

The Rockefeller Institute Hospital opened in 1910. By then the best of American medical science and education could compete with the best in the world. But an enormous gap existed in the United States between the best medical practice and the average, and an unbridgeable chasm separated the best from the worst.

In effect, there were outstanding generals, colonels, and majors, but they had no sergeants, corporals, or privates; they had no army to lead, at least not a reliable one. The gap between the best and the average had to be closed, and the worst had to be eliminated.

Physicians already practicing were unreachable. They had on their own either chosen to adopt scientific methods or not. Thousands had. Simon Flexner himself received his M.D. from a terrible medical school but had more than compensated, confirming Welch's observation: "The results were better than the system."

But the system of medical education still needed massive reform. Calls for reform had begun in the 1820s. Little had been accomplished outside a handful of elite schools.

Even among elite schools change came slowly. Not until 1901 did Harvard, followed soon by Penn and Columbia, join the Hopkins in requiring medical students to have a college degree. But even the best schools failed to follow the Hopkins's lead in recruiting quality faculty, instead choosing professors in clinical medicine from among local physicians. The official history of Penn's medical school conceded, "Inbreeding of a faculty could hardly go farther." Harvard's clinical professors were actually selected by a group of doctors who had no status at Harvard and met at the Tavern Club to make their decisions, which were usually based on seniority. Not until 1912 would Harvard select a clinical professor from outside this group.

Pressure did come from within the profession to improve. Not only those at the Hopkins, Michigan, Pennsylvania, Harvard, and other leading medical schools devoted themselves to reform. So did a large number of individual physicians and surgeons. In 1904 the American Medical Association finally formed a Council on Medical Education to organize the reform movement. The council began inspecting all 162 medical schools—more than half of all the medical schools in the world—in the United States and Canada.

Three years later the AMA council issued a blistering—but confidential—report. It concluded that at the better schools improvement was occurring, although, despite enormous effort by many reformers, not at a rapid enough pace. But the worst schools had barely changed at all. Faculty still owned most of them, most still had no connection to a university or hospital and no standards for admission, and tuition still funded faculty salaries. One school had graduated 105 "doctors" in 1905, none of whom had completed any laboratory work whatsoever; they had not dissected a single

cadaver, nor had they seen a single patient. They would wait for a patient to enter their office for that experience.

The report had some effect. Within a year, fifty-seven medical schools were requiring at least one year of college of their applicants. But that still left two-thirds of the schools with lower or no requirements, and it did not address the content of the education itself.

Unable to confront its own membership again—in 1900 the AMA had only eight thousand members out of one hundred ten thousand doctors and feared antagonizing the profession—the AMA gave its report to the Carnegie Foundation, insisted that it remain confidential, and asked for help. In turn, the Carnegie Foundation commissioned Simon Flexner's brother Abraham to survey medical education. Although not a doctor, Flexner had been an undergraduate at the Hopkins—he said that even among undergraduates “research was the air we breathed”—and had already demonstrated both a ruthless, unforgiving judgment and a commitment to advancing model educational institutions. In his first job after college, he had taught in a Louisville high school—where he failed his entire class of fifteen students—and had experimented with new ways of teaching. Later he would create the Institute for Advanced Study at Princeton, and personally recruit Albert Einstein to it.

Abraham Flexner began his study by talking at length to Welch and Franklin Mall. Their views influenced him, to say the least. He stated, “The rest of my study of medical education was little more than an amplification of what I had learned during my initial visit to Baltimore.”

In 1910, the same year the Rockefeller Institute Hospital opened, his report *Medical Education in the United States and Canada* appeared. It soon came to be known simply as “The Flexner Report.”

According to it, few—very, very few—schools met his standards, or any reasonable standard. He dismissed many schools as “without redeeming features of any kind . . . general squalor . . . clinical poverty. . . . [O]ne encounters surgery taught without patient, instrument, model, or drawing; recitations in obstetrics without a manikin in sight—often without one in the building.” At Temple, at Halifax University, at the Philadelphia College of Osteopathy, the dissecting rooms “defy description. The smell is intolerable, the cadavers now putrid.” At North Carolina Medical College Flexner quoted a faculty member saying, “It is idle to talk of real laboratory work for students so ignorant and clumsy. Many of them, gotten through advertising, would make better farmers.”

Flexner concluded that more than 120 of the 150-plus medical schools in operation should be closed.

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It was the Progressive Era. Life was becoming organized, rationalized, specialized. In every field “professionals” were emerging, routing the ideas of the Jacksonian period, when state legislatures deemed that licensing even physicians was antidemocratic. Frederick Taylor was creating the field of “scientific management” to increase efficiencies in factories, and Harvard Business School opened in 1908 to teach it. This rationalization of life included national advertising, which was now appearing, and retail chains, which were stretching across the continent; United Drug Stores, the largest, had 6,843 locations.

But the Flexner report did not merely reflect the Progressive Era. Nor did it reflect the context in which one Marxist historian tried to place scientific medicine, calling it “a tool developed by members of the medical profession and the corporate class to . . . legitimize” capitalism and shift attention from social causes of disease. Noncapitalist societies, including Japan, Russia, and China, were adopting scientific medicine as well. The report reflected less the Progressive Era than science. Not surprisingly, progressives failed in a similar effort to standardize training of lawyers. Anyone could read a statute; only a trained specialist could isolate a pathogen from someone sick.

The Progressive Era was, however, also the muckraking era. Flexner’s report raked muck and created a sensation. Fifteen thousand copies were printed. Newspapers headlined it and investigated local medical schools. Flexner received at least one death threat.

The impact was immediate. Armed now with the outcry Flexner had generated, the AMA’s Council on Medical Education began rating schools as “Class A” and fully satisfactory; “Class B,” which were “redeemable”; or “Class C,” which were “needing complete reorganization.” Schools owned and operated by faculty were automatically rated C.

Less than four years after Flexner’s report was issued, thirty-one states denied licensing recognition to new graduates of Class C institutions, effectively killing the schools outright. Class B schools had to improve or merge. Medical schools at such universities as Nebraska, Colorado, Tufts, George Washington, and Georgetown kept a tenuous hold on AMA approval but survived. In Baltimore three Class B schools consolidated into the present University of Maryland medical school. In Atlanta, Emory absorbed two other schools. Medical schools at such institutions as Southern Methodist, Drake, Bowdoin, and Fordham simply collapsed.

By the late 1920s, before the economic pressure of the Depression, nearly one hundred medical schools had closed or merged. The number of medical students, despite a dramatic increase in the country’s population, declined from twenty-eight thousand in 1904 to fewer than fourteen thousand in 1920; in 1930, despite a further

increase in the country's population, the number of medical students was still 25 percent less than in 1904.

Later, Arthur Dean Bevan, leader of the AMA reform effort, insisted, "The AMA deserved practically all the credit for the reorganization of medical education in this country. . . . 80% of the Flexner report was taken from the work of the Council on Medical Education." Bevan was wrong. The AMA wanted to avoid publicity, but only the leverage of the publicity—indeed, the scandal—Flexner generated could force change. Without the report, reform would have taken years, perhaps decades. And Flexner influenced the direction of change as well. He defined a model.

The model for the schools that survived was, of course, the Johns Hopkins.

Flexner's report had indirect impact as well. It greatly accelerated the flow, already begun, of philanthropic funds into medical schools. Between 1902 and 1934, nine major foundations poured \$154 million into medicine, nearly half the total funds given away to all causes. And this understates the money generated, because the gifts often required the school to raise matching funds. This money saved some schools. Yale, for example, was rated a weak Class B school but it launched a fund-raising drive and increased its endowment from \$300,000 to almost \$3 million; its operating budget leaped from \$43,000 to \$225,000. The states also began pouring money into schools of state universities.

The largest single donor remained the Rockefeller Foundation. John D. Rockefeller himself continued to see a homeopathic physician.

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Welch had turned the Hopkins model into a force. He and colleagues at Michigan, at Penn, at Harvard, and at a handful of other schools had in effect first formed an elite group of senior officers of an army; then, in an amazingly brief time, they had revolutionized American medicine, created and expanded the officer corps, and begun training their army, an army of scientists and scientifically grounded physicians.

On the eve of America's entry into World War I, Welch had one more goal. In 1884, when the Hopkins first offered Welch his position, he had urged the establishment of a separate school to study public health in a scientific manner. Public health was and is where the largest numbers of lives are saved, usually by understanding the epidemiology of a disease—its patterns, where and how it emerges and spreads—and attacking it at its weak points. This usually means prevention. Science had first contained smallpox, then cholera, then typhoid, then plague, then yellow fever, all through large-scale public health measures, everything from filtering water to testing and killing rats to vaccination. Public health measures lack the drama of pulling someone back from the edge of death, but they save lives by the millions.

Welch had put that goal aside while he focused on transforming American medicine, on making it science-based. Now he began to pursue that goal again, suggesting to the Rockefeller Foundation that it fund a school of public health.

There was competition to get this institution, and others tried to convince the foundation that though creating a school of public health made good sense, putting it in Baltimore did not. In 1916, Harvard president Charles Eliot wrote bluntly to the foundation—and simultaneously paid Welch a supreme compliment—when he dismissed the entire Hopkins medical school as “one man’s work in a new and small university. . . . The more I consider the project of placing the Institute of Hygiene at Baltimore, the less suitable expedient I find it. . . . In comparison with either Boston or New York, it conspicuously lacks public spirit and beneficent community action. The personality and career of Dr. Welch are the sole argument for putting it in Baltimore—and he is almost 66 years old and will have no similar successor.”

Nonetheless, that “sole argument” sufficed. The Johns Hopkins School of Hygiene and Public Health was scheduled to open October 1, 1918. Welch had resigned as a professor at the medical school to be its first dean.

The study of epidemic disease is, of course, a prime focus of public health.

Welch was sick the day of the scheduled opening, and getting sicker. He had recently returned from a trip to investigate a strange and deadly epidemic. His symptoms were identical to those of the victims of that epidemic, and he believed he too had the disease.

The army Welch had created was designed to attack, to seek out particular targets, if only targets of opportunity, and kill them. On October 1, 1918, the abilities of that army were about to be tested by the deadliest epidemic in human history.

Barry, John M.. *The Great Influenza* (pp. 82-88).