

РОЗДІЛ IV. ПРОБЛЕМИ ПОРІВНЯЛЬНОЇ ПЕДАГОГІКИ

UDC 378.096:61:005.342(73)Dart «17/18»

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DOI 10.24139/2312-5993/2020.10/423-433

DARTMOUTH MEDICAL SCHOOL IN THE USA: ESTABLISHMENT, INNOVATORS, AND INNOVATIONS (THE LATE 18TH – 19TH CENTURY)

The article reveals the peculiarities of the Dartmouth Medical School establishment. Moreover, the author appeals to American outstanding innovators and innovations from the late 18th century to the 19th century. Note that N. Smith was an innovator-organizer of American medical schools (Dartmouth Medical School, Yale School of Medicine, Bowdoin Medical School, and Jefferson Medical College in Philadelphia). Besides, N. Smith's methods of typhus treating and certain surgical operations, as ovariectomy, staphylococci, were innovative in American medicine. Also, R. Mussey, D. Crosby, E. Peasley, C. Frost provided innovative activity at Dartmouth Medical School during the 19th century. Among the crucial innovations, there were new departments, implementation of new teaching methods within the educational process, use of various European practices and devices, including the X-ray apparatus, etc.

Key words: *Dartmouth Medical School, innovations, educational process, recitation semester, innovators, N. Smith, R. Mussey, D. Crosby, E. Peasley, C. Frost.*

Introduction. In 1879 O. Hubbard, Professor of Chemistry and Pharmacy, stated that Dartmouth Medical School was “one of the oldest medical schools in this country (the USA. – A.K.), there being but two of earlier date...” (Hubbard, 1880). Although, according to other references, Dartmouth Medical School was the fourth, not the third, medical institution established in the United States (*Catalogue of Dartmouth...*, 1911, Chapman, 1973).

In “Centennial Exercises, Tuesday, June 29, 1897: Historical Address” (1897), Ph. Conner noted, “as there has been a steady evolution from the little school that Nathan Smith established, so must there be in the years to come to continuing growth, a constant adaptation to the demands of the time or having outlived her usefulness it will be numbered with the things that were. It has had honorable past, may she have a yet honorable future, and at the close of another hundred years (the late 1990s. – A. K.) may her sons gather about her to tell of her glories and to do her reverence» (*Dartmouth Medical College*, 1897).

Analysis of relevant research. Analysis and systematization of references dedicated to the activities at the Dartmouth Medical School of the late 18th century – 19th century, made it possible to summarize that this issue was described in the catalogs of the medical school, introductory lectures (R. Mussey (1818), S. Bartlett (1878), Ph. Conner (1897) and others); works by

C. Chapman (1973), P. Spiegel (1995), B. Blough, D. Grossman (1999) and others; in biographical investigations (F. Blaisdell (1907), E. Smith (1914), J. Spalding (1916, 1926), etc.).

Aim of the Study. The article focuses on the features of the Dartmouth Medical School establishment, outstanding innovators, and innovations from the late 18th century to the 19th century.

Research Methods. To achieve the aim of the study, we have applied the following methods: analysis, synthesis, systematization, and generalization of archival sources that deal with this issue; biographical method – to study the life and professional path of the innovators at the Dartmouth Medical School in the outlined chronological period; historical and genetic method – to reveal the establishment and development features of the Dartmouth Medical School, in particular its innovative activities.

Results. The medical school was part of Dartmouth College. In our opinion, the circumstances of the Dartmouth College establishment are interesting. Note that after its opening it played a leading role in the formation of the medical education institution as a structural unit.

Beginning from 1752 in Lebanon, Connecticut E. Wheelock conducted charitable educational Christian missionary work for Indian youth at Moor's Indian Charity School (Hubbard, 1880).

Later, E. Wheelock also decided to educate English youth as missionaries for the Indian tribes, and in 1764 his school had thirty teachers, about half of whom were Indians. His idea was to train Indians not only in Christian education but also in the humanities and ways of civilized life, medical care so that when they would return to their tribes with the English missionaries, they could inspire other people for general prosperity (*General Catalogue of...*, 1890).

However, he wanted to move the school closer to the Indian tribes and develop it as a general education college. At that time, E. Wheelock received many invitations from various states, including New Hampshire. The proposals from the latter proved to be convincing and favorable for the further school, so in December 1769 E. Wheelock received permission from local authorities to establish an education institution. In 1770, his relatives and he moved to New Hampshire and built a new education institution, becoming its first president. Unfortunately, the Indian school ceased to exist and was replaced by a new college with several departments, which held leading positions in the United States (Hubbard, 1880).

Observing the development of medical education and personally encountering certain moments on the way to the medical profession, in particular

the fact that the distance between the people of New Hampshire made it difficult to attend them, in August 1796 Nathan Smith (1762 – 1829) appealed to the Board of Trustees of Dartmouth College to support and approve the plan he had developed for the position of Professor of Medical Theory and Practice, implying that the new college in Hanover would train physicians and improve medical care in the state (Hubbard, 1880, Blough, Grossman, 1999).

In this regard, E. Smith noted that “the scheme, novel and far-reaching, was favorably received and discussed by the Trustees, a resolution complimentary to the character and energy of Dr. Smith passed, and hope given for future encouragement...” (Smith, 1914). N. Smith purchased books and devices for the school library at his own expense (*Dartmouth Medical College*, 1897). Later, in 1803 and 1809, he was reimbursed for those expenses (*Documents Chiefly from Records...*, 1897).

The first lecture on Medicine at Dartmouth College was held on November 20, 1797, with N. Smith’s participation. He conducted a full 10-week course alone (Spalding, 1916, Chapman, 1973). In 1798, he became a professor with a salary and he was to give public lectures on Anatomy, Surgery, Chemistry, Theory, and Practice of Medicine in a small two-stored building with four rooms. In June of that year, two graduates received bachelor’s degrees (Hubbard, 1880, *Catalogue of Dartmouth Medical...*, 1911). It was a courageous step for a young educator who worked unassisted and was alone. However, after twelve years of hard work, the reward was that the college was firmly established and many other professorships were added (*General Catalogue of...*, 1890).

N. Smith spoke little about the theory but insisted on the facts and principles illustrated by cases from his medical practice (Hubbard, 1880). Besides, he had a habit of tracing history from ancient times to the days he gave his lectures (Smith, 1914).

Although J. Spalding argued that Dr. Spaulding taught Chemistry and Pharmacology, while Dr. Smith lectured on other fields of medicine and performed surgery operations (Spalding, 1916). L. Spalding assisted N. Smith during 1798 – 1799 (*Dartmouth Medical College*, 1897).

According to the general regulations for medical education at Dartmouth College, it was stated that training should begin annually on October 1 and last for 10 weeks. The professor had to give at least 3 lectures daily within three branches of medicine (*Documents Chiefly From...*, 1897).

In 1799 the Board of Trustees provided another room for lectures, in 1803 there was one more room, which was a lecture hall, a dissection room, a laboratory, and a library. However, the school prospered in those inadequate

conditions. N. Smith did not despair and found financial sources, asked the state authorities for help, and tried his best to train future professionals. Thus, the development of the college was obvious, and in 1814 the number of students increased to seventy-seven (Hubbard, 1880).

E. Smith noted that “the old hall of the Medical Building at Dartmouth was the scene of many minor operations, and when sufferers were brought from distant places to be relieved from complaints and injuries, after the wheeling back into the little dressing room of the operating hall, they were often subjected to the further ordeal of being transported to their homes on mattresses in wagons. But, despite the want of later-day science, the majority of patients recovered and lived long lives” (Smith, 1914).

In 1801, the term of study was extended from two to three years, ending with a Bachelor’s degree in medicine. To get a doctorate, one had to study for another two years. Besides, in the early 19th century an Anatomical museum was opened at the Dartmouth Medical School (*Dartmouth Medical College*, 1897).

Note that N. Smith was tolerant concerning the opinions of his colleagues about teaching. For example, in a letter from January 22, 1806, to G. Shattuck, N. Smith pointed out that the classification of diseases given by Professor Rush was not material, because the disease had to be studied very carefully. Moreover, according to N. Smith, there was no logical connection between the name of the disease and the word “state”, which was added to it (Smith, 1914). Besides, Professor Smith was so committed to his profession and vocation – to teach medicine, so he was always willing to sacrifice his own time and well-being for the sake of teaching, and helping others (Smith, 1914).

N. Smith’s students and followers listened to his thoughts. Thus, in 1807, L. Spalding put forward for discussion and voting the thesis that “no physician to be qualified for practice unless a graduate from a respectable university, and no medical man not so qualified to have legal power to collect debts” (Smith, 1914).

N. Smith strived for self-education, invited like-minded people and the best specialists of that time to work at Dartmouth Medical School. Therefore, in 1808 he invited O. Ramsey, whom he considered the best anatomist in America, to give a course of lectures on Anatomy. O. Ramsey began a new era in the development of college and Anatomy as a science. In the same year, N. Smith suggested cancer (Smith, 1914).

In 1809, N. Smith submitted a personal application to the legislature of the state of New Hampshire to allocate the construction of a new building for the medical school. As a result, the legislation supported this idea. So, in 1810, Dartmouth Medical School moved to a new two-stored building planned by

N. Smith, with two spacious lecture rooms, a chemical laboratory, a museum, and a library (Smith, 1914).

The last organizational steps in this institution of medical education were in 1810. N. Smith appealed to the Board of Trustees with the purpose to establish the Department of Anatomy and Surgery. S. Perkins, his student, became the head of it. Besides, the degree of Doctor of Medicine was firstly conferred in 1812 (*Dartmouth Medical College, 1897, Catalogue of Dartmouth...*, 1911, Smith, 1914). Moreover, in 1812, N. Smith and S. Perkins treated the population near Dartmouth Medical School from an epidemic of typhus, without saving only one patient. Dr. Smith's remarkable success in rescuing many patients from that disease was due to his original and independent treatment, which he developed and practiced in 1798 in Cornish (Smith, 1914).

Dr. Smith worked at Dartmouth Medical School until 1813. What caused his dismissal from that institution is not known (*Dartmouth Medical College, 1897, Catalogue of Dartmouth...*, 1911, Smith, 1914).

However, in 1816, Dr. Smith returned to give another course of lectures, which was attended by sixty-six physicians and forty-four students. During his lectures, N. Smith focused on the history of medicine from Hippocrates and the 1810s, the effects of injuries and wounds to the skull and brain, the climate of New Hampshire, and the diseases that were prevalent in the state. Moreover, he was re-elected to the professorship the same year but resigned. Therefore, the Board of Trustees considered his decision to leave Dartmouth final (Smith, 1914).

E. Smith considered that N. Smith was "in medicine one of the greatest men of his day in America, a pioneer, who made important innovations in the treatment of diseases, raising the standard of medical science from a very low estate" (Smith, 1914).

It should be noted that N. Smith was an innovator-organizer of American medical schools (Dartmouth Medical School, Yale School of Medicine, Bowdoin Medical School, and Jefferson Medical College in Philadelphia). He helped coordinate and establish the educational process at those schools. Besides, he was the second among ovariotomists, performing the original operation in 1821. Out of thirty cases of lithotomy, only three were fatal. He did not lose a single patient with hemorrhage as a result of operations, and he made staphylography for the first time in America. Twenty cataract surgeries, one eye removal, one leg amputation, and more operations were performed at his surgical clinic. Regarding necrosis, hip amputation, reduction of hip dislocation, and treatment of fractures, his principles and instruments were new and valuable (Hubbard, 1880).

One of Smith's followers was Reuben Mussey (1780 – 1866), Professor of Theory and Practice of Medicine and Obstetrics. F. Blaisdell emphasized that “Mussey seems to have been born to carry on the splendid work of Nathan Smith, coming into life at just the right time, and under just the right influences to have the mantle of his distinguished predecessor fall upon him” (Blaisdell, 1907).

In 1818, R. Mussey believed that the medical profession was a separate philosophy that needed careful consideration. He also noted that the future doctor should always use that method both in the educational process and during self-education: one needed to identify a specific topic, read what each author wrote on it, well remember the features of each author, making certain records, and then summarize the information obtained by writing an article on the subject, which would contain the thoughts found in the books, and their thoughts. Besides, one should regularly read the best professional periodicals, which might be the impetus for future ideas (Mussey, 1818), and later – for innovations. In our opinion, such advice was innovative in the 19th century, as it was traditional to study and memorize textbooks by heart without showing the individuality of a student, his creativity.

Moreover, R. Mussey advised students to have a journal of unusual cases and describe everything that happened during them (Mussey, 1818). He was the first in the history of American medicine to connect the two carotid arteries and successfully perform many other complex operations (Blaisdell, 1907).

In 1820, four separate departments were established: Anatomy and Physiology; Theory and Practice of Medicine, Pharmacology, and Botany; Surgery, Gynecology and Medical Law; Chemistry, Mineralogy, and the Application of Science to the Arts (Chapman, 1973). Thus, there was a distribution of responsibilities and functions. Moreover, that year the New Hampshire Medical Association decided to elect representatives who would attend the final exams. In 1821, a 9-month academic year was proposed, combining lectures with classroom practical classes. However, within a few years this innovation disappeared (Dartmouth Medical College, 1897).

Furthermore, in 1820 the beginning of the semester fell on September 21 and lasted two weeks longer than usual. In 1825, the semester began on September 8, in 1832 – on August 30, in 1836 – on August 11, in 1840 – on August 6, and ended before Thanksgiving Day. So, from the beginning of August to the end of November there was a semester. The changes happened in 1886, when the semester had 20 weeks, started in the second half of July and ended on March 1 (*Dartmouth Medical College*, 1897).

Another prominent innovator at Dartmouth Medical School was Dixie Crosby (1800 – 1873). From his youth, D. Crosby had a rebellious and innovative zeal. During his student years, he dared to make a serious surgical step, successfully amputating the gangrenous leg of a hopeless patient. For another case, he used a set of tools to amputate the leg: an ordinary carved knife, a carpenter's saw, and a chisel. The operation was successful. D. Crosby always observed new methods and operations (Spalding, 1926).

After successfully graduating from Dartmouth Medical School, D. Crosby devoted ten years to private practice. In 1835, he removed a large osteoma that had grown into the clavicle and shoulder blade, turning a weak patient into a healthy young man (Spalding, 1926).

In 1838, he was Professor of Surgery at Dartmouth Medical School, and later Professor of Gynecology. Therefore, people respected D. Crosby as a skilled physician, students – as an excellent lecturer with original pedagogical principles (Spalding, 1926).

One of Crosby's innovations was to reduce the dislocation of the thumb by bending the phalanx back, under pressure, the bone quickly got its place. The professor was also known as "Crosby's elbow" because of his original method of splitting adhesions in the joint (Spalding, 1926).

In the 1850s, D. Crosby opened a small hospital on North College Street and ran it until 1870. He was the first to introduce ether anesthesia in Hanover (Chapman, 1973). Besides, D. Crosby was an active member of the New Hampshire Medical Society, where he constantly covered the theoretical background and practical tips concerning unknown diseases (Blaisdell, 1907).

Edmund Peaslee (1814 – 1878), Professor of Anatomy and Physiology at Dartmouth Medical School, published world well-known works on human histology, and ovarian tumors (Blaisdell, 1907). According to S. Bartlett, "his Histology was the first systematic work on the subject in the English language, and his Ovariectomy was at the time the only complete monograph on those subjects which had been published in any language, while some of his surgical operations were the first of their precise kind in New England" (Bartlett, 1878).

E. Peaslee was also the first to remove both ovaries through a single incision; applied vaginal drainage after laparotomy; systematically washed the abdominal cavity after surgery (Blaisdell, 1907).

As for the educational process, he was open to students. If something was unclear during his lectures, he offered to visit his consultations at any time. Students always came to E. Peaslee, knowing that their visits would be appropriate (Blaisdell, 1907).

In 1871, the Vermont Medical Society announced its intention to send the accredited representatives to participate in the final examination session of Dartmouth Medical School graduates (*Dartmouth Medical College*, 1897).

In 1874, Carlton Frost (1830 – 1896) was the first dean of the Medical School (Chapman, 1973), who introduced an innovation – “recitation term”, which began in January and lasted until June, according to which students worked hard in classrooms, anatomical and chemical laboratories of the medical school. The students liked this semester and they repeated it two or even three times (*Dartmouth Medical College*, 1897). Besides, C. Frost founded the Dartmouth Hospital Association, which helped with certain issues regarding the land and found a patron. As a result, the Mary Hitchcock Memorial Hospital was opened in 1893, which was closely associated with the Medical School (Chapman, 1973).

In 1884, the curriculum was updated. Thus, courses in Surgery and Practice consisted of sixty-six lectures each. The course of Anatomy and Physiology was extended to ninety-nine lectures. The Chemistry course consisted of lectures and laboratory work. Courses in Obstetrics and Therapy had forty-four lectures each, and a course in Gynecology had twenty-two lectures. There was a reduction in lectures on Medical Law, Mental Disorders, Ophthalmology, Laryngology, etc. (*New Hampshire Medical...*, 1884).

At the end of several courses, students had to pass a final written exam. After reviewing works at the Medical School, they were submitted for reviews to New Hampshire and Vermont Societies, which also tested candidates orally to determine their suitability for future medical practice (*New Hampshire Medical...*, 1884).

In 1894, Dartmouth Medical School had a new dissection room (Chapman, 1973).

An interesting innovation for the teaching staff of Dartmouth Medical School was W. Roentgen’s discovery in November 1895. In January 1896, an accident occurred in Hanover that eventually led to the first X-ray testing in U.S. history (Spiegel, 1995).

A young man injured his left wrist. He was visited by G. Frost, Professor of Medicine at Dartmouth Medical School. E. Frost, Professor of Physics and Astronomy at Dartmouth College, was experimenting with H. Langill and F. Austin concerning new mysterious rays. When the portable device was ready, E. Frost invited the young man for the procedure. As a result, the study showed a fracture of the ulna. In 1903, the first X-ray apparatus was installed at Hanover Hospital (Spiegel, 1995).

All the teachers-surgeons at Dartmouth Medical School were united by the fact that they did not wait until they were shown operations before they were performed (Blaisdell, 1907). They were risking and became innovators.

Conclusions. Thus, in the 1770s, in New Hampshire, E. Wheelock established Dartmouth College as a general education institution. At the end of the 18th century, due to certain circumstances, N. Smith suggested creating a medical school in Dartmouth College. As a result, there was a positive response from the Board of Trustees. Initially, N. Smith taught almost all disciplines alone. At the beginning of the 19th century, N. Smith updated the curriculum, changed the duration of study at Dartmouth Medical School, and opened an Anatomical museum with exhibits from his collection.

Moreover, N. Smith was an innovator-organizer of American medical schools (Dartmouth Medical School, Yale School of Medicine, Bowdoin Medical School, and Jefferson Medical College in Philadelphia). Besides, N. Smith's methods of typhus treating and certain surgical operations, as ovariectomy, staphyloraphy, were innovative in American medicine. Also, R. Mussey, D. Crosby, E. Peasley, C. Frost provided innovative activity at Dartmouth Medical School during the 19th century. Among the crucial innovations, there were new departments, implementation of new teaching methods within the educational process, use of various European practices and devices, including the X-ray apparatus, etc.

As for prospects for further research, we will cover the historical and pedagogical experience of medical education in Ukraine during the same period.

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РЕЗЮМЕ

Куличенко Алла. Дартмутская медицинская школа в США: основание, инноваторы и инновации (конец XVIII в. – XIX в.).

В статье раскрываются особенности создания Дартмутской медицинской школы. Кроме того, автор обращается к выдающимся американским инноваторам и инновациям конца XVIII в. – XIX в. Необходимо отметить, что Н. Смит был инноватором-организатором американских медицинских школ (Дартмутская медицинская школа, Йельская медицинская школа, Боудоинская медицинская школа и медицинский колледж Джефферсона в Филадельфии). Методы Н. Смита касательно лечения сыпного тифа и некоторые хирургические операции (овариотомия и стафилография) были инновационными в американской медицине. Кроме того, Р. Масси, Д. Кросби, Э. Писли, К. Фрост обеспечивали инновационную деятельность в Дартмутской медицинской школе в XIX в. Важными инновациями стало основание новых кафедр, внедрение новых методов обучения в образовательный процесс, использование различных европейских практик и устройств, включая рентгеновский аппарат и т.д.

Ключевые слова: Дартмутская медицинская школа, инновации, образовательный процесс, аудиторный семестр, инноваторы, Н. Смит, Р. Масси, Д. Кросби, Э. Писли, К. Фрост.

АНОТАЦІЯ

Куліченко Алла. Дартмутська медична школа у США: заснування, інноватори та інновації (кінець XVIII ст. – XIX ст.).

У 1770-х рр. в американському штаті Нью-Гемпшир Е. Вілок заснував Дартмутський коледж як заклад загальної освіти. Наприкінці XVIII ст., зважаючи на певні обставини у штаті щодо надання медичної допомоги, до адміністрації

Дартмутського коледжу звернувся Н. Сміт, у майбутньому один із найвідоміших лікарів та хірургів, освітян-інноваторів. Він запропонував створити медичну школу при коледжі. Отже, статтю сфокусовано на висвітленні особливостей заснування Дартмутської медичної школи, видатних інноваторів та інновацій з кінця XVIII ст. та впродовж XIX ст. Для досягнення мети статті було використано такі методи: аналіз, синтез, систематизація й узагальнення архівних джерел, присвячених зазначеному питанню; біографічний – для вивчення життєвого та професійного шляху інноваторів Дартмутської медичної школи окресленого хронологічного відрізка; історико-генетичний – для послідовного розкриття становлення та розвитку Дартмутської медичної школи, зокрема її інноваційної діяльності.

Н. Сміт був інноватором-організатором американських медичних шкіл, оскільки особисто допоміг скоординувати й налагодити освітній процес (Дартмутська медична школа, Єльська медична школа, Боудоїнська медична школа та медичний коледж Джефферсона у Філадельфії). На початку XIX ст. освітянин оновив навчальний план, змінив тривалість навчання в медичній школі й відкрив анатомічний музей із експонатами з власної колекції. Крім того, він завжди мав чітку громадську, наукову та викладацьку позицію, за що його шанували колеги, студенти і хворі. Методи Н. Сміта щодо лікування висипного тифу та деякі хірургічні операції (оваріотомія і стафілографія) були інноваційними в американській медицині. Крім того, Р. Массі, Д. Кросбі, Е. Пізлі, К. Фрост забезпечували інноваційну діяльність у Дартмутській медичній школі у XIX ст. Важливими інноваціями стало заснування нових кафедр, упровадження нових методів навчання в освітній процес, використання різних європейських практик та пристроїв, зокрема рентгенівського апарату тощо.

Перспективами подальших досліджень є звернення до історико-педагогічного досвіду медичної освіти України, його всебічне осмислення.

Ключові слова: *Дартмутська медична школа, інновації, освітній процес, аудиторний семестр, інноватори, Н. Сміт, Р. Массі, Д. Кросбі, Е. Пізлі, К. Фрост.*

УДК 378.4.147:615.8-051]-027.561:37.02(489)

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DOI 10.24139/2312-5993/2020.10/433-448

ДИДАКТИЧНІ ЗАСАДИ ПРОФЕСІЙНОЇ ПІДГОТОВКИ ФАХІВЦІВ З ФІЗИЧНОЇ ТЕРАПІЇ У ВИЩИХ НАВЧАЛЬНИХ ЗАКЛАДАХ ДАНІЇ НА ПРИКЛАДІ КОПЕНГАГЕНСЬКОГО УНІВЕРСИТЕТУ ПРИКЛАДНИХ НАУК

У статті проаналізовано зміст професійної підготовки фахівців із фізичної терапії у вищих навчальних закладах Данії з використанням аналізу, систематизації, порівняння й узагальнення навчального плану, наукових даних, клінічної освіти та здатності мислити по-новому. Визначено дидактичні засади професійної підготовки фахівців із фізичної терапії. Проаналізовано навчальний план підготовки бакалаврів фізичної терапії в Копенгагенському університеті прикладних наук, де навчаються фахівці з фізичної терапії. Висвітлено педагогічні, традиційні, інноваційні технології та використання інформаційно-комунікаційних технологій у Копенгагенському університеті прикладних наук для підготовки фахівців із фізичної терапії та умови здійснення їх професійної діяльності.