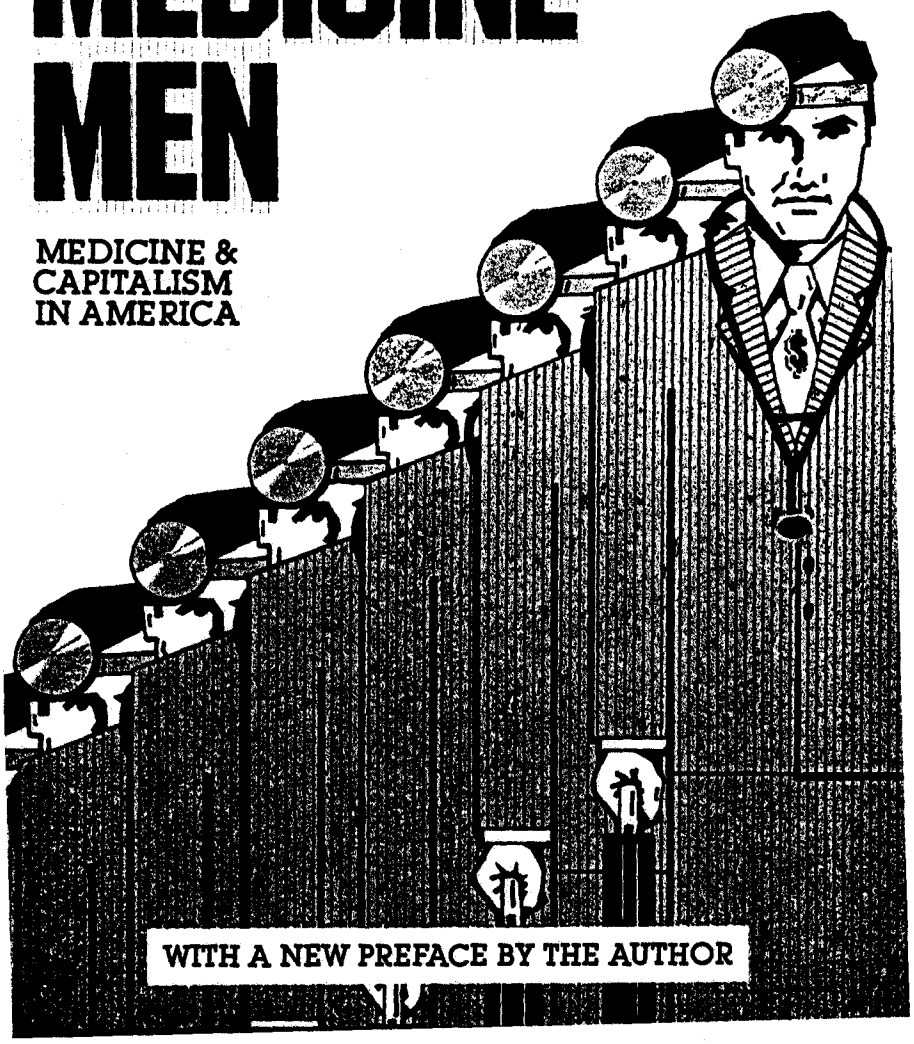
E. RICHARD BROWN

ROCKEFELLER MEDICINE MEN

MEDICINE & CAPITALISM IN AMERICA



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To Marianne, Delia, and Adrienne

Rockefeller Medicine Men

Medicine and Capitalism in America

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2 CHAPTER

Scientific Medicine I: Ideology of Professional Uplift

THROUGHOUT the nineteenth century the medical profession was almost constantly frustrated in its attempts to gain public confidence and raise professional incomes and status. Despite varied attempts to alter the competitive market economy for medical services, the dominant portion of the profession continued to be plagued by competition within its own ranks and from those beyond the pale of orthodoxy.

In this chapter we will see how the rise of science in the latter part of the century provided the solution that medical reformers had previously sought in vain. Physicians and biological researchers consciously applied the methods and principles of scientific research to problems of disease, though even in the 1860s their work had little support and played a very minor role within the medical profession. At about midcentury, however, leading reformers among elite medical practitioners took up "scientific medicine" as the ideology of professional reform and uplift. Medical science gradually provided practitioners with a somewhat more effective medical practice, enabling them to increase their credibility with the public and reduce economic competition within the profession. "Scientific medicine" was adopted as the unifying theory that enabled the dominant profession to develop strong political organization and to win political and financial

support from wealthy people in society. Perhaps most fundamental, the association of medicine with science won support from the new technical, professional, and managerial groups associated with the growth of corporate capitalism.

AMERICAN MEDICINE IN THE 1800s

In 1800, nearly all American physicians received their training as apprentices at the side of a practicing physician, assisting with simple techniques and mixing medications. In the eighteenth century, medical lectures had not been widely available in this country, so young men from the upper class went abroad for their medical education, especially to Scotland. The handful of Edinburgh-trained physicians in America developed very successful practices, with the wealthiest citydwellers for their clients and lucrative consulting practices besides. By 1800 only about a hundred American physicians had attended medical courses at Edinburgh, and only three American medical programs—at Pennsylvania, Harvard, and Dartmouth—were offering lectures to supplement the apprenticeship. The graduates of these institutions formed a medical elite, and together with the rank-and-file apprentice-trained physicians they formed the self-styled "regular" profession.[1]

But most Americans were probably not getting their medical care from "regular" physicians. Whereas most of the populace lived in the countryside or small towns, most apprentice-trained doctors and the few medical school graduates lived in the large towns and cities. In Virginia, by 1800 the eleven largest towns had only 3 percent of the state's population, yet 25 percent of all physicians known to have practiced in Virginia during the eighteenth century lived in those eleven towns.[2]

Most Americans, when they were sick, consulted herbal practitioners. These empirical healers had no formal training but apprenticed mainly with other herbalists. Some of the herbalists were midwives, and others were men and women who had experimented with herbs and were known for their abilities to heal the sick. Lay healers were distributed throughout the countryside. They seldom relied on healing for their entire support and charged little for their services.[3] Regular physicians were increasingly plying their art on a full-time basis and charging

substantially higher fees, often supported by medical societies' publishing "fee bills" to place a floor under competing doctors' charges.

The maldistribution of regular physicians and their higher fees were only two reasons why the regular profession was widely unpopular in the first half of the nineteenth century. Very much related to their social, economic, and geographic separation from the populace, the orthodox profession's clinical practice was greatly feared by much of the population. Not only did medicine offer little hope for curing disease, but the heroic methods used by regular doctors were unpleasant and often lethal. The lancet was the physician's indispensable tool for nearly every ailment. Benjamin Rush, the most prominent physician in America from the Revolution through Jefferson's time, urged bleeding for yellow fever "not only in cases where the pulse was full and quick, but where it was slow and tense."[4] When bleeding was not recommended, and even when it was, calomel (chloride of mercury), jalap, or another purgative was administered. The violent vomiting and purging that resulted were more detested than even the pus-filled blisters induced as another form of therapy. After attacking the body as well as the disease with bleeding, blistering, and purging, the physician administered an arsenic tonic to restore the weakened patient's vigor.

Against this distasteful and frequently disastrous treatment by regular physicians, the empirical herbalists' mild treatments were pleasanter and at the very least did not interfere with natural rates of recovery. Their mild emetics and stimulants seemed closer to nature than the regulars' profuse blood-letting and harsh purges.[5]

Still experiencing competition from the empirically grounded herbalists, regular physicians resorted to ever larger doses of their therapies through the first half of the nineteenth century. Believing that any desired change in a patient's gross symptoms was to the good and seeking to distinguish their art from lay practice, regular doctors bled their patients more profusely and doubled and tripled their doses of calomel and jalap. The profession's heroic therapy became the focus of increasingly bitter and widespread attacks. Thomas Jefferson called them an "inexperienced and presumptuous band of medical tyros let loose upon the world." By the middle of the century cholera victims were given an even chance of being done in by the disease or by

the doctor. The profession's fearsome and futile methods reduced public confidence in regular doctors to an all-time low.[6]

Leading local and regional members of the professibn tried many methods of increasing public confidence in doctors and reducing competition. At various times during the nineteenth century, they sought licensing laws, formed new medical sects, started medical schools and issued diplomas, organized state and national medical societies, demanded medical school reforms, and adopted codes of ethics, all with little or no improvement in technical effectiveness, credibility with the public, or their own status and fortunes.

LICENSING

Despite the antipathy of much of the populace, regular doctors at the end of the eighteenth century persuaded fellow gentlemen in the state legislatures to pass medical licensing laws to restrict or prohibit practice by herbal healers. Licensure bestowed exclusively on regular physicians the right to sue for fees. The legally sanctioned economic privilege did not provide the regular profession with an economic monopoly, but it did set them apart from and above lay healers and most other Americans.

In addition to the public's lack of confidence in regular physicians' clinical methods, populists in the Jacksonian era articulated their opposition to any form of class privilege. By 1850 medical licensing laws were repealed in nearly every state through the efforts of the Popular Health Movement, a loose populist movement of lay healers, herbal practitioners, artisans, farmers, and working people who fought to remove the legal sanctions that protected the privileged position of physicians.[7]

MEDICAL SECTS AND MEDICAL SCHOOLS

The humiliated profession was badly divided. Many physicians, critical of heroic medicine, were attracted to the pleasanter new professional sects, such as homeopathy and eclecticism, that were growing in popularity. These sects built their materia medica around herbal drugs or some distinctive technology or procedure, each adding elements that enabled them to claim the necessity of extended study in their field.

Homeopathy, as formulated by its founder Samuel Hahnemann (a German physician), was based on the widely accepted medical view that the symptoms of a disease constitute the disease itself and, a corollary, that eliminating the symptoms constitutes a cure. Hahnemann found that some drugs produced the same symptoms in a healthy person (that is, caused the "illness") that they eliminated in a sick person (whom they "cured"). For example, he found that cinchona bark, at the time used to relieve the symptoms of malaria, produced malarial symptoms in a healthy person. From these observations he developed what he called the law of *similia similibus curantur*—or "like cures like." Hahnemann also maintained that diluting the dosage of a drug down to one ten-thousandth or one-millionth of its original strength *increased* the drug's potency.[8]

Competition between the sects and the lack of decisive public support for any one of them, left none of the sects in a position to establish control through licensing. The orthodox profession and the other sects turned to medical education and degrees as a method of recruiting and certifying new physicians in their ranks and uplifting the profession. Medical schools proliferated throughout the country, and some 400 were founded between 1800 and 1900.[9] Local physicians organized schools to supplement their practices with lecture fees paid by medical students and, through their graduates, to fatten their incomes with increased consultations. At a time when physicians considered $1,000 to $2,000 a year a good income, the average part-time medical school faculty member earned more than $5,000 annually from student fees and private practice while more enterprising and popular colleagues earned at least $10,000.[10] Like hundreds of general colleges started before the Civil War by rival Protestant sects and political groups, many medical schools were started by rival medical sects to improve their competitive position vis-à-vis other sects. The orthodox profession controlled by far the largest number of schools.[11]

The proliferation of medical schools in the 1800s assured the dominance of diploma-carrying regular doctors over lay healers and physicians of other sects. By 1860 regular physicians outnumbered other sectarian doctors ten to one.[12] The inexpensive and widely dispersed medical colleges encouraged large numbers of young men and some women to attempt careers in medicine.

Graduates, many of them from yeoman farming and working-class families, filled the cities, towns, and countryside of America. Elite* regular physicians resented the competition within the dominant sect, but they saved their most venomous denunciations for competing sects. The sectarian doctor was "the greatest foe to the medical profession," argued the dean of the Tulane University medical department, because he was "an obstacle to the financial success of the respectable medical practitioner."[13]

As the number of physicians increased, organized doctors became increasingly worried. It was clear to all physicians that producing a lot of doctors would lower rather than raise the status and incomes of the profession as a whole. Lacking the public support necessary for effective medical licensing laws and still smarting from the humiliating defeat of medical licensing earlier in the century, the reformers turned to medical school reform. Raising medical school standards and thereby reducing their enrollment, medical reformers believed, would simultaneously win public confidence in medical practice and reduce the output of doctors. The problem they faced was how to control the independent, proprietary medical schools.

MEDICAL SOCIETIES

Local and state medical societies, representing the practitioners, fought with medical schools in their areas. In 1847 the societies banded together to form the American Medical Association (AMA). At the founding convention, leading practitioners passed resolutions that sought to raise requirements for preliminary education prior to admission to medical school. So few Americans had the requisite education at the time that enforcement of these standards, according to historian William Rothstein, "would have closed down practically every medical school in the country, and would have depleted the ranks of formally educated physicians in a few years."[14]

From its founding onward, the AMA was hostile to the interests of proprietary medical colleges and their faculties. The practitioners wanted to reduce the output of medical schools in

*The term "elite" refers somewhat loosely to physicians who, by their reputations for clinical or research techniques, by income, and/or by organizational leadership positions, had achieved prominence within the profession.

order to reduce competition within the profession, while the medical faculties opposed any attempted reforms because of their interests in maximizing their lecture fees and future consulting fees. Unfortunately for the practitioners, the reform leadership mistakenly thought that including medical schools in the new national organization would allow the medical societies to control them. This strategic mistake immobilized the AMA as the vanguard of practitioners' interests until 1874 when medical college voting rights in the association were abolished.

CODES OF ETHICS

The AMA's attacks on medical education and especially on other medical sects were supported by a "code of ethics" adopted at their first convention. With the code the AMA hoped to deny the ability of patients to judge their physicians or disagreements between physicians, to encourage attacks on "irregular" doctors and "quacks," and generally to reduce competition among regular physicians. At the same time that the AMA complained about the low standards of medical education, the association commanded patients to trust their doctors. "The obedience of a patient to the prescriptions of his doctor should be prompt and implicit," the code of ethics instructed. The patient "should never permit his own crude opinions as to their fitness to influence his attention to them."[15]

These efforts to bolster the profession's falling economic status and power were legitimized on moral and ethical grounds by the medical societies. Since the colonial period, violation of "ethical codes" had been grounds for ostracizing nonconforming physicians. Codes were used not only against other sects and lay healers but against members of the regular profession who consulted with homeopaths and eclectics and even against the developing medical specialties which offered competition to the general practitioners. The AMA code failed to win public support or stamp out competition although the medical societies' attacks on members for code violations intimidated some doctors and increased intraprofessional antagonisms.[16]

In short, conflicts between practitioners and medical faculties, generalists and specialists, and "regular" physicians and other sects kept the profession badly divided throughout the nineteenth century. The incoherent strategy of the regular profession's

leadership and the weak structure of their organization, the AMA, left the field with no sect able to secure undisputed control over the competitive marketplace.

Medical school output continued unabated. By the end of the nineteenth century, the United States averaged one physician to every 568 people.[17] Compared with prevailing ratios in European countries (Germany, with one doctor to 2,000 population, was the favorite example), the United States was "overcrowded" with physicians. Physicians' incomes ran the gamut from poor ($200 a year) to wealthy (as much as $30,000 a year for a small number of elite doctors). The chief complaints of the most prominent professional spokesmen by the end of the century were the "surplus" of doctors, "low" incomes, and the low social status of the profession.

Three underlying problems plagued medical reformers who tried to heal these wounds. First, physicians lacked an agreed upon *technical* basis for settling among themselves disputes between the sects. Without public consensus on technical criteria of effectiveness and validity, all sects competed for business in the medical market. But without sufficient public confidence in the validity of any one sect, no sect could win a monopoly of medical practice and thereby eliminate the competition.

Second, their lack of a technical basis for establishing public support put them all in a weak position to establish *political* control over entry into medical practice. Earlier efforts to use licensing ended in humiliating defeat for the regular profession because of organized opposition from other sects and a distrustful public.

Third, within at least the dominant sect different economic interests divided those who practiced medicine from those who trained future practitioners. Practitioners wanted to restrict the supply of physicians, and part-time faculty wanted to preserve institutions that were lucrative additions to their own practices.

INCOMPLETE PROFESSIONALIZATION

Without actually having public confidence in their technical ability, physicians throughout the nineteenth century and earlier had nevertheless proclaimed norms to support their authority over the lay public. Demands for recognition of the regular profession's technical competence (in which they undoubtedly

believed) were the means of legitimating their claims to professional authority. The recognition of that authority, however, was seen as necessary to the profession's controlling the economic conditions of its work. By proclaiming a set of norms and values associated with their work, regular physicians hoped to end the competitive market for medical services and to win a regulated market for themselves.

The basis of professional status and power is still debated by sociologists, who traditionally have posed a set of essential features that are supposed to distinguish professions from the general run of occupations. In 1928, A. M. Carr-Saunders, the father of the sociology of professions, defined a profession as an occupation: (1) based on specialized intellectual training or study, (2) providing a skilled service to others, and (3) in return for a fee or salary.[18] Thirty years later, William Goode stressed prolonged specialized training in a body of abstract knowledge and a collectivity or service orientation as the "core characteristics" of professions.[19] The list of formal characteristics of professions has been extended by other sociologists to include a systematic body of theory, acceptance of the authority of the professional by all who come to him or her as clients, protection of the professional's authority by the political community, a code of ethics to regulate professional relations, and a set of values, norms and symbols that build solidarity among the profession's members.[20]

However, lists of formal characteristics turn out to be fairly useless in the real world in distinguishing professions from other occupations. Even worse, they tend to gloss over the political and economic dynamics that are essential to the process of professionalization, making professional status and power appear an inevitable and desirable feature of modern societies. In reality, as Eliot Freidson has observed, any occupation wishing professional status creates a systematic body of theory, claims exclusive authority of its practitioners, adopts a code of ethics, tries to build solidarity among its practitioners around formal values, norms, and symbols, and otherwise cloaks itself with the well-known medallions of professions to support its claims. "If there is no systematic body of theory," Freidson argues, "it is created for the purpose of being able to say there is."[21]

The commitment to service, argues Harold Wilensky, is "the pivot around which the moral claim to professional status revolves."[22] Like many such professional norms, there remains no clear evidence that a service orientation is *in fact* strong and widespread among professionals. In reviewing the sociological literature that makes such claims, Freidson has concluded: "the blunt fact is that discussions of professions assume or assert *by definition* and without supporting empirical evidence that 'service orientation' is especially common among professionals."[23]

Indeed, many academic social scientists have been beguiled by their own (usually self-serving) beliefs in "science" and "expertise" into confusing professional norms with the reality of professional practice and motivation. Codes of ethics were accepted by some sociologists as genuine efforts by the profession to guarantee competence and honor. Carr-Saunders believed that "if the foundations of the codes were better understood, they would not be generally regarded with hostility."[24]

More recently, some sociologists have approached professional norms more critically. Everett Hughes, for example, argues that the widespread acceptance of norms, like the professional "should have almost complete control over what he does for the client" and "only the professional can say when his colleague makes a mistake," have been used by professionals to hide mistakes.[25]

What much of the sociological literature ignores in examining the process of professionalization is how essential political power is in gaining and maintaining professional status. As the history of the medical profession in the nineteenth century demonstrates, without sufficient political power the profession remained unable to control its economic and working conditions. Initial efforts at licensure were defeated by a popular movement of lay healers and other Jacksonian-era populists. Attempts to use medical education as a strategy of reform were thwarted by the organized profession's lack of control over medical schools. The leading reformers organized a national professional association, but the medical school faculties were beyond the reach of the American Medical Association. Ethical codes, articulating prevailing professional norms, failed to win public support for the profession and could not overcome intraprofessional competition. What the medical reformers sought was the power to enforce the instruments of professionalism that assure high incomes, social status, and continued prosperity for the profession.

Freidson is adamant in this interpretation of professionalization. "Not training as such, but *only the issue of autonomy and control over training granted the occupation by an elite or public persuaded of its importance* seems to be able to distinguish clearly among occupations," he argues. "And the process determining the outcome is essentially political and social rather than technical in character—a process in which power and persuasive rhetoric are of greater importance than the objective character of knowledge, training, and work." The nature of training, as well as the service ideal, ethical code, and body of abstract theory constitute a profession's "ideology, a deliberate rhetoric in a political process of lobbying, public relations, and other forms of persuasion to attain a desirable end—full control over its work."[26]

The history of medicine, from this perspective, can be understood as a political process in which the specific reforms—however much they may increase the technical effectiveness of physicians—are also instruments of persuasion and symbols of legitimacy. The goals of reform leaders were to gain collective control for the profession over its working conditions and economics in order to establish a hierarchy of authority and power among healing occupations, to assure that physicians reign firmly at the top of the hierarchy, and to assure them as high incomes as possible in any given historical period.

Support for such interests would have to come from outside the profession. While efforts were made to win the credibility of "the public," leaders of the profession did not see their struggle as a grassroots campaign. Seeking a social and economic position above the majority of the population, they could at best hope for the acquiescence of the people. Active support would have to come from the already higher social classes. In the eighteenth century, practitioners had turned to gentlemen farmers and wealthy merchants in the state legislatures to protect their interests. In the nineteenth century a political rebellion from below demonstrated the insufficiency of merely legislated sanctions. Furthermore, political power increasingly rested in a new class in society—those capitalists who controlled great manufacturing and marketing enterprises. These were the men who, for good or bad, were changing the face of the nation. Around their enterprises grew the great cities. From their factories came the steel and machines that enabled the same men to unify the country commercially with railroads, products, and even armies. From their corporations came the demand for foreign resources and the products for foreign markets that were rapidly making America a world power. This was the ascending class in America at the end of the nineteenth century. Those groups in society who connected with their enterprises or their interests could rise with them.

It became clear to increasing numbers of physicians that the complete professionalization of medicine could come only when they developed an ideology and a practice that was consistent with the ideas and interests of socially and politically dominant groups in the society. It was *desirable* that everyone in society recognize their technical effectiveness, but it was *essential* that the classes and groups associated with the ascending social order believe in their efficacy. The development and increasing dominance of scientific medicine within the profession provided the virtually perfect material and ideological basis for an alliance of the medical profession with other professionals (mainly engineers and lawyers), corporate managers, and all ranks of the capitalist class. The medical profession discovered an ideology that was compatible with the world view of, and politically and economically useful to, the capitalist class and the emerging managerial and professional stratum.

MEDICINE AS SCIENCE

Medical research was flourishing in Germany and France during the nineteenth century, and even in the United States biologists and physicians made their contributions. In 1818 Valentine Mott, a New York physician, was among the first to attempt major arterial surgery near the heart. Other Americans also attempted new surgical procedures while some physicians contributed new understandings to internal medicine. The New York Academy of Medicine, founded in 1847, and the Pathological Society in Philadelphia promoted discussion of medical research and science.[27]

Few of the findings and developments in medical research were directly useful in improving medical practice. It is doubtful that many patients survived the new surgical techniques in the

absence of aseptic practices. While the differentiation of diseases made observation more precise, the usual heroic treatments were just as likely to do the patient in as before.

Beginning in midcentury, medical research in Europe started producing more applicable findings. In 1858 Rudolf Virchow unveiled a general concept of disease based on the cellular structure of the body. From the findings of cell physiology, anatomy, and pathology, Pasteur, Koch, and other medical researchers developed new concepts and applications of bacteriology.[28] In the last quarter of the century specialized German laboratories began to replace the more generalist botanists, biologists, and physicians. Their findings gave medical science a more reductionist and technically more effective turn.

Changes in American medical practice reflected the gradual acceptance of recent developments in Europe. Starting in the 1870s, American physicians flocked to the famous laboratories of German and Austrian universities for a year or more of study—if they were ambitious and could afford the expense of travel and living abroad without income. Between 1870 and the outbreak of World War I in 1914, about 15,000 American physicians studied medicine in Germany alone.[29]

While most American doctors who studied in Europe returned to develop lucrative private practices, a few put their main energies into developing laboratory medical sciences in the United States. Carl Ludwig's physiology institute in Leipzig produced several luminaries of America's infant medical science. Henry Pickering Bowditch, one of Ludwig's pupils, founded the country's first experimental physiology department at Harvard University in 1871. William Henry Welch, another of Ludwig's pupils, started America's first pathology laboratory at Bellevue Hospital medical school in 1878.[30]

Fifteen years later American medical science came of age with the opening of the Johns Hopkins medical school, modeled after the German university medical schools with a heavy emphasis on research in the basic medical sciences. At Hopkins, for the first time in the United States, the laboratory science faculty were to be full-time teachers and researchers, supported by salaries adequate to live on and unencumbered by the distractions of private practice. Virtually the entire Hopkins faculty was trained in Germany. Hopkins, and then Harvard, Yale, and Pennsylvania, became the indigenous producers of scientific medical faculty. As scientific medicine gained increasing acceptance, medical schools throughout the country vied for Hopkins graduates to add gleam to their lackluster local faculties.

Medical practice likewise began to change with the increased acceptance of medical science. Physicians began introducing into their work those scientific medical practices that were uncomplicated and acceptable to their patients and at least *seemed* effective in reducing suffering and ameliorating the symptoms of disease.[31] The use of bleeding and calomel began falling off in the 1870s though many physicians continued to use them on a more limited basis as late at the 1920s.

Physicians who had the money to take an extra year's study in Europe were able to build more prestigious practices than the ordinary American-trained doctor. Usually they would take themselves out of direct competition with the majority of physicians by specializing in gynecology, surgery, opthalmology, or one of the other new branches of medicine. They quickly formed a new elite in the profession, with reputations that brought the middle and wealthy classes to their doors.[32]

As the base of scientific medicine spread out to include more practitioners, the peaks of elite physicians rose even higher. They quickly found that "scientific medicine" not only seemed more effective than the heroics of old, it was also far more profitable.

Professional leaders had tried numerous ways of uplifting the profession during the nineteenth century, but none of them had succeeded. It was medical science that provided the key to professional reform. Medical research yielded new tools of understanding and held out the hope of more effective techniques of prevention and treatment than orthodox medicine offered. But scientific medicine was utilized by professional leaders beyond merely increasing the technical effectiveness of their practice. It became as well the *ideology of professionalization,* used to gain support from the dominant groups associated with industrial capitalism, to cement the complete dominance of health care by the medical profession, and to raise the incomes and status of physicians as a group.

The obvious advantages to the profession notwithstanding, scientific medicine contained within it the seeds of ultimate destruction for the profession. The remainder of this chapter and

the rest of this study will examine how this dialectic played itself out—the benefits the profession derived from the adoption of scientific medicine, the contradictions inherent in this historical process that began to undermine the position of the medical profession, and the new forces and contradictions that are now emerging.

GAINING PUBLIC CONFIDENCE

Scientific medicine solved two broad problems the medical profession faced in the late nineteenth century: lack of public confidence in the effectiveness of their service and competition within the medical profession.

Rather than inspiring awe and confidence, the regular medical profession had won the public's fear and ridicule. To win public support and patronage was the major task set by professional leaders during the nineteenth century. The AMA's code of ethics sought to assure the lay public that doctors were ethical and competent and attempted to command the public to place their confidence in regular physicians. But no claims or commands were effective in the absence of convincing personal experience or persuasive propaganda that could substitute for personal experience.

While homeopathy, eclecticism, and osteopathy did not have as much public patronage as the regular profession, they had a strong base of support. They had a following, including many wealthy and influential people, who believed in their absolute effectiveness. Their practitioners were widely believed to be, relatively at least, as effective as and certainly less dangerous than most regular doctors. And they did not demand a monopoly of practice, a wise and practical political course given the disreputable condition of the profession and the almost universal reliance on home remedies for most minor acute and chronic ailments.

For the regular profession to win in their competition with the other medical sects, they needed first of all to gain absolutely and relatively in public confidence. Scientific medicine provided the basis for a concerted and successful campaign to win this public support. The effort never depended on the common folk of America. The campaign for acceptance of scientific medicine was aimed at the wealthy and powerful in society and the new

"middle" classes. Both of these groups owed their privileged positions to the intensive industrialization that began with the Civil War. They were particularly attracted to a kind of medicine that shared their industrial culture, their values, their world outlook, and their ideologies. "Scientific management" analyzed the labor process in production into its constituent elements and reorganized them under management's control and for management's profits.[33] In a similar vein, "scientific medicine" analyzed the body into its parts, subjected the parts to the control of scientific doctors, and thereby kept the bodies healthier and more efficient.

The germ theory of disease was especially attractive to both the regular profession and these new industrial and corporate elites. The germ theory emphasized discrete, specific, and external causal agents of disease. It gave encouragement to the idea of specific therapies to cure specific pathological conditions.[34] The payoff for the medical practitioners would be increased technical effectiveness and improved standing in the eyes of the public. That was not the foremost concern of either influential capitalists or medical researchers. These men (there were hardly any women in their ranks) saw in scientific medicine the possibility of preventing diseases through technological intervention that identified the offending organism and its means of contagion, and attacked the organism at the source or used it to create an immune response within the body. Disease was thus seen as an engineering problem, surmountable with sufficient talent and resources. To the medical researchers the germ theory and discoveries in bacteriology confirmed the value of their craft and assured increased support for their work. For capitalists, bacteriological investigations and the application of the findings opened the possibility of reducing the toll that disease took of society's resources.

The forerunners of scientific medicine, along with practitioners in other medical sects, had already greatly improved the classification of diseases. European physicians had long dominated the field of medical discovery although now and then an American made a contribution. In 1836 William Gerhardt, a physician at Philadelphia Hospital, clinically differentiated typhoid from typhus. But there was little practical benefit from such classifications when no therapy was forthcoming to cure the

condition. Bleeding, purging, blistering, and tonics were the standard bag of tricks available to regular physicians. Homeopaths and eclectics, along with lay healers, used a wide assortment of herbs, and many claimed high rates of cures. By the 1880s the regular profession still had only a few drugs that were widely recognized to be curative: Quinine could save the victim of malaria, mercury could cure syphilis, and digitalis was often successful in treating heart disorders.[35]

The field of disease prevention was somewhat more successful. In the eighteenth century wealthy Europeans and Americans adopted the practice of variolation, a somewhat dangerous inoculation against smallpox used in the East for centuries. In 1798 Edward Jenner introduced inoculation with cowpox that was effective and somewhat safer than variolation.[36]

By the time of the third major cholera epidemic in the United States in 1866, the notion that cholera was a specific and contagious disease had finally won near-unanimous support from the medical profession, joining the already strong popular belief in its contagion. Medical support for cleaning up the accumulated filth in American cities won the backing of the business class and helped prevent the spread of cholera and the high death rates that had characterized the previous epidemics. The success of this preventive effort was credited to sanitary engineering and brought increased support for sanitation programs.[37]

Despite the scant results, leading practitioners and the new class of medical researchers sustained their faith in the eventual success of medical science. The major breakthroughs came from Europe in the 1880s and 1890s. In 1883 and 1884 Edwin Klebs and Friedrich Loeffler isolated the germ involved in diphtheria, a major killer in the nineteenth century. Emil von Behring and his coworkers produced a diphtheria antitoxin in the early 1890s, which although of little significance in reducing the death toll from diphtheria, supported the belief that deadly epidemics that were borne with resignation could in fact be prevented by understanding their causes.[38]

These and other discoveries in the 1880s and 1890s were lauded around the world. Medical science benefited with new respect and political and financial support. Success indeed paved the road to fortune. The German government provided laboratories for Robert Koch and Paul Ehrlich. In France popular

contributions supplied a research institute for Louis Pasteur. In England and Japan private philanthropy paid for new medical research institutes.

In the United States private and government support for medical research lagged behind these other countries. Veterinary medicine received help from the Department of Agriculture to stem epidemics that were wiping out livestock investments. Government officials and philanthropists saw little value in researching human disease, as Richard Shryock notes, "partly because of the nature of medical science prior to 1885 and partly because human welfare brought no direct financial return. Hogs did."[39] Discoveries of the 1880s and 1890s, however, held out the promise that as science uncovered the germs that caused the great pestilences, further investigation would provide not only cures but methods for guarding against infection and for preventing the spread of epidemics. These expectations guided the lives of medical researchers, but they were also spreading rapidly among the middle classes and those who owned and managed America's new industrial empires.

Medical science rescued the medical profession, in particular the practitioners, from the widespread lack of confidence in their effectiveness. These few but significant discoveries, mostly in bacteriology, increased the belief in the technical effectiveness of the profession as a whole. The actual impact of progress against infectious disease was not nearly so great as its proponents claimed. The arsenal of effective weapons against diseases did not increase spectacularly, but its limited advances did provide the basis for persuading the public that scientific medicine reflected on all members of the profession—practitioners as well as researchers—who had been trained in the theory and methods of scientific medical research.

The slight increase in the effectiveness of the new medicine was embellished in propaganda by the profession and the media. From the 1890s on, popular magazines and newspapers joined the leading medical journals in praising the accomplishments and prophesying the future success of medical science. Articles ridiculing "Popular Medical Fallacies" and extolling the "Triumphs of Modern Medicine" and the "War Against Disease" appeared in many popular magazines as well as professional journals. They portrayed medicine as an "exact science" and the

physician as an inquiring and skeptical scientist who avoids "hasty jumping at conclusions or too-ready dependence upon formulae."[40]

The increased credibility of medicine was important in convincing the public that doctors with scientific medical training had an expertise worth paying for. If doctors could do little more for a patient than an herbal healer or a patent medicine, there was not much point in people wasting their money on expensive doctors' fees. Scientific medicine wrapped the modern doctor in an aura of therapeutic effectiveness, and the limited improvements gave support to that aura. Furthermore, the technical expertise associated with scientific medicine helped to mystify the role and work of the physician more effectively than did older notions of the etiology of disease, unpleasant remedies, and transparent codes of "ethics." Scientific medicine thereby supported the claims of the profession for a monopoly of control over all healing methods. These benefits provided the basis for other gains and were effective in undermining sectarian medicine, midwifery, and other forms of competition.

In seeking to destroy its competitors' hold on the medical marketplace, the regular profession proffered scientific medicine as more effective than "medicine as art" and "sectarian medicine" and "quacks." Not only was it *more* effective, it was, as each sect before it had claimed, the *only* truly valid medicine. Scientific medicine was held up as *the* nonsectarian medical theory and practice—the only one based not on dogma but on verifiable truths.[41] As the only valid medicine, it should be granted a monopoly of practice; "none but men and women who have an interest in scientific medicine" should be allowed to join any county medical society.[42] But making the claim was not equivalent to having it accepted.

Folk medicine was still widely used in the United States, particularly in the countryside but also in the cities. Every family had its traditional remedies that were part of the family lore, believed in and passed down from generation to generation. Generally, the young woman's own family's remedies prevailed in her new family.[43] Some of the remedies undoubtedly acted as placebos, but many were certainly effective in providing relief and even cures. Such traditions were effective obstacles to the acceptance of scientific medicine.

Most practitioners were also very pragmatic, developing a repertoire of skills and utilizing some new techniques that seemed effective and readily accepted by their patients. These country and city doctors were not much impressed by medical science. They saw it as a tool enabling them to heal more effectively when its claims worked and when its techniques did not require a whole new method of practice.

Robert Pusey, a Kentucky country doctor who practiced in the 1870s and 1880s, used the clinical thermometer, assorted specula, and a syringe. Occasionally, he used the stethoscope although he preferred to place his ear to the patient's chest. With this simple method he could hear and distinguish most conditions as well as his scientifically trained son could with a stethoscope. He used judgments based on practice, read up on cases in the more concrete and concise medical texts, and distrusted journal articles. The older Dr. Pusey vaguely accepted bacteriology, especially as an explanation for infections causing pus but not generally for infectious diseases. He sometimes used calomel, made and sold his own drugs, did not use patent medicines, and often prescribed strichnine and arsenic as tonics. He practiced surgery in which he used chloroform as an anesthetic and asepsis when the knowledge and techniques became available to him.[44]

The propaganda for scientific medicine was sure to be effective, but it would take time. John Shaw Billings, a leading medical reformer in the late nineteenth century, observed that doctors whose practices were not interfered with by quacks were indifferent to reforms while those in need of larger practices were more indignant about such competitors. Many quacks had effected cures where science had failed, Billings admitted. But rather than giving him pause in his rejection of any but scientific medical methods, Billings saw it as a tactical problem of persuading the American public that it is in their interests to suppress quackery. The remarkable achievements of medical science were being brought to the public, but, Billings cautioned, "it is necessary to go slowly and allow such evidence to accumulate."[45]

The reformers believed scientific medicine would increase the technical effectiveness of the medical profession, and they promoted it as the *only* effective therapeutic method. Through propaganda they hoped to undermine public resistance to its use,

increase the public demand for it, and thereby force practitioners to join the new "nonsectarian" medicine.

REDUCING COMPETITION

As scientific medicine won public and professional credibility, it also solved the second and fundamentally more serious problem facing the profession in the nineteenth century: competition.

Plagued by competition among numerous medical sects, between practitioners and medical school faculty, and within the "crowded" ranks of regular practitioners themselves, the profession was saved from its own internal competitive struggles by the triumph of scientific medicine. First, the technical requirements of teaching scientific medicine provided several advantages for the profession's elite. Second, scientific medicine forged new unity in the interests of elite practitioners and medical school faculty. Third, as it gained increasingly widespread legitimacy, scientific medicine undermined the major medical sects. It thereby imposed unity among those sects in their subordination to the dominant forces in the profession. And, finally, medical science made possible specialization which was largely a response to competition within medicine. The overall impact of scientific medicine within the profession was to legitimize control by elite practitioners and medical school faculty.

TECHNICAL REQUIREMENTS OF SCIENTIFIC MEDICAL EDUCATION

THE NEW ACADEMICIANS

Making the doctor the purveyor of a broad range of skills within a context of mystified knowledge required extensive and esoteric training. Nineteenth-century medical reformers envisioned the physician as a bedside scientist. Medical practitioners must think and talk like scientists. They must be trained in anatomy, physiology, bacteriology, pathology, pharmacology, and the physical sciences. They must think of health and disease, not holistically as general relationships between bodily systems or

between the person and the environment, but in terms of the micro-concepts of physiology and anatomy, bacteriology and cell pathology. These sciences and their reductionist concepts were gradually recognized in the late nineteenth century as the foundations of medical education.

The medical schools of the last century were staffed by practitioners, often very talented men who were heavy on the "art" but less expert on the "science." Increasingly, laboratory science courses were taken away from the local practitioner and given to physicians with special training in the laboratory sciences. The new academic physicians who preferred these laboratory sciences over medical practice prospered with the increased demand for more faculty with training in these fields. Those who could afford to spend a year or two studying in Germany or Austria after medical school had secure, if not lucrative, academic careers awaiting them on their return.

In 1893 Johns Hopkins became the first medical school in the United States to employ these laboratory men full time and to pay them salaries that enabled them to devote all their time and energy to research and teaching. The new full-time organization of the laboratory science faculty was hailed as a great advance for American medical education. It was quickly adopted by other elite schools and gradually became the norm emulated by the average institution. Although the laboratory science faculty gave up private practice incomes of $10,000 a year and more in return for salaries of $3,000 or $4,000, there were more than enough people to fill the demand.[46]

Some of the giants of medical reform, like William H. Welch, loathed medical practice, feared the insecurity of competition among private practitioners, and longed for the opportunity to pursue medical research without the diversions of maintaining a private clientele. Before going off to Europe in 1876 to advance his medical science skills, Welch confided to his sister his fears of trying to set up "by hook or by crook a patronage of some kind." Echoing the pipe dreams of most medical graduates, Welch observed, "it is much finer to hold a chair in a medical college, and to have a salary . . . and to be sought by patients instead of seeking them." His studies abroad would give him a jump on his competitors: "If by absorbing a little German lore I can get a little

start of a few thousand rivals and thereby reduce my competitors to a few hundred more or less, it is a good point to tally."[47]

The emphasis on scientific medicine thus created unprecedented job opportunities for physicians qua medical scientists. As positions expanded, a core of professionals developed who were more dedicated than ever to seeing medicine as science completely displace medicine as art. These medical scientists' interests and identification were bound up solely with medical schools and not with private practice. As the vanguard of the profession's successful strategy and the recipients of millions of dollars in capital investments in medical research and education, the new medical academicians became the symbol of the new profession. In the 1890s, for the first time in the United States, the medical profession came to exalt the scientist over the practitioner.[48] Despite their more modest, middle-class incomes, the scientists were the new elite in the profession.

The faculty at the most prestigious schools won their professional reputations on the basis of their research contributions to their fields. The best reputations attracted the best students and the wealthiest patients. In 1903 William Halsted, a famous surgeon on the Johns Hopkins faculty, got $10,000 for an appendectomy, and his colleague, Howard Kelly, charged $20,000 for a major operation.[49] Unlike the old-time medical faculties, whose material interests were enhanced by student fees and referrals from their many former students, the new academicians' material interests were tied to the promotion of medical science. It was in their interests to raise the standards of medical schools and to make scientific medicine the only acceptable theory and practice.

The predominant type of medical school, owned by the faculty and existing on student fees, prospered as long as enrollments could be kept high and costs low. However, practitioners would prosper only if the production of physicians was decreased, reducing competition within the profession. This conflict of economic interests had divided elite practitioners from medical school faculty throughout the nineteenth century. The ascendancy of scientific medicine transformed the old conflict into the basis for an alliance between the scientific medical faculties and elite practitioners.

The interests of the new medical scientists in medical education were thus tied to the dominance of scientific medicine and *not* to large numbers of students or even large numbers of medical schools. They joined the elite practitioners as the leaders of reform in the profession. Together they gained control of the AMA at the turn of the century and completely reorganized it to make the AMA the profession's instrument of political action as we know it today and to use it and the leading medical schools to alter completely the technical, economic, and social forces within the medical profession.

The technical requirements of developing and teaching scientific medicine sharpened the distinction between laboratory science faculty and practitioners, provided new and expanding job opportunities for medical scientists, and hoisted them to elite and influential positions within the profession. At the same time these developments provided the basis for the alliance between these new elite faculty and the elite practitioners, giving them sufficient power to take control of the profession and transform it.

"FEWER AND BETTER"

As a professional consensus developed around scientific medicine, the scientific medical faculty and elite practitioners agreed upon "objective" criteria for judging medical schools. The needs of scientific medical education were pretty clear cut. If students are to be trained as medical scientists, they need to be taught the biological and physical sciences, and they need to be taught how to apply the principles they learn in those sciences to the diseases of real people. Experience as well as common sense argued for laboratory courses in the sciences and hospital experience for the clinical application of those sciences: Learning *how* is at least as important as learning *about.*

The technical requirements of teaching scientific medicine suggest fairly clear criteria for judging medical schools. If the premise of training scientists is accepted, then any worthy medical program must have adequate laboratory facilities, clinical teaching facilities, and well-trained laboratory and clinical faculty.

While the criteria of what is "adequate" might be (and were)

argued, the standards were set by those who secured positions of power. The AMA became the vehicle for political action within the profession and the larger society. The reformers used the technical requirements of training medical scientists to set standards and then evaluate medical schools according to those standards. With a few exceptions—Johns Hopkins the shining example among them—virtually all nineteenth-century medical colleges were weak when judged by these standards.

Unquestionably, scientific medical education was and is an expensive affair. The capital outlays for laboratories and hospital facilities were beyond the resources of most nineteenth-century and early twentieth-century medical schools. Student lecture fees could not cover the larger salaries for faculty who devoted substantial time to research and teaching, let alone the increasingly widespread full-time salaries for laboratory science faculty. No medical school could exist on student fees and at the same time provide these increasingly necessary medical science programs for their students.

In some states, students who graduated from medical colleges that did not have these programs, facilities, and personnel were barred from taking licensing examinations. Increasingly, state exams were geared to the information and perspectives provided in scientifically oriented schools, and graduates of inadequately equipped schools failed their licensing exams with increasing frequency.[50] Since the schools were supported by students' fees and students had little incentive to attend a school that did not prepare them to pass state board exams, inadequate schools lost out in the competitive market for enrollees and their money. AMA president Charles Reed observed in 1901, "Under the pressure of legal requirements the weight falls with almost fatal force upon the small, private and poorly equipped institutions."[51] The technical requirements of scientific medical education thus brought about the conditions of collapse of proprietary medical schools. As Abraham Flexner later noted, "Nothing has perhaps done more to complete the discredit of commercialism than the fact that it has ceased to pay. It is but a short step from an annual deficit to the conclusion that the whole thing is wrong anyway."[52]

In Chapter 4 we will see how these conditions provided an opportunity for the AMA and capitalist foundations to transform medical education in the United States. For the moment it is

enough to note that without sufficient capital and endowments, no medical school could survive in the era of scientific medicine. Schools collapsed and consolidated all over the country beginning in 1905, coinciding with the first year of serious activity by the AMA's new Council on Medical Education. Between 1905 and 1910, thirty schools merged and twenty-one closed down altogether.[53] The number of medical schools declined from a high of 166 in 1904 to 133 in 1910, 104 in 1915, and hit a low of seventy-six in 1929. In the reorganization of medical schools the number of students was reduced at many institutions in order to intensify the teaching and research resources within each school. Thus the technical requirements of scientific medical education were used to close schools and decrease the production of new physicians, easing the competition within the profession and raising doctors' incomes.

Furthermore, scientific medical education "required" greater preliminary education. Students must come to medical school, it was argued, having had a full year each of college chemistry, physics, and biology.

The demands for stringent requirements of preliminary education were not new to the era of scientific medicine. In eighteenth-century and nineteenth-century England, where "physicians" were a tiny elite above surgeons and apothecaries, it was essential for physicians to be regarded as gentlemen. Because they practiced only among the wealthy, it was important to their pocketbooks to be able to mingle with the upper class. As professions developed, a liberal education became the mark of upper-class origins. "It might not make you a gentleman," W. J. Reader has observed, "but without it a gentleman you could hardly hope to be."[54] In the United States as well, a college education was the mark of a gentleman. For those who were not born into a privileged class, a college education—if it could be gotten—"rubbed the raw edge off many a country boy," giving them sufficiently proper appearances to make their way to a higher social class.[55]

It is not surprising then that substantial educational requirements had been declared an imperative in the mid-nineteenth century because it would assure that doctors would be gentlemen. Daniel Drake, probably the most illustrious American physician of the midcentury, criticized his colleagues' ignorance of Latin

and Greek without which, "whatever may be his genius and professional skill," a physician would still necessarily "appear defective and uncultivated."[56] This persistent concern was echoed by Johns Hopkins' famous Dr. Welch who wrote in 1906, "The social position of the medical man and his influence on the community depend to a considerable extent upon his preliminary education and general culture."[57]

Elite physicians frequently complained of the "coarse and common fiber" of much of the profession.[58] Even a minority of the profession lacking upper-class polish cheapened the status of all doctors. The proliferation of inexpensive proprietary schools enabled a young man to live at home while attending medical school and thereby made medicine a ladder that some farm boys, artisans, and shop clerks could climb to middle-class status and income. It was not only the inadequacies in the training provided in commercial colleges that angered the elite reformers; it was also whom they brought into the profession. Frank Billings, in his presidential address to the AMA in 1903, disdained "these sundown institutions" that provided evening classes and enabled "the clerk, the streetcar conductor, the janitor and others employed during the day to earn a degree."[59]

Prior to the acceptance of scientific medicine, attempts to lengthen the medical school term of instruction and raise preliminary education requirements were met with charges of elitism. "There is an aristocratic feature in this movement" by medical societies, Martyn Paine, a faculty member in the New York University medical department, asserted in 1846. "It is oppression towards the poor, for the sake of crippling the medical colleges."[60]

Even after the turn of the century some education leaders warned against excluding the poor from medicine. In 1908, W. L. Bryan, president of Indiana University, criticized the Association of American Medical Colleges' proposed requirement of two years attendance at a liberal arts college prior to admission. Raising the entrance requirement would "shut out of the medical schools thousands of men who are not ignorant nor incompetent" but who would be excluded because "poverty and other hard conditions" have kept them from the colleges.[61] The profession's objective was exactly that—to exclude the poorer classes from their ranks.

Scientific medicine provided an "objective" basis for requiring a lengthy preliminary education. If students had to come prepared with college courses in physics, chemistry, and biology, then there could be no argument against lengthening the requirements. The standard-setting schools raised their requirements from completion of high school to two years of liberal arts college and finally to a bachelor's degree. From the moment it opened its doors in 1893, Johns Hopkins medical school led the way by requiring a bachelor's degree for admission and four years of instruction for its prestigious M.D. degree. When Harvard instituted the baccalaureate requirement in 1901, its entering medical class dropped from an all-time high of 198 students the previous year to sixty-seven.[62] The preliminary education requirements were several steps ahead of the great majority of American youth and enabled the profession to draw its recruits from the "better" classes.

Was this an unintended outcome of the technical "requirements" of medical education, or was it the desired outcome for which scientific medicine provided the mere rationale? Given the goals of professional leaders throughout the nineteenth century —to reduce the numbers of physicians and to raise the social-class standing of the profession—it seems that scientific medicine provided the credible rationale that all previous generations of medical elites had sought in vain. The preliminary requirement would weed out the economically and socially "unfit." Some reformers justified this selectivity by the cost of scientific medical education. "It does not pay to give a $5,000 education to a $5 boy," intoned John Shaw Billings in 1886 while helping to organize Johns Hopkins medical training.[63] But most elite physicians simply desired to eliminate "professional degeneracy," as Dr. Inez Philbrick put it at the turn of the century. Philbrick, a successful practitioner in Lincoln, Nebraska, rallied his colleagues to "Let fewer and better be our motto."[64]

In sum, the technical requirements of scientific medical education gave new career opportunities to physicians as medical scientists, creating a whole new position of full-time researcher and teacher and a new group of elite medical school faculty who combined a material interest in medical schools with a commitment to promoting scientific medicine. At the same time these technical requirements of the new medical education provided

the standards and the rationale for reducing the output of medical schools and raising the social class base of the entire profession.

"NONSECTARIAN" MEDICINE UNDERMINES THE SECTS

As scientific medicine gained increasingly wide acceptance, it undermined the other medical sects. Scientific medicine thereby forged unity within the profession by enabling the AMA to subordinate the sects to its own standards of medical education and practice. Overwhelmed by the increased claims of technical effectiveness for scientific medicine, the major sects began incorporating scientific medicine into their own doctrines and practice.

Homeopathy, the most formidable competitor of the regular professions in the nineteenth century, gradually dropped its unique features. Most homeopathic physicians in America broke with pure homeopathic theory in the mid-nineteenth century, taking what they believed valid from regular medicine and discarding especially heroic therapies. They purged the purists from their ranks by founding homeopathic medical colleges, previously believed unnecessary, and requiring training in general medical skills, including surgery.[65] Most midcentury American homeopaths were regular physicians unhappy with the ineffectiveness of regular medicine and with its growing unpopularity. In 1849, 1,000 Ohio physicians and lay people, disaffected by the orthodox profession's inability to relieve suffering during the cholera epidemic, organized a homeopathic society in Cincinnati.[66]

The direct competition that homeopathy posed to regular physicians led to campaigns to exclude them from medical societies and hospital privileges. The Massachusetts Medical Society began excluding homeopaths in 1860. By the 1870s there was a general attack, led by the AMA, on homeopathy and other "exclusive systems of medicine." Physicians violated the AMA code of ethics if they consulted with sectarian physicians or female or black doctors. In the 1870s the restrictions against female physicians were rescinded under pressure from the growing women's rights movement, and the exclusion of blacks was relaxed though local medical societies and hospitals openly

continued their racist practices. But the attacks on "irregular" doctors continued throughout the century.[67]

By the end of the nineteenth century, nearly all homeopaths were using both regular and homeopathic drugs. Leading homeopaths announced that the great majority of homeopathic doctors did not believe in infinitesimal doses, rejected the universality of the law of "like cures like," and generally used drugs like regular physicians. Homeopaths also became interested in clinical specialties. In 1899 the American Institute of Homeopathy redefined a homeopathic physician as "one who *adds* to his knowledge of medicine a special knowledge of homeopathic therapeutics."[68] Homeopathy, as well as other sects, were being overcome by the competition from scientific medicine.

Nonetheless, the continued popularity of homeopathy and eclectic medicine and the incomplete acceptance of scientific medicine made it difficult for regular professional leaders to win exclusive licensing privileges in the states. With the convergence in practice and education of homeopaths, eclectics, and regular physicians, it was possible to assure the dominance of scientific training and politically necessary to ignore, for the moment, the sectarian separations. Only through the combined efforts of the regular and "irregular" profession could laws be secured to restrict medical practice to scientifically trained physicians. The profession's leaders around the country agreed with William Osler, the most eminent American physician of his day, who advised the Maryland state medical society in 1891, "if we wish legislation for the protection of the public, we have got to ask for it together, not singly."[69] And together they asked.

Beginning in the 1870s, state legislatures established medical licensing examination boards. In 1873 Texas passed the first modern medical practice act, a morale-boosting victory to the profession that offset the bitter memories of the Jacksonian era's repeal of licensure. The Illinois Board of Health, the state's licensing agency, was a model for the nation. Beginning in 1880, it began to list American and Canadian medical schools according to qualitative criteria set by the Association of American Medical Colleges, an organization of elite, scientifically oriented institutions.[70]

Nonregular doctors participated in some way in medical licensing in at least thirty-three of the forty-five states that had

enacted licensing laws by 1900. Physicians from at least two sects served on the same licensing boards in twenty states.[71] By cooperating in licensure, the nonregular profession won inclusion among the respectable. With scientific medicine gaining ground every year, it appeared to the leaders of homeopathy that they had nothing to lose and everything to gain from their association with the regular profession. The president of the AMA even acknowledged in 1901 that "with broadened and increasingly uniform curricula" it made little sense to argue that competing sects did not share the profession's competence.[72]

The reform leaders in the regular profession won the biggest rewards. By cooperating with the nonregular sects, they won licensing laws that recognized scientifically oriented reforms as the only valid basis of medical education. In a short time they secured complete control of licensing and the resources for medical education reform. Whether these elite professionals foresaw their ultimate gain from cooperating with the homeopaths and eclectics or they were guided by expedience undiluted by strategy, the cooperative licensing efforts hastened the elimination of sectarianism amid the growing chorus of support for scientific medicine.

By 1903 the AMA adopted the strategy explicitly. At its annual convention the delegates voted to eliminate the decades-old exclusion of physicians who were trained as homeopaths or eclectics but chose not to "designate" themselves as such.[73] Two years earlier AMA president Charles Reed had drawn attention to the good effects of allowing all licensed physicians into state medical societies. By ending its exclusionary policy, he said, the New York society had reduced the registration of sectarian physicians by "nearly ninety percent."[74]

Scientific medicine was perhaps more effective than homeopathy and eclecticism in treating some diseases for which it had developed cures, but it was not, particularly at the turn of the century, the panacea it was believed to be. The reformers' overly optimistic assessment is shared by many contemporary medical historians. William Rothstein, for example, maintains that "sects could survive in medicine only so long as medically valid therapies constituted a small part of the therapies used by physicians. Once medically valid therapies became the dominant part of medical practice, medical sectarianism declined markedly."[75]

In reality the number of medically *effective* therapies had not increased significantly in the first few years of this century, the period when sectarianism declined in medicine.[76] Rather the campaign to win acceptance for scientific medicine struck a responsive cultural chord among the new technical and managerial groups associated with industrial capitalism and with the media they controlled. The campaign established a popular belief in the broad effectiveness of scientific medicine and, together with political action by elite medical reformers, undermined the medical sects that competed with the regular profession.

SPECIALIZATION: LESS COMPETITION FOR THE ELITE

Advances in medical science during the late nineteenth century rapidly developed the technical basis for some physicians to offer highly specialized expertise not available from the ordinary practitioner. Medical advances were presumably usable by any physician, but in reality only those who studied a particular area developed the expertise to apply techniques and inventions. The ophthalmoscope, invented by Helmholz in 1851, required considerable study and practice to know what to look for on the other side of the cornea. Anesthetics, antisepsis, and asepsis made surgery a relatively safer procedure, but the masters of surgical techniques were those who devoted their entire practice to it.

The very existence of medical specialization rested upon a reductionist analysis of the body and disease. Its concrete development was made possible by advances in medical science. Nevertheless, specialization among practitioners was encouraged by economic competition within the profession and grew to take advantage of the new market for more technical, seemingly, more scientific medical services.

With dissatisfaction rampant among more ambitious members of the profession, some 15,000 American physicians studied medicine in Germany alone. They returned to reap the benefits of their advanced training and confidence to specialize in some branch of clinical medicine.[77] Successful specialists soon earned

more than twice as much as the better-off general practitioners.[78] Elite, scientifically oriented physicians saw specialization as a solution for themselves in the competitive medical market.

The demand for specialists grew with the urban upper middle class. Patients whose own social position was based on the growth of technology and industrialization sought out physicians whose practice suggested the same world view. Gynecological theory viewed most female disease as being rooted in or associated with uterine problems. As Barbara Ehrenreich and Deirdre English have amply demonstrated, Victorian femininity itself was associated with invalidism and physical and emotional frailty. Women of the "better" classes were defined as sick in order to support their role as social ornamentation, demonstrating the financial and social success of their husbands and distinguishing them from lower-class women who were expected to work and were considered sickening.[79]

Gynecological surgeons preyed upon the supposedly delicate nature of upper middle-class women and the terrible consequences of having a "tipped" uterus or sexual appetite. Hysterectomies, ovariotomies, and cliteridectomies were prescribed for these and other female maladies. Some gynecologists, like Horatio Bigelow writing in the AMA *Journal* in 1885, favored a "conservative" approach over too rash use of the knife or mechanical devices. He believed that better results could be obtained "by attention to every detail of life, even the most insignificant, for the aggregation of the little things go to the making of the big ones, and also, by attention to psychical conditions and reactions."[80] Such attention, of course, required daily visits from the doctor.

Gynecologists tailored their medical theories to the prevailing notions of the place of women in society and thereby developed a new and lucrative medical market. Upper-class women became the objects of knife-wielding gynecological surgeons or the invalided captives of overly "attentive" gynecological practitioners. From the early 1890s abdominal and pelvic surgery seemed the profession's own Gold Rush, and surgeons were, in the words of the AMA *Journal,* "as restless and ambitious a throng as ever fought for fame upon the battlefield."[81]

General practitioners obviously suffered to the extent that their patients went to specialists with complaints the GPs formerly treated. From the 1850s onward, the GP-dominated medical societies attacked what they viewed as unfair competition. In 1874 the AMA's judicial council ruled that specialists could advertise only that their practices were "*limited* to diseases peculiar to women" or "diseases of the eye and ear." Such restrictions on specialists denied the claims of scientific leaders that specialism was based on greater expertise not available to the general practitioner. Moreover, few physicians at that time could completely limit their practices to specialties since specialization was not yet widely enough accepted.[82]

Conditions soon changed, at least in large and medium-size cities. Specialists promoted the medical sciences through their own societies. Following a rebuff by the AMA, which named a committee of medically conservative professionals instead of distinguished medical scientists to host the 1887 International Medical Congress, specialists and other medical scientists formed the Association of American Physicians. In 1888 all national specialty societies formed an alliance outside the AMA in the American Congress of Physicians and Surgeons. In the last years of the nineteenth century, as scientific medicine increased and the economic base of specialism grew more secure, membership in scientific societies increased—particularly in Eastern cities where medical centers were beginning to dominate medicine—while membership in the AMA languished.[83]

Medical specialty societies were intended not only to promote development of the specialty but also to gain acceptance of the specialists by general practitioners. Even though they were competitors, specialists relied heavily on referrals from other physicians for much of their practice. Generalists had to be induced to refer their difficult cases to other physicians. To encourage referrals, many, if not most specialists, gave a portion of their fee to the doctor who made the referral.[84] Fee-splitting became a widespread practice to control competition and gain acceptance of specialists by GPs.

Fee-splitting, however, was a private tool of individuals used to soften competitive relations among themselves. For fee-splitting to be used collectively by the organized profession would require an open admission of its existence and legitimacy within the profession. That would have been worse than the competition that fee-splitting was attempting to regulate because it was a

purely commercial arrangement that undercut professional claims of expertise and privilege. It thereby reduced public confidence in physicians and further weakened the social and political position of the profession. Fee-splitting could not resolve conflicting interests between specialists and GPs at the national level.

Ultimately, the development of specialties and subspecialties has indeed reduced overall competition within the medical profession. The ratio of primary care physicians has fallen from more than 170 per 100,000 population in 1900 to less than sixty per 100,000 today.[85] But the division of physician labor into specialties created intraprofessional problems, pitting general practitioner against specialist. The decline in primary care physicians has eased the problem somewhat, but it was still a serious split in the ranks at the turn of the century and an obstacle to the efforts of the scientifically oriented elite practitioners and medical faculty who led the reform movement.

New levels of accreditation of specialists emerged in the twentieth century. The American College of Surgeons was charged with being elitist and un-American for its efforts to restrict surgery to specially licensed physicians and to accredited hospitals. In 1912 Franklin Martin's public relations tour for the College of Surgeons was interrupted with heckling by hostile GPs. The college fellows were accused either of degrading the profession by forming "a glorified surgical union, along labor lines" or of establishing a new oligarchy, "an exclusive Four Hundred in the profession."[86]

The reform leadership gathering in the wings of the AMA included many leading specialists, but they saw the importance of putting the interests of the profession as a whole at the forefront of their campaign. After failing in 1898, they succeeded in 1901 and 1902 in their efforts to reorganize the AMA into a more effective national organization. Their strategy included the delicate issue of unifying the competing specialists and general practitioners and bringing the specialists into the profession's main political arm—the AMA.

GAINS AND LOSSES

Scientific medicine was clearly an effective doctrine for the reform and uplift of the medical profession. It increased the technical effectiveness of doctors, providing a basis for increasing public confidence in the profession. The need for research and the teaching of medical sciences created a whole new category of academic medicine. It united the interests of these academic physicians, who sought total victory for scientific medical schools over less adequate ones, with the interests of elite practitioners, who wanted to reduce production of and competition among doctors in order to raise their incomes and status. The requirements of scientific medical education strained the resources of "commercial" medical education to the breaking point, closing down many medical schools and reducing the production of physicians. It also provided the rationale for requiring extensive preliminary education of medical school applicants, forcing the poorer classes out of medicine and thereby raising the social class base of the profession. Furthermore, scientific medicine undermined sectarian medicine, uniting most of the divided profession under the banner of "nonsectarian" scientific medicine. Finally, it provided a basis for further decreasing competition within the profession through the development of specialization. Thus, scientific medicine helped complete the professionalization of medicine.

These gains to the medical profession were accompanied by some losses. Some of the losses were borne by less powerful members of the profession. The gains of specialists, the new elite among practitioners, were the losses of the general practitioners. Scientific medicine provided the profession's scientific elite with the means of securing its position and taking complete control.

While society benefited from more effective techniques against infectious diseases, people lost the benefits of traditional techniques and became dependent on technological medicine. The propaganda of the reform-minded elite sold scientific medicine as the last word on matters of health and disease. Through their campaign, the medical profession excluded herbal methods of prevention and therapy that are only now regaining popularity. They also narrowed the scope of medical inquiry to reductionist concepts, all but ignoring the social and economic contexts of health and disease.

The doctor was portrayed as omniscient and his skill as all-powerful. Patients, accepting the profession's claims and wanting something for their money, began to expect their doctors

to provide remedies for their suffering. Not wanting to discourage this profitable attitude, most physicians believed that, in the words of a late nineteenth-century physician, "he fails of his duty and his privilege who neglects to do something for the patient."[87] However, even this lucrative attribution of physician omniscience was a double-edged sword. Armed with assurances of the near-infallibility of medical science, patients demanded compensation when they were maimed by the therapies or mistakes of scientific doctors. The number of malpractice suits from 1900 to 1915 exceeded the number of suits during the entire nineteenth century.[88]

Naturally, the most oppressed groups in society suffered the most from the complete professionalization of medicine made possible by scientific medicine. The poorer classes in general and ethnic and racial minorities in particular have suffered doubly—by being excluded from entering the profession and by losing medical care that was indigenous to their communities and accessible to them. By the early 1900s people who could afford specialists increasingly relied on them, often by-passing the general practitioner altogether. The poor filled the waiting rooms and examining tables of teaching hospitals to become the teaching and research material for interns, residents, and specialists. The nation's wage earners, excluded from charity clinics by means tests and often unable to afford private specialists' fees, became the bread-and-butter clients of the nonelite general practitioners.[89] Following the largely successful doctors' campaigns to rid the country of midwives, working-class and rural women and men lost the services that helped maintain the integrity of their families during the disruption of childbirth and found themselves having to pay the higher fees of physicians and the cost of a hospital bed.[90] Women suffered from unnecessary surgery and suffocating attention from gynecologists. They, like the working class and racial minorities in general, were also excluded from becoming doctors.

The fewer physicians competing for consumers' dollars, the higher physicians' incomes rose and the fewer doctors who practiced in working-class and poor sections of the cities and in the countryside. The middle class became the main source of income for the majority of the profession. As Morris Fishbein, editor of the AMA *Journal,* complacently observed in 1927, "The

physician of the future will deal largely with this group. From them most of the physicians, who are themselves of the middle class, will derive their incomes."[91]

The dynamics that lifted white middle-class and upper-class male physicians to the top of a hierarchy were not based on conspiracies or conscious deceptions. Physicians acted in their collective self-interest. While the different interest groups within the profession often clashed, their conflicts were gradually overwhelmed by the growing belief that all who embraced scientific medicine would benefit. Old-time homeopaths and eclectics, of course, fell by the wayside, and proprietors of crassly commercial medical schools lost their lucrative businesses. But most physicians could relate to the purposes of the reform campaign—more respect for their skills, higher social status, more money—and to the necessary means of achieving them. Undoubtedly conspiracies and conscious deceptions occured along the way (we will see some examples in Chapter 4), but even the reform leaders believed their mission would benefit society as well as the medical profession. Nevertheless, it strains the imagination to conclude that the complete professionalization of medicine served the interests of more than a small minority of the population.

The technical limitations of nineteenth-century medicine were replaced by technical narrowness in the twentieth century; the professional pluralism, by professional monopoly controlled by elite specialists and medical academicians; the culturally diverse and widely distributed group of healers, by a more fully stratified and, for many, inaccessible professional class. These were some of society's losses that accompanied the profession's gains. The consolidation of a scientific medical profession, however, also provided important gains for the corporate class in America.