



Abraham Flexner and the reform of American medical education to 1915  
by Michael Stephen Schmotzer

A thesis submitted in partial fulfillment of the requirements for the degree of MASTER OF ARTS in  
History

Montana State University

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Abstract:

In 1910, at the behest of the Carnegie Foundation for the Advancement of Teaching, Abraham Flexner published a scathing expose, *Medical Education in the United States and Canada*. Many modern authors have considered the publication of this work—most often referred to as the Flexner Report—to be the beginning of dramatic reform in medical education. Flexner had accurately described the abysmal conditions existing in the medical colleges of the United States and had recommended sweeping reforms to rectify the situation. It is the purpose of this paper to assess the actual impact of the Flexner Report on the reform movement.

The paper briefly outlines the history of medical education and medical licensing prior to Flexner. It attempts to analyse the impact of modern science on medicine and medical education. Because nineteenth century science was mostly German in origin, a section is devoted to the Germanic influence. Flexner had made his name as an educator before taking up this special project. Therefore, the paper discusses his background as well as the report itself.

By comparing the progress of the reform movement before and after the publication of the Flexner Report, the author has found little evidence of any impact made by the report. The reform began shortly after 1900. It was caused by advances in medical science and sustained by the efforts of the American Medical Association.

This fact was born out by the author's research carried out at the archives of the University of Pittsburgh School of Medicine.

Flexner was an educational theorist and a publicizer of causes. His work was used by the AMA to aid the cause of reform but he did not start the reform or even change the course of events in any significant way.

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## ABSTRACT

In 1910, at the behest of the Carnegie Foundation for the Advancement of Teaching, Abraham Flexner published a scathing expose, Medical Education in the United States and Canada. Many modern authors have considered the publication of this work--most often referred to as the Flexner Report--to be the beginning of dramatic reform in medical education. Flexner had accurately described the abysmal conditions existing in the medical colleges of the United States and had recommended sweeping reforms to rectify the situation. It is the purpose of this paper to assess the actual impact of the Flexner Report on the reform movement.

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## INTRODUCTION

In June of 1910 the Carnegie Foundation for the Advancement of Teaching published its fourth bulletin, Medical Education in the United States and Canada. It had been researched and written by Abraham Flexner, an educator rather than a medical man. Flexner had had some contact with the medical profession through his older brothers, Jacob, a pharmacist, and Simon, the world renowned pathologist and director of the Rockefeller Institute for Medical Research. Otherwise, he was a complete outsider to the complex and esoteric world of medical education. Yet he had the audacity to write 323 pages highly critical of the state of that art, and to advocate a number of dramatic and sweeping reforms which he claimed would cure all the specific ills that he described in graphic detail. Ills such as the following (listed under Chicago):

NATIONAL MEDICAL UNIVERSITY. A night school, organized in 1891 as "homeopathic," which word was subsequently dropped. Ostensibly the medical department of the "Chicago Night University," which claims departments of arts, law, dentistry, pharmacy, etc. The school appears to be owned by the "dean".

Entrance requirement: Entrance is on the same basis as in other night schools; a "preparatory department" is also in operation.

Attendance: 150. "Free transportation from Chicago to Vienna by way of New York, London, Paris," is offered to any graduate who has for "three years or more paid regular fees in cash."

Teaching staff: 36

Resources available for maintenance: Fees, amounting to \$22,500 (estimated).

Laboratory facilities: The school occupies a badly lighted building containing nothing that can be dignified by the name of equipment. There had been no dissecting thus far (October to the middle of April), anatomy being didactically taught. Persistent inquiry for the "dissecting-room" was, however, finally rewarded by the sight of a dirty, unused, and almost inaccessible room containing a putrid corpse, several of the members of which had been hacked off. There is a large room called the chemical laboratory, its equipment "locked up", the tables spotless. "About ten" oil-immersion microscopes are claimed—also "locked up in the storeroom". There is not even a pretense of anything else. Classes in session were all taking dictation.

Clinical facilities: The top floor is the "hospital". It contained two lonely patients. Access to a private hospital two miles distant is also claimed.

Recently this school has been declared by the Illinois State Board of Health as "not in good standing". The same action was taken once before, but was afterwards revoked; just why, it is impossible to find out; for the school was after the revocation just exactly what it was at the time of its suspension; and it is the same today.

Date of visit: April, 1909<sup>1</sup>

Juxtaposed to this abhorrent institution, a more laudatory description:

MEDICAL DEPARTMENT OF THE JOHNS HOPKINS UNIVERSITY: Established 1893. An organic university department.

Entrance requirement: The bachelor's degree, representing specific attainments in chemistry, physics, biology, German, and French.

Attendance: 297.

Teaching staff: 112, of whom 23 are professors. All the laboratory teaching is conducted by instructors who give their entire time to teaching and research; the heads of the clinical depart-

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<sup>1</sup>Abraham Flexner, Medical Education in the United States and Canada (New York: The Carnegie Foundation, 1910), 212-213. Hereinafter cited as Flexner Report.

ments are salaried teachers attached to the Johns Hopkins Hospital.

Resources available for maintenance: The income from tuition fees is \$60,542, that from endowments \$19,687, making a total of \$80,229. The budget calls for \$102,429, not including salaries of the clinical faculty and other items carried by the Johns Hopkins Hospital, which is thus actually an integral part of the medical school. The productive hospital endowments now aggregate \$3,632,289, not including the bequests for the Phipps Psychiatric Clinic and the Harriet Lane Johnson Home for Children.

Laboratory facilities: These facilities are in every respect unexcelled. As the institution has been from the beginning on a graduate basis, teaching and research have been always equally prominent in its activities.

Clinical facilities: The Johns Hopkins Hospital and Dispensary provide practically ideal opportunities. The medical staff of the medical school are identical; the scientific laboratories ranged around the hospital are in close touch with clinical problems, immediate and investigative. The medical school plant is thus an organic whole, in which laboratories and clinics are inextricably interwoven. Recent foundations have greatly augmented the original hospital plant in the direction of psychiatry, pediatrics, and tuberculosis. Three hundred and eighty-five beds under complete control are now available. The dispensary is largely attended and is admirably conducted from the standpoint of both public service and pedagogic efficiency.

Date of visit: December, 1909<sup>2</sup>

Speaking like an expert in the field, Flexner analyzed, criticized, and evaluated the 155 schools he visited. He condemned most and praised few. He pulled no punches: The California Medical College (Eclectic) was "a disgrace to the state whose laws permit its existence!" "Chicago is . . . the plague spot of the country." The Maryland

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<sup>2</sup>Flexner Report, 234-236.

Medical College is "dirty", "foul", and without "teaching accessories whatsoever," while, "anything more woe-begone than the laboratories of the Pulte Medical College in Cincinnati would be difficult to imagine".<sup>3</sup>

The Flexner Report was mentioned in the better papers and became, for a time, a subject of discussion by popular journals. Many medical journals reviewed it. Some criticized it. Eventually, it became the symbol of reform in medical education and in some modern works is seen as the initiating force of the entire reform. One author claimed, "As a result of the Flexner Report, the public, led by the American Medical Association and the American Public Health Association, effected the closing of the most inadequate, sometimes even fraudulent, schools of medicine."<sup>4</sup> That the report dramatically affected American education is not to be doubted. That it began the reform is simply not true. Certainly it was the Magna Carta of the movement, but like all such documents, it had a long pedigree. It did not spring whole cloth from the mind of one man; but was the product of years of work by many individuals. It is the clearist expression of a whole body of ideas, part and parcel with the Progressive Era on the one hand, and the rise of scientific medicine on the other.

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<sup>3</sup>Flexner Report, 190, 216, 237, 284 respectively.

<sup>4</sup>H. G. Good, A History of American Education (New York: The Macmillan Company, 1964), 472. In another example: The report "threw a bombshell into the medical world. It also marked the beginning of

It is the purpose of this paper to show the relationship between the Flexner Report and the ongoing efforts of the American Medical Association (AMA). The reform movement was complicated and involved all of the aspects of medical education including preliminary education, laboratory and clinical teaching, and medical licensing. But most importantly, the reform concerned what was taught in the schools -- medical science itself. In order to see how these parts fit together, one must understand how American medical education came to be so wretched in the first place. This requires a lengthy overview of medical education and medical progress in the nineteenth and twentieth centuries, certain European influences, and the efforts of many reformers.

reform." Current Biography (1941), 290. See also H. J. Savage, Fruit of an Impulse, 106.

## CHAPTER ONE

### THE EARLY HISTORY OF MEDICAL EDUCATION

#### Rise and Decline: 1765-1860

American Medical education began with the apprentice system, just as the Hippocratic Oath required:

I swear by Apollo Physician, by Asclepius, by Health, by Panacea, and by all the gods and goddesses, making them my witnesses, that I will carry out, according to my ability and judgment, this oath and this indenture. To hold my teacher in this art equal to my own parents; to make him partner in my livelihood . . .

As with everything else in the New World, the first doctors were imported from Europe, but those young Americans who wanted to be doctors had to return to the Continent or follow in the footsteps of a master here at home. As with apprentices in general, the menial chores came first and would-be physicians of the day had the unique privilege of collecting fees for their tutors--undoubtedly an unpleasant job at best. As with their legal counterparts, colonial students "read" their way into their profession. At the time this was not an unduly harsh undertaking for in all there were only about twelve works considered

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<sup>1</sup>Logan Clendening, Source Book of Medical History (New York: Dover, 1942), 14.

worthwhile: Sydenham, Boerhaave, and Cullen on medical practice, Haller on physiology, Cheselden and Monroe on anatomy, Pott, Sharp, and Jones on surgery, Hunter and Smellie on midwifery and Lewis on materia medica.<sup>2</sup> One wonders how many of these works were available to the average student.

Because of the nature of apprenticeship, medicine has always carried with it the conservatism of the guild system, but insofar as medicine is a science, novelty is a necessity. Whereas slavish imitation may be an asset in a technical trade, science cannot stand still. Early on, groups of physicians began to augment the education of their mutual apprentices by holding public dissections and lectures on the latest material from the Continent. By the mid-eighteenth century this practice became relatively formalized. Regular short review courses were organized to prepare the graduating apprentice for actual practice. The existence of these courses demonstrated the need for a formal institution of learning.

America's first medical school was begun by two young men fresh from their studies at Edinburg, then the leading medical school in Europe. William Shippen, Jr., and John Morgan set up a medical college at the College of Philadelphia in 1765. They embarked on their endeavor with a surge of enthusiasm and dedication to learning. Morgan

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<sup>2</sup>Martin Kaufman, American Medical Education (Westport, Connecticut: Greenwood Press, 1976), 16. Hereinafter cited as Kaufman.

cautioned that, "Young men ought to come well prepared for the study of medicine."<sup>3</sup> Students without a college degree were required to show a proficiency in Latin, Greek, mathematics, and natural and experimental philosophy. All had to show proof of an apprenticeship taken under a reputable practitioner. The course of study led to a Bachelor's Degree in Physic, the first of which was awarded May 12, 1767. The more prestigious Doctor's Degree in Physic represented an even more extensive achievement. The candidate had to be twenty-four years old and must have held the Bachelor's Degree for three full years. In addition he had to write and defend a thesis--published at his own expense!

These basic requirements were certainly a credit to any contemporary medical school and would exceed those of most American schools for the next 100 years. The high standards of Morgan and Shippen would not stand for long. Soon other physicians made bids to join the school, but offered something less than the idealism of its founders. Among these were Thomas Ruston, a mutual friend of the founders, who thought that "we may fall upon some easier method" to make a living "than by the dry Practice of Physic . . ." There was also the young Benjamin Rush, who realized the value of college affiliation in an age of patronage.<sup>4</sup> Another shadow fell upon the pristine beginnings of the

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<sup>3</sup>John Morgan, A Discourse Upon the Institution of Medical Schools in America (Philadelphia, 1765). In Kaufman, 20.

<sup>4</sup>Kaufman, 19.

school. The courses left a good deal to be desired. John Morgan had outlined the rationale for the college in a public presentation in May, 1766: A Discourse Upon the Institution of Medical Schools in America.

Great is the havock (that the untrained physician) spreads on every side, robbing the affectionate husband of his darling spouse, or rendering the tender wife a helpless widow; increasing the number of orphans . . . and laying whole families desolate. Remorseless foe to mankind! activated by more than savage cruelty! hold, hold thy exterminating hand.<sup>5</sup>

However, Morgan's often quoted purple prose belied the actual training of physicians. The lectures at his and forthcoming medical schools were, with few notable exceptions, merely diluted copies of those from the masters of Europe, complete with errors undetected and uncorrected.<sup>6</sup> Consequently, his call to battle would remain valid for another one hundred and fifty years!

Kings College Medical School opened its doors November 2, 1767 and the Harvard Medical School followed some fifteen years later. Harvard's standards were very high and will be presented in some detail here to serve as a contrast for those of the subsequent century. To secure the Bachelor's Degree, the student had to have a college degree or demonstrate his competence in Latin, experimental philosophy and mathematics. He had to complete two full years as an apprentice and

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<sup>5</sup>Kaufman, 20

<sup>6</sup>Letter to National Gazette (Philadelphia), with others to the effect that students remained ignorant. In Kaufman, 28-29.

attend two lecture courses (equal to two years of study) which included anatomy, theory and practice of medicine, chemistry, and materia medica. Finally, he had to submit to a public examination by Harvard professors and members of the Massachusetts Medical Society, and then defend a thesis in Latin or English. A doctor's degree (M.D.) required completion of a B.A., seven years of practice, another examination, and defense of a thesis in English and Latin.<sup>7</sup>

Ironically, Harvard also represented the beginning of decline in medical education. Admittance to the medical school presupposed a college degree, but beginning September 13, 1783, admission was thrown open to all applicants with only two years standing. This was done to make the school financially self-sufficient and would prove to be the bane of American medical education until the twentieth century. Soon other concessions were made to keep the students and their fees coming in. In 1792, the University of Pennsylvania abolished the Bachelor of Medicine degree and reduced the requirements for the Doctor's degree. Latin and mathematics were dropped from the preliminary education requirements, reflecting the as yet rural nature of the United States. It was almost impossible to get a good basic education, and that shortcoming was largely responsible for the problems in medical education.

Many modern writers often claim that medical education declined in

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<sup>7</sup>Kaufman, 26

the early nineteenth century because of the rise of proprietary schools. However, the general reduction of standards was already well underway before the advent of such profit-making institutions. In 1813 there were seven medical schools, four of them college affiliated; the others had been established by medical societies or private practitioners. All of them, then, had valid educational antecedents. The purely commercial enterprises came later.<sup>8</sup>

Besides the lack of preliminary education, the medical schools were plagued with another problem. The formal doctor's degree as originally instituted was a post-graduate degree of great prestige, but it did not substantially improve a doctor's earning potential. From 1780 to 1791 the University of Pennsylvania graduated sixty-seven B.M.'s, but only six M.D.'s.<sup>9</sup> The novice physicians were opting for immediate practice rather than further study. The M.D. degree was fast becoming meaningless. Not only that, but the length of the courses rapidly decreased. At first they were seven to nine months long, but as students flocked to those schools with the shortest courses, the average fell to four to five months. Economic and social realities of rural America

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<sup>8</sup>Kaufman, 39. The colleges were: Kings College (Columbia), University of Pennsylvania, Harvard, Dartmouth. The others were: College of Physicians and Surgeons (New York City), University of Maryland Medical School, College of Physicians and Surgeons of the Western District of New York.

<sup>9</sup>Kaufman, 39-40.

had completely reshaped medical schools within thirty years. That process would continue with the founding of many new, and for the most part, proprietary schools. Between 1810 and 1840 twenty-six new schools were founded. Another forty-seven opened their doors before 1877, bringing the total number of operating schools to sixty-four. But the heyday was yet to come. In 1904 there were 161 medical schools in the United States--almost 50 per cent of the total for the western world.

Without belaboring the "frontier thesis" in American historiography, it can be said that the expanding frontier did affect American medical schools. First of all, it added to their numbers throughout the country. But most importantly, the new schools were of conspicuously low quality. By itself the poor school was not seen as a problem. They were mostly proprietary in nature and local by intent. A medical school, even a poor one, was a welcome addition to a town, for it added prestige and kept the students (and their money) from traveling elsewhere. It also bolstered the prestige of the owner and gave him an edge over his medical competitors. Schools, too, had to compete for students. Soon false advertising was common. Brochures listed courses which turned out to consist of a single lecture. Advertised "hospitals" in which students could gain clinical experience often turned out to be miniscule or even nonexistent, as were such scientific niceties as laboratories and dissections. In order to maintain profitability, the student turnover had to be fast and cheap. Education was purely

incidental. But to the pragmatic westerner, it was better than no school at all.<sup>10</sup>

Evidently, some schools were profitable and worth the effort to acquire:

One of the most memorable episodes of intrafaculty rivalry occurred in 1856 and revolved around a faculty dispute over control of the Eclectic Medical Institute of Cincinnati. The dispute became so hot that it actually led to open and violent warfare between the two factions. At one point there were two armies of students and faculty members confronting each other with knives, pistols, bludgeons, and blunderbusses. The faction that held the building faced a siege by the opposing forces. According to reports, the tall and bewhiskered Professor Joseph Rhodes Buchanan, a leading exponent of phrenology, urged his troops to the battle crying, "on, on my lads". Finally the siege was broken when a six pound cannon was located and used to defend the building; the sight of the cannon dispersed the forces. The rest of the battle was fought in court.<sup>11</sup>

Such rivalry--even the less violent kind--hurt all medical schools to the extent that the quality of students was soon obviously inferior. For the school year 1850-1851, eighty per cent of theology students and sixty-five per cent of law students held a B.A. degree. Only twenty-six per cent of those studying medicine could say the same. The better schools, such as Harvard, could not raise their entrance

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<sup>10</sup>Asa D. Lord, "Medical Education", Ohio Medical and Surgical Journal 4 (November, 1851), 112-116. In Kaufman, 52-53.

<sup>11</sup>Harvey W. Felter, History of the Eclectic Medical Institute (Cincinnati, 1902), 41-42. In Kaufman, 45.

requirements for the very real fear of being driven out of business. Instead, they turned to private tutoring and summer schools to train their better students.<sup>12</sup> Overall, the situation deteriorated to such an extent that many students returned to the old system of reading medicine with a local physician. Medical College was strictly pro forma. A check of all doctors in six New England counties revealed that from 1790 to 1840, 70 per cent had never attended medical lectures and only 25 per cent were graduates of medical colleges.<sup>13</sup> One could blame the problem on the spirit of quackery within the profession as a whole. The extravagant and even false advertising commonly used by doctors--testimonials, guaranteed cures, etc.--carried over to the medical colleges. The business aspect rode roughshod over the educational.

The country's first organized attempt at medical education reform came in New England in 1825. At a regional convention of state medical societies, the Vermont group's move to increase preliminary education requirements, lengthen the courses and require examinations was greeted enthusiastically by the state societies. Not so by the colleges. Such

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<sup>12</sup>In 1838 Jacob Bigelow, Oliver W. Holmes, D. H. Storer, and Edward Reynolds opened the Tremont Street Medical School as an outgrowth of Harvard's private tutoring efforts begun in 1827. Kaufman, 49-51.

<sup>13</sup>Barnes Riznik, "Medicine in New England, 1790-1840", (Type-script; Sturbridge, Massachusetts, 1963). Kaufman, 55.

a move would be contrary to their financial interests by depleting the student body. Besides, no one wanted to be first. Further south, the Medical College of Georgia sent out a call for a regional conference of colleges in 1834 to affect some kind of general reform. No one came. In 1835 a convention of Ohio doctors proposed to reform local schools by inspecting them and then recommending improvements. They too were ignored.<sup>14</sup> The colleges could not, or would not, change by themselves.

So some members of the profession began to look for an outside agency of change. Early in 1846 the New York State Medical Society passed the following resolution:

WHEREAS, It is believed that a national convention would be conducive to the elevation of the standard of medical education in the United States, and

WHEREAS, There is no mode of accomplishing so desirable an object without concert of action on the part of the medical societies, colleges and institutions of all the states:

RESOLVED, That the New York State Medical Society earnestly recommends a national convention of delegates from medical societies and colleges in the whole Union to convene in the City of New York on the first Monday in May, 1846, for the purpose of adopting some concerted action on the subject set forth in the foregoing preamble.

RESOLVED, That a committee of three be appointed to carry the foregoing resolution into effect.

On May 5, 1846, 119 delegates from sixteen states convened in New York for the first meeting of what would become the American Medical Association. The founding document of that group was primarily concerned with

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<sup>14</sup>Kaufman, 80-84

medical education.

First. That it is expedient for the medical profession of the United States to institute a national medical association.

Second. That it is desirable that a uniform and elevated standard of requirements for the degree of M.D. should be adopted by all the medical schools in the United States.

Third. That it is desirable that young men before being received as students of medicine should have acquired a suitable preliminary education.<sup>15</sup>

Almost immediately a cry of protest was heard in the land.

Martyn Paine of the New York University medical school condemned the society as elitist. "It is oppression towards the poor, for the sake of crippling the principle Medical Colleges", and would limit medicine "to the few who may spring from families of wealth".<sup>16</sup> This argument would remain alive for many years to come.

Nevertheless, the convention reconvened in 1847 and subsequent years in hopes of improving education. Members took several surveys of medical colleges to confirm and analyze the extent of the problem, but the association had nothing greater than moral suasion to encourage compliance with agreed upon standards. Two schools did attempt to follow the AMA's recommendations. In 1847 the University of Pennsylvania and the New York College of Physicians and Surgeons increased their courses

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<sup>15</sup> Journal of the American Medical Association, 40 (1903), 1372.  
Hereinafter referred to as JAMA.

<sup>16</sup> Defense of the Medical Profession of the United States, (New York, 1846), 15-16. In Kaufman, 88.

from the normal four to six months. In the Pennsylvania case, the University lost medical students while its crosstown rival, the Jefferson Medical College, gained appreciably. Within six years the attempt was abandoned. Just prior to the Civil War the AMA finally made some progress. It succeeded in convincing its membership to refuse recognition to any school not following its recommendations. The new effort was never given a chance to succeed. The war blotted out all serious talk of reform for years.

Medical Licensing 1800-1880

The fundamental principle that society has the right to regulate medical practice and practitioners was present in the colonies from the very first. It did not, however, remain that way. The ideals of Jacksonian democracy destroyed medical licensing laws because those laws restricted the rights of the individual. Thereby medicine was removed from its larger social role and became a strictly personal relationship between doctor and patient. This principle in turn would linger on to such an extent that Flexner would feel compelled to comment on it.

New York provides one example of the change of licensing laws in the early 1800's. In 1806 licensing was the responsibility of county medical societies. They could pass judgment on anyone considered to be a regular medical practitioner. They could not, however, examine any of the various herbalists or nature healers in an age when they were increasingly common. Even if they could have, it would have had little effect. The punitive power of the law went no further than to say that unlicensed doctors could not sue a patient for unpaid fees. One critic was prompted to remark that the law "punishes the larceny while it acquits the homicide."<sup>1</sup> The exemption was removed in 1827, but three years later was restored. Under the guise of democracy things went from bad to worse: "The people regard it among their vested rights to buy

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<sup>1</sup>James R. Manley, Inaugural Address Delivered before the Medical Society of the State of New York, (1826), 19. In Kaufman, 68.

and swallow such physick, as they in their sovereign will and pleasure shall determine; and in this free country, the democracy denounce all restrictions upon quackery as wicked monopolies for the benefit of the physician."<sup>2</sup> In such an atmosphere, it is not surprising that between 1830 and 1850 almost all state licensing laws were repealed.

Actually, the repeal was not as disastrous as it might seem. By removing the effects of persecution, the medical sects tended to languish instead of flourishing as might be expected. It has been estimated that in 1790 there was but one orthodox doctor for every ten domestic practitioners. By 1860 the ratio had reversed itself.<sup>3</sup> Then too, this was an age of therapeutic nihilism, so one man's treatment was as good as another's. As late as 1885 the Medical and Surgical Register opposed placing strict licensing limitations on so-called irregulars. "Wouldn't you rather that your wife and children should be treated by an intelligent homeopath, or by nature, than by a regular graduate who gives 60 grains of atropia at a dose?"<sup>4</sup> The sects also contributed to a common sense attitude toward health which tended to improve the general state of affairs. This was especially true for those "sublimated

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<sup>2</sup>David M. Reese, The Humbugs of New York, (New York, 1838), 124. In Kaufman, 69

<sup>3</sup>Joseph F. Kett, The Formation of the American Medical Profession, (New Haven: Yale University Press, 1968), 179.

<sup>4</sup>George W. Corner, Two Centuries of Medicine, (Philadelphia: J.B. Lippincott Company, 1965), 191.

puritans" such as Sylvester Graham--of Graham cracker fame--Dr. T. H. Trall--father of the American water cure--and others. By warning the public about the dangers of drugs and the benefits of sensible eating and basic hygiene they made the job of the regular doctor that much easier.<sup>5</sup> Finally, homeopathy made a contribution to public attitudes because of its emphasis on a formal medical education. To the popular mind which did not always differentiate "sectarian" and "regular" practitioners, a proper doctor was an educated doctor.<sup>6</sup>

In the 1840's the newly formed AMA and other groups discussed the need for licensing, but were divided over the issue of whether the profession or the college should be the licensing agent. The point was, of course, moot, as states were abandoning those laws and were not likely to support new ones. Shortly after the Civil War some members of the AMA flirted with the idea of a federal licensing law. However, what few state laws were appearing in the postwar years had the same

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<sup>5</sup> Many of the sects seemed to follow a regular pattern from radical idea to acceptable orthodoxy. For example, the "water cure" came to the United States from Germany with little going for it. In time, though, a "hygienic institute" and a "medical school" were established. Their magazine, The Water Cure Journal, lasted forty years and was one of the most successful of all the early health journals. As the movement became acceptable, the journal changed to The Herald of Health and later The New York Journal of Hygiene. Richard H. Shryock, "Sylvester Graham and the Popular Health Movement", Mississippi Valley Historical Review, 18 (1931), 181.

<sup>6</sup> Kett, American Medical Profession, 162-164.

gaping loopholes as those prior to the war, indicating a general lack of interest. The federal idea died quietly. Stanford E. Chailié pointed out that the public had no interest in such legal action because they could anticipate no benefits from improved licensing or education. At the time, 1874, he was right. In the previous year, smallpox had taken over five hundred lives in his home town.<sup>7</sup> In other places popular support was lacking because of naiveté. Licensing efforts failed in Pennsylvania because the citizenry trusted its schools to turn out good doctors. This was true of the University of Pennsylvania and Jefferson Medical College.<sup>8</sup>

There was some progress, though. As the 1870's progressed the trend reversed itself and states began once again to set up licensing boards. As can be expected, they were, for the most part, inadequate. There was no inter- or intrastate uniformity. Medical school graduates were usually exempted, as were homeopaths and eclectics. States with harsh laws could be avoided for their more easy-going neighbors. What penalties there were were usually light. According to a survey taken in 1879, only seven states had effective legislation; only thirty-eight states had legislation. In a tone presaging Flexner, it said that

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<sup>7</sup>Stanford E. Chailié, "Medical Colleges, the Medical Profession and the Public", New Orleans Medical and Surgical Journal, n.s. 1 (May, 1874), 823-829. In Kaufman, 114-115.

<sup>8</sup>Corner, Two Centuries, 190-191.

Connecticut "had no restrictions, whatever," in Kentucky "the most ignorant pretender may dub himself doctor", and in Massachusetts "Charlatanism infests every city and town."<sup>9</sup>

Because of the exemption usually granted to medical school graduates, a medical diploma was an easy ticket past the licensing board. As a result, diploma mills abounded. When the Illinois Board of Health was empowered to grant licenses, their survey found that from 1877 to 1879 almost 10 per cent of the M.D.'s in the state had actually purchased their diplomas.<sup>10</sup> But once the state actually enforced the law, 25 per cent of the total number of doctors had to leave or cease practicing.<sup>11</sup> Medical licensing laws with teeth were the single most effective way of controlling quackery and improving medical practice and education in general. Therefore the problem was how to stimulate a concerned profession and public to write and enforce those laws.

<sup>9</sup>Stanford E. Chaillé, "State Medicine and State Medical Societies" Transactions of the AMA, 30 (1879), 297-355. In Kaufman, 122-123.

<sup>10</sup>Illinois Board of Health, Official Register of Physicians and Midwives, (Springfield, 1880), 252. In Kaufman, 123-124. See also Martin Kaufman, "American Medical Diploma Mills", Bulletin of the Tulane Medical Faculty, 26 (February, 1967), 53-57.

<sup>11</sup>In 1878, 4,950 licenses were granted: only 150 by examinations; the rest by pre-possession of a diploma or by a grandfather clause. Of the examinees, 221 failed and thereby joined the 1400 who left voluntarily. Kaufman, 130-131.

### The Rise of Scientific Medicine

The retardation of science in medicine was due largely to the unique nature of medicine as it affected society.

Unlike the physical or the general biologic sciences, medicine dealt directly with the most vital interests of mankind--with birth and death--and out of this situation arose a whole series of peculiar difficulties. Most obvious, first, was the manner in which the human body (as basic subject matter) was hedged about by all sorts of moral taboos. Physical scientists could do as they pleased with test tubes and pendulums, but physicians must not experiment with living men except within very narrow limits . . . moreover, he faced still another difficulty inherent in what Roger Bacon once called "the nobility" of his materials. This was the fact that physicians were under constant pressure to get results quickly. This was not usually the case with physical scientists, because the latter's findings were rarely of vital concern to the public. Hence physicists, even though seeking "useful knowledge" could suspend judgment and proceed with due caution. But death would not wait, and so men desired that physicians reach conclusions without benefit of real verification. The insistent need for curing illnesses had been present throughout the centuries, when the state of medical knowledge was such--we can now see--that it could not possibly meet this demand. Yet the attempt had to be made and, what is more, men ever wished to believe that it had at last been successful. Such wishful thinking constantly encouraged guess-work, unverified speculation, or sheer dogmatism in medical thought.<sup>1</sup>

In the 1830's and 40's the use of surgery was increasing dramatically in the United States. However, "the surgery of this period was not always superior to the best in the later medieval period".<sup>2</sup> While

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<sup>1</sup> Shryock, "Interplay of Social and Internal Factors", Medicine in America, (Baltimore: Johns Hopkins Press, 1966), 311-312.

<sup>2</sup> Shryock, The Development of Modern Medicine, (Philadelphia: University of Pennsylvania Press, 1936), 173.

nineteenth century physicians and surgeons knew a great deal more about anatomy, they knew nothing more about pathology. The old humoral pathology had been laid to rest but they still did not know what caused illness and death, or how disease affected the organism it infected.

There were attempts to establish cause and effect in an empirical manner, but that led to purely empirical therapeutics which were as ineffective as they were diverse. Every disease and every cure had to be learned separately.

In the late eighteenth century, Benjamin Rush claimed to have found a single, simple approach which cut through the maze of treatments and guaranteed a cure for everything. If disease were seen as a house with 100 rooms, then the doctor needed one hundred keys. But Rush bragged, "I am capable of entering every apartment of my House with the assistance of a single Key", venesection. There had been relatively little use for bleeding prior to 1760, but by the zealous preachments of Rush it became the universal treatment by 1810. He ushered in the era of Heroic medicine and a half century of monistic pathology in which "summoning a physician almost certainly meant undergoing treatment that in an earlier or later time might be characterized as torture."<sup>3</sup> A contemporary labeled Rush's panacea, "one of those great discoveries which are made from time to time for the depopulation of the

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<sup>3</sup>Kaufman, 57-58

earth."<sup>4</sup>

Another favorite treatment (of the physicians, that is) was to give large doses of a violent purgative, calomel. Calomel, also known as "Rush's Thunderbolt", consisted of jalap, a botanical substance, and mercurous chloride. While no one could have known the fatal effects of mercury, the treatment soon developed an evil reputation nonetheless.

A leading song writer, Jesse Hutchinson, wrote "A Dose of Calomel":<sup>5</sup>

Physicians of the highest rank,  
To pay their fees would need a bank,  
Combine all wisdom, art and skill,  
Science and sense in--Calomel.

The man grows worse quite fast indeed!  
Go, call the doctor, ride with speed;--  
The doctor comes, like post with mail,  
Doubling his dose of--Calomel.

The man in death begins to groan,  
The fatal job for him is done!  
He dies alas! and sad to tell--  
A sacrifice to--Calomel!

In another version, published in the Richmond Enquirer,<sup>6</sup> note the universality of its application:

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<sup>4</sup>William Cobbett, The Rush Light, (New York: February 28, 1800), 49. In Shryock, "The Significance of Medicine in American History", American Historical Review, 62 (1956), 81-91.

<sup>5</sup>Kaufman, 61-62.

<sup>6</sup>Richmond Enquirer, March 5, 1825.

Howe'er their patients do complain  
 Of head, or heart, or nerve, or vein,  
 Of fever, thirst, or temper fell,  
 The Medicine still, is Calomel.

Since Calomel's become their boast,  
 How many patients have they lost,  
 How many thousands they make ill,  
 Or poison, with their Calomel.

One is immediately reminded of Moliere's seventeenth century satire, La Malade Imaginaire in which the universal prescription is:

Clisterium donare  
 Postae bleedare,  
 Afterwards purgare.

If ineffective,

Rebleedare, repurgare, and reclysterisare.<sup>7</sup>

When it is noted that Calomel was still being recommended to students as late as 1878<sup>8</sup> one realizes just how slowly the art of medicine progressed!

In the meantime, society changed. Many people, especially women, were repelled by the barbarity and uncertainty of heroic practice.<sup>9</sup> It is not the least coincident that this period gave rise to many medical

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<sup>7</sup>Partial translation from Clendening, 235

<sup>8</sup>John H. Biddle, Materia Medica for the Use of Students, eighth edition (Philadelphia, 1878), 17-19, 247-285. In Kaufman, 60.

<sup>9</sup>Kett, American Medical Profession, 117.

sects such as Thomsonianism, Homeopathy, Grahamism et al. Thomsonianism--after Samuel Thomson of New Hampshire--was especially attractive in the age of Jacksonian democracy. It was a mild treatment of relatively harmless botanicals intended to restore "natural heat". A throw-back to humoral pathology, it was simple for the layman to understand. What was attractive about it was its privacy. Thomson promised to make "every man his own physician" by selling the rights to use his system in the home.<sup>10</sup> Even if it did not help cure the disease, it did not subject the patient to the tortures of bleeding and purgation.

Homeopathy came from Germany. Its originator, Samuel Christian Hahnemann, a physician and pharmacologist, based his theory on the idea similia similibus curantur--"likes cure likes". He gave his patients small doses of substances which would produce the same symptoms as those of the disease from which that person was suffering. Homeopathy soon replaced Thomsonianism and by the 1880's was the largest single medical sect.

In 1842, Oliver Wendell Holmes, in an address entitled "Homeopathy and Its Kindred Delusions", expressed the view of the orthodox profession. He said that homeopathy began

with an attempt to show the insignificance of all existing medical knowledge. It not only laid claim to wonderful powers of its own, but it declared the common practice to be attended

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<sup>10</sup>Kaufman, 65-66.

with the most positively injurious effects, that by it acute diseases are aggravated and chronic diseases rendered incurable.<sup>11</sup>

Unfortunately, the homeopaths were right. In all too many cases the cure was worse than the disease. The Thomsonians had already shown that the vaunted medical education of the orthodox physician was of little or no value. Doctors demonstrably saved few lives, and in the popular mind anyway, took a few. Furthermore, the homeopath had an education equivalent to that of the allopath--or orthodox physician--and could claim to be more scientific. This was because he had a philosophy from which deductions could be made concerning the disposition of a case;<sup>12</sup> the allopath had none. It was an age of therapeutic nihilism. Doctors simply could not cure diseases and did not know which way to turn.

In the early nineteenth century English primacy in medical education waned in favor of France. During the Enlightenment, the French had been eminently successful in the physical sciences and were imbued with an enthusiasm for science in general. Then, too, Paris had become a city of hospitals. By 1830 there were thirty, serving 20,000 patients and 5,000 medical students. These pre-conditions led to a

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<sup>11</sup>Address to the Massachusetts Medical Society in Oliver Wendell Holmes' Medical Essays: 1842-1882, 9, writings of Oliver W. Holmes, (Boston, 1891), 39-40. In Kett, American Medical Profession, 26-27.

<sup>12</sup>Ibid., 162-164.

unique opportunity for the systematic observation of the effects of disease.<sup>13</sup> One man in particular rose to the occasion: Pierre Louis. For seven years he ignored the opportunities (and distractions) afforded by private practice. Instead, he intensely studied cases in the wards of city hospitals and took every opportunity to perform post-mortems on cases he had been observing. In the process he assembled the first accurate statistical data on medical therapy which emerged as Recherches sur Les Effets de la Saignee in 1835.<sup>14</sup> His findings showed that there was no evidence to support the value of bloodletting. Rather, there was a demonstrated need for accurate studies of therapeutic methods which were based on significant numbers of cases. Only the use of control groups could avoid the inherent inaccuracies of opinionated empiricism. By introducing the use of mathematics into the study of medicine, Louis made medicine a modern science.<sup>15</sup>

Louis' studies led logically to a localized pathology. By studying the course of a disease in a patient and then searching the cadaver

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<sup>13</sup>Shryock, The Development of Modern Medicine, 151.

<sup>14</sup>Britain had already been using statistical studies to improve public health in general by identifying areas of high mortality to be cleaned up. They did not, however, apply the statistical method to medicine per se.

<sup>15</sup>Louis' statistical study was weak because he used arithmetical methods and not calculus as were British statisticians studying public health. Nevertheless, in its time it was "the most significant study ever made in medical method". Shryock, Development of Modern Medicine, 154-158.

for the effects of the disease on the organism, Louis began to establish that specific diseases affected only certain parts of the body. This went a long way toward discrediting the many monistic and otherwise speculative systems of explaining the effects of disease, and set the stage for the great etiological discoveries of the mid and late 1800's. Pasteur and Koch could never have found the organisms which caused "biliousness" or "inflammation of the chest", but once they had a specific notion of, for example, tuberculosis, they could apply the technological innovations such as the microscope to search for a cause.<sup>16</sup> Louis' discoveries could have shown the specific effects of drugs used in treatment. However, his results were mixed because there was no standard procedure. The failure tended to discredit all drug therapy. Hence the prolonged period of therapeutic nihilism through the mid 1800's. The allopaths could sneer at the "quacks" as being unscientific in their methodology, but the sectarians could rebut that the orthodox physician was unable to find any cures.

In spite of this drawback, Paris quickly became the seat of medical learning. German and American medical students and doctors flocked to France to learn the new method. Oliver Wendell Holmes used Louis' study for his own famous work on puerperal fever. William Wood Gerhard of Pennsylvania was able to differentiate typhus from typhoid in 1837 by

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<sup>16</sup>Shryock, "Internal and Social Factors", Medicine in America, 324.

studying their respective lesions. Samuel D. Gross, professor of surgery at Jefferson Medical College in Philadelphia wrote Elements of Pathologic Anatomy in 1839 which was soon acknowledged to be the best pathology textbook in the English language.<sup>17</sup> While it may have been discouraging to clinician and patient, the current of nihilism was actually a very real sign of progress. The old, ineffective because scientifically baseless, therapies had to be discarded before new could be introduced. Medical nosology had to be advanced before the newly differentiated diseases could be cured.<sup>18</sup>

Throughout the nineteenth century medical technology made dramatic advances which set the stage for the application of the scientific method. There is a very real problem of how to investigate what goes on inside a living being. One of the first breakthroughs was Leopold Auenberger's work on percussion, Inventum Novum (1761). An even greater discovery, the stethoscope,<sup>19</sup> permitted doctors to go beyond mere observation for the first time: at last they could actively examine their patients.<sup>20</sup> The clinical thermometer was the invention of James

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<sup>17</sup> Shryock, The Development of Modern Medicine, 242.

<sup>18</sup> Ibid.

<sup>19</sup> René Théophile-Hyacinthe Laënnec, De L'Auscultation Mediaté, ou Traité du Diagnostic des Maladies des Poumons et du cœur, Fondé Principalement sur ce Nouveau Moyen D'Exploration. (Paris, 1819)

<sup>20</sup> Shryock, Development of Modern Medicine, 154.

Currie, but its use was perfected by Carl R. A. Wunderlich of Leipzig.<sup>21</sup> The use of the pulse as a diagnostic tool has been attributed to Floyer, Heller and Louis, and was routine by the 1860's. The hypodermic needle was invented in the 1840's and the significance of blood pressure discovered by S. S. K. von Basch in 1887.

In the early nineteenth century two Germans, dissatisfied with the homegrown Naturphilosophie, went abroad to study. Friedrich Wohler and Justus Liebig went to Stockholm and later Paris. In 1824, Liebig established the first systematic laboratory instruction at Giessen.<sup>22</sup> With the aid of Wohler he began to analyze chemically various organic compounds and life processes. Through their work and that of William Beaumont of the United States, and Claude Bernard, the famous French pathologist, the Cartesian view of a purely mechanical organism was replaced by a chemical view.<sup>23</sup>

Liebig's laboratory was soon the most famous school of chemistry in the world. Germany began to draw students away from the French medical schools as universities and laboratories began to surpass clinical teaching in importance. Claude Bernard characterized the importance of the new laboratory sciences:

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<sup>21</sup>Das Verhalten der Eigenwärme in Krankheiten, (1868).

<sup>22</sup>First, that is, with the exception of anatomy.

<sup>23</sup>Shryock, The Development of Modern Medicine, 129.

On leaving the ward, the physician should enter the laboratory instead of secluding himself in his study and turning to his books to seek a solution of his medical problems in the writings of his predecessors. He must turn to experimentation, which alone will enable him to analyze and explain what he observed in his patient.<sup>24</sup>

Bernard's contemporary, Louis Pasteur, made French science literally a household word. However, the French system of clinical teaching as a whole could not, or would not, make the adjustment to laboratory science. Therefore, French hospital instruction, formerly the best in the world, was eclipsed by the German university system in the 1860's. Education took a new turn. In a nationalistic reaction to Napoleon and the Enlightenment, German science had remained aloof from all things French, but once the advantages of the new mathematical science were clear, the Germans fervently worked to surpass their foreign teachers. The German university system was uniquely prepared to advance medical science. In France and England all research was concentrated in the hospital schools of Paris and London. Spain and Scandinavia had good schools, but were handicapped by language. The United States had few schools even worthy of the name. On the other hand, Germany had some twenty good schools all doing correlated, organized, and centrally directed research. England would not get its first true laboratory

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<sup>24</sup>Claude Bernard, Leçons sur le diabète et la glycogénose animale, (Paris: Baillière, 1887). In George Rosen, "Patterns in Health Research in the United States," Bulletin of the History of Medicine, 39 (May-June, 1965), 204.

until twenty years after Liebig's; the United States would have to wait seventy years.<sup>25</sup>

Typically, the United States was slow on the uptake of anything not immediately utilitarian. Take surgery, for example. American surgeons acquired a frontier-born independence of their own. They had a reputation for doing what no other surgeons would attempt because they were not tradition bound to what could not be done. Yet it took twenty years for antiseptic surgery to be fully accepted in this country. Amazingly, the use of a general anesthetic was suggested as early as 1800<sup>26</sup> but was not actually used until the 1830's, and then only by dentists. Dentists were interested in seeing their patients more than once and were therefore receptive to anything which would reduce the discomfort of the treatment. Surgeons, however, tended to see theirs as an emergency procedure; repeat visits were not expected. Not until French and German research introduced a specific pathology and nosology was there any reason to do specific and major abdominal surgery,<sup>27</sup> as the surgeon did not know what to look for. Once the utility of the new science was realized, however, the United States shot to the forefront. In 1887, the Paris surgeon Chassaignae told an American audience

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<sup>25</sup> Shryock, Development of Modern Medicine, 187-190.

<sup>26</sup> By Humphrey Davy. Shryock, "Significance of Medicine", 58.

<sup>27</sup> Ibid.

"America at the moment wields the surgical scepter of the world".<sup>28</sup>

By the end of the century many Europeans were attending United States' dental schools, especially those of the University of Pennsylvania and Northwestern University.<sup>29</sup> But in the meantime, American medical education was distinctly inferior.

There are many specific reasons why this delay was particularly acute in the United States. They range from Jacksonian democracy to Victorian prudishness, but for the most part revolve around American pragmatism.<sup>30</sup> It boils down to the fact that basic medical research was not really cultivated in the United States until it gave promise of useful applications. Increasingly from the 1880's on the public became aware of the actual and potential benefits that could be derived from medical research. Their main sources of information were popular magazines such as Harper's Weekly, Graphic, Metropolitan Magazine, etc. Surgery undoubtedly held greatest sway over the popular imagination because it was so much more spectacular.<sup>31</sup> Between 1800 and 1850,

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<sup>28</sup> Autobiography of Samuel D. Grose, M.D., (Philadelphia, 1887), 319. In Shryock, Development of Modern Medicine, 173.

<sup>29</sup> In 1900 the United States had forty-six dental schools, while Germany, France, and England had sixty-six among them. Shryock, *Ibid.*, 331.

<sup>30</sup> A more thorough discussion can be found in Shryock, Medicine in America, and in "Significance of Medicine."

<sup>31</sup> For example, W. W. Keen, "Recent Progress in Surgery", Harpers Magazine, (New York, 1889), 703ff.

average life expectancy increased nine years (from age thirty-two to forty-one). In the next half century it rose to age fifty and doubled its rate of increase after that. "In a rough way, the rising expectancy up to 1900 can be credited to improvements in living standards, whereas acceleration in the rate of increase since that date can be ascribed to the impact of medical science."<sup>32</sup> In any case, these improvements led to public pressure for federal, state, and local action on behalf of public health research,<sup>33</sup> or at the very least the public no longer opposed funding of such research.

The first federal agency to do research was the National Board of Health, established in 1879. Its \$10,000 budget did meet with some Congressional opposition as being extravagant<sup>34</sup> but once the door opened, others followed. The Marine Hospital Service, concerned with immigration and therefore the spread and control of disease, set up the Hygienic Laboratory in 1887. It was not, however, recognized and directly funded by Congress until 1901. In that year it was transferred to the Public Health Service and its Division of Scientific Research. Because of the general success in combating acute infections, the laboratory's mission changed by 1910 to work on cancer and other

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<sup>32</sup>Shryock, "Significance of Medicine", 81.

<sup>33</sup>George Rosen, Patterns in Health Research, 209-210.

<sup>34</sup>Shryock, Development of Modern Medicine, 342.

chronic diseases,<sup>35</sup> showing that successful work led to rising expectations and demands for even more research. The first genuine, self-contained laboratory on a par with Europe's was the William Pepper Laboratory at the University of Pennsylvania. It opened its doors in 1894 for pure research and post-graduate teaching.<sup>36</sup> What was unique about the Pepper lab was its centralization. It was not, as in the case of Germany, dependent upon a mandarin and his disciples. Instead it was an organized research center conducive to the exchange of ideas and dependent upon the contribution of many individuals. This would be the model of the American approach.

The other unique contribution of America to scientific research was money. The German universities, and therefore researchers, were totally dependent on state funding. As science became increasingly expensive, new and better equipment was hard to get. American doctors had an international reputation for having the newest and best equipment then available--even though it was frequently made in Germany. For many years the funds came from private sources, the researchers fearing government control.<sup>37</sup> The Progressive ethic of centralization and

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<sup>35</sup>Rosen, Patterns in Health Research, 217-218.

<sup>36</sup>Corner, Two Centuries, 194-195.

<sup>37</sup>William H. Welch, "The Evolution of Modern Scientific Laboratories", Bulletin of the Johns Hopkins Hospital, 7 (1896), 18-21.

efficiency appealed to American philanthropists. Frederick T. Gates, John D. Rockefeller's philanthropic purseholder, commented that "medicine can hardly hope to become a science until it should be endowed and qualified men be enabled to give themselves to uninterrupted study and investigation, on an ample salary, entirely independent of practice."<sup>38</sup> Rockefeller responded and in 1902 set up a center of research which grew steadily in size and importance as the most complete and advanced facility of its kind. The head of the department of pathology and bacteriology was Simon Flexner, older brother of Abraham. In 1905 he was promoted to director of the Rockefeller Institute for Medical Research. By that time, American medical research was catching up with the rest of the world.

Simon Flexner left his professorship at the University of Pennsylvania to work at the Institute because he was disgruntled with his fellow physician/teachers. He wrote to William Welch that "Alexander Abbot alone of all the men in the medical school is doing work."<sup>39</sup> That is to say, research. Flexner saw himself as a specialist in pathological research. A contemporary, William Mayo, noted that there had been some "super generalists" in the early 1900's (such as Osler and Welch) but, "the sum total of medical knowledge is now so great and

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<sup>38</sup>Henry E. Sigerist, American Medicine, (New York: W. W. Norton Company, 1934), 275

<sup>39</sup>Corner, Two Centuries, 206-207.

widespreading that it would be futile for any one man . . . to assume that he has even as working knowledge of any large part of the whole.<sup>40</sup> As late as 1860 there were virtually no specialists in the United States.<sup>41</sup> Those who set themselves aside as "eye doctors" or "ear doctors" were most often viewed as quacks, but developments in science and technology soon made specialization inevitable. Louis' contribution of localized pathology led to anatomical specialties. New and better instruments required longer education and practice to be used skillfully. Also, increased urbanization created the social conditions necessary for the specialist to support himself and permitted more regular hours, breaking the traditional "slavery of the G.P."

By the 1880's publications for specialists were outstripping those for generalists. In 1875 the International Medical Congress had only eight sections, by 1900 the sections had increased to seventeen, and by 1915 had doubled again. The process of specialization did not occur without its problems and opposition. In the 1890's doctors were complaining that specialists were losing their perspective of the

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<sup>40</sup>Speech to the graduating class of Rush Medical College, 1910. In Stanley J. Reiser, Medicine and the Reign of Technology, (Cambridge: Cambridge University Press, 1978), 150.

<sup>41</sup>Rosemary Stevens, American Medicine and the Public Interest, (New Haven: Yale University Press, 1971), 31. For other discussions of specialization see Reiser, Medicine and Technology, Francis Packard, The History of Medicine in the United States, II., and Shryock, The Development of Modern Medicine.

entire patient and were predicting examination by committee as the way of the future.<sup>42</sup> These complaints sprang largely from the self-perpetuated vision of the G.P. as family advisor and confidant; the specialist was seen as a cold disinterested scientist. The G.P. was also threatened with loss of business and loss of prestige. As more and more patients went directly to specialists whose obviously superior knowledge let them openly criticize the generalists, this contributed to an erosion of confidence on the part of the G.P.'s and friction between the two.<sup>43</sup>

As far as education is concerned, it was the rise of specialization that contributed most toward the call for greater purity in medical schools. Shortly after the turn of the century, doctors as scientists began to decry the lack of university-connected medical schools like that at Johns Hopkins, with good research laboratories and graduate departments. Times had changed: "the effort made must be to educate the largest number, but to educate most fitly."<sup>44</sup> Of course there were those who complained that medical students were being forced to learn too much, too soon. Medical schools should produce only G.P.'s

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<sup>42</sup>Reiser, Medicine and Technology, 145.

<sup>43</sup>In Great Britain the G.P. was able to hold his own because a clear distinction was maintained between the function of the generalist, to whom the patient went originally and the specialist who acted strictly as a consultant.

<sup>44</sup>Clarence J. Blake, "Collaboration in Medical Education", Boston Medical and Surgical Journal, 153, (July 6, 1905), 6.

and leave the process of specialization to those who pursued it on their own.<sup>45</sup> As will be seen in the next chapter, the force of the reform in medical education came from the better colleges themselves and from the American Medical Association. The motive for their action was to produce a high quality education, and the need for that quality could best be seen by the researcher and the specialist practitioner.

<sup>45</sup>Edmond Souchon, M.D., "A Plea for a Reform in Medical Education" Medical Record, 76 (November 20, 1909), 855-56.

## CHAPTER TWO

### THE SOURCES OF REFORM 1865-1909

#### German Influence

Just as soon as Medical Education in the United States and Canada was completed, Flexner realized that he should have investigated European medical education before criticizing America's.<sup>1</sup> Immediately after the publication of Bulletin Number Four, Flexner embarked for an extensive study in Europe.<sup>2</sup> A synopsis, "The European Side of Medical Education", was read to the 1913 meeting of the Council on Medical Education<sup>3</sup> but belied its title by concentrating exclusively and unapologetically on the German example. Flexner's Germanophilia pervades all of his work. In preparing for the Flexner Report he read extensively from German works or those of Americans who had studied in Germany.<sup>4</sup>

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<sup>1</sup> Flexner, I Remember, (New York: Simon and Schuster, 1940), 131

<sup>2</sup> Published as Bulletin Number Six of the Carnegie Foundation, Medical Education in Europe, (New York: The Carnegie Foundation, 1912).

<sup>3</sup> American Medical Association Bulletin, 8 (March 15, 1913), 56-70. Hereinafter referred to as AMAB.

<sup>4</sup> For example, T. Billroth, Lehren und Lernen der medizinischen Wissenschaften. In Flexner's bibliography are the works of Abel, Barker Bowditch, Chittenden, and Adami, et al. At least half of the total studied in Germany.

Many, if not most, of the leading reformers had themselves studied there.

German influence on American medicine was extensive and came in two related areas--scientific medicine and medical education. The transference of the scientific center of gravity from France to Germany in the mid-nineteenth century has already been discussed. By the late eighteenth century, German science was clearly pre-eminent. Doctors from all over Europe and the western hemisphere flocked to the great universities of Germany and Austria. They returned home with a great admiration for the superior system which could produce that science. When they got home many found it nearly impossible to continue their researches for three reasons. There were no general research laboratories in the United States before 1894. Investigators here, and for that matter the world over, were dependent on German theory and German technology. Finally, with very few exceptions, the American medical school was totally divorced from the university system.

The German success was due primarily to the early centralization of their efforts. As early as the late eighteenth century the Germans were centralizing the administration of public health and hygiene, especially through the work of Johann Peter Frank. In the early nineteenth century, England and France were still calling for voluntary

cooperation.<sup>5</sup> It has already been noted that the German universities began to centralize their laboratories and scientific teaching in the early eighteen hundreds. For the most part, these laboratories revolved around one famous professor and his students. Progress in science traditionally has been due to the efforts of single "great men", but progress in modern life science has been dependent on complex and expensive laboratories. The Germans were the first to combine both. Their approach was more adaptable and hence more progressive than anything the English, French or Americans would develop for years to come.<sup>6</sup>

In 1893 the Smithsonian Institution reported that Germany had twenty-one state supported universities with some three hundred researchers in biology and medicine alone.<sup>7</sup> Partially in response to this report, the University of Pennsylvania opened the William Pepper Laboratory in 1894. After 1902 the evolutionary growth of the Rockefeller Institute demonstrated an increasing awareness of the need to do primary research not only as an end in itself, but because of its inherent educational value.

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<sup>5</sup>Shryock, Development of Modern Medicine, 94.

<sup>6</sup>Joseph Ben-David, The Scientist's Role in Society, (New Jersey: Prentice Hall, 1971), 118.

<sup>7</sup>Addison Brown, Endowment for Scientific Research, Annual Report of the Smithsonian Institution, 1892, (Washington D. C.: Government Printing Office, 1893), Part 1, 625. In Rosen, Patterns in Health Research, 208.

The German influence can best be seen in Johns Hopkins University medical school--opened in 1893--and its early imitators, Harvard, Michigan, and Cornell. At these schools a reformed curricula reflected the Germanic education of their faculties. They emphasized demonstrations over lectures whenever possible; had higher entrance requirements, a more flexible curriculum with more basic medical subjects, and fewer examinations with less rote learning. Obviously the medical schools were all connected with a good university after the German model and all four soon began to develop extensive graduate medical programs in which the teachers were investigators.<sup>8</sup>

Flexner would later say that the German success was founded upon the use of laboratories and clinics for teaching, the fact that their teachers were full-time professors rather than practicing physicians, and their emphasis on research.<sup>9</sup> In addition, he noted that, "the achievements of German medicine, scientific and educational, are due largely to the solidity of secondary education in Germany", and to the strict enforcement of high entrance requirements in their medical schools.<sup>10</sup> It is precisely in these areas that the American reform

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<sup>8</sup>Thomas N. Bonner, American Doctors and German Universities, (Lincoln: University of Nebraska Press, 1963), 58. Hereinafter referred to as American Doctors.

<sup>9</sup>Flexner, I Remember, 170.

<sup>10</sup>Flexner, "The European Side of Medical Education", 58-59. Flexner said that at the time only New York State had an education

movement concentrated. There exists an irony, however, in that the would-be reformers returning from Germany apparently based their idealistic vision upon a misreading of the institutions they had just attended. The Americans, being foreigners and already possessing the M.D. degree, had no difficulty gaining admission to the various research institutes. German students did. In the universities, individual courses were determined by the individual professor and hence were highly specialized, but not oriented toward any goal because "in Germany, research was not recognized as a profession; it was a sacred calling" to the dedicated few. At the university teaching was central and research peripheral. However, the Americans saw research as an integral part of the university system and sought to reform their own universities toward those ends. In the United States there was such a thing as a career in research,<sup>11</sup> and the students themselves were exposed to that research early on.

The entirely unique American system that resulted sprang largely from the desire to achieve practical results. This bent for utilitarianism can be seen in two places. First, the majority of American

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department comparable to a German state's education department. At the same time he noted that in Germany, classes tended to be too frequent and too large. Consequently, there was insufficient apparatus for each student and only poor access to patients during clinical instruction. I Remember, 170

<sup>11</sup> Ben-David, The Scientist's Role in Society, 141-142.

doctors who studied in Europe flocked to Vienna. There they congregated in sufficient numbers to force changes in the medical school. In the late nineteenth century, many courses were changed to demonstrate the practical use of their content rather than the theoretical nature of the subject at hand. American influence was so great that some courses were even taught in English.<sup>12</sup> Secondly, the Germans themselves noted this phenomenon. They traveled throughout the United States in ever increasing numbers up to World War I. At first they criticized, but increasingly they praised American medicine. By 1900 the leading German medical journals regularly featured letters from travelers to the United States.<sup>13</sup> One of the early visitors, Julius Hirschberg, an ophthalmologist, complained about the ubiquity of pragmatism exhibited at his speeches to American doctors. He said that even scientists demanded to know what practical application his theories had, and noted that they had no use for the history of medicine. However, in 1898 Arnold Keller of Berlin thought that New York hospitals were superior in equipment and in "scientific routine" to German institutions. He marveled at the careful treatment given to each patient. Orthopedics were singled out for especial praise by another doctor who noted that while Boston and Munich had similar populations,

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<sup>12</sup>Donald Fleming, review of Bonner, American Doctors, Mississippi Valley Historical Review, 50 (December, 1963), 521-522

<sup>13</sup>Bonner, American Doctors, 114.

Boston had three hundred beds available to orthopedic patients, but Munich had less than fifty.<sup>14</sup>

What seemed to impress many of the visitors was the availability of superior equipment which was a result of a greater availability of funds.<sup>15</sup> Flexner himself would later state that the greatest weakness in German medical education was its total financial dependency on the state, which often limited expansion.<sup>16</sup> On the other hand, the Germans were quick to note the two greatest liabilities of American medical education which Flexner was to attack vehemently: The separation of medical faculties from their proper university setting, and the existence of competing medical schools in the same city.<sup>17</sup> Once these problems were overcome, though, things would be different. Beyond a certain point, the German system actually retarded progress, because although some ninety per cent of medical students became general practitioners, the German universities were still producing theoreticians.

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<sup>14</sup>Bonner, American Doctors, 143 and 147.

<sup>15</sup>Or, as one German said at the time, "Wenn wir in den deutschen Kursen Experimente an der Maus aus fuhren können, so nehmen die Amerikaner dafür zum gleichen Zweck einen Elefanten." Ibid., 149.

<sup>16</sup>Flexner, "The European Side of Medical Education", 62. The other great advantage in the United States was the availability of literature. When John Shaw Billings began the Index Medicus in 1879, most Europeans could assemble no more than a bibliography on some specialized subject. Shryock, Development of Modern Medicine, 179.

<sup>17</sup>Bonner, American Doctors, 144.

The orthopedic surgeon Fritz Lange saw the handwriting on the wall:

We have a great past in medicine, but we still stand under the influence of that past and we overlook thereby the requirements of the present. The requirements of the present can be learned most quickly in America . . . The unprejudiced manner with which Americans approach the solution to every problem has made a great impression on me. The American does not ask of any task, 'How has this been done'. There are disadvantages, of course, to a lack of tradition, especially in areas where an old culture is indispensable as in art, music, painting and architecture. In general, however, I believe that the lack of tradition is of advantage in the development of America. The solution to all scientific, social, and political problems is completed over there much faster than among us <sup>18</sup>. One sees there in the present what the future will bring us.

The United States was quantitatively superior in equipment, but it was dependent on German technological quality until after World War I. The compound microscopes of Reichert, Leitz, and Zeiss; the pure chemicals of Kahlbaum, the stains of Grubler and the resistant glassware from Jena, could not be duplicated for a long time.<sup>19</sup> That much can be easily documented. Intellectual influences are not so easily determined. It is clear, however, that educational reform was in the air in the United States from 1870 to 1914, and, it is only reasonable to say that "Germany provided the model and Americans who had been abroad furnished

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<sup>18</sup>"Amerikanische Reiseerinnerungen", Münchener Medizinische Wochenschrift, (1911), 1404-1409. In Bonner, *ibid.*, 156.

<sup>19</sup>Paul Clark, Pioneer Microbiologists of America, (Madison: University of Wisconsin Press, 1961), 97.

the enthusiasm."<sup>20</sup>

<sup>20</sup>Bonner, American Doctors, 58.

Early Reform Efforts of the AMA and AAMC 1866-1900

In 1866, the AMA picked up the cause it had laid aside during the Civil War. Almost immediately it revealed internal disorder and lack of will to do battle with its wayward members. In 1867 the AMA convention voted to "adopt and enforce any system or plan that may be agreed upon by two-thirds of all recognized medical colleges."<sup>1</sup> Obviously there would be no reform. William O. Baldwin called for federal legislation at the 1868 convention.<sup>2</sup> But the country would not tolerate such a radical move. The spirit of rugged individualism was so strong in the midwest that doctors there refused to accept quarantine as a public health measure, even against cholera.<sup>3</sup> Three years later Francis G. Smith from the University of Pennsylvania suggested to the AMA that a national medical college should be instituted based on the highest possible standards so as to shame the others into compliance. A bill was even introduced into Congress, but fell afoul of the homeopathic sects who would use the college to get official recognition. In such a college, faculty appointments would be subject to political patronage and "to trust to politicians for the advancement of scientific medicine

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<sup>1</sup>Transactions of the AMA, 18 (1867), 381-384. In Kaufman, 111.

<sup>2</sup>Ibid

<sup>3</sup>Bonner, "The Social and Political Attitudes of Midwestern Physicians, 1840-1940: Chicago as a case history", Journal of the History of Medicine, 8 (April, 1953), 135. Hereinafter referred to as "Chicago".

would be to seek . . . such protection as wolves give to lambs."<sup>4</sup>

The AMA withdrew its endorsement and the measure died soon after. So too, for most of the rest of the century, did the AMA. There would be no significant reform from within medical education until the AMA had set its own house in order. This was not to be until 1902.

Medical licensing laws continued to make slow but steady progress as more and more states set up boards of examiners to check on competency. For a long time, though, that progress was threatened by homeopaths and the other medical sects that demanded equal representation on a single board or separate boards for each sect. In New York in September of 1891, for example, sectarian pressure brought about the creation of three separate licensing boards, one each for allopaths, homeopaths, and eclectic. However, these boards then represented threats to Christian Scientists, Osteopaths, and even more obscure groups who demanded equal recognition. Anarchy threatened. In the name of good order the three major sects agreed to join ranks on a single unified board that would decide on all licenses. Members of all three would be seated on the board and questions of therapeutics, the major differentiating factor, would be avoided. In 1907 New York joined the ranks of states with "unified" boards.<sup>5</sup>

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<sup>4</sup>Transactions of the AMA, 22 (1871), 12-13. In Kaufman, 114.

<sup>5</sup>In 1896 twenty-three states had licensing boards: sixteen with unified boards, four with two boards and three with three boards. In

In 1891 the National Confederation of State Medical Examining and Licensing Boards was established to come to grips with the problem of interstate uniformity. These men had the insight to realize that licensing agencies could no longer concern themselves solely with the medical school graduate, but with his education as well. In that year they voted to require a uniform standard of three years for all medical schools in an effort to force improvements.<sup>6</sup> This rather extraordinary move had come about only after several schools had proven that it was possible to do so. Lind University, a Chicago medical school, had been endowed by Sylvester Lind in 1859. Because of the endowment it remained financially independent of student fees. It could therefore offer a higher level of education and require a higher quality matriculant. In 1863, its endowment failed to maintain itself, but the college, by then called the Chicago Medical College (CMC), refused to lower its standards. Nathan Smith Davis, the founder of the AMA--if ever there was a single founder--left Rush Medical College to join the faculty at CMC and establish there the suggested standards of the AMA. Rush and CMC offered an interesting contrast in 1880. Rush admitted all applicants: CMC only college graduates or those who passed a rigid entrance

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Kaufman, 143-146.

<sup>6</sup>The wheels of progress grind with painful slowness. The Pennsylvania State Medical Society proposed such a requirement in 1888. The State Legislature debated the measure but did not adopt it until 1893. Corner, Two Centuries, 190-191.

examination. The academic year at Rush lasted four months; five at CMC. Rush had 440 students; CMC had only 148. Since CMC had a larger faculty, it is easy to understand why Rush's profitability was immensely higher. Until 1879 the Chicago Medical College was the only school to hold out in its opposition to the degrading competition. Its faculty suffered from reduced salaries but there was no better school in the country.<sup>7</sup>

The next school to undergo any meaningful reform was Harvard, under its great president Charles Eliot. Prior to Eliot the Harvard Medical School had been dependent upon student fees for its continued existence and so in a sense was a proprietary school. Eliot put an end to that and raised the standards considerably. In 1871 the school announced a three year course with nine month terms. A graded curriculum was introduced requiring students to undergo successive stages of instruction on an annual basis. Finally, oral and written examinations were made mandatory. This last move revealed a weakness in contemporary medical education. One of Eliot's chief opponents, Henry Bigelow, objected to (among many other things) the exams, because Eliot "knew nothing about the quality of the Harvard Medical students; more than half of them can barely write: of course, they can't pass written

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<sup>7</sup>Kaufman, 128.

examinations."<sup>8</sup> Here too, a high price was extracted: Between 1870 and 1872, enrollment decreased 43 per cent. In time, however, other schools followed. The three year graded curriculum was introduced at the University of Pennsylvania in 1877 and at Syracuse and Michigan shortly thereafter.

The greatest single inspiration to medical education came from a newly founded school; one intended from the start to be an inspiration to all. Johns Hopkins University was endowed from the estate of Johns Hopkins of Baltimore in 1876, under the presidency of Daniel Coit Gillman. John Shaw Billings was given the task of designing the medical school which did not open until 1893. Knowing that the school would be independent of student fees, he set standards commensurate with the scientific requirements of the day and not according to the competitive market. His plan called for a four year graded curriculum, extensive use of laboratory studies in the first years, and the integration of college and teaching hospital. Clinical teaching after the German model was not new to the United States, having been introduced at the Jefferson Medical College, Philadelphia, in 1867, but it was very rare. William Osler, who had the least schooling in Germany, wanted "to build up a great clinic on Teutonic lines . . . on lines which have proved so successful on the Continent and which have placed

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<sup>8</sup>Kaufman, 128.

the scientific medicine of Germany in the forefront of the world".<sup>9</sup> Similarly, Gillman and Billings wanted a staff that was young and had been trained in Germany. The entering class was required to possess a bachelor's degree or its equivalent, which included designated courses in physics, biology and chemistry, and a reading knowledge of both French and German. These requirements were so extraordinary they prompted Osler to say to Welch, "we are lucky to get in as professors, for I am sure that neither you nor I could ever get in as students."<sup>10</sup> Nevertheless, Johns Hopkins was an immediate success.

A group of concerned medical professors formed the American Medical College Association in 1876. The association was essentially the brain child of John Biddle of Jefferson Medical College in Pennsylvania and was meant to be a "provisional society" to serve as a forum for debating the issues of reform. By 1878 its name changed to the Association of American Medical Colleges (the AAMC), and its debates changed to censorship of the more flagrant violators of generally acceptable standards. Its major weakness derived from the fact that it never spoke for more than a minority of the schools and hence had to avoid specific and harsh measures. Some success was forthcoming; by 1880 no member medical school offered less than two years of training.

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<sup>9</sup>Bonner, American Doctors, 60-61.

<sup>10</sup>Paul Clark, Pioneer Microbiologists, 90

However, too much of a good thing all but destroyed the organization. Efforts to require a three year curriculum forced the resignation of eleven members as a matter of survival. The AAMC dropped the issue in 1882. Enthusiasm waned and no meetings were held until 1889.<sup>11</sup>

The Association revived itself in May, 1890, at a convention in Nashville at which fifty-five of the ninety orthodox colleges were represented. The new membership requirements were fairly stiff, three years of training with a minimum of six months per year. There would have to be oral and written examinations as well as lab work in chemistry, histology and pathology. Only accredited college graduates would be exempted from mandatory entrance examinations in composition, Latin, arithmetic, and physics. In 1894, fully cognizant that increased standards would hurt representation as it had before, the AAMC voted to require a four year course by 1899. Membership did drop off, from sixty-six in 1895 to fifty-four in 1897. It hurt, but not as drastically as feared.<sup>12</sup>

By 1900 all of the pieces were in place to effect a major reform in medical education. The most advanced scientific and clinical methods spawned in Europe were now being successfully taught in the United

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<sup>11</sup>Kaufman, 135-140. See also "History of the Association of American Medical Colleges, 1876-1956", Journal of Medical Education, 32 (July, 1957), 512-525.

<sup>12</sup>Kaufman, 154-156.

States. Public demand for better therapeutic results was being felt through the slowly rising standards of state licensing boards and through the somewhat more rapid growth of hospitals. Unfortunately, the failure of the AAMC to move the medical colleges themselves more than a bare minimum showed the strength of the resistance. What was lacking was a concerted and centralized effort to move the medical school from the realm of private gain into that of the public good. Increasingly, gains in public health had made obsolescent the idea that medicine was an affair of the individual doctor treating the individual patient. Medicine was now a larger social issue. Society would require a more responsible and responsive medical community.

The AMA Revives, 1900-1910

The leadership of the AMA decided to return to the arena in 1900. An editorial in the AMA journal quoted a New York doctor to the effect that the government should provide funds for and regulate medicine along scientific lines. To do so would eliminate many schools, but the country would suffer "no loss if three-quarters of the 150 or so schools closed." The editor agreed: "That it is desirable, no one questions."<sup>1</sup> But the Association had lost its vitality and had generally dropped out of the fight for improved education. In order to be more effective, the Association had to become more responsive to an interested and invigorated membership. The national leadership swept the country to make contact with the local chapters and re-establish a hierarchy of communication and control.<sup>2</sup> The reorganization effort lasted until 1903, creating a new and vital group that continued to grow in size and influence. By 1910, AMA membership totaled 70,000 or slightly less than half of the 158,000 doctors in the country.<sup>3</sup>

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<sup>1</sup> Journal of the American Medical Association, 34 (May 19, 1900), 1268. Hereinafter referred to as JAMA.

<sup>2</sup> It has been claimed that Dr. Joseph N. McCormack traveled further and made more speeches than any other solicitor in the Progressive Era. James G. Burrow, Organized Medicine in the Progressive Era, (Baltimore: Johns Hopkins University Press, 1977), 23. Hereinafter referred to as Organized Medicine.

<sup>3</sup> Shudson, "The Flexner Report . . .", 353. The new editor of the JAMA, G. H. Simmons, also revitalized that organ and increased its circulation 500 per cent by 1909. Morris Fishbein, A History of the

In 1901 the Association began to advertise a plan to establish a national bureau of health which would be empowered to regulate practice and licensing and make recommendations for uniformity in state laws. In 1902 the Association president appointed a five member committee devoted exclusively to education and chaired by Arthur Dean Bevan, a Chicago surgeon. Bevan recognized the inherent impossibility of taking a national approach to a problem traditionally the purview of the states. The plan was soon dropped, but Bevan wanted the AMA to provide some form of "national supervision". He reminded the national convention in 1903 that the AMA had been originally "formed for the purpose of elevating standards of medical education", and dedicated the committee to that end.<sup>4</sup>

Perhaps carried away by the excitement of the moment, AMA president Frank Billings called for a complete revitalization of medical education. He insisted upon a four year curriculum followed with a one year internship. All professors would be dedicated to teaching as a full time profession and the heads of clinical departments would also be professors so as to bind the hospitals and universities together.

Billings claimed that the new commitment of the AMA "ushered in a new

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AMA, (Philadelphia: Saunders, 1947), 257. Hereinafter referred to as AMA.

<sup>4</sup>Bevan, JAMA, 40 (1903), 1372-1373. Bevan requested that the committee be given permanent status and a maximum annual budget of \$5000 to carry on the reform.

epoch in American medical education."<sup>5</sup> But cooler heads prevailed. Previous reform efforts of the AMA had been stifled largely by the inherent cohesion of the medical colleges which made them a strong voting block within the constituency.<sup>6</sup> Bevan cautioned that "advance must gradually be brought about." Therefore the trustees decided to forestall any further discussion of the issue until the organizational restructuring was complete.

The committee did not reconvene until 1904 when it was made a permanent organ of the AMA and renamed the Council on Medical Education. It immediately embarked on a three year study to discover the extent of America's problems in medical education. Some of the Council's findings were released at the 1906 convention. Until then 112 colleges had been evaluated according to the percentage of students failing state board examinations of 1904. Although forty-seven of them had fewer than 10 per cent failures, thirty-eight had more than 20 per cent. Five "especially rotten spots" were identified: Illinois, Kentucky, Maryland,

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<sup>5</sup>Fishbein, AMA, 689.

<sup>6</sup>The influence of the colleges "has always been so great in the Association as to prevent its doing what it should have done long ago, viz., establishing a national standard for medical teaching and demanding that colleges shall accept it or not be recognized." G. H. Simmons, "What the AMA Stands For", JAMA, 21 (November 23, 1907), 1733.

Missouri, and Tennessee.<sup>7</sup> Such comments undoubtedly created new enemies who joined the ranks of competing medical journals, quacks and patent medicine sellers who were already attacking the JAMA for its exposes. But by the same token, many popular journals such as Ladies Home Journal, Colliers, and Everybody's Magazine, had joined the AMA against these same enemies.<sup>8</sup>

The final results of the investigation were ready in 1907. They were reported to the AMA membership and published as Pamphlet Number 22 of the Council on Medical Education. In summary, of the 160 schools in operation "only about 50 per cent are sufficiently equipped to teach modern medicine", 30 per cent "are doing poor work", and 20 per cent "are unworthy of recognition". The report placed most of the blame on state government. Those states lacking effective licensing laws were fast becoming a "dumping ground" for "bad doctors".<sup>9</sup> In his own report Bevan complained of schools "conducted for the purpose of preparing a student to pass a state board examination and not with the object of making him a competent practitioner . . . and some . . . are no better equipped to teach medicine than is a Turkish-bath establishment or a

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<sup>7</sup> Council on Medical Education, Report of the Second Annual Conference, 1906, (Chicago, 1906), 6-14.

<sup>8</sup> Fishbein, AMA, 238-240.

<sup>9</sup> Pamphlet Number 22, (Chicago, 1907), 160.

barber shop."<sup>10</sup> The Council recognized the value of publicity but did not identify the miscreants. In the report they threatened to go public with the names of the worst offenders to coerce them into compliance but never did. When later criticized for not doing so, N. P. Colwell, the council's secretary, claimed that they wanted to give the bad schools a chance "to make good" without undue embarrassment. Their purpose in describing the conditions was to prevent any "plea of ignorance", no more. That they were correct in their approach, Colwell states, was born out by subsequent closures and mergers.<sup>11</sup> That claim, however, may have been a smokescreen for the AMA because at that time, June, 1910, the Flexner Report which did name names, and in which Colwell had been deeply involved, was being published.

In the meantime, the AMA continued to publicize and criticize. A new committee, the Board of Public Instruction, was created in 1908. This group organized and conducted a series of nationwide lectures covering the basic sciences, preventative medicine, and the history of medicine in order to enhance public awareness and concern for the medical profession and for public health in general. The Council on Medical Education published another long report in the AMA Bulletin which contained a state-by-state breakdown of licensing laws and medical colleges

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<sup>10</sup> Report of the Third Annual Conference, 1907, (Chicago, 1907), 10

<sup>11</sup> N. P. Colwell, "Secretary's Report", American Medical Association, 5 (June 15, 1910), 252-253.

and their acceptability to the AMA. There was also a comparison of medical schools in twenty European and Latin American countries. At the time, of the 335 medical colleges in the world, the United States had 48 per cent of them. What made the country look bad was the fact that all of the foreign schools were part of universities while almost none of those in North America were.<sup>12</sup>

During the 1904-05 academic year, the number of medical schools reached an all time high of 166. It hovered there for awhile and then began a slow decline. By 1908, sixteen schools had closed their doors permanently but twenty-five new ones had emerged. Yet the total had decreased to 148 as twenty-seven schools merged into twelve.<sup>13</sup> The increasing number of schools which indicated a willingness to adopt the five year medical course indicated further improvement. A trend was developing, but with painful slowness. In order to increase the speed of the reform the council decided to look for other means to publicize its efforts. For that reason the Council decided, "that if we could obtain the publication and approval of our work by the Carnegie Foundation for the Advancement of Teaching, it would assist materially in securing the results we were attempting to bring about."<sup>14</sup> Members

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<sup>12</sup>AMAB, 3 (May 15, 1908), 221-255. The Canadian medical schools were university affiliated.

<sup>13</sup>Ibid., 5 (September 15, 1906), 8.

<sup>14</sup>Bevan, "Cooperation in Medical Education and Medical Service",

of the Council contacted the Foundation through its president, Henry S. Pritchett, and requested that a thorough investigation of medical education be undertaken. Pritchett agreed to the project and to the condition that it be independent of the AMA.

. . . while the Foundation would be guided very largely by the Council's investigations, to avoid the usual claims of partiality no mention should be made in the report of the Council than any other source of information. The report would therefore be, and have the weight of an independent report of a disinterested body, which would then be published far and wide. It would do much to develop public opinion.<sup>15</sup>

Pritchett hired Abraham Flexner to do the job.

JAMA, 90 (April 14, 1928).

<sup>15</sup>Ibid. They succeeded admirably in keeping the two organizations separate. Flexner mentioned the AMA but once in the entire report. Even modern researchers have been thrown off the scent. It is very rare that mention is made of the fact that the AMA actually asked the Carnegie people to do the report. Minutes of the Council on Medical Education, December, 1908. In Fishbein, AMA, 897.

## CHAPTER THREE

### THE FLEXNER REPORT

#### Abraham Flexner and the Progressive Era

The Carnegie Foundation for the Advancement of Teaching was chartered in 1905 for the purpose of aiding university teachers by providing income assistance and retirement benefits.<sup>1</sup> Presiding over the Foundation was Henry S. Pritchett, a scientist, an experienced teacher and an expert administrator.<sup>2</sup> While investigating various colleges as potential aid recipients, the Foundation discovered great discrepancies between schools. Many were actually doing the work of secondary schools while claiming to be colleges or universities. Consequently, the Foundation set out to clarify the relationships between secondary schools, the so-called university, and the various professional schools within the entire education system.<sup>3</sup>

Apparently it is this interest that brought the AMA and the

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<sup>1</sup>Howard J. Savage Fruit of an Impulse: Forty-five Years of the Carnegie Foundation, (New York: Harcourt, Brace and World, 1953).

<sup>2</sup>Pritchett had been an astronomer, had taught at Washington University in St. Louis and was director of the Coast and Geodetic Survey and President of MIT prior to working for Carnegie.

<sup>3</sup>Pritchett, introduction to the Flexner Report, vi.

Carnegie Foundation into the same business. When approached by the AMA Pritchett saw the problems plaguing medical schools as problems of education and not of medicine.<sup>4</sup> When casting about for someone suitable to the job, he chose Abraham Flexner. As a layman and an educator Flexner was better qualified than a medical professor. He had recently published a book on university education which was critical of the lecture system and the abuse of elective courses.<sup>5</sup> Since he had no personal medical training, he would be aloof of the internal vageries of the battle, but because his older brother Simon was a world-famous pathologist, teacher, and director of the Rockefeller Institute, he had instant access to the epitome of a good medical education. Flexner accepted the challenge.<sup>6</sup>

Who was Abraham Flexner? Born in 1866 he was the sixth of nine children of a middle class Louisville merchant. He graduated from public school with an aspiration to further himself with a classical education. It was his older brother Jacob's largesse that permitted him to attend Johns Hopkins University. Jacob had been denied a college

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<sup>4</sup>Kaufman, 165.

<sup>5</sup>Abraham Flexner, The American College: A Criticism (New York: Century, 1908). Flexner later admitted that his appointment was the only consequence of that work, as it had been largely ignored. I Remember, 115.

<sup>6</sup>Flexner was unperturbed by challenges against his lack of expertise, recalling what F. T. Gates once said on the matter, "You don't have to eat a whole sheep to know it's tainted". I Remember, 120

education because of the depression, but the drugstore that he owned was frequented by many reputable medical men. These gentlemen, especially those who were associated with the better eastern universities, had a great influence on Abraham. At Johns Hopkins he took a typical liberal arts curriculum, but with special emphasis in Greek and Latin. This proved to be ironic, because he was later to be a champion of the "practical" education which denigrated the value of these subjects.<sup>7</sup> Forced by economic necessity, he finished his degree a year early. Back in Louisville he taught school--primarily Greek and Latin. He found it a frustrating and almost hopeless endeavor<sup>8</sup>; after several years he opened a private school for elite, but troubled, children. His goal was to prepare them for entry into one of the elite eastern colleges and by his own admission he was remarkably successful. Yet, he was not satisfied with his work. Over the years he became more and more concerned with theories in education and eventually closed his school to take up graduate work at Harvard and Berlin. In 1908 he published a criticism of universities--The American College--which insured

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<sup>7</sup>His 1916 pamphlet, A Modern School, created a storm of controversy in educational circles. See "Pros and Cons of the Flexner Scheme of Modern Education". Current Opinion, 60 (June, 1916), 423-424; The Nation, 102 (May 18, 1916), 541-542.

<sup>8</sup>One gets the impression from his memoirs that he is a purist--that one studies the classics for their own sake. He leaves no clue of what gave rise to his utilitarian bent in education, unless it was fear of the depression in his childhood which drastically affected his family. Flexner, I Remember, 19.

his reputation as an educator and brought him to the attention of Henry Pritchett of the Carnegie Foundation.

Having brought together medical education, the Carnegie Foundation and Abraham Flexner, a small digression is in order. The Progressive Era had a major impact on all aspects of American life, including medicine. After 1900 many medical journals, such as the Chicago Medical Recorder, The Medical Standard, Illinois Medical Journal, Clinique, and Journal of the American Medical Society, frequently reported on social and political issues without any medical content whatsoever.<sup>9</sup> The revitalization of the AMA, the reports of the Council on Medical Education and the Flexner Report itself are all permeated with Progressive rhetoric. Therefore, the various reform efforts of the period, including the work of Abraham Flexner, cannot be seen apart from Progressivism.

Defined most simply, the Progressive Era involved the application of efficiency--as understood by the mechanical engineer and the business man--to society and social institutions. By the end of the nineteenth century America had become the most powerful industrial nation on earth. This had been accomplished by a combination of technological innovation and the superior efficiency of large business conglomerates. Efficiency became the catch-word of the era. But too much efficiency could be a

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<sup>9</sup>Bonner, "Chicago", 152-153.

bad thing. The most efficient businesses, the trusts, were good to their stockholders, but could be bad for society as a whole. Progressivism was an attempt to separate good efficiency. It was directed toward the end of making all social and political institutions more effective and more responsible to the people. Thus the Progressive Era was a combination of science, business and society.

John Dewey, the patron saint of Progressive education, spoke the language of science and economics. To him the student's natural inquiry was the "uninvested capital" of education, and in order to aid the proper development of students, one needed to begin a thoroughly scientific study of them<sup>10</sup> much as the great capitalists were then applying science to industry. Some educators saw classroom management as a "problem of economy: it seeks to determine in what manner the working unit of the school plant may be made to return the largest dividend upon the material investment of time, energy and money. From this point of view, classroom management may be looked upon as a 'business' problem".<sup>11</sup> The United State Commissioner of Education reminded the Council on Medical Education that "light weights and cheap adulterations

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<sup>10</sup> Lawrence A. Cremin, Transformation of the School (New York: Alfred A. Knopf, 1961), 118-119.

<sup>11</sup> William C. Bagley, Classroom Management (New York, 1910), 2. In Raymond E. Callahan, Education and the Cult of Efficiency (Chicago: University of Chicago Press, 1962), 6-7.

do not pay in education any more than they pay in trade."<sup>12</sup> People with this attitude saw the old style of education, emphasizing the classics, as useless in the modern age: It "oftener unfits than fits a man for earning a living."<sup>13</sup> Modern education needed to be practical. Flexner agreed. His own school had been narrowly directed at preparing children to pass college entrance examinations.

Medical colleges became the center of a long-standing feud over the de-emphasis of the humanistic education. To some, the new educational ideal suggested a total concentration on utilitarian science. "The era of tradition in medicine has passed . . . Medical instruction has followed too closely the methods of the Academic College." Therefore medical schools should concentrate their efforts in laboratory and clinical courses in an affiliated hospital.<sup>14</sup> But to others the neglect of the humanities for practical subjects created an inadequately trained physician. Doctors especially needed the study of languages -- Greek, Latin and German.<sup>15</sup> The profession has yet to find a

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<sup>12</sup> Elmer Ellsworth Brown, AMAB, 5 (January 15, 1910), 255

<sup>13</sup> Calvin M. Woodward, The Manual Training School (Boston: 1887), 243. In Cremin, 27.

<sup>14</sup> Frank F. Dow, "The Hospital as a factor in the training of medical students", Bulletin of the American Academy of Medicine 12 (June, 1911), 138-40.

<sup>15</sup> Isadore Dyer, "Medical Education: An Unsolved Problem", New York Medical Journal 97 (February 1, 1913), 227.

generally agreed upon compromise.

One of the early goals of Progressivism in education (c. 1890) was purely political. Local partisan politics was removed from the schools as the ward bosses and machine politicians were deprived of their ability to control appointments. Teachers could then concentrate on the needs of the students.<sup>16</sup> This was accomplished at the state level, and soon led to the wedding of government and education for their mutual benefit. The "Wisconsin Idea" referred to the self-conscious union of the university and the state house in which the academic expert would give scientific advice to guide the government.<sup>17</sup> However, it was soon apparent that nationwide, education was not getting fair treatment because of the lack of uniformity across the states. The Davis and McLaughlin Bills--1907 and 1909 respectively--are just two of the many examples of attempts by reformers to get federal aid and therefore nationwide uniformity for education.

Doctors, too, began to realize their impotence in the face of political forces. The early reform efforts of the AAMC and the AMA fell victim to the machine-like political block of the proprietary medical schools. Consequently, groups within the profession arose or were "reawakened to form an alliance with the law to use government for their

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<sup>16</sup> Gremin, Transformation of the School, 5-6.

<sup>17</sup> Haber, Efficiency and Uplift, (Chicago: University of Chicago Press, 1964), 106.

own ends."<sup>18</sup> The attempts to increase the strengths of state licensing boards can be seen in this light. Here too, lack of interstate uniformity became a hard fought issue. At first, it was hoped that the profession itself could be the regulating factor, especially through the AMA. Inequalities between states would be made up by private funding as the Carnegie Foundation, Rockefeller's General Education Board and other private agencies poured millions of dollars into medical schools. The problem was too large, however, and the federal government was called upon. In 1914 Arthur Bevan, Chairman of the Council on Medical Education, announced that the future of medicine--especially in the fields of education and public health--was inexorably tied to government.<sup>19</sup>

Finally, Progressivism entailed an ironic process of democratization. The Robber Barons were excoriated as "exalted thieves", "corruptors of public morals", and so on. Big business ran government often to the detriment of the people that government supposedly represented. To counter the power of business the Progressives talked about the return of popular government and of personal involvement by greater numbers of people, but in so doing inadvertently created a dichotomy. How could government be highly efficient on the one hand and highly

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<sup>18</sup>Burrow, Organized Medicine, 12.

<sup>19</sup>Bevan, "Medicine as a Function of the State", JAMA 62 (March 14, 1914), 821-823.

individualistic on the other? The dominant theme of efficiency contradicted the call for democracy. A highly efficient government is naturally removed from its constituency.<sup>20</sup>

The same process occurred within the AMA. The reorganization in 1902 was intended to make the individual members an active force within the national organization. Yet, in the interest of efficiency, the major issues, legislation, patent medicines, education etc., were turned over to small committees who reported to, but were relatively independent of, the larger group. Even the president of the AMA acknowledged his own limitations. Dr. Lewis S. McMurty, president in 1906, stated that the real power in the AMA was invested almost exclusively in the Board of Trustees.<sup>21</sup> One of the best expressions of the irony between the reality of concentrated power and the idealism of democracy is in Henry Fritchett's introduction to the Flexner Report. Fritchett had at his disposal millions of Carnegie dollars acquired by an extreme form of monopolism, yet he could say that the purpose of the Foundation's investigation was to make medical education more responsive "to the ambitions and needs of democracy."<sup>22</sup>

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<sup>20</sup>Haber, Efficiency and Uplift, xi, and Richard Hofstadter, The Age of Reform; from Bryan to F. D. R. (New York: Alfred Knopf, 1955), 331.

<sup>21</sup>Fishbein, AMA, 241.

<sup>22</sup>Flexner, I Remember, 115.

### Preparation

Flexner began work on December 1, 1908. He read intensively to familiarize himself with the subject in general and its current status in particular. After mastering the basics he concentrated his efforts on the top men in the field, especially those who were recognized as scientists as well as educators. A large percentage of the authors listed in his bibliography had studied in the best German schools. He traveled to Johns Hopkins Medical School to inquire as to what a medical school ought to be. He spoke personally with men such as William Welch, William Halsted, J. J. Abel, and W. H. Howell, also recognized experts. He later characterized Johns Hopkins as "a small but ideal medical school embodying in a novel way, adapted to American conditions, the best features of medical education in England, France, and Germany."<sup>1</sup> The school tended to confirm his elitist prejudices. To him, medical school was for the "picked" students only. Anyone not intellectually qualified or sufficiently serious should be sent to a technical or other "training" school.<sup>2</sup>

He then went to Chicago to confer with G. H. Simmons, secretary of the AMA and editor of its journal. There he read all of the reports

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<sup>1</sup>Flexner, I Remember, 115.

<sup>2</sup>Ibid., 58-59. Flexner's elitism was fueled by his own pursuit of excellence and fear of mediocrity. He wanted to escape from what Goethe called "was uns all bandigt-das Gemeine" (that which hampers us all--the commonplace).

of the Council on Medical Education. He found them "creditable and painstaking documents" but limited in value because the authors had to be "extremely diplomatic" in dealing with fellow physicians. Flexner, however, saw himself "in a position to tell the truth with utmost frankness". Flexner, too, realized the danger to his credibility if he did not maintain some distance. When Pritchett passed along a suggestion from the AMA that he have an advisory council of doctors available, he deferred committing himself until the matter was finally dropped.<sup>3</sup>

Flexner was not one to waste time in idle contemplation. One month after taking up the challenge, he set out to personally visit each and every medical school then extant. It has been suggested that he took the idea from William H. Welch of Johns Hopkins<sup>4</sup>, but the point is moot. Due to his association with the AMA and their ongoing inspections, he could hardly have done otherwise. Flexner claimed that he set out to inspect the schools without any fixed methods, questionnaires, or other devices. He just wanted to talk with the students and teachers. He did, however, want to talk to them about some very specific things:

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<sup>3</sup>Flexner, I Remember, 114-115.

<sup>4</sup>Alan Gregg, "On Abraham Flexner's Eightieth Birthday", Journal of the History of Medicine 2 (Autumn, 1947), 487-488.

First, the entrance requirements. What were they? Were they enforced? Second, the size and training of the faculty. Third, the sum available from endowment and fees for the support of the institution, and what became of it. Fourth, the quality and adequacy of the laboratories provided for the instruction of the first two years and the qualifications and training of the teachers of the so-called pre-clinical branches. Fifth, and finally, the relations between medical school and hospitals, including particularly freedom of access to beds and freedom in appointment by the school of the hospital physicians and surgeons who automatically should become clinical teachers.<sup>5</sup>

This particular statement is one of the clearest demonstrations of Flexner's debt to the influence of Johns Hopkins and therefore to German medicine.

The intensity with which he worked can be seen by his schedule: From November 4 to 20, 1909, he visited fourteen cities in eleven states--Iowa, Nebraska, Missouri, Oklahoma, Texas, Arkansas, Tennessee, Kentucky, Mississippi. Yet the uniformity with which he covered the schools is impressively visible in the final report. He obtained answers to all of the above questions for every school and he frequently double-checked their accuracy by gaining access to safes and files. It was not unusual for him to discover thereby that registrars claimed their students had taken required courses or graduated from "accredited" high schools that never existed. Transfer students were often admitted to advanced standing on the basis of work done in inferior schools and in some cases for courses they had failed or completed

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<sup>5</sup>Flexner, I Remember, 120.

poorly.<sup>6</sup> Flexner cannot be faulted for lack of thoroughness.

As in all such enterprises, the intense work was not without its comic relief.

I recall the fact that when in Salem, Washington, I asked the dean of the medical school whether the school possessed a physiological laboratory, he replied, "Surely, I have it upstairs; I will bring it to you." He went up and brought down a small sphygmograph--an instrument designed to register the movement of the pulse.<sup>7</sup>

When Flexner finally sat down to write the work it was with the most altruistic of goals in mind, the public interest.<sup>8</sup> He argued that earlier in the history of the United States there had been no need for social controls over professions such as medicine, but that in the modern era everyone faced the possibility of the "unscrupulous and ignorant" who exploited the masses for their own profit. Therefore, outside intervention was necessary to prevent the harm which could come from the misuse of medicine.<sup>9</sup> Pritchett expressed it better: "The

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<sup>6</sup> Kaufman, 168-169.

<sup>7</sup> Flexner, I Remember, 122.

<sup>8</sup> "It is no greater sacrifice than you are asking of the medical schools when you ask them to suppress themselves in the interest of the public . . . We have been trying to assist that by publicity by showing how uncontrolled self-assertion leads to all sorts of educational demoralization." Flexner, New York Times, October 1, 1911, 5.

<sup>9</sup> Flexner, "Medical Colleges", World's Work 21 (April, 1911), 14238-14242.

attitude of the Foundation is that all colleges and universities, whether supported by taxation or by private endowment, are in truth public service corporations . . ." Therefore the public has the right to inquire about such formerly private things as their administration, finances, and so on. "No visionary ideal has been pursued", only an investigation into what "every community has a right to demand of its medical school".<sup>10</sup>

<sup>10</sup>Pritchett, introduction to the Flexner Report, ix and xii.

The Report in Summary

Medical Education in the United States and Canada has been aptly described as "reminiscent of a Dun and Bradstreet report". There is an almost indigestible amount of hard-hitting factual information between its covers. There is also a great deal of Flexner's personal opinion.

The work has a peculiar dialectic construction throughout: It alternates between the general and the specific. The first half is a discussion of the problems of medical education; the second is a list descriptive of every medical school in the country so the reader can see for himself how each school relates to the previous discussion. Within the first part every topic is similarly divided: first, the ideal approach or method to solve some aspect of the problem and then the reality of the situation.

As the work is rarely read anymore, a summary of its content is in order.

Chapter I, "Historical and General", begins, like this work, with a general overview of American medical education from the apprentice system through to the Johns Hopkins experience. The only mention of the AMA in the entire book is a brief note as to its formation. Flexner mentions the declining number of medical schools and attributes this, in part, to the greater activity of state boards, but primarily to "genuine professional and scientific conviction." He then moves to reassure his readers that a decline in the number of doctors will

actually be beneficial. Germany, he reminds them, has only one doctor to every 2000 persons; the United States one to 568, yet the Germans have better medical care. In fact, it was the continued overproduction of physicians in the United States that caused the plethora of poorly trained doctors because, "According to Gresham's law . . . the inferior medium tends to displace the superior."<sup>1</sup> He stressed that contrary to popular belief, increasing the production of doctors does not aid rural areas. Assured that what the country needed was fewer doctors, Flexner proceeded to calculate the proper rate of production. According to his figures, the south produced 1300 M.D.'s in the previous year where one-third of that number would have been sufficient. Turning, then to the rest of the country, it

may be rapidly surveyed from the same point of view. The total gain in population, outside the southern states already considered, was 975,008--requiring on the basis of one doctor for every 1500 more people, 650 doctors. By death, in the course of the year there were in the same area 1730 vacancies. Replacing two vacancies by one doctor, 865 men would have been required; in most sections public interest would be better cared for if they all remained unfilled for a decade to come. On the most liberal calculation, 1500 graduates would be called for, and 1000 would be better still. There were actually produced in that year, outside the south, 3497, i.e., between two and three times as many as the

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<sup>1</sup> Flexner takes pains to name a number of small towns with more than one doctor, e.g. Wellington, Texas, population 87, with 5 doctors; Crofton, Nebraska, 46 people and 2 doctors; Fossil, Oregon, 2 doctors to its 370 inhabitants. The people did not necessarily get better medical care. 14.

country could possibly assimilate . . .

Having proved over-production to his own satisfaction, Flexner blamed the problem on the commercial school, whose deans "occasionally know more about modern advertising than about modern medical teaching." He saw their goal as enticing the "crude boy or the jaded clerk" with "alluring advertisement . . . quite commonly an exaggeration, not infrequently an outright misrepresentation." Two common examples of misleading advertising include:

Medical Department, University of Buffalo: "The dispensary is conducted in a manner unlike that usually seen . . . Each one will secure unusually thorough training in taking and recording of histories". (p. 25) There are no dispensary records worthy the name.

Halifax Medical College: "First-class laboratory accommodation is provided for histology, bacteriology and practical pathology". (p. 9) One utterly wretched room is provided for all three.

The first chapter concludes with a wash of Progressive rhetoric.

The overwhelming importance of preventive medicine, sanitation, and public health indicates that in modern life the medical profession is an organ differentiated by society for its own highest purposes, not a business to be exploited by individuals according to their own fancy. There would be no vigorous campaigns led by enlightened practitioners against tuberculosis, malarial, and diphtheria, if the commercial point of view were tolerable in practice . . . The public interest is then paramount, and when public interest, professional ideals, and sound educational procedure concur in the recommendation of the same policy, the time is surely ripe for decisive action.

Chapters II and III are a dialectical whole. "The Proper Basis of Medical Education" stands juxtaposed to "The Actual Basis of Medical

Education." Boiled down to essentials, Flexner believed the proper basis was a competent knowledge of chemistry, biology, and physics. Prior to the dawn of scientific medicine, empirical knowledge required empirical learning, but that would no longer suffice. The time had passed when the would-be physician could get by with a rote knowledge of symptoms and cures. Unfortunately, that kind of education had yet to disappear. As proof, Flexner listed a number of "quiz-compendiums"--pamphlets written by doctors and professors to help medical students get through their courses as quickly and painlessly as possible. Flexner felt that a modern medical education should include anatomy, physiology, and pathology within the first two years, and those fields presupposed a working knowledge of the three basic sciences mentioned above. Yet few schools required them. Flexner compared medicine to engineering. The engineering student was required to have a high level of maturity and a good education. He was taught the basic sciences in his college before studying engineering itself. After graduation with a bachelors degree he was not permitted to work directly with projects that would ultimately affect human life; instead, he had to undergo a lengthy apprenticeship which required him to master his subject. The average doctor, on the other hand, was permitted to enter school with but a rudimentary education, was not grounded in the sciences while in school, and then was, immediately upon graduation, given the responsibility of life and death. To Flexner, such an

absurdity could only be rectified by making the doctor "first of all an educated man."

That was the idealistic side of the dialectic. The realistic side, presented in chapter III, is a catalog of abuses. Flexner divided the country's medical schools into three groups; those requiring college for entrance, those desiring a high school diploma "or its equivalent", and those asking somewhat less. Within each class Flexner described schools that honestly tried to provide an education and those that fell far short. He recites their shortcomings and hypocrisies and does not hesitate to publicize their names. He does cite some encouraging improvements, especially in the south, and after refuting several objections to his plan for reducing the number of schools, concludes with a few suggestions for decisive action on the part of state governments.

Chapters IV to VII are lengthy dissertations on the proper course of study. The former two chapters deal with the first two years of medical school, while the latter concern themselves with the years devoted to clinical work. Chapters IV and V are entitled "The Laboratory Branches", VI and VII, "The Hospital and Medical School". As with the first chapters each couplet tends to be a pairing of the ideal and the real. Chapter IV describes what a two year laboratory course should be like, while V is a series of vignettes of actual practice. Similarly, VI and VII concern themselves with proper clinical teaching and its

contemporary realities. The only bibliography to appear in the book is appended to the chapter on the proper teaching of laboratory science. Only two books are cited, T. Billroth's Uber Lehren und Lernen in Medicin, and Adolf Bickel's Wie Studiert man Medizin? The rest are articles and lectures published in various medical journals ranging from the Anatomical Record to The Michigan Alumnus. All are concerned with teaching methodology for the fields of anatomy, physiology, pharmacology, pathology and bacteriology and hygiene.

The "Financial Aspects of Medical Education" is a chapter to itself. Like many of the Progressives of the previous decades, Flexner was not opposed to the acquisition of money; only to its misuse. He objected to the fact that in New York the University and Bellevue Hospital Medical College could use student fees to pay "salaries to some of the most successful practitioners in New York City, while the laboratory branches still lacked anything like uniform development. If, in other words, medical education is a social function, it is not a proper object for either institutional or individual exploitation. Society ought to provide means for its support according to the best light obtainable . . ." Flexner had a very good idea of just how much that support would entail. His theoretical budget for a laboratory department of ten to fifteen thousand dollars was realistic. That those figures could not be reached by student fees alone was self-evident and had long been the brake on educational reform from within the profession.

Most of the rest of the chapter is a series of compliments for those schools who try to spend their money constructively, and a list of budgetary figures condemning those schools who do not. Flexner's point was to encourage medical schools to join universities and for states to encourage their hospitals to become part of a medical school. Such a three part combination would allow the most efficient use of funds and would attract more private and public endowment.

The most radical aspect of Flexner's work is summed up in Chapter IX, "reconstruction". It is at once his summation and solution. Medical schools must 1) be associated with universities where the scientific aspects of medicine can be taught and 2) have access to abundant clinical material so the student can gain experience. Therefore medical schools should properly be located in major metropolitan areas, with no more than one school in any one city, to prevent competition. Allowing that students generally prefer to go to local schools, he divided the country into seven geographic and demographic regions with an appropriate number of medical schools in each. This division would be made doubly advantageous when appropriate specialties were developed in each region. For example, by encouraging research on tropical medicine, southern schools would promote scientific medicine in their region. He analyzed the regional institutions in terms of their potential for improvement and then considered the needs of the nation as a whole. Using the population figures and formulas from chapter I, he

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determined that the entire country needed only thirty-one schools.

His proposed reduction would limit the total annual output of doctors to 2000.

To bring about the proposed reconstruction, some 120 schools have been apparently wiped off the map. As a matter of fact, our procedure is far less radical than would thus appear. Of the 120 schools that disappear, 37 are already negligible, for they contain less than 50 students apiece; 13 more contain between 50 and 75 students each, and 16 more between 75 and 100. That is, of the 120 schools, 66 are so small that their students can, insofar as they are worthy, be swept into strong institutions without seriously stretching their present enrollment. Of the 30 institutions that remain, several will survive through merger.

Flexner's figures do not quite add up, but one gets the gist of his message. He provides two spot-filled maps to illustrate the symmetry of his solution. The first is haphazardly dotted with schools scattered across the country; the second has fewer marks artfully distributed according to demographic concentrations. Flexner concludes the chapter with a long paragraph justifying his ax-swinging approach. He reminds us that "the physician is a social instrument" because of the social nature of disease. Society therefore has the right, if not the obligation, to regulate the medical schools, even if it limits the rights and actions of some individuals. However, such regulation provides "more freedom at a higher level . . . Reorganization along national lines involves the strengthening, not the weakening of democratic principle, because it tends to provide the conditions upon which

well-being and effectual liberty depend."

Chapter X, "The Medical Sects", is a brief but thorough condemnation of any group that stands outside of what Flexner saw as orthodox medicine. He equates sectarianism with blind dogmatism and therefore at antipodes with modern and scientific medicine. The scientist distrusts "a priori explanations"; the sectarian "begins with his mind made up". Therefore, to include sectarians within scientific medicine is self-contradictory. Flexner notes that some of the sects, homeopathy for example, pay lip-service to the laboratory sciences, but their entrance requirements and physical facilities belie their intent. Flexner differentiates four major groups--homeopaths, eclectic, physiomedicals and osteopaths--who control thirty-two schools. He then goes through the list describing each successive school as worse than its predecessor. He attributes the continued existence of sectarian practitioners to human nature and prejudice, reinforced by ignorance. Unfortunately, "instincts so profound cannot be abolished by statutes." In order to prevent exploitation of the ignorant, Flexner proposes that any and all "practitioners of the healing art comply" with the same rigidly enforced regulations as to education and school facilities. Such a measure would permit sectarians to practice, but only after they have acquired the same body of knowledge as the orthodox M.D. It is clear that in the back of Flexner's rationalistic mind, the sectarian schools would then simply dry up and disappear.

Flexner saw the state boards of examiners as the sine qua non of the reform. Thus, he devoted a separate, albeit short, chapter to their status. They were part and parcel with Flexner's view of social responsibility: "The law that protects the public against the unfit doctor should in fairness protect the student against the unfit school." By failing poorly prepared graduates, the boards performed a double duty. They would eliminate bad doctors and at the same time force the bad schools out of existence by drying up the source of their livelihood. Schools whose graduates consistently fail their state exams would soon be without students. Flexner set within the purview of the state board regulation of preliminary educational requirements, length and scope of the courses and final medical licensing. He made a point of coming out on the side of practical versus written examinations. In keeping with the form of the previous chapters, he roundly condemned several states by name, and conditions in general. He then outlined a model state board law. Such a board had to include "the best elements of the profession"--i.e. include teachers--be enabled to condemn poor schools and be funded at a rate sufficient to prevent political corruption. Always looking to the future, he ended the brief discussion on a hopeful note. "Perhaps the entire country may some day be covered by a national organization engaged in protecting the public health against the formidable combination made by ignorance, incompetency, commercialism, and disease."

A scant four pages cover the Postgraduate School, the entire subject of Chapter XII. There were thirteen such schools in 1909, varying from adequate to abysmal. They had originated as "undergraduate repair shops" to provide "the practical technique which the medical school had failed to impart. The courses tended to be short. They aimed predominantly to teach the young doctor what to do in the various exigencies of general practice. A few of the better schools were becoming centers of specialization; others for retraining established doctors in the latest techniques. It did not require a great deal of prescience to see that the future of the postgraduate teaching was with the university medical schools. In so saying, Flexner was only stating the obvious.

Flexner concluded the first half of his book with two brief chapters of two pages each--The Medical Education of Women and the Medical Education of the Negro. By 1909 women were freely admitted to 60 per cent of the medical schools, but were entering the profession in decreasing numbers--162 graduates in 1909, down from 254 in 1904. Flexner speculated as to the cause of this decline: Perhaps as the profession opened to them, women lost interest in entering it. He encouraged all schools and hospitals to grant women equal intern privileges, but discouraged the financial development of separate women's schools, because they would detract from his master plan.

As for black doctors, the Negro must be educated not only for his

own sake, but for ours, because he is a potential source of infection to his white neighbors. "The pioneer work in educating the race to know and to practice fundamental hygienic principles must be done largely by the negro doctor and the negro nurse." There were seven medical schools for blacks at the time; Flexner saw five of them as useless. Meharry in Nashville and Howard in Washington could be, and should be, saved through government and charitable support.

Part two, slightly less than one-half of the report, is the more dramatic of the two. It is a complete listing, arranged by states, of every medical college in the United States and Canada. The two examples reproduced in the introduction to this work will suffice for a summary of this part as that standard format is used in every case. Flexner sums up each state with a paragraph or two of general commentary. He praises, condemns, scolds and suggests improvements. Most of his suggestions revolve around his grand scheme, irrespective of local political considerations. Therefore his suggested mergers and eliminations were not likely to be popular. His proposal that the reduction of Illinois' eighteen independent schools to just one "presents a rare opportunity for educational statemanship", is one of the understatements of all time.

## CHAPTER FOUR

### AFTERMATH

#### The Immediate Response

Flexner's report came out in June, 1910. It was front page news in The Chicago Tribune and The Los Angeles Daily Times. A mild, but favorable editorial appeared in the New York Times, June 12. The Times said that the report was toned to "catch the attention of magazine readers, that it is to lead those in error to correct their ways."<sup>1</sup> But to others the information was presented "in a manner which has proved too frank for some susceptibilities."<sup>2</sup> Those susceptibilities quickly lashed back at Flexner personally. The College of Physicians and Surgeons of St. Louis filed a \$100,000 suit for defamation of character against Flexner, Pritchett and Dr. Simmons, the secretary of the AMA.<sup>3</sup> Flexner received anonymous threats against his life--if he went to Chicago he would be shot on sight. He proceeded to Chicago at the first opportunity.<sup>4</sup>

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<sup>1</sup> June 12, 1910, 12. The editor sniffed that American doctors were really better than Flexner seemed to indicate.

<sup>2</sup> The Lancet, (July 23, 1910), 242.

<sup>3</sup> Ibid., (July 9, 1910), 137.

<sup>4</sup> Flexner, I Remember, 131. Flexner mentions a \$150,000 libel suit

The lawsuit was soon dropped and the threats never materialized, but the reaction to the report continued for some time. Newspapers and magazines carried letters and articles on the report. It is impossible to tell if the report increased interest in medicine and medical education or not because many papers and magazines had been reporting regularly on those subjects since the beginning of the Progressive Era. Several journals carried a synopsis of the report.<sup>5</sup> Most comment was favorable, although many letters to editors--and many to Flexner personally--took issue with specific points or found excuses for the shortcoming of schools in which they had an interest. Frederick W. Hamilton, president of Tufts University, challenged Flexner's evaluation of his school because it had met the approval of the AAMC. Flexner agreed completely that Tufts had met the requirements, but only because "those requirements are extremely low." When Hamilton complained about Flexner's lack of proper credentials, he again agreed but reminded the president how much the profession had suffered after "being left entirely in the hands of medical men".<sup>6</sup>

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in his memoirs. It is not known if this was a different action than the one above.

<sup>5</sup>Pritchett, "How to Study Medicine", Outlook, 96, October 1, 1910, 272-275; Flexner, "Medical Colleges", World's Work, 21, April, 1911, 14238-14342; and "Do you know where your Doctor was Trained?" 22, June, 1911, 14441-2; also Atlantic 105, June, 1910, 797-804; Collier's 45, June 11, 1910, 16, To cite but a few.

<sup>6</sup>Flexner Papers, Tufts file. In Kaufman, 172. See also E. B.

As for the medical profession, the reaction was, as could be expected, mixed. Some medical journals did not carry any article of scientific value and were unperturbed by the whole affair. Others reviewed it without comment as to its controversial proposals, but many attacked it. The New York State Journal of Medicine cried out against the report, "The author is evidently of the opinion that it is the last word on the subject of medical education and writes in a style of insolent self sufficiency." The reason for this belligerence became apparent some months later when the editor noted that the actions of state boards--most especially of the Medical Society of the State of New York--had caused the situation to improve "before the critic of the Bulletin was out of short clothes".<sup>7</sup> Others thought Flexner's grand scheme of rearranging schools was "arbitrary" and his doctor-to-population ratios were inaccurate because many doctors held degrees for their prestige value alone.<sup>8</sup>

One of the most popular arguments was an appeal for the "poor-boy" who would be barred from his god-given right to practice medicine

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Craighead, "Medical Education in the South" AMAB 7 (March 15, 1912), 219-227.

<sup>7</sup>Volume 10 (June, 1910), 271-272 and (November, 1910), 483-484 respectively. Others felt slighted that Flexner had ignored the recent improvement; but nevertheless acknowledged the value of his work, e.g. American Medicine ns. 5 (September, 1910), 441-442.

<sup>8</sup>Henry B. Ward, Bulletin of the American Academy of Medicine, 11 (October, 1910), 557-586.

by the higher fees charged by the better institutions. The reformers saw this as a tearful excuse for the poor school and were ready to counter it forcefully. "It is clear that the poor boy has no right to go into any profession for which he is not willing to obtain adequate preparation."<sup>9</sup> N. P. Colwell, Secretary for the Council on Medical Education, later prepared some figures showing that while some of the good state universities were charging \$50 to \$60 per term, a few of the worst commercial schools were charging \$100 to \$200. Evidently the "plea for the continued existence of a low-grade medical school is . . . more for the 'poor-boy' in scholarship rather than the poor-boy in purse".<sup>10</sup>

A common and emotional extension of the poor-boy argument was the plea for the preservation of the small or rural school where the poor boy would not be ashamed.<sup>11</sup> The medical needs of rural America were a prime and legitimate concern of many in this period of rapid urbanization, prompting articles such as "Too Many Doctors? Not Enough!"<sup>12</sup> It

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<sup>9</sup>Pritchett, introduction to the Flexner Report, xi. This statement was frequently repeated, e.g. Harper's Weekly, 54, (June 25, 1910), 29; Outlook, (October, 1910).

<sup>10</sup>AMAB 8 (March 15, 1913). 49.

<sup>11</sup>American Medicine, n.s. 5 (October, 1910), 507.

<sup>12</sup>Alienist and Neurologist, 32 (February, 1911), 203, also "Not Enough Physicians," 32 (August, 1911), 408.

was thought that more competition would drive doctors into rural areas to make a living. The competition argument also appealed to social Darwinians who saw it as a way of destroying the bad doctors and bringing the best ones to the fore.<sup>13</sup> Flexner demolished both by pointing out that Germany with one doctor to 2000 people had generally better health than the United States with a ratio of one to 568. He reminded his critics that a physician in a rural area must be the best possible doctor because he must be self-sufficient, and that well-trained doctors were in fact going into isolated regions. Flexner cited several examples of Johns Hopkins, Western Reserve and McGill graduates who practiced in remote parts of the United States, Canada, and Alaska. The spot-shortage of rural physicians would not be solved by competition, because "even long-continued over-production of cheaply made doctors cannot force distribution beyond a well-marked point." To solve the problem, states could hire physicians to serve those rural areas with shortages and fulfill the functions of a county health officer and that of the private doctor.<sup>14</sup>

The small school was also seen as the last bastion of the individual, unincumbered by the autocratic and impersonal atmosphere of the

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<sup>13</sup>American Medicine, n.s. 5 (April, 1910), 163.

<sup>14</sup>Flexner Report, 14-16 and 45. The AMA had long agreed: "If every patient were treated scientifically, there are not doctors enough in America to treat them all." J. N. McCormack, JAMA 46 (April, 1906), 225.

large campus. A closer and less formal student-teacher relation would produce a better doctor, because when confronted with an unfamiliar disease he would naturally be less technical in his approach. Also, a larger school does not necessarily produce a better doctor because medicine is an art and can be properly taught only "by the natural teacher who is just as liable to develop in one place as another".<sup>15</sup> Similarly, "learning is largely dependent on the personal equation. . . It is the man himself and his individual ability that commands principle interest", not his college. Therefore the small college still had a legitimate place.<sup>16</sup>

Some objectors reminded Flexner that some of the great men in modern medicine such as William Welch and William Halstead were products of small schools.<sup>17</sup> The editor of American Medicine pointed out that, "Dr. Simon Flexner in light of his brother's dicta concerning medical colleges and their capacities for developing useful physicians, should be a graduate of one of the large and best equipped universities" but, he, in fact, possessed an M.D. Degree from the University of

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<sup>15</sup>Louis F. Bishop, letter to New York State Journal of Medicine, 10 (July, 1910), 353. Curiously, J. G. Adami, one of whose works Flexner cited in his bibliography for teaching, opposed Flexner on this very point: "What a man teaches is not half the game; how he teaches it counts, I would almost say, everything". New York State Journal of Medicine, 13 (May, 1913), 235-42.

<sup>16</sup>American Medicine, n.s. 5 (September, 1910), 442.

<sup>17</sup>New York State Journal of Medicine, 10 (June, 1910), 271.

Louisville Medical Department. Abraham had described this particular school as "inadequate", "poor" and "unequal to the task"; and this, twenty-one years after brother Simon's graduation.<sup>18</sup> This laughable attack on Flexner was easily shrugged off by all of the reformers.

It was common knowledge that Simon Flexner and most of the other great scientists had become great only after their studies at the large universities and laboratories of Europe.

Other detractors separated the function of, and therefore the training of the doctor and the scientist. Flexner could not agree as "The progress of science and the scientific or intelligent practice of medicine employ . . . exactly the same technique."<sup>19</sup> Extensive and time-consuming laboratory training would be useful to all doctors--general practitioners and researchers alike--because it is an exercise in problem solving without dogmatism.<sup>20</sup> Logical thinking is as much part of being a physician as gross anatomy.

Finally, there were those who agreed with the reform in general but needed time to adjust to the rapidly changing world. The editor of

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<sup>18</sup>American Medicine, n.s. 5 (October, 1910), 504. The New York Medical Journal, 89 (January 30, 1909), 233-234 concurred, holding that even men without college training might "add lustre" to modern medicine.

<sup>19</sup>Here, Flexner's Progressive antecedents showed clearly: John Dewey had once said, "Science has been taught too much as an accumulation of ready-made material . . . not enough as a way of thinking, as an attitude of mind . . ."

<sup>20</sup>Flexner Report, 55.

American Medicine advised, "Let us go slow in any further lengthening of the curriculum and give more attention to those who are evidently men of great ability but unable to absorb all the food laid out for them."<sup>21</sup> Charles Stover, President of the Medical Society of the State of New York reflected this attitude. Flexner was just too revolutionary for too many people. Stover predicted that Flexner's reforms would occur eventually, but only by an evolutionary process moved by pressure from state governments and the state boards of examiners.<sup>22</sup>

<sup>21</sup>American Medicine, n.s. 5 (June, 1910), 298.

<sup>22</sup>"Medical Teaching . . .", New York State Journal of Medicine, 11 (May, 1911), 207-208.

The AMA: Business As Usual

Once the Flexner Report was published, the AMA made no more than passing references to it.<sup>1</sup> This was done deliberately, as the AMA and the Carnegie Foundation had agreed not to acknowledge publically their affiliation so as to preserve the appearance of impartiality. The work of the Council on Medical Education continued without interruption.

The 1909 annual report of the Council on Medical Education was simply a summary of the progress that had been made in the previous years and an eighteen point list of the problem areas that needed to be addressed. Having made some progress in the field the AMA was not about to alienate any supporters by advocating radical ideas. Bevan made it a point to remind his audience that while harsh measures were needed to wipe out the disgraceful schools, the AMA was really nothing more than a forum for discussion of the issues, and all legal power resided with the state boards.<sup>2</sup> The 1908 report had contained several "suggestions" for solving the problems, including a model piece of legislation for the states to use in regulating medical education.<sup>3</sup> Not

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<sup>1</sup>JAMA, 55 (July 9, 1910), 131-132 and JAMA, 57 (August 19, 1911), 658-659. One author asserts this is because the AMA was miffed when the Carnegie Foundation took credit for what was rightly that of the Council on Medical Education. C. B. Carleton, "The Flexner Report by Abraham Flexner", Daedalus, 103 (winter, 1974), 105-117.

<sup>2</sup>AMAB, 5 (September 15, 1909), 4.

<sup>3</sup>AMAB, 3 (May 15, 1908), 222-223.

so in 1909.

The 1910 report was a good deal longer and concentrated largely on state licensing laws. A state by state description provided an overview of the problem but presented it in a positive light. The report was downright benign. Even Illinois, which Flexner lamblasted so harshly was given the benefit of the doubt.<sup>4</sup> Instead, the emphasis was in getting the message to the public so as to create a more pervasive atmosphere for reform. The previous year, Fred C. Zapffe--secretary of the AAMC and one of the few Pritchett would single out for recognition in the Flexner Report--complained of "a notable and deplorable absence of harmony and uniformity" in the reform effort.<sup>5</sup> The United States Commissioner of Education addressed the Council on Medical Education on exactly that point in 1910. He discounted the federal government's role as a setter of standards; portraying it as rather a promoter of cooperation.<sup>6</sup> The Council adopted the same position, as a molder of opinion. Bevan emphasized that the Council's reports and discussions "will by virtue of their intrinsic value and the publicity given them, exert a powerful and wide reaching influence. We should be

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<sup>4</sup>AMAB, 5 (January 15, 1910), 252-279.

<sup>5</sup>Bulletin of the American Academy of Medicine, 10 (August, 1909), 358-369.

<sup>6</sup>Elmer E. Brown, "Standards in Medical Education . . .", AMAB, 5 (January 15, 1910), 284-289.

careful to see that such influence is wisely used." At the end of his equally conservative report Colwell called attention to "the forthcoming report of the Carnegie Foundation which will at least call attention to the great need of endowments for medical education. . . ."<sup>7</sup>

This cautious note stood in marked contrast to the radical tone of the report when it actually emerged.

When the Flexner Report finally came out the AMA was free to complete a project they had been planning for several years. The Council had wanted to publish a list of the good schools, but in 1908 deferred the work until after the Carnegie expose. It was felt that report would make the Council's report at a later date more effective.<sup>8</sup> In the intervening time they expanded on an idea first proposed by F. C. Zapffe of the AAMC to divide all the schools into two classes according to their requirements.<sup>9</sup> The Council decided to reinspect the schools and evaluate them in ten vital areas including preliminary education requirements, curriculum, laboratory and clinical facilities, etc. Using a scale of 1,000 points, each school was given a grade:

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<sup>7</sup>AMAB, 5 (January 15, 1910), 242-274.

<sup>8</sup>Bevan, JAMA, 90 (April 14, 1928), 1173.

<sup>9</sup>F. C. Zapffe. "The Present Status of Medical Education", Bulletin of the American Academy of Medicine, 10 (August, 1909), 356-369.

- A+ - Acceptable
- A - In need of certain specific improvements.
- B - In need of general improvements to be made acceptable.
- C - In need of complete reorganization.

The results were published in 1913 in a Classified List of Medical Colleges in the United States, and included every school by name. Of the 112 schools listed, sixty-one, or 54 per cent, were Class A (twenty-four A+ and thirty-seven A), 20 per cent were Class B and 25 per cent Class C--without redeeming virtues. As Flexner had already broken ground for this kind of thing it was relatively uncontroversial.<sup>10</sup> The list continued to be updated for a number of years.

In 1913 The New York Times cheerily reported a "general movement" toward improved medical education. Statistics of the Federal Bureau of Education for 1912 to 1913 showed a decrease of fourteen in the number of medical schools and of 1200 in the number of students.<sup>11</sup> Reform was gathering momentum but was also creating new problems. Bevan opposed the movement to require a college degree for entrance into medical school. That would put off final graduation until age twenty-seven or so, "too late a period at which a young man should begin his life

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<sup>10</sup> Benjamin H. Breakstone complained about the objectivity of graders who were all from Class A schools and of the use of different standards in the North and South. He felt that a B school in Texas would be listed as C in Illinois. "The Classification of Medical Institutions.. " Illinois Medical Journal, 30 (October, 1916), 243-247.

<sup>11</sup> December 14, 1913, III, 6.

work".<sup>12</sup> But advances in medicine were forcing a later graduation date anyway. The "Preliminary Report of the Committee to Investigate Graduate Medical Instruction" found that the four year curriculum was inadequate because it provided only the most basic fundamentals.<sup>13</sup> Education was facing a crisis of "new knowledge" which could only be cured by closer regulation of graduate instruction. That this problem was acute is shown by the success of the American College of Surgeons founded in that year (1913). This professional association set up strict and effective requirements for its members and for approval of institutions. By 1915 it had effectively usurped leadership in graduate medical education from the AMA.<sup>14</sup> Increased specialization forced the AMA to consider establishing a special shortened curriculum for general practitioners.<sup>15</sup>

Because a meaningful reform in medical education involved improved clinical study, the AMA was forced to involve itself in hospitals. Flexner placed much of the blame for poor medical schools squarely on the shoulders of the hospitals themselves. If the hospitals

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<sup>12</sup>AMAB 8 (March 15, 1913), 44-49. The world-wide average was twenty-four to twenty-five years old.

<sup>13</sup>AMA, 9 (1914), 313-318.

<sup>14</sup>Stevens, American Medicine and the Public Interest, 124-125. See also Shryock, Development of Modern Medicine, 338-339.

<sup>15</sup>This was in 1919, Fishbein, AMA, 314.

were to limit access to poor doctors, they would have a throttling effect on poor schools.<sup>16</sup> In 1913 the AMA decided to set up a committee on hospitals similar to the successful Council on Medical Education. The group would acquire data on the country's four thousand hospitals and classify them A, B, or C so as to give medical schools and state boards an index for evaluating internships. The Carnegie Foundation indicated to Bevan its willingness to help research the problem just as it had for medical schools.<sup>17</sup>

The work of the Council on Medical Education continued in this same methodical way for a number of years. Their annual reports were the nagging conscience of medical schools and state boards of examiners alike. The process was slow but effective. Overall, then, as far as the AMA was concerned, the Flexner Report changed nothing.

<sup>16</sup> Flexner speech to the American Hospital Association, New York Times, September 22, 1911, 20.

<sup>17</sup> Bevan, AMAB, 8 (March 15, 1913), 44-49.

Long Term Effects

In order to facilitate the accomplishment of his suggested reforms, Flexner publicly aided the on-going campaign to strengthen and unify state licensing laws. Flexner emphasized that the boards must be staffed by dedicated men with sufficient funding to keep them above local politics. "A good board with a bad law can clean up any city, because it has in the right to examine the power to destroy; a political board with a model law will accomplish no more than public opinion absolutely drives it to do."<sup>1</sup> The AMA had been encouraging states to increase the power of their boards and every year the Council on Medical Education reported steady although uneven progress. Probably the greatest single advance was reported in 1913, the first year of the AMA's classification of colleges. In that year twenty-four state boards agreed to refuse to license graduates from Class C schools.<sup>2</sup> The AMA had given the boards something tangible and easy to fix upon for their standard. The Federation of State Medical Boards was organized in 1913 to work for a national standard.<sup>3</sup> Two years later the leadership of that board, the AAMC and the AMA Council on Medical Education united to form the National Board of Medical Examiners. They began work in

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<sup>1</sup>Flexner, "Medical Colleges", World's Work, 21 (April, 1911), 14238-14242.

<sup>2</sup>AMA Report to the House of Delegates, (1913), 14-15.

<sup>3</sup>New York Times, July 12, 1913, 6.

1916 with a grant from the Carnegie Foundation. After years of work, genuine nationwide uniformity was at last a possibility.

The net result of the reformers' efforts was a strong decline in the number of medical schools in America and a sharp increase in accepted standards. Flexner inspected 155 schools in 1909; by 1914 that number had dropped to 100. The curve leveled off but continued fall. By 1924 there were only seventy-five medical schools left. These schools graduated fewer and fewer new M.D.'s. In 1906 the country had 160 doctors per 100,000 population. This was a maximum. The ratio declined to its minimum of 153 in 1929.<sup>4</sup> As early as 1922 the AMA House of Delegates, its major legislative body, recognized a new threat and sought ways to encourage the development of more medical schools.<sup>5</sup> Just twelve years after the publication of the Flexner Report the trend had reversed itself--the reform had been a success.

There was one other long-term effect of the Flexner Report worthy of note. When Flexner was making his investigation, he had no trouble opening any doors. Everyone knew in advance he was coming and everyone knew he worked for Carnegie. Without a doubt they were all hoping that Flexner would be the harbinger of large endowments. He was, but not in the way anyone suspected.

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<sup>4</sup>Julius B. Richmond, Currents in American Medicine, (Cambridge: Harvard University Press, 1969), 7.

<sup>5</sup>Fishbein, AMA, 331.

America prospered greatly in the late nineteenth century and many public institutions prospered simultaneously through the philanthropy of the captains of industry. For a long time things were a bit one-sided, even as late as 1891. In that year, theological schools received \$18 million in endowments, but medical schools received only five hundred thousand and a "negligible" amount filtered down to the physical sciences.<sup>6</sup> Yet those who stood to benefit most did not complain. William Welch, speaking for researchers who needed large infusions of money, asserted that "we must rely upon enlightened private beneficence, and not upon governmental aid . . ."<sup>7</sup> Welch had studied in Germany and knew how paltry government could be, but he could not foresee the changes that would take place and the costs that those changes would incur.<sup>8</sup> As these costs grew, philanthropy failed to keep pace. Across the country educators began to call out for government aid.<sup>9</sup> Medical educators did as well. In 1912, the JAMA and the New York Medical Journal--enemies for the most part-- pointed out that

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<sup>6</sup>Shryock, Medicine in America, 77-78

<sup>7</sup>"The Evolution of Modern Scientific Laboratories", Bulletin of the Johns Hopkins Hospital, 7 (1896), 23.

<sup>8</sup>Flexner estimated that in a school with 250 students each department would require an annual budget of from \$10,000 to \$15,000. Flexner Report, 129.

<sup>9</sup>See Cremin, Transformation of the Schools, 36-50.

government financial aid was an essential ingredient in the future of medical education.<sup>10</sup> The South especially felt left out, ignored by the government and private donor alike.<sup>11</sup>

Actually the South had not been abandoned, and neither had education. The George Peabody Education Foundation had been set up after the Civil War to give special help to the South. Similarly, the Slater fund was devoted to helping schools for Negroes. The General Education Board, or GEB was the first of the "great" American foundations for education. It was started in 1902. Three years later Andrew Carnegie set up the Carnegie Foundation for the Advancement of Teaching. Eventually they gave tens of millions of dollars to education in all forms.

While Flexner was still working for the Carnegie Foundation, he was approached by Frederick T. Gates, who had been instrumental in setting policy for John D. Rockefeller's philanthropic endeavors. He wanted Flexner to help distribute endowments to medical education. Flexner went to work for the GEB and oversaw the distribution of vast sums of money. He investigated many schools as to their need and their ability to make improvements. Money was given to the school only after

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<sup>10</sup> JAMA, 62 (March 14, 1914), 821-823. New York Medical Journal 96 (July 6, 1912), 17-18 and 97 (February 1, 1913), 224-225.

<sup>11</sup> E. B. Craighead, "Medical Education in the South", AMAB, 7 (March 15, 1912), 219-227.

it had demonstrated its ability to use the money wisely. For example, Yale was offered half a million dollars, but to receive it had to raise an equal amount. Yale's success in doing so was taken as a sign of sincerity and the money was granted.<sup>12</sup> The Carnegie Foundation also gave generously, slowly at first--only \$60,000 up to 1912--but over time in greater amounts, so that by 1936 it had granted over eight million to just nine medical schools.<sup>13</sup>

Naturally there were frequent accusations that the foundations were using their grants to manipulate and control medical schools. The Carnegie Foundation had been attacked by educators from its inception, so cries of "autocracy" were nothing new.<sup>14</sup> There is no evidence that the granting institutions attempted to control the education within a school; they only tried to improve the ability of the school to give a high quality education. As a matter of fact, Pritchett openly admitted that the Carnegie Foundation had joined the crusade to crush worthless medical schools.<sup>15</sup> The foundations did in fact bring about

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<sup>12</sup>Flexner, I Remember, 261.

<sup>13</sup>See H. J. Savage, Fruit of an Impulse; Carnegie Corporation, Report of the President 1921-24, and E. V. Hollis, Philanthropic Foundations and Higher Education, 213.

<sup>14</sup>See "Pensions that are not pensions", The Nation, 109 (August 2, 1919), 151; New York State Journal of Medicine, 10 (November, 1910), 483-484 and 12 (December 1912), 687-8.

<sup>15</sup>New York Times, June 4, 1913, 10.

the demise of several low-grade schools, but they accomplished it in a positive way. Instead of forcing bad schools out of existence--as medical licensing was intended to do--the foundations encouraged mergers to build strong schools. Classic examples occurred at Vanderbilt University where one million Carnegie dollars and three weak schools combined to make one good school, or at Tulane University where the GEB built an excellent regional medical school.<sup>16</sup>

There were, of course, some strings attached to the grants. The money had to be used in a rational and efficient manner so as to improve the quality of education. One index of efficiency used by the foundations was the use of a full-time staff. Professors were to be full-time teachers and not half-time practitioners. The GEB made this a prerequisite for all grants after 1913.<sup>17</sup> Medical professors had divided their time between classrooms and private practice since colonial times. They did so partly for experience, but largely out of economic necessity. Divided time meant divided loyalties, and usually it was the classroom that lost in any conflict. Johns Hopkins was the first American school to make full-time teaching a fundamental part of its philosophy. Since then, the AMA and other reformers had been seeking

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<sup>16</sup>Carnegie Foundation, Report of the President, 1921, 21-24 and New York Times, June 4, 1913, 10.

<sup>17</sup>Hollis, Philanthropic Foundations, 211-212. See Rosen, Patterns in Health Research for a discussion of the Progressive ideal of efficiency as it was applied by the foundations.

ways to eliminate it. It appeared that philanthropy would open the door to the future of teaching.

## CHAPTER FIVE

### THE PITTSBURGH EXAMPLE

The University of Pittsburgh School of Medicine was only one of the 155 schools Flexner inspected, but its experience may be indicative of the progress of reform. The Western Pennsylvania Medical College was chartered by the state to a group of Pittsburgh physicians in 1883. The first class of fifty-seven students graduated the following year. Nine years later, the school affiliated itself with the Western University of Pennsylvania--later the University of Pittsburgh. In 1908 the university bought up all of the medical college's stock and began to reorganize it. University Chancellor Samuel B. McCormick appointed Dr. Thomas S. Arbuthnot as Dean of the Medical School. Arbuthnot was a graduate of Yale--A.B., 1894--and of the Columbia University College of Physicians and Surgeons--L.L.D., 1898. He had done graduate work in Scotland and England and was a member of the Royal College of Surgeons. The new dean had carte blanche to purge the faculty as he saw fit and immediately demanded the resignation of everyone connected with the medical school.<sup>1</sup>

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<sup>1</sup> Correspondence of Dr. Oskar Klotz. The material in this chapter is drawn primarily from the archives of the Falk Medical Library of the University of Pittsburgh School of Medicine, consisting mostly of faculty correspondence and minutes of faculty meetings.

After a brief trip to study the curriculum, textbooks, and personnel of other medical schools, Arbuthnot set about to restructure the school in line with the recent AMA recommendations. He extended the length of the course, raised the entrance requirements by increments over the years and enforced them strictly. As a result, of the 165 students who started the year of his appointment, 105 were disqualified or dropped out--many to go to other schools. According to Edward Zur Horst, who graduated successfully with that class, the "reason why a lot of those were disqualified . . . that's where the athletes went . . . to the medical school."<sup>2</sup> To prevent circumscription of the new requirements, Arbuthnot stopped the practice of giving advanced standing to students transferring from other schools.<sup>3</sup> He went so far as to block the entrance into the senior class of a physician of twelve years experience. The gentleman in question had an M.D. from Baltimore University and had been in practice since 1897. He wanted to practice in Pennsylvania and needed to graduate from a state school to be eligible for the state examination. Apparently, he assumed that his acceptance and graduation would be strictly pro forma (his letter to the school is not in the files). Arbuthnot did not see it that way and insisted that the good doctor enter as a member of the junior class and successfully

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<sup>2</sup> Interview with Edward Zur Horst, November 6, 1975, typescript.

<sup>3</sup> Letter to Albert Pierce of Chicago, August 4, 1909.

complete one didactic and one clinical year. There would be no compromise.<sup>4</sup> Arbuthnot was determined that Pittsburgh would have a "good school or none."<sup>5</sup>

He was also determined to get the best possible faculty for his school, but met with limited success. His invitation to Howard Taylor Ricketts, one of the top names in bacteriology, indicates just how serious he was. The attempt failed, however, when Ricketts accepted a position at the University of Pennsylvania. The top medical scientists of the day could demand \$5000 for a professor's salary. By 1911 Pittsburgh had only one man in the category, Oskar Klotz in Pathology, at \$5000.<sup>6</sup> He was, however, able to effect major changes in the faculty. A comparison of the 1907-08 catalog with that of 1909-10 reveals an increase in the faculty from seventy-four to 109. Of the latter

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<sup>4</sup>Letter to Dr. E. A. Reed of Lima Center, Wisconsin, August 4, 1909.

<sup>5</sup>Undated notes on his personal stationary, 1910 file.

<sup>6</sup>Letter of Joseph Eslanger of the University of Wisconsin to Arbuthnot, May 30, 1909, in which the suggested salary of a professor and department head with 75 students was \$4500 to \$5000. In addition, Eslanger recommended two assistant professors at \$1500 to \$2000, and two assistants at \$600 to \$800, a janitor at \$60 per month and a "mechanician" at \$70 to \$80 per month. In 1911 Pittsburgh paid its Professor of Physiology \$4000 and the Assistant Professors of Pathology and Anatomy \$2500 and \$2200 respectively. Salaries fell off markedly from that point, showing that Arbuthnot had not been able to fulfill Eslanger's demand that "the chairs of all scientific departments" be filled "by men of recognized scientific ability."

group, only 20 per cent were survivors of the earlier school.<sup>7</sup>

Arbuthnot was apparently satisfied with his new faculty which included "quite a number of excellent young men . . . (from) Hopkins and Philadelphia,"<sup>8</sup> and remained substantially unchanged as late as 1914.

One of the main aims of the entire reform movement was to raise and enforce entrance requirements for preliminary education. These requirements tended to be plastic so as to ensure against the loss of a paying student. It is instructive to review the changes of these requirements as stated in the college Announcements (if one keeps in mind that such documents are of relative value). In 1886 "students, on admission, will be required to give evidence of the possession of an education sufficiently comprehensive to enable them to pursue the study of medicine with advantage." This was translated as a degree, diploma, or a certificate of examination from any Pennsylvania County Medical Society or any other medical school "in good standing".<sup>9</sup> In the catalogs for the years ending in 1907 and 1908 the rules became even more flexible. A student without proper credentials had to pass an examination at the college, but even then could be "conditioned" in any of

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<sup>7</sup>A number of letters in the archives reveal the ire of those unexpectedly released from their sinecures.

<sup>8</sup>Letter to Dr. Percy R. Turnure, New York City, September 11, 1909.

<sup>9</sup>Catalog of the Western University of Pennsylvania for the year ending June, 1897, Pittsburgh, Pa: Nicholson and Brothers, 136-137.

the required subject areas until his Sophomore year. That gave him a year to catch up while studying medicine full time. With the coming of Arbuthnot the rules were tightened. Instead of a one paragraph description, three pages of the 1908-09 catalog spelled out in detail what a real diploma meant and what the matriculation examination required. As can be seen from the letters quoted previously, the new rules were enforced. In each successive year the requirements were raised, first to require a year of college science, and eventually to include two full years of college work by 1913-14. This last move brought them in line with the AMA guidelines. At that point Pittsburgh was roughly on a par with Johns Hopkins, Harvard, and Yale.

Entrance requirements are not the only index of a school's quality. Actual course content is a more important measure, and a similar evolution can be undertaken. The 1897 announcement completely described the fields of pathology and bacteriology in the following way:

Special instruction in the use of the Microscope and in the preparation of specimens given to the students (without additional fee); abundant opportunity for personal study of the tissues and fluids of the animal body in health and disease. Microscopes and material are supplied.

In 1906 the course extended through three years and involved three hours of lecture and four of practical laboratory work per week. Three years later Oskar Klotz tied the course more closely to the student's own clinical studies. He had them investigate the diseases of each organ and then the pathology of the body as a whole. He also relieved

the students of the tedium of preparing all of their own specimens by acquiring a significant collection of prepared slides in 1911.

Arbuthnot's efforts paid off in the end. When the AMA published its first list of graded schools, Pittsburgh was among the 54 per cent in the A category. One year later the school was given an A+. There was, however, a price for success. In 1908 the medical school had approximately 145 students in each class. At the time of Flexner's visit the number had declined to about eighty and by 1915 was down to forty-eight.<sup>10</sup>

The Pittsburgh example is central to this paper because it clearly illustrates what the other documents can only imply. That is, the amount of time needed to effect a reform at a large institution of learning. In this case approximately seven years. If that figure is average, then many of the other schools that made an A rating in 1913 also began reorganizing prior to Flexner. One instance is not proof, it is only an example, but in this case it does help to illustrate the complexity of the problem. The Pittsburgh experience shows the slow, deliberate pace of the reform, but, then, the movement did involve a great number of people and could not change overnight.

<sup>10</sup>Ruth C. Maszkiewicz, The Presbyterian Hospital of Pittsburgh, 1978. Of the 145 of the class of 1908, 60 graduated, but only 40 passed the state board examinations.

## CONCLUSION

In his memoir Flexner congratulated himself for stirring up the country and changing the face of medical education. "Such a rattling of dead bones has never been heard in this country before or since. Schools collapsed to the right and left, usually without murmur."<sup>1</sup> One can forgive Flexner his hyperbolic memory; unfortunately this exaggeration is virtually a given in modern scholarship. It is generally conceded that the Flexner Report created such a hue and cry that the medical profession had to change its ways. Yet in 1912, Edwin B. Craighead casually remarked of the report that,

fortunately or unfortunately, the general public never read it. One may venture to doubt whether one physician in ten, whether even a large part of the professors of our medical schools or members of health boards, ever made a careful study of this illuminating report . . . .<sup>2</sup>

There may be a great deal of truth to his remark. At the University of Pennsylvania, the faculty minutes for 1910 do not mention it.<sup>3</sup> Nowhere in the archives of the University of Pittsburgh could I find mention of its publication. Apparently it was one of those reports

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<sup>1</sup> Flexner, I Remember, 131

<sup>2</sup> "Medical Education in the South," AMAB 7 (March 15, 1912), 219.

<sup>3</sup> Corner, Two Centuries, 231.

which everyone quoted but no one had read.<sup>4</sup>

It is interesting that the AMA commissioned the report from the Carnegie Foundation knowing that "it would do much to develop public opinion."<sup>5</sup> It was probably a safe assumption that anything produced by the Foundation would be attacked. Did the members of the Council know how radical Flexner would be? Why, precisely at the time that Flexner and Colwell were preparing to forthrightly condemn medical education, did the Council on Medical Education avoid making any direct suggestions for improving the situation? Instead, they were portraying the AMA as a forum for debate and an organ for relatively conservative publicity. Why did they continue to divorce themselves from the report years after the fact? Was the Carnegie Foundation meant to be a whipping boy to make the AMA appear less radical while still advocating reform?

These are questions which cannot be answered, but they do highlight the centrality of the AMA. A pair of graphs published in the AMA Bulletin also show the importance of that association to the reform.<sup>6</sup> One graph shows the decline of the number of medical schools from 1904

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<sup>4</sup>Dr. George Dock noted that Flexner's second work for the Carnegie Foundation, Medical Education in Europe, caused little or no response in any educational or medical journals. AMAB, 8 (March 15, 1913), 64-70.

<sup>5</sup>A. D. Bevan, JAMA, 90 (April 14, 1928), 1173.

<sup>6</sup>AMAB, 8 (March 15, 1913), 51.

to 1913. The curve is relatively flat until 1907, then it descends steadily in an almost straight line to 1911. One year after the Flexner Report the trend begins to level off. An extrapolation of later statistics shows a continuation of that trend. The second chart shows the increase in the number of medical colleges adopting one or more year of college as an entrance requirement. This chart is meant to be indicative of improved quality. The curve rises slowly from 1903 to 1909, shows a doubling from 1909 to 1910 and then only a slight increase in each succeeding year to 1914. Again, the most dramatic change is actually prior to the publication of Flexner's work. If this information is at all reliable, it shows that Flexner had little or no immediate impact on the reform. The credit clearly belongs to Arthur Bevan's Council on Medical Education.

That the Council succeeded when it did is itself significant. Because the reform took place during the Progressive Era, it is tempting to attach undue importance to that fact. As was indicated earlier in this work, the rhetoric of Progressivism was frequently used by the medical reforms, but efficiency in education was not their goal. Some writers have attempted to single out the elitist elements of Progressivism--and Flexner was an elitist to be sure--claiming that the reformers were trying to enhance their own prestige and incomes after the model

of the successful businessman.<sup>7</sup> While there may be a great deal of evidence in this regard, it really says nothing about why the reform took the path that it did toward the expensive and time consuming teaching of basic science in medicine. Running like Ariadne's thread throughout the movement is an everpresent concern with science. That is the real key. American medical education began with the highest possible standards of the day but collapsed into unrepentent commercialism. Not until advances in basic science provided medical education with a new content could its outward form be changed in any meaningful way. Only then could medical education be reformed, and after that point prestige in medicine was measured by its scientific content. Therefore, efficiency was the catchword of Progressivism, but science was the real motive force of reform.

Abraham Flexner was above all a Progressive and for that reason alone he was a late comer to the reform of medical education. To his credit, he identified with and publicized the efforts of the leading scientist/educators, but those efforts had begun long before Flexner came on the scene and remained essentially unchanged by his presence.

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<sup>7</sup>See Gerald E. Markowitz and David K. Rosner, "Doctors in Crisis: a Study of the Use of Medical Education Reform to Establish Modern Professional Elitism in Medicine," American Quarterly, 25 (March, 1973), 83-107, and S. J. Kunitz, "Professionalism and Social Control in the Progressive Era--Case of the Flexner Report," Social Problems, 22 (1974), 16-27.

What did Flexner accomplish, if anything? For one, he "stirred the better schools to look critically at their own weakness which in many cases, they themselves had not recognized." This is suggested by the case of the University of Pennsylvania in 1911. There, the dean and faculty of the Medical School forced the university president to accept the AMA reforms which he had previously rejected.<sup>8</sup> Flexner had some criticism for every school in the country, even for Johns Hopkins, the epitome of medical education. If nothing else, then, injured pride moved some schools from the A to the A+ category. If Flexner had a major impact anywhere, it was most likely in the increase of endowments to medical education. The evidence suggests that only after the Flexner Report appeared were large sums given to medical schools. The effects of those dollars are beyond the scope of this paper except to say that they helped introduce scientific medicine into those schools. What can be said is that Flexner was largely responsible for obtaining them.

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