On September 11, 1862, two very different physicians took a Pennsylvania Medical Review Board examination to qualify as army surgeons. One was Dr. Uriah Q. Davis (1821–1887) of Milroy, the other was Dr. Alfred T. Hamilton (1836–1911) of Lewistown. By an unusual coincidence, both received a copy of the same examination questions and both eventually served in the 148th Pennsylvania Volunteers. These two civilian physicians understood the Union’s need for qualified surgeons to serve in the army, yet their approaches to medicine were radically different. Dr. Davis was a “regular” allopathic doctor and Dr. Hamilton was a “sectarian” hydropathic or water-cure doctor. This article will discuss some of the challenges faced by the Union Army in mustering sufficient numbers of competent surgeons to serve in regiments during the Civil War and how the recruiting of surgeons was further complicated by the bitter conflict between the regular and sectarian schools of medicine that fought for dominance in mid-nineteenth-century America.
FIGURE 1: Staff Officers of the 148th Pennsylvania Volunteers. Dr. Uriah
Q. Davis (1821–1887) and Dr. Alfred T. Hamilton (1836–1911) appear in
the middle. (Photo from “The Story of Our Regiment,” 1904.)
This conflict between medical philosophies also was reflected in the personal conflict between Dr. Davis and Dr. Hamilton during their service in the 148th Pennsylvania Volunteers.

From Civilian Doctor to Military Surgeon

At the outbreak of the Civil War, no one could have predicted how long the conflict would last or the immense casualties that would be sustained by soldiers on the battlefield and in camp. Yet it quickly became apparent that the U.S. Army Medical Department, which at the outbreak of the war was comprised of fewer than one hundred surgeons and assistant surgeons, was completely unequal to the task. Between 1861 and 1865, approximately seven hundred thousand men would lose their lives to wounds and disease. As noted in the introduction to the Medical and Surgical History of the Civil War, "A shortage of surgeons was a constant drain on everyone in the armies. The Union forces had eleven thousand surgeons, which broke down to one medical officer per 133 men... with 24,355 reported cases of trauma or sickness for every 1,000 soldiers on the Union side, close personal attention to a single ill man was all but out of the question."

The increase in Union Army medical personnel from less than one hundred to over eleven thousand surgeons over a four-year period was monumental. These surgeons were pulled exclusively from the civilian population, because unlike some European countries, the United States had no college for the preparation and training of military medical personnel. According to the Roster of Regimental Surgeons and Assistant Surgeons in the U.S. Army Medical Department during the Civil War, Pennsylvania alone provided 947 surgeons and assistant surgeons attached to 179 infantry, artillery, and cavalry regiments. Ideally, each one thousand-man infantry regiment included one surgeon and two assistant surgeons, although in practice the number varied due to a unit's ability to attract physicians, leaves of absence, temporary postings to other units, and losses through discharge and resignation. The pool of civilian candidates from which these military surgeons was drawn varied greatly in terms of education, experience, and practice of medicine.

The transition from civilian physician to army surgeon was not always a smooth one in terms of temperament, skill, experience, or level of education. Civilian physicians in mid-nineteenth-century America had limited experience working cooperatively with other doctors unless they had worked...
in a hospital or poorhouse. It must have been difficult for many doctors to function within a hierarchy where their roles as army surgeon and assistant surgeon were strictly prescribed and materia medica, the drugs and medications used to treat patients, were limited to items approved by the military. They also had to function, without additional military-specific medical training, within the confines of military discipline and bureaucracy while caring for huge numbers of soldiers suffering from exhaustion and exposure, in addition to battlefield casualties. Many civilian physicians, whose local practices had focused on obstetric cases, home and occupational injuries, and common illnesses were unprepared to deal with epidemic camp diseases and battlefield wounds. Dr. John H. Brinton noted in his memoirs, "Our experience in the early part of the war taught us...how hard it was for a medical man who had just donned his uniform, to learn the mysteries of obtaining food from the subsistence department, or of stores and transportation from the quartermaster, how to obtain an ambulance, or to find horses, or to procure forage, how even to obtain medicines from the purveyor, and how to take care of them when received, how to draw a hospital tent, how to pitch it, how to keep it standing and comfortable for the sick."6

Adding to the difficulties, the mid-nineteenth-century American medical community lacked consensus on the knowledge expected of all physicians and specific standards for acceptable practice of therapeutics. It might be said that American medicine was experiencing its own civil war.

The War Between Regular and Sectarian Medicine

Regular and sectarian philosophies of medicine, based on competing views of the natural state of the human body, the causes of disease, and the therapeutics necessary to regain health, competed for the hearts and pocketbooks of patients in mid-nineteenth-century America. In a time before germ theory, when there was a limited understanding of the value of sanitation, when bleeding was still practiced, and mercury, arsenic, antimony, strychnine, and opium were popular medicinal ingredients, regular doctors, also called allopaths or drug doctors, held some medical beliefs that dated back to antiquity. One such belief was that two diseases could not coexist in the body and that self-limited artificial symptoms produced by drugs could displace the original illness.7 Another belief was that illness or disease could be purged from the body by using large quantities of drugs that increased the expulsion
of bodily fluids. A staple of regular allopathic medicine was mercury, often in the form of mercurous chloride, called calomel. Mercury had been used medicinally since ancient times and was only one of a variety of drugs used to increase bodily secretions in order to purge the patient.

Regular allopathic medicine, also called “heroic” medicine, required a great deal of stamina on the part of the patient. The often violent physical reactions to the purgatives, emetics, and caustics, the bleeding and blistering in the allopathic arsenal were seen as proof of a treatment’s effectiveness. A regular allopathic physician accepted the premise that the patient must suffer the effects of his treatment as part of the healing process: “…in situations where medically valid therapies were unknown, physicians developed a small number of medically invalid therapies—like bloodletting, calomel, and blisters—that produced consistent and demonstrable changes in the patient’s physiological condition. Most regularly trained physicians used these standardized therapies almost exclusively, even though textbooks on therapeutics contained hundreds of alternatives. One physician stated in 1849 that for many physicians the lancet, mercury, antimony or opium, are the great guns that they always fire on all occasions…whoever sends for a physician of this sort expects to be bled, blistered or vomited, or submitted to some painful or nauseous medication.”

Patients who did not wish to subject themselves to these debilitating allopathic treatments had other options. Sectarian schools of medicine abounded. These alternative medical schools included homeopathy, several based on plant-derived materia medica including the botanics and Thomsonians, eclectics, and hydropathy. These sectarian systems all agreed that the regular allopathic staples: bleeding, blistering, purging, and dosing with mercury, arsenic, and other toxic drugs were to be avoided. They also placed more trust than allopaths in the basic curative powers of nature, but they agreed on little else.

In 1860, the census listed by occupation slightly over fifty-five thousand physicians. One study has estimated that there was one sectarian physician for every ten allopathic doctors and that nearly twenty percent of medical schools were teaching some form of sectarian therapeutics. The percentage of sectarian physicians may have been even higher in areas where sectarian medicine was more favored or sectarian medical schools were located, such as in the Northeast and Midwestern states.

In frontier and rural areas where the sparse population made it impossible for any type of physician to make a living, nineteenth-century Americans
might live their entire lives without consulting a doctor of any type. Midwives, local healers, bone-setters, and helpful neighbors, supplemented by popular self-help medical manuals and mail-order patent medicines, met the needs of many patients in isolated areas or of those who could not afford a visit by a professional physician. Groups of sectarian medical practitioners rose and fell in popularity throughout the nineteenth century, each appealing to patients from different socio-economic groups or geographic areas; their prevalence based as much on their political or social philosophies as on their therapeutics.

One of the earliest forms of American sectarian medicine was botanic in nature, a successor to the “Indian” cures and traditional English and European herbal remedies transported to the new world in the seventeenth century. Botanic healers believed that nature provided remedies for disease in the form of herbs, roots, barks, and other natural botanical substances. It was the job of the explorer and physician to discover these native botanical remedies and their uses. Both botanic and allopathic physicians believed that it was necessary to increase a patient’s bodily secretions to purge illness. In practice, the difference between these competing schools could be as minor as whether a purgative or emetic was botanic or mineral in origin.

Building on this tradition of native botanic medicine, the Thomsonian medical sect rose to popularity in the 1830s. Samuel Thomson (1769–1843), a New Hampshire farmer, developed a medical system based on botanic emetics and stimulants, rejecting all non-botanic drugs. The Thomsonian botanical school was unique in restricting its practitioners to a limited list of materia medica, including lobelia, peppers, ginger, and hemlock. Although opposed to the allopathic practice of bleeding and mineral drugs, Thomsonians erroneously believed that their medicines could cause no harm because they were natural in origin.

The philosophic basis of Thomsonian medicine was that disease was caused by a reduction in body heat. To regain health, heat must be restored and the body cleansed and invigorated. These steps could be followed using numbered instructions and a kit of prepared remedies. First, the stomach was cleansed using the “emetic herb” (lobelia or wild tobacco), which caused the patient to vomit. The patient was then fed capsicum (cayenne powder) to raise the temperature. The third step was to strengthen the body and provide the stimulation needed to restore the system to equilibrium. Botanical stimulants typically included myrica (bayberry), nympheia (pond lily), pinus canadensis (spruce), statica (marsh-rosemary), or rhus glabrum (sumac).
As the appeal of Thomsonian medicine began to fade, the largest and most prestigious of the alternative medical sects soon replaced it. Homeopathy, a system developed by the German physician Samuel Hahnemann (1755–1843), was based on the doctrine of "like cures like." Homeopaths administered minute quantities of medicines that would, in an otherwise healthy person, produce symptoms similar to those of the patient’s disease. This was believed to correct the abnormal functioning of the body’s vital force.

Homeopathy spread rapidly following the cholera epidemics of 1848 and 1852. Cholera patients treated with the highly-diluted homeopathic remedies survived in greater numbers than those treated with the more toxic allopathic drugs. "It was reported that a great many orthodox practitioners were disappointed with the limited success of their own practices in the face of the cholera outbreak. This led to what one historian described as a widespread desertion from orthodox ranks." Thirteen The conversion of allopathic physicians, as well as many patients, to homeopathic medicine following the cholera epidemics was viewed as a real threat to the regular medical profession, greater than any threat posed by the primarily self-educated Thomsonians. The conversion of trained allopathic physicians to homeopathy was an admission that many educated medical practitioners lacked faith in the effectiveness of allopathic therapeutics.

Despite the increased respectability earned during the cholera outbreaks by homeopathic physicians, homeopathy was vehemently opposed by the allopathic medical community. This prejudice was noted in a contemporary editorial entitled “A Medical Absurdity” which stated, “There is no stronger tenet in the orthodox creed than that it is better the patient should die under the old remedies than recover under the homeopathic treatment.” Thirteen Another measure of opposition can be seen in the Fiske Award presented by the Rhode Island Medical Society. The award was created in 1851 for the best published dissertation or essay refuting homeopathy. Fifteen

Although homeopathy was the largest of the alternative medical sects, other groups had their share of faithful practitioners and patients. Eclectics, another medical reform movement, supported a less rigid system in which each physician could use experimentation and personal experience to identify the best course of treatment for a condition or individual patient, choosing from among any of the orthodox or alternative systems of therapeutics. Eclectics opposed the bleeding, purging, and mercurial treatments of regular physicians, but allowed the use of animal and mineral drugs to supplement the botanic materia medica.
Another nineteenth-century medical sect was hydropathy, based on the healing properties of water, a practice pre-dating Roman times. Vincent Priessnitz (1799–1851), a Silesian farmer, developed his own system of therapeutics using cold water to combat swelling, inflammation, and fever. Incorporating the dietary and lifestyle reforms championed by Sylvester Graham (1794–1851), American hydropathic practitioners, also called hygienic or water-cure physicians, believed in the body’s natural ability to heal itself if given an environment of fresh air, healthy—preferably vegetarian—food, mild exercise, non-binding clothing, abstinence from alcohol and tobacco, and frequent baths and applications of cold water. Hydropaths condemned all drugs, including botanicals, as poison. Like other sectarian medical systems, they were adamantly opposed to the use of mercury, which ranked third, after opium and morphine, as the medicine most prescribed by allopathic doctors between 1854 and 1887, according to one study.¹⁶ Hydropaths held that pure water either internally or externally applied was the only safe and effective medicinal agent. They believed that regular and botanical physicians were killing their patients with the toxic medicines they prescribed. Conversely, allopathic physicians considered hydropaths, as well as homeopaths and botanical physicians, to be unscientific quacks.

Despite the mutual hostility between practitioners of these differing schools, each major mid-nineteenth-century medical philosophy was based on a coherent belief system taught by its medical educators in alternative medical schools. Each had its own medical journals and sincerely believed that it alone held the key to health. As such, a sharp distinction must be made between sectarian physicians and the quacks and itinerant hucksters who sold “miracle tonics” and secret-formula patent medicines. Sectarian medical systems were not deliberately fraudulent; they were alternative philosophies of therapeutics based on differing views of health and disease. All of these sectarian systems agreed on the core elements of anatomy and the technical aspects of surgery.¹⁷ Each system could claim successes and point to its opponents’ failures.

In addition to these practitioners schooled in their own sectarian specialties, there was another group practicing as “physicians,” despite a lack of any formal training or credentials. In the period prior to the Civil War, the absence of federal and state laws restricting who could practice medicine or prescribe drugs meant that any individual could adopt the title of doctor and simply set up practice.

This was the diverse pool of civilian physicians from which military surgeons were drawn during the Civil War. The bitter conflict between
allopatic and sectarian physicians would be replayed in the question of who could be considered qualified to serve as a military surgeon. An equally important question was whether the unregulated system of American medical education could adequately prepare physicians for the medical demands imposed by the war.

**Medical Competency and Sectarian Prejudice**

Surgeons in the Union army displayed varying levels of competency, attributable not only to individual variation, but also to the mid-nineteenth-century American medical education system which lacked a standardized curriculum and required no examination of competency before the awarding of a medical degree. Standards for entering medical school and for graduating were low. For most allopathic and sectarian medical schools, the only criteria for acceptance of students was their ability to pay the tuition; a high school diploma was not a prerequisite at all medical colleges. One of the main goals of the founders of the American Medical Association (AMA) in 1847 was to standardize and improve the overall quality of medical education in the United States. Limited progress was made prior to the Civil War, although the AMA and other groups did lobby state and local governments to prevent homeopathic, hydropathic, and other sectarian medical schools from receiving charters. They also worked to bar sectarian medical school graduates from practicing medicine or serving as military surgeons.

The conflict between supporters of regular allopathic medicine and alternative sectarian medicine during much of the nineteenth century was as unrelenting and bitter as the conflict between the states. The 1847 AMA *Code of Ethics* prohibited its members from having professional contact with sectarian physicians in *any* capacity, including consultation on medical cases, stating that, "A regular medical education furnishes the only presumptive evidence of professional ability..."  

The AMA code prohibiting consultation with sectarians, and also with allopathic women physicians, was viewed by some contemporary sources as more of an attempt to protect the allopathic physicians' own self-interest than to protect their patients. This was particularly the case for the large number of Americans who consulted homeopathic physicians who had originally trained as allopaths. The code stated that: "...no one can be considered as a regular practitioner, or a fit associate for consultation, whose..."
practice is based upon an exclusive dogma, to the rejection of the accumulated experience of the profession.”

This provision, ostensibly created to protect patients from quacks, was enforced without regard to the patient’s health or wishes. A homeopathic and allopathic physician could not consult on a case, even if the patient requested it. For an allopathic physician to be brought in, the sectarian physician must first be dismissed, regardless of how dire the illness or the patient’s condition. Allopathic physicians who violated this exclusivity provision were ostracized socially and professionally, barred from membership in local and national medical associations, and excluded from lucrative consultations.

The chilling effect the AMA provision had on cooperation or sharing of best practices between physicians of differing schools of medicine can be seen in the preface to Our Family Physician: A Thoroughly Reliable Guide to the Detection and Treatment of all Diseases...Embracing the Allopathic, Homeopathic, Hydropathic, Eclectic and Herbal Modes of Treatment. The publisher states, “It will be observed that the name of the author is not given. This is the explanation: He is a graduate of a medical college—a physician in regular standing in a particular school—and would at once lose his standing were it known that he had prescribed any other treatment than that practiced by his particular school...As long as such a spirit of intolerance exists, even among the more intelligent of the profession, our author cannot be blamed for withholding his name, especially as no particularly good end could be gained by its use.”

From the time of the 1847 AMA Code of Ethics throughout the Civil War, allopathic physicians and their organizations maintained that only a regular medical education, and exclusive use of allopathic therapeutics, qualified a physician to practice. However, even among regular medical schools, a wide variance existed in terms of admission standards, length of term of study, subjects taught, opportunities for clinical experience, the examination of students’ mastery of the subject matter, and the criteria for graduation. For example, it was possible to obtain a regular medical degree from some colleges merely by attending lectures and having never dissected a cadaver or examined actual patients in a clinical setting.

This lack of standardized medical education in the United States had a quantifiable result as civilian physicians were sought for the Union Army. One half of applicants taking the federal-level U.S. Army medical examination in 1860 received a failing grade due to deficiencies in their knowledge of anatomy, pathology, or clinical medicine. Concern by those in
government over the uneven competency of incoming army surgeons at the federal level led to reviews of requirements for surgeons in the U.S. Medical Department during the early years of the war. The Medical Department organized rigorous reviews lasting up to four days by an examining board of not less than three medical officers appointed by the U.S. Surgeon General to screen out applicants who lacked the required level of general and medical knowledge.²⁵

This U.S. Medical Department review system did not, however, apply to the vast majority of Civil War surgeons, because they served in volunteer regiments organized by the states, not at the federal level. Regimental surgeons were examined solely by state medical boards of review.²⁶ These examinations varied by state and might include questions on non-medical topics, such as history, mathematics, or geography, in addition to therapeutics, surgery, and materia medica.²⁷ It was the duty of the state medical boards to test physicians' basic knowledge, character, and judgment prior to enlistment, although some states’ criteria would be lowered as the need for surgeons increased.²⁸

Even at the federal level, there was pressure to lower standards. Dr. John H. Brinton, President of the Medical Examining Board in Washington, D.C., supervised the examination of candidates for the position of brigade surgeons, also known as Surgeons of Volunteers. He recollected, “A great many came before us. Some were well prepared; some were not. Quite a number failed to pass, until finally, we were indirectly informed by the Secretary of War, the ‘dreadful Mr. Stanton,’ that he wanted more doctors, ‘and that if we didn’t pass more, our Board would be broken up.’ So under this cogent military reasoning, our standard was lowered, and more surgeons were obtained. I think our system of examination was not altogether perfect, for after-observation convinced me that many men who passed high in our examination did not prove very efficient military surgeons, while some who did not do so very well before us, proved themselves afterward able and satisfactory officers, professional and otherwise.”²⁹

Brinton’s retrospective observation that success in the medical examination system was not necessarily an accurate predictor of the efficiency of military surgeons in the field is borne out by the example of the surgeons who served in the 148th Pennsylvania Volunteers. Against this backdrop of conflicting medical philosophies and concerns about the education, qualifications, and competency of incoming army surgeons, Dr. Davis and Dr. Hamilton played out their own personal conflict.
The Surgeons of the 148th Pennsylvania Volunteers, 1862–1865

By the time the 148th Pennsylvania Volunteer infantry regiment was formed in the autumn of 1862, a well-developed examination system for physicians was in place in Pennsylvania to screen out unqualified recruits. The 148th Pennsylvania Volunteers, part of the 2nd Corps of the Army of the Potomac, was a three-year-enlistment regiment primarily comprised of men from Centre, Clarion, Indiana, and Jefferson counties. Its colonel was the popular James A. Beaver (1837–1914), later governor of Pennsylvania from 1887 to 1891. The 148th had four physicians from the time of its formation until being mustered out in June, 1865: Uriah Q. Davis, Calvin P. W. Fisher, Alfred T. Hamilton, and John Wesley Allen. Davis, Fisher, and Hamilton took the state medical examination given at Harrisburg on September 11, 1862. Dr. Davis and Dr. Fisher were appointed as the regiment’s two assistant surgeons, but Davis, who was older, more experienced, and scored one point higher than Fisher on the exam, was rapidly promoted to surgeon on December 9, 1862 because the regiment still lacked a surgeon.

Following Davis’ promotion, Dr. Hamilton joined the regiment as the second assistant surgeon, reporting for duty on February 4, 1863. Dr. Fisher served only until June 12, 1863 when he was discharged on a surgeon’s certificate of disability for partial blindness caused by amaurosis, a disease of the optic nerve, which had impaired his ability to see well enough to function as a surgeon. Following Fisher’s departure, Davis and Hamilton were responsible for the regiment until Dr. Allen joined as assistant surgeon on May 3, 1864. For eleven months, this regiment, involved in some of the bloodiest battles of the war, was served by two physicians, and at times by only one.

The 148th Pennsylvania Volunteers was involved in over forty skirmishes and battles between 1862 and 1865. Major actions included Chancellorsville, Gettysburg, Mine Run, the Wilderness, Po River, Spotsylvania, Cold Harbor, the assault on Petersburg, and Deep Bottom. Of over two thousand Union regiments, the 148th Pennsylvania Volunteers ranked fourteenth in the number of men killed in action. Out of a total of 1,339 members, twelve officers and 198 men were killed in battle or died from wounds. An additional four officers and 183 men died from disease and accident and sixty-four died in Confederate prisons. The regiment’s mortality rate of around 30% does not reflect their additional non-fatal casualties from wounds, accident, and disease, which were much higher. These figures demonstrate the heavy action seen by the 148th and the burden placed on its surgeons. In addition to being
overworked, Davis and Hamilton shared the disadvantage of disliking each other intensely. While much of their conflict was due to personality, they were also divided by differences in medical philosophy: Davis was an allopathic physician and Hamilton was a water-cure hydropath.

The Medical Education of Dr. Davis and Dr. Hamilton

Dr. Uriah Q. Davis represented an older generation of allopathic physician. He was forty-one years old at the time of his enlistment, older than most of the men in the regiment. He had trained under the preceptor system, a preparatory method popular throughout the first half of the nineteenth century whereby a young man interested in studying medicine would apprentice with a practicing physician, or preceptor, who provided on-the-job training for a fee. For many preceptors, this system provided additional income, a source of free labor, and relief from repetitive tasks, such as grinding and preparing medicines. The better preceptor could provide a student with access to the preceptor's library of medical books, practical knowledge from his years of practice, and hands-on experience with house calls and minor surgeries. The quality of medical information taught varied with the type of practice of the preceptor and his own level of knowledge and skill as a physician. At the end of this preparatory period, the student received a letter of recommendation, then enrolled in medical school.

Mid-nineteenth-century medical schools offered a course of study that lasted anywhere from four to nine months in length. The curriculum was presented in the form of lecture courses. The identical course of study was repeated during a second year. If a college was fortunate enough to be affiliated with a hospital, a student was more likely to obtain some clinical experience, where hospital patients might be examined to illustrate the symptoms of a condition or show the effects of a treatment. Not all medical students had this opportunity to watch surgeries or work with patients. Final exams to determine students' knowledge of medicine were not universally required by medical schools. After students attended lectures and paid a matriculation fee, they were awarded a medical degree.

This was the system under which Dr. Davis received his medical education. He first read medicine with Dr. Ludwig of Limestoneville, Pennsylvania, before graduating from the respected University of Pennsylvania medical school in 1848. Davis practiced as a physician for twelve years prior to the

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war, first in Lewisburg, then in Milton, Pennsylvania. His education and years of experience meant that Dr. Davis had a strong background for an allopathic doctor of this period. Except for his age, Davis was a desirable applicant for the position of military surgeon.

Dr. Alfred T. Hamilton was twenty-six years old and an enthusiastic advocate of the hygienic-hydropathic school of medicine at the time of his enlistment. He had practiced less than two years as a doctor at the Franklin Water Cure outside Winchester, Tennessee, then part-time as a water-cure physician in his hometown of Lewistown, Pennsylvania. It is unlikely he was mentored by a regular physician preceptor prior to attending medical school. This can be surmised from his representation of himself as an embattled sectarian “outsider” in a letter in which he wrote, “I owe my present position to none of the doctors of Lewistown as I got it in spite of them and by dint of having brains. There are many graduated blockheads—regular graduates—who don’t like me to be where I am, but the examination silences them.”

That Hamilton was able to pass the Pennsylvania Medical Board examination, which was designed for regular allopathic physicians, was due to his own initiative. He was an 1858 graduate of the Hygeio-Therapeutic College of New York City headed by Dr. Russell T. Trall (1812–1877), the premier American hydropathic educator. Trall, who had received an allopathic medical degree in 1835 from Albany Medical College, became a zealous convert to hydropathy after a personal health crisis. In 1844, Trall opened his first institution in New York for the treatment of patients by the hydropathic method. He established the New York Hydropathic and Physiological School in 1853 in the large building that housed his water-cure establishment at 15 Laight Street by St. John’s Park in Manhattan. A few years later, the school was renamed the New York Hygeio-Therapeutic College, with its goal being to educate “Hygeio-pathic practitioners and Health-Reform lecturers.” An 1857 advertisement for the treatment center and college in the Water-Cure Journal boasted that, “The public rooms and halls are warmed with steam, which in winter maintains a uniform and pleasant summer temperature, without dust or smoke...In short, the proprietors are determined to spare no exertions nor expense to make this the model health institution in the world.” The Laight Street facility could house up to one hundred patients who provided the medical students with cases for clinical study and hands-on experience in the application of hydropathic and physiological therapeutics.
Although the college graduated students and conferred medical degrees from 1853, it did not receive a charter from the state of New York until February 4, 1857.\textsuperscript{41} Trall attributed the delay in obtaining the charter to opposition from the allopathic medical community who objected to state recognition of any sectarian medical college. Like many sectarian medical schools, the New York Hygeio-Therapeutic College offered instruction comparable to that provided by regular medical colleges in anatomy, chemistry, medical jurisprudence (forensic medicine), obstetrics and female diseases, physiology, and surgery. It differed from an allopathic medical school primarily in its approach to \textit{materia medica} and therapeutics. Trall's lectures on \textit{materia medica} railed against everything being taught in allopathic medical colleges; he emphasized the poisonous nature of all drugs, including botanicals, and reinforced the hydropathic prime directive to rely on the healing powers of nature and pure water.

The New York Hygeio-Therapeutic College also differed from regular medical schools in offering courses in the mental sciences, phrenology, and speech, including vocal exercises to cure stuttering.\textsuperscript{42} With an enrollment of one hundred students, its founder could boast in 1856 that "in numbers our school already ranks as the \textit{third of} the five medical schools in this city; that is to say, our class is much larger than that of the \textit{irregular} Physio-Medical, and somewhat larger than the \textit{regular} New York Medical College."\textsuperscript{43} The student body was highly unorthodox in another way: of the one hundred medical students, forty-eight were women.\textsuperscript{44}

Unlike most hydropathic medical students, Dr. Alfred T. Hamilton also paid to attend lectures and clinics at two prestigious allopathic institutions: Bellevue Hospital and the College of Physicians and Surgeons in New York City. There he was exposed to some of the most prominent surgeons and anatomists of the day including Drs. Valentine Mott, James Rushmore Wood, and Alonzo Clark. Hamilton's lecture notes show that he readily accepted their instruction except where the topic of drugs was concerned. His notes reflect scorn for the use of all drugs, especially mercury. An example of this view can be seen in his journal entry for December 4, 1857: "More infants are destroyed by the pestal [sic] and mortar than Herod slew. Scarcely a child can reach one year without being poisoned...All the quackery in the world comes from the regulars' dispensaries. Ninety five percent get well without doctors."\textsuperscript{45}

Despite his formal training in anatomy and regular clinical medicine that surpassed that received by graduates of many regular allopathic medical
schools, Hamilton's hydropathic beliefs would have excluded him from being commissioned as a military surgeon. Regardless of the popularity of homeopathic, hydropathic, eclectic, and botanic medicine among the general population preceding the Civil War, state medical review boards remained firmly in the hands of allopathic physicians. Only allopaths were allowed to take the federal or state examinations for military surgeon. William H. Cook (1832–1899), Dean of the Physio-Medical Institute of Cincinnati, Ohio, complaining of the practice of excluding sectarian physicians, observed that "allopathic surgeons with only a few months of practice were granted commissions while reform physicians who had toiled for years to save limbs and lives were excluded from honorable service."46

Organized attempts to increase the potential pool of military surgeons by allowing recruits from sectarian medical schools to take qualifying examinations were blocked. The Ohio Senate passed a bill in May 1862 to abolish restrictions against non-allopathic physicians being commissioned as medical officers, but the move was met with strong opposition by allopathic supporters.47 Sectarian medical practitioners lobbied, with no effect, for state medical examinations to be the sole criteria to determine who was, and who was not qualified to serve, regardless of medical philosophy.48

Knowing this, Hamilton concealed his hydropathic background by registering for the Pennsylvania State Medical Board examination as a graduate of the "New York Medical College in 1858, having attended Bellevue Hospital Medical and Surgical Clinics for two winters."49 Hamilton took the added precaution of enlisting in a regiment outside his native Mifflin County so that his hydropathic background would not be known, saying, "I think I can get along in duty unless some one interferes of those who know me. But it is no one's business now. I passed the rigid examination of the Medical Board, and it is presumed that they ought to know who is competent."50

Hamilton was not alone in this practice. There are examples of other sectarian physicians obscuring their credentials and beliefs in order to take a medical board examination.51 One case was that of Dr. Edward C. Franklin (1822–1885) who, "without revealing his homeopathic bent,"52 passed an examination for federal appointment as Brigade Surgeon of Volunteers. Franklin and his assistant, contract physician Leonard Pratt (1819–1900), were later revealed as homeopaths upon which the army medical director annulled Pratt's contract in November, 1862. Franklin was relieved of his duties a few days later.53
Discrimination against sectarian practitioners was viewed by some allopaths as a strong incentive for sectarian physicians to turn—or return—to medical orthodoxy in the form of heroic allopathic medicine. In a September 1862 article in *The American Medical Times*, the editor stated that “it being a regulation that none but regular practitioners are eligible for examination, very many of the homœopathists have been tempted to turn heretics to their faith in the hope of obtaining positions.”

Whether any sectarian physicians turned heretic or merely concealed their beliefs remains unknown. It is clear Hamilton’s strong beliefs remained intact. In an 1860 article published in the *Water-Cure Journal* entitled “Fanaticism,” Hamilton wrote:

“As advocates of the Water-Cure system we must expect the fate of our predecessors. Persecution and misrepresentation are our daily experience from those who are ignorant and prejudiced against that theory which holds out health and its attendant happiness to a drug-ridden world...When individuals, or a community, wish to decry any new invention, any system that will benefit mankind, the cry of “infidel,” “fanatic,” “enthusiast,” is brought forth to oppose scientific argument—to extinguish the light of truth...We need fanatics. The term is significant of honesty—of a noble mind...Trall and Jackson are both fanatics, but still Hygeio-Therapia is growing popular, and the almost incurable are being healed, while thousands are blessing God that they ever became acquainted with the laws of life and health as taught in the *Water Cure Journal*...We have adopted that fanaticism which enables us to restore health to the sick without having recourse to ‘drugs and dye stuffs,’ and as the fanatical principles and practice of Water-Cure have never failed to meet our most sanguine hopes, we ever intend to be a disciple of the truth as taught at the N.Y. Hygeio-Therapeutic College.”

The number of sectarian physicians serving undetected in the Union Army likely will never be known due to the skill with which these physicians hid their backgrounds. This was relatively easy to do because most medical review boards depended on self-reporting of where a physician received his medical training and asked for no documentation of a medical degree. It is also possible that comrades-in-arms became aware of sectarian surgeons’ backgrounds, but kept the secret to themselves. In Hamilton’s case, this can be inferred
from an incident in which, "Colonel Matthews twitted me about cold water, as he did in military company once before, but it passed off pleasantly."56 Due to the popularity of sectarian medicine in America prior to the Civil War, it is possible some soldiers might have preferred treatment by a sectarian physician, especially one who also had been certified by a state medical board of review. Memoirs and other accounts prove that sectarian physicians did pass state qualifying examinations, something that not all allopathic physicians were able to do, and went on to serve successfully as military surgeons.

The Pennsylvania Medical Review Board Examination

The Pennsylvania Medical Review Board's examination consisted of forty-four questions arranged under headings for surgery, anatomy and physiology, materia medica, and practice of medicine. Different versions of the test were administered to nearly three hundred applicants at Harrisburg on September 11, 1862. By coincidence, Davis and Hamilton received the same version of the examination. (See Appendix)

The questions assessed the physicians' understanding of basic medical knowledge that would be required of an army surgeon: the ability to diagnose and treat pneumonia, smallpox, typhoid, and dysentery; the treatment of gunshot wounds and broken bones; how to amputate a leg; the best place to set up a camp; and how to prepare basic medicines. Although a few medicines were mass produced by pharmaceutical companies during the Civil War, it was necessary for the physician to know how to prepare and mix ingredients for most prescriptions. This process was assisted by referring to the Dispensatory of the United States, a massive reference volume with instructions for gathering ingredients, formulating medicines, dosages, conditions for which a medicine was prescribed, and the expected patient reaction, including countermeasures in case of overdose. Because most medicines had to be compounded by the physician himself, a knowledge of materia medica was essential for an allopathic physician in this period.

The examination essays submitted by Davis, Hamilton, and Fisher were graded by Drs. Rutherford, Dock, and Wilson under the signature of Dr. James King, Surgeon General of Pennsylvania. The grading scale was one to ten, with ten being the highest score possible. In addition to technical knowledge, the graders evaluated spelling, clarity of writing, neatness, and quality of references, if any were supplied.57 An instruction letter for grading
the essays stated, “The number five represents the lowest qualification worthy of any appointment. The Board therefore recommend for the appointment of Assistant Surgeon all those having the standard marked five and upwards. Those having seven and upwards are considered worthy of the appointment of Surgeon when in the judgment of the Surgeon General they shall have had sufficient experience in the field or previous experience in Hospital or private practice of some years. Those having less than seven it is considered improper for promotion unless approved by another examination.”

A grade was given for the examination as a whole. Individual questions were not marked as correct or incorrect in the Harrisburg examinations reviewed for this article. Grades were recorded on a grid with columns listing the recruit’s name, the initials of the board members grading the essay, the overall grade given by each reviewer, and a column averaging the reviewers’ scores. Most passing scores fell into the five to seven range. Scores of nine and ten were rare among the records for the year 1862 retained in the Pennsylvania State Archives. Whether this was due to the modest quality of applicants or the reluctance of reviewers to give higher scores is unknown. Not all applicants passed the examination.

It is possible to compare Dr. Hamilton’s and Dr. Davis’ responses because they received identical versions of the exam. Hamilton’s responses were weakest in the area of materia medica—understandably, because of his background as a hydropath. In response to a question asking for the ingredients of the opium-containing Hope’s Mixture, Hamilton responded “don’t recollect” and for the purgative “compound extract of colocynth,” he replied “can’t tell.” Davis answered both of these questions correctly. Hamilton’s responses to questions on allopathic therapeutics were also weaker than Davis’, including rewriting his answer on how to prevent strangury, a urological condition. Hamilton’s initial answer, which included cold water injections, was lined out and rewritten with a less hydropathic-sounding treatment.

However, for several questions on surgery, anatomy, and physiology, Hamilton provided stronger answers. He gave more detailed responses than Davis to the question of why gunshot wounds are slow to heal, how to treat a gunshot fracture of the humerus, and the technique for amputation of the thigh. He also listed more factors to consider when selecting a healthy hospital or camp site. These questions, of vital significance for a military surgeon, showed Hamilton’s strong background in anatomy, surgery, and practical hygiene. On two questions concerning treatment of dysentery and pneumonia, Hamilton’s treatments would have been less injurious to the patient.
Davis' reply to the question on pneumonia included the staples of allopathic medicine that were so debilitating for the patient: bleeding, calomel (mercury), cathartics to purge the bowels, and ipecac to induce vomiting.

Whenever possible, Hamilton told the examiners what he thought they wanted to hear. His examination answers do include mention of mercury, purgatives, and other allopathic therapeutics that were anathema to his hydropathic beliefs. This strategy was successful in hiding his hydropathic background and resulted in his being commissioned at the rank of assistant surgeon.

Dr. Hamilton received an examination score of five, the lowest passing score, but a result far better than many regular allopathic physicians who received a failing grade that day at Harrisburg. Dr. Davis, with over twelve years experience, received a score of seven.60 Dr. Fisher, a thirty-year-old graduate of the University of Pennsylvania medical school, received a score of six. Although these three physicians passed the Pennsylvania Medical Review Board examination, passing the exam was no guarantee of effectiveness in action or being viewed as competent by the men in the regiment in which they served.

A Clash of Men and Therapeutics

The 148th Pennsylvania Volunteers were noted for their esprit de corps. The regiment had several officers with strong leadership skills who were well-respected. Colonel James A. Beaver was highly popular among both officers and men, as was Chaplain William H. Stevens.61 Adjutant Joseph Muffly, himself a well-liked figure, would later compile the recollections of over seventy veterans to create a regimental history. Accounts in Muffly's history speak little of Dr. Davis, perhaps because it was not completed until 1904, seventeen years after Davis' death. There are brief allusions to Davis' argumentative nature and his ambiguous nickname "the old man," despite the regiment having two men who were twenty years older than Davis. Hamilton's own Civil War letters paint a decidedly unflattering picture, but are undoubtedly biased by personal enmity. In a letter of October 3, 1864 Hamilton states, "I heard that Dr. Davis and Rev. White would have quarreled daily if it had not been for [the] Colonel."

Although Dr. Davis' credentials seemed to make him the most qualified and competent of the regiment's three surgeons, in practical terms he lacked the goodwill and communication skills possessed by his fellow officers. This
affected his ability to supervise the medical staff under his direction, as can be seen in an incident in which he accused his hospital steward Jacob B. Kreider of incorrectly preparing a prescription and had him "maliciously discharged" from the army.

Jacob Kreider's court-martial records confirm that he was not experienced in the preparation of medicines. This was not unusual. No previous medical or pharmacy experience was required of hospital stewards, who were sometimes elected by popular vote from the general ranks of volunteers. Kreider misunderstood the order from Dr. Davis to mix "equal parts" for a medication. Davis had referred to equal parts of the active ingredients—opium and ipecac—which then were to be diluted. But Kreider mixed equal parts of all the ingredients, a mistake which could have been lethal, a point that was made at his court-martial. Davis would take no responsibility for any part of the misunderstanding and Kreider was sent home to Pennsylvania in disgrace in October 1863.

Hamilton felt that the fault was Davis', not Kreider's. Hamilton wrote in a letter to his father, "[Davis] prepared charges of incompetency while he was incompetent himself, that is, in the specification he swore before court that our Hospital Steward was incompetent because he mixed medicines in an unscientific manner. The truth is he ordered the Steward to mix medicine in a certain way & the order was unscientific and incorrect, thus making the blunder on the part of Davis." For this and other reasons, Hamilton would later write on January 4, 1865 that, "Every Medical Officer in the Division is satisfied with Davis' incompetency and they treat him accordingly."

The clash between Hamilton and Davis began long before the discharge of the hospital steward. It had its origins in the early days of the regiment. In the five months from the regiment's formation until Hamilton's arrival, when the camp and hospital were under the care of Dr. Davis, twenty-nine men had died of disease or accident. This was a period in which the regiment was still in training and had not yet seen combat. An outbreak of typhoid had killed and sickened many, causing Colonel Beaver to express concern over the regiment's weakened condition. Beaver went on walking tours of the camp to try to determine what was causing so much illness in his new regiment. Beaver wrote of his tours during this time: "I spent considerable time going about with Dr. Davis in visiting the sick and was impressed with his view that many men were suffering not so much from disease as from pure homesickness and, in one case which I well remember, the doctor spoke of one of our men...that he was dying, because his wife could not write a cheerful letter." The belief that men could die of homesickness was echoed
forty years later in the reminiscences of Lieutenant William Gemmill of the 148th, Company D, when he said, “Discouraging news from home led on to homesickness and that made men heartsick and hopeless, and that led to the hospital and in some cases to the grave. We had something of that in our company that winter, and it didn’t do anybody any good.”

Dr. Davis’ diagnosis of homesickness as a causative factor in disease among soldiers of the 148th Pennsylvania Volunteers was supported by texts used by military surgeons. The Manual of Instruction for Military Surgeons on the Examination of Recruits and Discharge of Soldiers did specify that: “Nostalgia, or home-sickness, although not in itself a disease, is yet a predisposing cause to disease of a most serious character.” However, it was far more likely that Davis was overlooking more obvious causes: initial exposure in camp to childhood diseases, tainted food and water, uncollections refuse and animal waste, poorly located latrines and ill-maintained “sinks,” toxic allopathic medicines, and the unclean condition of the hospital.

The problem of deaths in newly formed regiments was recognized at the time. Dr. John H. Brinton noted, “The men from the country had often not passed through the ordinary diseases of child life, and no sooner were they brought together in camps, than measles and other children’s diseases showed themselves, and spread rapidly. The malarial influences of the rivers too, produced a most depressing effect upon men brought from higher regions, and more healthy surroundings. Violent remittent, intermittent and low typhoid fevers invaded the camps, and many died. The general hygiene was bad, the company and regimental officers did not know how to care for their men, and the men themselves seemed to be perfectly helpless.”

When Dr. Hamilton arrived in camp on February 4, 1863, he immediately applied his hydropathic concepts of sanitation and cleanliness to the regiment and camp. In this he was supported by Colonel Beaver who was deeply concerned about the condition of the camp and the health of the men. Within six weeks, Hamilton reported: “Our Regiment was inspected today, also our Hospital. Our Hospital was pronounced the best in the army by our inspector. I have things fixed up pretty well. They give me the credit, among officers & men, of having this reform. Our Hospital was pronounced by Gen. Couch to be the worst he ever saw in his military career—that was when I first came, but now a rigid inspector says it is the best in the Army.” Colonel Beaver remarked on the change in a letter to his mother dated March 24, 1863, “The health of the regiment is improving and I hope soon to see a much more marked improvement. Our Hospital is now a very nice place.”
Despite the support of Colonel Beaver, within three months of arrival Hamilton found working under Davis to be intolerable. In a letter dated June 6, 1863, Hamilton worried about being the regiment’s only assistant surgeon, saying, “Dr. Fisher was requested by the Corps Surgeon to resign on account of his eye sight...This will leave me in an awkward position in regard to Dr. Davis whom I hate worse than the itch. You need not be surprised if you see me home some day, all on account of Dr. Davis.”

Hamilton’s solution was to request a transfer. On March 4, 1864, he wrote, “I applied to Dr. King to be transferred to another regiment on account of ill treatment by Dr. Davis but he would not transfer me.” Dr. James King, Surgeon General of Pennsylvania, had larger concerns than a quarrelsome regimental surgeon and his fanatically hygienic assistant surgeon. Hamilton then decided to seek promotion in rank so that he could resign his commission as assistant surgeon with the 148th and be commissioned at the rank of surgeon with a newly-formed regiment. He was hampered in this plan by not knowing if his examination score was sufficient to allow promotion. Hamilton asked his father to use his influence and contacts in Harrisburg to obtain his examination score. He was also interested in knowing how he compared to his allopathic fellow surgeons: “If my examination placed me in any of the four higher grades, I see that I need not be reexamed for promotion...It would be a matter of great interest for me to know the grade of Merit of Drs. Davis, Fisher and myself.” Hamilton was never able to ascertain that his examination score was five—not high enough to allow promotion without reexamination. Whether due to policy or red tape, the Pennsylvania Medical Review Board would not share this information, causing Hamilton much frustration for the rest of the war. The option of reexamination was ruled out by Hamilton, who remained concerned that his hydropathic beliefs would be discovered.

Dr. Hamilton attended to the medical and surgical needs of the men of the 148th Pennsylvania Volunteers through over forty battles and skirmishes. He was stricken with typho-malarial fever in October 1864 and hospitalized at City Point, Virginia. Even there, Dr. Davis haunted him. Hamilton wrote from his hospital bed on December 17, 1864, "I was told that Dr. Davis sent word to City Point Hospital that the doctors should not send me home unless on an extreme necessity, and every few days he would inquire whether I got home yet and when he found that I was still in hospital he laughed and was very much pleased because I did not get off." Hamilton survived his illness and returned to the regiment, where he served until the end of the war. When J. W. Muffly contacted survivors of the 148th to write the regimental history, Story of Our Regiment, it was Drs. Hamilton

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and Fisher who contributed two parts entitled “The Surgeon’s Story.” Uriah Q. Davis had died in 1887 in an accident at a railroad crossing in Milford, Pennsylvania. Hamilton said nothing negative about Davis in his chapter. Hamilton’s chapter begins with a statement of that all-important qualifying credential: “My military service was preceded by an examination before the State Board of Medical Examiners…”78

Alfred T. Hamilton was a life-long proponent of hygienic living and public sanitation. He did not practice medicine after the Civil War, except for a one-year elected term as Lewistown coroner in 1879. It would have been impossible to continue, even had he wished to, because by 1888 it was illegal to practice medicine in Pennsylvania without a license from an accredited “regular” medical program, with a diploma and an annually renewed license on file. Because Hamilton had a hydropathic medical degree, he would not have been eligible for a license. Instead, he lobbied for the building of public sewers and served as Lewistown’s first public health officer until 1911. He proposed the establishment of an institution supported by the Knights of Malta for the sick, aged, and orphaned. He worked tirelessly on its behalf until his death in 1911. The Malta Home opened in Granville, Pennsylvania in 1920 and was still in operation in 2007. A photograph of Alfred T. Hamilton is sealed in the Malta Home’s foundation stone.

Conclusion

Drs. Davis and Hamilton were born at a time when much of medicine was based on philosophical models dating back to antiquity. Medical diagnostic tools were primitive, germs had not yet been discovered, and the functioning of the immune system was unknown. Yet advanced knowledge of anatomy learned through dissection allowed physicians to perform increasingly complicated surgeries successfully.

The Civil War occurred at the very beginning of the transition to “modern” medicine. It is important not to confuse the allopathic medicine of the mid-nineteenth-century with modern medicine. Modern medicine evolved only as a result of major scientific breakthroughs, developments in medical technology, and the integration of reforms previously promoted by sectarian practitioners. By the time of the Civil War, a few regular physicians acknowledged the debt they owed to homeopathic theory in helping to
curb the allopaths’ worst excesses in over-prescribing toxic medicines. The sectarian physicians’ anti-venesection campaigns also undoubtedly curbed the practice of bleeding the sick. The hydropathic movement’s insistence on washing, cleanliness and hygiene, healthful living, and preventative medicine paved the way for many late-nineteenth and early-twentieth-century reforms regarding inspection and quality control of drinking water, milk, meat and other foods, the building of sewers, and attempts to curb industrial pollution and urban waste dumped into water sources—issues that continue to concern Americans today.

In retrospect, each medical system was correct in some cases and very wrong in others. Regular allopathic doctors did poison their patients with large doses of toxic medicines, but for a few diseases, those treatments did work. For example, mercury was the only effective treatment for syphilis before the discovery of penicillin. The allopathic error was in prescribing potentially-damaging heroic treatments for almost every condition, including those where the patient would have been better off if left to recover unaided.

Sectarian medical reformers, including hydropaths, who championed the healing powers of nature and promoted lifestyle changes paved the way for many concepts found in modern preventative medicine. Hydropathic admonitions to eat whole wheat bread, drink water, cut down on salt, fried foods, and red meat, avoid alcohol and tobacco, and get plenty of fresh air, rest, and exercise sound very contemporary, although they were mocked by the medical establishment of the day. Today, we better understand the mechanisms by which specific behaviors lower the risk of disease based on scientific study, whereas many nineteenth-century reformers relied as much on moral assumptions as on medical observation to come to similar conclusions. The error of the sectarian schools was in their over-reliance on the healing power of nature and single-theory therapeutics as a universal treatment for disease. It is also unfortunate that the animosity between the regular and sectarian schools of medicine delayed the sharing of the best features of each system.

The story of Drs. Davis and Hamilton of the 148th Pennsylvania Volunteers personified larger issues in mid-nineteenth-century American medicine including the lack of standards in medical education, the existence of sectarian schools of medicine, differences in philosophies of therapeutics, and the lack of provision for medical or leadership training for Civil War surgeons. The training, experience, and competency of civilian physicians varied widely at the outbreak of the war. Despite attempts by state and federal medical boards to exclude non-allopathic practitioners from serving as military
surgeons, some individuals like Alfred T. Hamilton managed to conceal their sectarian medical beliefs in order to pass qualifying medical examinations and serve in volunteer regiments. Sectarian physicians would have to wait until 1898, during the Spanish-American War, for President William McKinley to allow any physician, regardless of sectarian school, to be examined for a commission as a military surgeon based on merit alone.  

Uriah Q. Davis followed a system that believed heroic levels of intervention were required to cure illness, including removing enough blood from the patient to slow their pulse and prescribing large doses of dangerous drugs. Alfred T. Hamilton believed in a system of preventative medicine, a temperate lifestyle, and trust in the healing powers of nature and pure water. Records confirm that Hamilton was able to apply his hygro-therapeutic beliefs regarding sanitation and his training as a hydropath to improve the health and quality of life in the regiment, while also meeting its need for a physician with basic clinical and surgical training. Dr. Davis and Dr. Hamilton served the 148th Pennsylvania Volunteers as best they knew how, following their differing philosophies of allopathic and hydropathic therapeutics, despite personally being as incompatible as the mainstays of their respective schools of medicine—mercury and water.

APPENDIX

Pennsylvania State Medical Board Examination, 1862

Original spelling has been retained. Readers are invited to compare the examination answers of Uriah Q. Davis (UQD) and Alfred T. Hamilton (ATH) taken September 11, 1862 at Harrisburg, Pennsylvania:

A. SURGERY

1. What are the symptoms of a wound of the Lung—and how would you check Pulmonary Hemorrhage?

UQD: Labored & difficult breathing, Spitting of blood, which is raised by coughing. Treatment—Bleeding, cathartics, drafts to the extremities, Sugar of lead & Opium.
MERCURY AND WATER

ATH: Haemoptisis—coughing up of arterial blood, creaking sound in part affected. If excessive, blood letting from arm, breathing cold air, ice water or lumps of ice.

2. *How would you Trephine the Skull—and what fills up the opening made by the Trephine?*

UQD: By making a crucial incision, removing the periostium, place the pin of the trephine of the cutting edge so as to secure the instrument in one position, rotate the trephine and use much caution as you approach the dura matter for fear of wounding it. The opening fills with a fibro-cartilaginous substance.

ATH: Shave the part to [be] operated upon. Set the pin of the Trephine so that a start can be well made, after the proper incision, then remove the center pin, continue the cutting operation until the first and second tables of the skull bone are sawed through. Then lift up the depressed bone with the elevator. Cover the opening with the flap and dress with adhesive plaster. The opening is filled with coagulable lymph.

3. *What is a Hydrocele—what an Haematocele, and what is Varicocele?*

UQD: Is a collection of serum within the tunica vaginalis testes—is a collection of blood—is an enlargement of the Spermatic vessels.


4. *Describe the circular operation for Amputation of the Thigh.*

UQD: The tourniquet is first put on to arrest the flow of blood. The operator on the outside of the left leg—and assistant takes hold of the thigh with a firm grasp and draws up the integuments & muscles. The operator places his hand beneath the thigh and commences his incision on the inside and continues it round until he brings it to the place of commencing. The assistant draws up the integments still further. The incision is then made through the muscles to the bone. The muscle is then separated from the bone for an inch or an inch & a half. The tractor is then put on and the bone sawn off. The arteries lifted and the edges brought together in a straight line & fastened by adhesives straps or sutures.

ATH: Select a point for sawing the bone, below said point, about one fifth of the circumference of limb, make a circular incision, with the amputating knife, through the integuments. Dissect the integments and hold back with a retractor then cut through the muscles, and saw the
bone, lower end of limb to be held by an assistant so as not to choke the saw or splinter the bone. The Tourniket must first be applied over the principal femoral artery. Close the flap, after cleansing it thoroughly with wet sponge, by the interrupted suture after ligating the femoral artery, and all others that may bleed after removing the Tourniket. Bring the ligatures out at the lowest point so as to prevent suppuration from retained pus. Apply the adhesive strap sufficient to sustain the flap. Place lint between the edges of integument to prevent too sudden union.

5. Describe the dressing usually applied to a Fracture of the Femur.

UQD: Splints are applied. The one on the inside of the leg extending from the perineum to beyond the foot. The other extending from the bend of the body to beyond the foot, placing a cross stick or a ratchet for extension—a pad or band extending from the perineum & fastened to the upper end of the outer splint.

ATH: Shave the leg so as to apply the adhesive strap of sufficient strength to enable me to extend the leg so as to bring the fractured ends of Femur in juxtaposition, then apply a splint from groin to knee on inside, and a long splint from pelvis to beyond the heel on outside, another splint on inside of fore leg—all to be enveloped by the roller and the unevenness to be filled up with pads. Extension must be kept up until the muscles yield and bones unite.

6. Describe the method of reducing a Luxation of the Head of the Femur on the Dorsum Ilii.

UQD: The manipulator seizes the thigh in one hand & the leg in the other—flexes the leg on the thigh, then rotates the thigh by bringing it over the opposite thigh thence up over the abdomen & then extend the leg.

ATH: Extension and counter extension by pullies or assistants until head of Femur is brought over the ace tabulum, when it will return to its normal position. Raise the leg upward and inward in doing this.

7. In how many ways may Hemorrhage be arrested.

UQD: By cold applications, by compresses, by ligatures, by Styptics.

ATH: Hemorrhage may be arrested by "Garrot," Tourniket, ligature, torsion—cauterity.

8. Name the best styptics for the arrest of Venous Oozing.

UQD: Perchloride of Iron

ATH: Per sulphate of iron, ice, Per chloride of iron.
MERCURY AND WATER

9. Why are Gunshot Wounds tedious in healing, and what are their chief dangers?
UQD: Because it deadens the vitality of the parts. The parts first slough out before granulation takes place.
ATH: On account of laceration, presence of foreign bodies, liability to extensive sloughing. Hemorrhage, tetanus & trismus and suppuration are their chief dangers.

10. How would you treat a Gunshot Fracture of the Humerus?
UQD: If there be much commination of the bone we had best amputate.
ATH: If a simple fracture bring the bones in contact by extension and counter extension, apply the splint and bandage in usual manner—if comminuted, amputation would be indicated, either at the point of election or the point of necessity. Splint to be of wet pasteboard, or leather, bound with the roller, or simple pads and shingle splints held firmly by adhesive strap.

B. ANATOMY AND PHYSIOLOGY

1. How many Spinal Nerves are there, and how do they escape from the spinal canal?
UQD: Thirty two pairs & pass out between the vertebra.
ATH: 84 spinal nerves—they pass through the foramen of the vertebrae.

2. Name the bones composing the Head.
UQD: Frontal, occipital, two parietal, two temporal, Sphenoid & ethmoid.
ATH: Occipital, frontal, two parietal, two temporal, and ossa trigoneta.

3. Describe the portions of the Intestinal Canal.
UQD: Duodenum, jejunum & ileum, colon.
ATH: Mouth, Esophagus, Stomach, Duodenum, Jejunum, Illium, Ascending, Transverse & Descending Colon, Rectum and Anus.

4. Name the regions of the Abdomen, and state their relative positions.
UQD: Two hypochondriums, right and left, epigastrium. The middle portion contains the right & left lumber & the umbilicus. The lower portion, the two iliacs & hypogastrium.
ATH: Epigastric, over stomach—Hypochondria, under the ribs—Hypogastric above and bordering on the pelvis—Right and left Illiac, over the Illiac muscles.
5. *What is the composition of the Wrist-joint?—stating its bones and ligaments.*
   **UQD:** The bones of wrist-joint are the Scaphoid lunar, cuneiform & pisiform, trapezium, trapezoid, magnum & uneiform. The ligaments are the anterior posterior lateral & anular.
   **ATH:** Extremities of Radius and Ulna. Scaphoid, Semilunar, Cuneiform, Pisiform, Trapesium, Trapezoides, Os magna, Uneiform, Annular ligament, transverse ligament.

6. *Describe the origin, course, and relations of the Iliac Arteries.*
   **UQD:** Commences at the bifurcation of the abdominal aorta, runs down and divides into the external & internal iliac arteries.
   **ATH:** Iliac arteries arise at the bifurcation of the descending aorta, pass over the Iliac muscles down each side of the lumbar vertebrae, and terminate in the femoral artery and Glutens and hypogastric arterie.

7. *Where is the Thoracic Duct, and what is its function?*
   **UQD:** It is a Duct that extends along the spine receiving the chyle from the intestines and empties at the junction of the subclavical & internal jugular veins.
   **ATH:** The Thoracic Duct arises in the duodenum and terminates in the left embelarian artery. It carries chyle.

8. *Describe the process of Digestion.*
   **UQD:** The food is masticated mixing with the saliva, swallowed, enters the stomach meeting with the gastric juice, forms into chyme, leaves the stomach through the pyloric orifice and mixes with the bile & pancreatic secretions forming an emulsion—chyle is formed & absorbed by the lacteals.
   **ATH:** Food is masticated by the teeth, passes into the stomach through the esophagus, mixes with the gastric juice in the stomach by means of its muscular coats, passes into the duodenum where it is mixed with bile and pancreatic juice—thence through the Ilium and Jejunum where the chyle is taken up and thrown into the Thoracic Duct and thence through the left sub clavian artery into the arterial circulation. The foeces pass through the colon and rectum & anus.

9. *How is Respiration accomplished, and what is its object in the economy? What part is performed by the Lungs?*
   **UQD:** By the respiratory muscles. Its object is to oxyginate the blood. The Lungs receive the respired air, absorbs the oxygen, and throws out carboxic acid gas.
   **ATH:** Respiration is accomplished by the contraction and relaxation of the abdominal, dorsal, and intercostals muscles and diaphragm.
object is to purify the venous blood by exposing it to oxygen in the lungs through the capillaries.

10. Where are the Kidneys situated? State the name and course of their ducts, and where they empty.

UQD: The kidneys are situated at the posterior part of the lumbar region. The ureters pass down and empty into the bladder.

ATH: The kidneys are situated in the lumbar region of the back. There are two ducts (ureters) leading from the kidneys to the bladder and empty near its neck. Urine is secreted from the renal arties.

C. MATERIA MEDICA

1. What preparation of Arsenic is most convenient for medical use?

UQD: Fowler's Solution.

ATH: Fowler's Solution.

2. Write its composition and dose.

UQD: Carbonate of Pottassa, Arsenic & Sp. of Lavender. Dose 10 drops.

ATH: Arsenic & Potassa held in solution 8 to 10 drops.

3. What is the composition of the Compound Extract of Colocynth?

UQD: Colocynth, Alors, Scammony, Soap & Cardamon.

ATH: Can't tell.

4. What is the difference between Compound Extract of Colocynth and Compound Cathartic Pills?

UQD: It wants the addition of Calomel & gamboge.

ATH: Add scamony gamboge & Calomel to compound Extract of Colocynth.

5. What Purgatives are given in very small doses?

UQD: Croton Oil, Elaterium, &c.

ATH: Drastic Purgatives.

6. What medicines can be used as Purgatives, what as Diuretics, and what as Sudorifics?

UQD: Colocynth gamboges, Scammony, Calomel &c.—Squils Digitalis Sweet sp. of nitre—Dover's Powder neutral mixture, effervescing drafts nitre &c.

ATH: Calomel, Croton Oil, Mandrake &c as purgatives. Spirits of nitre, Tincture of Cantharides. Dover's Powders as Sudorifics & Seidlie Powder.

7. How ought a Blister to be treated for Endermic Application?

UQD: Apply your blister, remove the cuticle, then sprinkle your madisanal substance.
ATH: The collected fluid should be let out by puncturing the elevated cuticle, and covered with cotton batting or flour, and be protected from pressure. Question seems gloomy.

8. How would you prevent Strangury, and how treat it?
UQD: By the use of tissue paper salinated with the Tincture of Camphor, Injections of laudanum & starch water.

ATH: Strangury can be prevented by injections of warm water through the urethra, and avoidance of food containing lithic acid. Should be treated [with] small doses of diuretics and warm fomentations.

9. Name some of the indigenous substitutes for Peruvian Bark.
UQD: Dog-wood bark and yellow willow bark.

ATH: Wild cherry bark, Capsicum. Dog wood bark, thorough stem tea.

10. Name some of the indigenous Diaphoretics and Emetics.
UQD: Lobelia Sulfate Eupatorium perfoliate, Sassafras, Ipecacuanna.

ATH: Emetic, Lobelia, warm water, Old man tea. Thyme & Sage teas.

11. Write a prescription for a Mixture for the arrest of Diarrhoea.
UQD: Opium, Hoyd. cum oreta & Ipecacuanna.

ATH: One pint best Brandy, 20 grains Opium, ½ drachm tanin. Table spoon full doses every hour.

12. Write the formula for the composition of Hope’s Mixture as employed in Dysentery.
UQD: Nitric acid, laudanum & Champhor water.

ATH: Don’t recollect.

D. PRACTICE OF MEDICINE

1. What are your ideas of the responsibilities of an Army Surgeon?
UQD: It is a responsible situation because the life & death of his men often depends upon his skill as a Surgeon & Practitioner.

ATH: I think the responsibilities of an Army Surgeon most imminent, holding as he does the lives of patriot soldiers in his care. An error in diagnosis, in operations, in dressings and the general medical care of the field & city hospitals may damage the patient and reputation of the surgeon.

2. What would you desire to guard against and provide for, in the selection of a Site for a Hospital or Encampment?
UQD: I would guard against stagnant pools of water, marshy districts. Place the Hospitals or Encampments on elevated ground with a clear country around & running water.
ATH: Guard against miasma, against low marshy ground, proximity to stagnant water. Provide an elevated spot where pure air will insure sufficient ventilation. A spot that will be out of the reach of the enemy's guns for Hospital. For encampment, a spot that is sufficiently inclined to drain off the rain and offal, proximity to pure drinking and bathing water. A camp should be in an open field in preference to a woods.

3. Describe the symptoms and treatment of Small Pox.

UQD: Fever & pain in the head & back, nausea and vomiting, chilliness, constriction of the chest with laboured breathing, soreness of throat &c. Treatment. Commence with a dose of Calomel & after if necessary follow it with castor oil. Sweet sp. of nitre neutral mixture &c. When secondary fever sets in give nourishing diet, wine, quinine &c.

ATH: Asthenic fever, pulse weak and frequent, tongue furred & rusty, florid skin terminating in eruptions, which may be confluent or distinct pustules. Patient should have a cool well ventilated apartment, be given gentle cathartics sufficient to evacuate the bowels but not when the eruption is doing well on the surface. The great object should be to keep the eruption out else it would be fatal.

4. What conditions most predispose to Typhoid Fever?—and state its pathology and treatment.

UQD: An enfeebled & debilitated system caused by disease, fatigue, nursing, loss of sleep &c. Peyers glands become thickened, softened & ulcerated—mesenteric glands likewise. The liver, spleen & kidneys become softened. Treatment. A mild cathartic, refrigerants, such as effervescent draft. Sweet sp. of nitre. Sp. of Mindererus. When the skin & tongue is dry & the secretions of urine becomes less mucassalize the system. If it does not yield, turpentine. When the vital powers sink, beef tea, essence of beef, stimulants, quinine &c.

ATH: A scrofulous diathesis, an asthenic condition of body, constipation. Its pathology consists of low fever, small frequent pulse, pain in cerebellum, back, limbs, cold feet, inflammation of Peyers & Bruners glands, furred tongue, often getting black, an inclination to lie still owing to prostration. Frequent small doses of Turpentine when ulceration supervenes. Cold applications to head, warm to feet. Bowels free by enemas.

5. Describe the causes, symptoms, pathology, and treatment of Pernicious Fever.

UQD: Miasmatic. Symptoms—derangement of the digestion, respiration is laboured & suffocating, the circulation is lowered, the skin is pale, cold with a clammy sweat. The tongue is pale and cold, breath

ATH: Exposure in camp, hectic fever, low pulse, putrid condition of body. Treatment similar to Typhoid.

6. Describe the pathology, symptoms, and treatment of Dysentery.

UQD: It is an inflammation of the mucous membranes of the colon. Symptoms—fever, pain over the abdomen with frequent stools with straining with bloody & slimy stools. Treatment. A mild cathartic. Dover's powder, Calomel & Sugar of lead with chalk—injectons of a solution of morphine & Sugar of lead &c.

ATH: Pain, griping, tenesmus at stool, frequent evacuations, discharge of blood and mucous, sometimes of false membrane. Fever attending pulse slow & weak. Injections of warm water to free the bowels of crude matter, after which cool injections frequently given. Blister on abdomen. Opium in small doses.

7. Describe the symptoms, causes, and treatment of Scorbuts.


ATH: Lean, cadaverous look, teeth coated as in lead poison, similar to "Burtons Line," caused by bad, poorly cooked food, lack of vegetables. Should have a generous diet and general hygienic care, not very conversant with the disease.

8. What is Intussusception—what are its symptoms—what may it be confounded with, and how would you treat it?

UQD: It is the slipping of one bowel into itself—pain over the bowels very severe, sickness of stomach, Stercoraceous vomiting. It may be confounded with strangulated hernia. Treatment. Warm application over the bowels, opiates. When the [pain] diminishes give some active cathartic medicine.

ATH: Intussusception is the falling or entering of the Ilium into the Jejunum. Rain in hypogastrium, foecal vomiting, inability to evacuate, may be confounded with colic, pressure does not relieve pain. Fomentations to the abdomen, relaxent medicines, injections, finally operation. Sometimes pure mercury relieves it.
9. **What are the causes of Ascites—and how would you treat it?**

**UQD:** It is a dropical state of the abdomen and caused by inflammation of the peritoneum—disease of the liver &c. Treatment. Drastic cathartics, diuretics & diaphoretics.

**ATH:** Improper diet, foul localities, lack of functional action of absorbents. Preparations of iron, diuretics, &c.

10. **What are the symptoms, stages, and treatment of Pneumonia?**

**UQD:** Pain in the chest, difficulty of breathing, cough, oppressive feeling over the chest. The stages are congestion, red hepatisation and gray hepatisation. Treatment. Bleeding, cathartics, arterial sedatives such as tartar emetics & Calomel with Dover’s powder or ipecacuanna &c.

**ATH:** Cough, difficulty breathing, frequent pulse. Antiphlogistic treatment. Blister on chest.

11. **Write a formula for a Cough Mixture.**

**UQD:** Squills, Paragoric, liquorice, gum arabic & antimonial wine.

**ATH:** Pulverized licorice, gum arabic, morphia, antimonial wine.

12. **Describe the symptoms, diagnosis, and treatment of Scabies.**

**UQD:** It commences with a papula vesicle & pustules. We find it near the joints over the abdomen & thighs. Treatment. Sulphuric oint.

**ATH:** Itching, scratching, scabs, animal culae under cuticle. Bathe the body with soft soap and rain water. Sulphur & Iodide of sulphur applied externally.

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**NOTES**


2. *Medical and Surgical History of the Civil War,* (n. 1), iii.

3. *Medical and Surgical History of the Civil War,* (n. 1), v.

4. *Roster of Regimental Surgeons and Assistant Surgeons in the U. S. Army Medical Department during the Civil War.* (Gaithersburg, Maryland: Olde Soldier Books, 1989), 183–213. This lists Pennsylvania regiments with the name, rank, and service dates of surgeons and assistant surgeons.


9. Rothstein, American Physicians in the Nineteenth Century, (n. 8), 344.
15. Ibid., 44.
19. Allopathic attempts to block chartering of hydropathic medical schools are referred to by Dr. Russell T. Trall in the Water-Cure Journal and Herald of Reforms (New York: Fowler and Wells) beginning with the March 1856 issue. An August 1858 (p. 32) article states, “Another event which looks to me like a very cheering sign is, the establishment of the Hydropathic College in New York City. The fact that a charter was obtained for it from the New York legislature, against the powerful influence of the old-school physicians, is a cheering indication of the times.” The Water-Cure Journal is available on microfilm as part of the American Periodical Series: 1800–1850 (Ann Arbor: UMI), reel 577.
26. Gillett, Army Medical Department, (n. 24), 180.
28. Medical and Surgical History of the Civil War, (n. 1), v.

31. Letter from A. T. Hamilton to Col. John Hamilton dated March 13, 1863. All letters from Hamilton referred to in this article are unpublished and in private hands.


33. At 41 years old, Davis was not the oldest member of the regiment. Colonel Beaver described two older men in Company F: "...two specially fine woodsmen who were much over age—Wash Watson and Bill Perry...must have been well onto sixty years of age. Watson had a long white beard and Perry, although close shaven, seemed to be of equal age." Story of Our Regiment: A History of the 148th Pennsylvania Vols, ed. J. W. Muffly (Des Moines, Iowa: Kenyon Printing, 1904), 71.


46. Haller, Kindly Medicine, (n. 7), 69.

47. Flannery, “Another House Divided,” (n. 16), 487.

48. Ibid.

49. Pennsylvania State Archives, Harrisburg. Records of the Department of Military and Veterans’ Affairs, Record Group 19. Reports of Examination of Candidates for Appointment as Medical Officers, 1861–1865 (19.174), Box 7-2879. Documents include instructions to graders, grade sheets, and comments regarding exams.


51. Flannery, “Another House Divided,” (n. 16), 487.

52. Rutkow and Rutkow, "Homeopaths, Surgery, and the Civil War," (n. 10), 788.

53. Ibid.
58. Ibid.
61. The esteem in which individuals were held is apparent when reading Story of Our Regiment, ed. J. W. Muffly, (n. 33). Over 90 essays written by the officers and men provide one of the more compelling histories written by a Civil War regiment.
64. Jacob Krider/Jacob Kreider Court Martial documents. MM122. National Archives. Obtained through The Index Project.
68. Ibid.