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## John Jacob Abel at Michigan

### The Introduction of Pharmacology into the Medical Curriculum

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ON October 20, 1891, John Abel addressed a meeting of the Michigan State Pharmaceutical Association in Ann Arbor. He spoke on "The Methods of Pharmacology with Experimental Illustrations" and described the beginnings of this science in Europe:

. . . the insufficiency of the mere bedside study of medicines . . . led to the erection of special pharmacological laboratories in which the experimenters (could) build up their science, undisturbed by the intrusive demands of practical utility.

At another point in the lecture Abel explained:

Briefly, this science tries to discover all the chemical and physical changes that go on in a living thing that has absorbed a substance capable of producing such changes, and it also attempts to discover the fate of the substance incorporated. It (pharmacology) is not therefore an applied science, like therapeutics, but is one of the biological sciences, using that word in its broadest sense. Like its sister sciences, physiology, physiological chemistry, and pathology, it is making great progress along certain physical and chemical lines, which is pioneer work of a necessary kind toward the explanation of vital processes.

To amplify his presentation, Dr. Abel illustrated the effects of certain drugs upon animals. A rabbit which had been paralyzed with curare was used to show his audience the effects upon blood pressure of the administration of chloroform, alcohol, and ammonia. Another rabbit was used to demonstrate the ability of theobromine to increase the rate of urine formation. A biochemical phase of pharmacology, while not actually demonstrated to the audience, was described in terms of animal experiments. Dr. Abel cited the metabolic fate of benzylamine as an illustration of the varied chemical reactions which can occur in the living body. If benzylamine is fed to a dog, he said, the material is first hydrolyzed to form benzyl alcohol, which in turn is oxidized to benzoic acid, and this substance combines with glycine to form hippuric acid. The hippuric acid appears in the dog's urine.

The text of Dr. Abel's address before the Pharmaceutical Association was printed in the journal, *Pharmaceutical Era*, in 1891, and a pharmacologist reading the article 70 years later will find it a remarkably modern presentation. At the time that Abel delivered the address, he had been on the faculty of the Department of Medicine and Surgery of The University of Michigan

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for less than one year, and he was the only person in America then holding an academic chair in pharmacology (Figure 1).

The appointment of Abel to The University of Michigan faculty marks the introduction of pharmacology into the medical curriculum. The latter years of the nineteenth century saw the rapid development of such basic medical sciences as biological (physiological) chemistry, physiology, pathology, and bacteriology. In this movement toward scientific medicine, pharmacology was a relatively late arrival. This was due in part to the fact that pharmacology represented not a new subject for medical study, but rather a new approach to an old subject—the application of scientific method to the investigation of the actions of drugs.

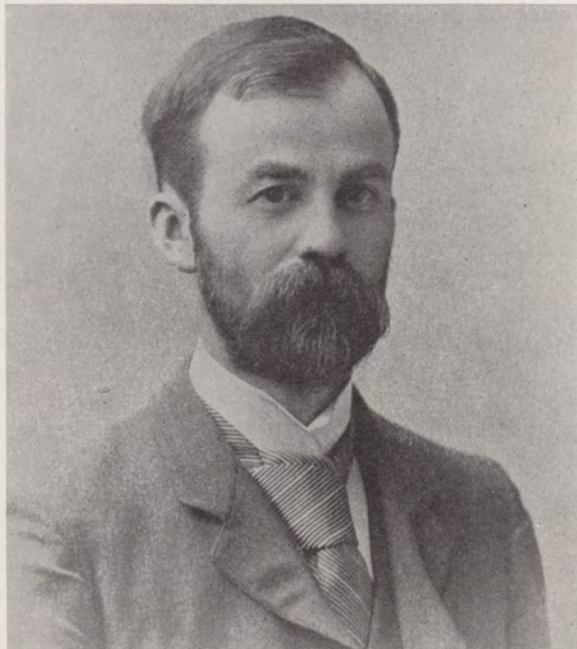


Fig. 1.—Dr. John J. Abel. This photograph was made while he was on the Michigan faculty.

The University of Michigan Department of Medicine and Surgery (as the medical school at Ann Arbor was then entitled) played a leading role in this change toward scientific medicine, and it is not remarkable that the first American professorship of pharmacology was established at Ann Arbor. Michigan's leadership in this area was made possible by the favorable financial structure of the medical department of that institution, and the initiative for the changes was supplied by a scientifically trained physician, Dr. Victor C. Vaughan, who held a position of leadership in the school.

Abraham Flexner, in his 1910 report on *Medical Education in the United States and Canada*, reviewed the history of American medical schools. He pointed out that the first American medical schools were established in the

latter half of the eighteenth century as integral parts of colleges or universities. Early in the nineteenth century, however, a proprietary medical school was set up in Baltimore, and this was followed by the rapid appearance of many such schools all over the country. Even the old medical schools soon followed suit, becoming virtually independent, proprietary-type institutions, Flexner wrote.

A proprietary medical school represented a group of physicians who had decided to augment their incomes by teaching their art to prospective doctors. The income of such a school came entirely from fees paid by the students, and all money remaining after expenses had been met was divided in some manner among the faculty members. Since instruction was conducted almost entirely by the lecture method, the expenses of such a school were minimal and the profit to the faculty members considerable. Such a system did not encourage the establishment of expensive teaching laboratories nor did it make possible full-time faculty appointments or extensive research activities on the part of the faculty members. Flexner pointed out that these conditions were maintained until the 1880's, when a movement toward university affiliation of medical schools began. Today almost all medical schools are departments of institutions of higher learning.

The University of Michigan's medical school has never been proprietary. It opened its doors in September 1850 as an integral part of the University and reaped the advantages of financial support from the state and intellectual support from the academic environment. For the first few years the curriculum of the medical department was similar to that of other medical schools of the era. It consisted of a course of lectures which lasted for four months, and a student sat through this course of lectures twice. The remainder of the student's medical education was in the hands of his preceptor, with whom he "read medicine," observed the preceptor caring for his patients, and made himself generally useful. Two courses of lectures at the University and a total of three years' study of medicine qualified a person for the M.D. degree in mid-nineteenth-century Michigan. During the early years of the medical department there were no student laboratories, no clinics, and no University Hospital.

When courses in the basic medical sciences were introduced into the curriculum of American medical schools, the curriculum was lengthened from two to three and then to four years to accommodate them, and the structure of medical school faculties was altered radically. The teaching of laboratory courses increased greatly the expense of running a medical school. It required capital outlay for the initial construction of laboratory facilities, the continuing expenses for laboratory supplies, and the full-time employment of scientifically trained teachers. Teachers qualified to give instruction in these basic sciences, even if they held M.D. degrees, usually were not engaged in the private practice of medicine, but instead devoted their non-teaching energies to scientific research. Therefore they were not in a position to augment their teaching salaries with the income from a medical practice, and the schools were obliged to offer them full-time academic positions instead of the part-time appointments which were attractive to the teachers of clinical medicine.



The proprietary medical schools were unable to keep up with the financial demands imposed by this revolution in medical education, and with the passage of time they ceased to exist. The University of Michigan medical department, on the other hand, was in the fortunate position of receiving its financial support not only from student fees but also from the legislature of the state of Michigan. This additional financial resource made it possible for The University of Michigan to take the lead in changing the American medical curriculum.

Dr. Victor C. Vaughan played a prominent role in the growth of the scientific disciplines in the Michigan medical curriculum (Figure 2). He came to Ann Arbor in 1874 to pursue graduate studies in chemistry. In June 1875 he



Fig. 2.—Dr. Victor C. Vaughan as he appeared in 1893.

received a Master of Science degree and the following fall he became one of the first two candidates for an earned Ph.D. degree at The University of Michigan. During that academic year he was pressed into service teaching chemistry to the medical students, and thus he began an association with the medical department which continued until his retirement in 1921.

The decade of the 1880's saw the rapid development of the basic medical sciences at Michigan and Dr. Vaughan figured prominently in these changes. The professorship of physiology was established in 1881, and Vaughan nominated Henry Sewall for the post. Also in 1881 Vaughan first offered a course in "Sanitary Science," which was the forerunner of instruction in bacteriology which he began in 1888. In 1883 Vaughan was appointed Professor of Physiological and Pathological Chemistry, and he was the first person to hold such a

professorship in an American medical school. In 1890 Vaughan was responsible for the appointment of Abel to the Michigan faculty. Vaughan became Dean of the Medical School in 1891.

The medical curriculum has always included instruction in the uses and dosage of drugs. Prior to the introduction of pharmacology, this instruction was given under the heading of materia medica and therapeutics. Such teaching was in the hands of men who were first and foremost medical practitioners, not scientific investigators. Frequently a professor of materia medica and therapeutics was responsible also for giving instruction in one of the branches of clinical medicine. As Dr. Torald Sollmann has said:

Medical teaching was by practitioners on a part-time basis; very part. And "Materia Medica and Therapeutics" was a traditional stepchild to something better; a chair in Medicine, perhaps . . .

Each of Abel's predecessors in the chair of materia medica had been responsible for giving instruction in some other discipline as well. The first man to hold the professorship was Dr. Silas Douglas who did not teach the subject at all but instead offered instruction in chemistry. During the period from 1850 to 1854 materia medica was taught by Dr. Jonathan Adams Allen, whose title was Professor of Pathology and Physiology. From 1854 through 1861 the lectures in materia medica and therapeutics were given by Dr. Alonzo B. Palmer, who was also responsible for instruction in diseases of women and children, pathology, and the theory and practice of medicine. Samuel Glasgow Armor, from 1861 to 1868, held the title of Professor of the Institutes of Medicine and Materia Medica. From 1868 to 1876 Henry S. Cheever was first Lecturer in Therapeutics and Materia Medica and later Professor of Therapeutics, Materia Medica and Physiology. Dr. Abel's immediate predecessor at Michigan was Dr. George E. Frothingham, who held for some years the lengthy title of Professor of Materia Medica, Ophthalmology, Aural Surgery and Clinical Ophthalmology (Figure 3). In 1889 Dr. Frothingham was fired.

For a number of years Dr. Frothingham and some of his colleagues had felt that The University of Michigan medical department was falling behind because the small town of Ann Arbor offered too few cases of certain types to permit adequate clinical instruction. These men advocated moving at least the clinical portions of the medical department to Detroit, where a much larger patient population would be available for clinical instruction.

Matters came to a head in 1889 when the Michigan legislature appropriated the sum of \$50,000 for the construction of a new University Hospital on Catherine Street in Ann Arbor, on the condition that the city of Ann Arbor appropriate \$25,000 to this end. The question was put to the Ann Arbor voters and the appropriation passed. Dr. Frothingham and Dr. Donald Maclean, the Professor of Surgery, were particularly strenuous in their attempts to defeat this project, realizing that the establishment of a new hospital in Ann Arbor would eliminate any chance of moving the clinical instruction to Detroit. The Board of Regents of The University of Michigan decided that Drs. Frothingham and Maclean had gone too far in their opposi-



tion to the proposal and at their meeting in June 1889 passed the following resolution:

*Resolved*, That in the opinion of this Board Professors Maclean and Frothingham have placed themselves in such antagonism to the policy adopted by the Board, both by their language and conduct, that their usefulness as professors in the Medical Department of the University has been so far impaired that it is not desirable that they should longer continue their connection with The University.

Therefore, the President is requested to communicate to Professors Maclean and Frothingham the willingness of this Board to accept their resignation.

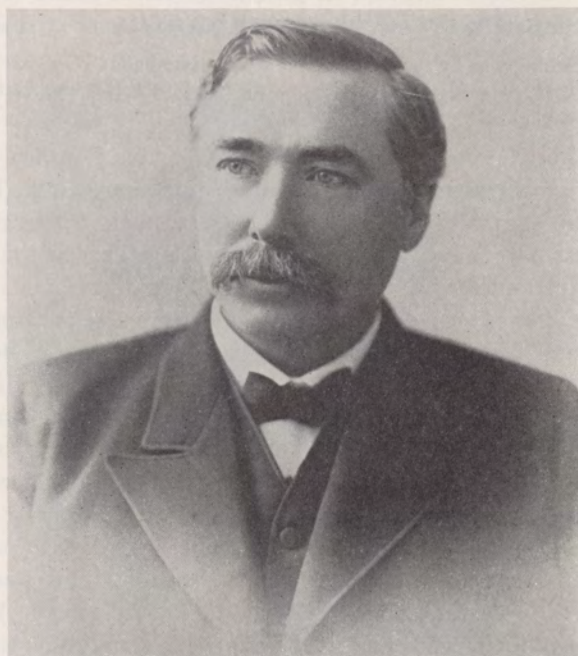


Fig. 3.—Dr. George E. Frothingham, Abel's predecessor at Michigan.

Thus in the summer of 1889 the chair of materia medica and therapeutics became vacant, and Dr. Vaughan saw and seized the opportunity to make the change from classical materia medica to modern pharmacology. In his autobiography, Dr. Vaughan recorded:

When in 1890 we decided to have a real chair of pharmacology with laboratory instruction, I wrote to Professor Oswald Schmiedeberg, the dean of that science at the time at Strasbourg. He replied at length and advised me not to take a German, since he thought it a doubtful procedure to install a foreigner into a professorship. He said that he had in his laboratory two Americans but that one of them was more German than American and he recommended the other. Besides, he said that the man he was recommending was not only an American but a graduate of Michigan University. In this way John J. Abel became our first professor of pharmacology, as a real science.

While the stage was being set in Ann Arbor for the appointment of a pharmacologist to the medical faculty, the future appointee was studying in Europe. John Jacob Abel had attended The University of Michigan as an

undergraduate student from 1876-79, and following a three-year period when he served as principal of the LaPorte, Indiana high school, he returned to Ann Arbor to complete his Ph.B. degree in 1883. During his senior year at Michigan he took Vaughan's course in physiological chemistry and Sewall's course in physiology. Following graduation and his marriage to Mary Hinman, Abel spent a year working in the laboratory of the physiologist Newell Martin in the department of biology at The Johns Hopkins University. In 1884 the Abels went to Europe.

In Europe Abel pursued a medical education, and in the manner of the day he studied at several different medical centers. The first two years were spent in Leipzig, and there Abel had his first contact with pharmacology in a course taught by Rudolf Boehm. Later he studied at Heidelberg, Würzburg, and Strassburg, where he studied pharmacology with Schmiedeberg and received his M.D. degree in 1888.

Abel wrote many years later of his plans for the future as of that time:

I expected to carry on medical practice and to do research work, if possible, in internal medicine in connection with one of our American medical schools.

To prepare himself for this goal Abel sought further training in both clinical medicine and laboratory research. After Strassburg he spent a year in Vienna studying internal medicine, and then he went to Berne and the laboratory of Marcel von Nencki where he conducted biochemical research and published his first scientific papers.

By the summer of 1890 his funds were running low and he was faced with the prospect of returning to America to begin practicing medicine. That summer he received Dr. Vaughan's cablegram inviting him to join the Michigan medical faculty.

Faced with this unexpected opportunity, Abel sought the advice of von Nencki who counseled him as follows:

Here is an opening for you in your native land and while you have not especially planned to enter the field of Pharmacology I can tell you from my own knowledge of the subject that it is one of the broadest fields of medicine—one that can be approached from many points of view and one that can afford an opportunity for research work of many types, in accordance with the previous training and ability and originality of the man who elects to work in the field.

Abel accepted the position at Ann Arbor, though there was some misunderstanding about the academic title he was to receive. His initial appointment was as Lecturer in Materia Medica and Therapeutics, whereas he had understood the offer to be that of a professorship. He accepted the lesser rank and the following year was promoted to professor. For reasons that are unclear, the designation "Materia Medica and Therapeutics" was preserved for the department and in his title, even though it was understood by all concerned that he would teach pharmacology. This tradition, dating from 1850, was preserved by his successors Cushny and Edmunds, although many publications carry the title "From the Laboratory of Pharmacology, Department of Materia Medica and Therapeutics." In 1942 the term Pharmacology became the official title of the department and the chair.



Before coming to Ann Arbor to assume his new duties Abel spent some weeks in Leipzig doing biochemical research with Edmund Drechsel, and then he stopped for two weeks in Berlin to see firsthand the tuberculin treatment which Koch was advocating for tuberculosis.

Dr. Abel arrived in Ann Arbor from Europe early in January 1891. Many years later, shortly before his death in 1938, Abel wrote a long letter to Dr. Charles Edmunds (Professor of Materia Medica and Therapeutics at Michigan from 1907 until his death in 1941) in which he described his life in Ann Arbor. Concerning the first days he wrote:

Following that first lecture, after a few medical consultations and the taking over of my old friend Herdman's practice for ten days while he was away on vacation, I decided that it was impossible to continue to serve two masters, and so dropped all idea of carrying on work in internal medicine and devoted myself entirely to my subject. Here at Ann Arbor I was given an opportunity of starting the first professorship of pharmacology in the United States, whose holder should devote himself entirely to giving students the best possible instruction by means of lectures, demonstrations, and quizzes, in the manner in which my European teachers (Schmiedeberg and Boehm) had long carried on their work. All my energy that was not given to this kind of instruction of students was devoted to research work and to arousing enthusiasm of others for it.



Fig. 4.—"The only material evidence that the School had ever had a department of materia medica and therapeutics was to be found in a large collection of official drugs, contained in beautiful glass jars that had been bought in France many years before. This collection was kept in good wall cases with glass doors in a special room of the southeast corner of the old medical building." (John Jacob Abel, in a letter to C. W. Edmunds)

When Abel came to Ann Arbor, the only material possession of the Department of Materia Medica and Therapeutics was a large collection of official drugs which had been purchased in France many years previously (Figure 4). Since his predecessor did not conduct laboratory research, Abel inherited no



Fig. 5.—Abel's first laboratory in Ann Arbor. Dr. Abel is shown seated. The other man is his assistant, Archibald Muirhead.

research facilities and at first had to use borrowed equipment. Therefore one of his first tasks in Ann Arbor was the establishment of a laboratory.

As there was no laboratory of any kind I immediately set about in January, 1891, with the cooperation of Dr. Vaughan, to build a little laboratory for myself on the first floor of the Medical School in a room that was just below the great rear stairs by which the students went up to the large amphitheater where most of the medical lectures of that day were given. This little laboratory, which was of a very simple kind, permitting of chemical studies and the performance of operations on dogs and other animals, was completed in the course of 4 or 5 weeks.

In these words Abel described to Edmunds the establishment of the laboratory (Figures 5 and 6). The University Regents appropriated \$900 that spring to equip it with apparatus and supplies.



Fig. 6.—The old medical school building, in which Abel fitted out first a small and then a larger laboratory. Most of his lectures were also given in this building, which burned in 1911 and was razed a few years later. The arrows indicate the locations of his laboratories.



During the first year Abel lectured once a day six days a week. His audience consisted of third-year medical students, dental students, and pharmacy students. His lectures and demonstrations required considerable knowledge of physiology and medicine. Such knowledge was not possessed by the dental and pharmacy students, and after a time Abel arranged for these students to be instructed in their own schools.

Abel's first lecture to the students was noteworthy. On January 7, 1891, *The University of Michigan Daily*, the student newspaper, had this article on its front page:

Dr. Abel, the new professor of Materia Medica and Therapeutics, returned last week from Germany, where for the past six years he has been pursuing special work. Yesterday he delivered a very interesting lecture upon "Koch's Lymph."

Probably no one in America is more familiar with the new remedy for consumption than Dr. Abel, for immediately after the appearance of Koch's paper in the *Deutsche Medizinische Wochenschrift*, he went to Berlin and entered Koch's laboratory, where for about two weeks he made a thorough study of the new remedy. The University is to be congratulated upon securing the services of so valuable a man.



Fig. 7.—The house rented by Abel in Ann Arbor, at 3 Volland Street. This portion of Volland Street was removed in 1927 to make way for the construction of the University Museums building. The other block of Volland was renamed North University Avenue, and became the easternmost block of that street.

Archibald Muirhead, a senior medical student from Canada, was appointed to be Abel's assistant. He helped Abel in the new laboratory, assisted with the demonstrations and research, and even lived at Abel's home (Figure 7), where he did such jobs as taking care of the furnace. In June 1891 the University Board of Regents appointed Muirhead Assistant to the Professor of Materia Medica at an annual salary of \$300.

Abel gave pharmacological demonstrations on anesthetized animals to illustrate his lectures to the students. He purchased locally some simple appara-

tus for animal experiments. Some of the demonstrations had to be given in the surgical amphitheater which was in a separate building from the Medical School.

Abel's first research activities in Ann Arbor were along the biochemical lines that he had pursued with Drechsel in Leipzig. In an investigation which he began in the small laboratory at Michigan and completed later at Johns Hopkins he demonstrated that ethylsulfide is a constituent of dog urine.

Abel and Muirhead attempted to repeat the work of a Russian experimenter, Eck, who was able to shunt the liver in a dog by connecting the portal vein with the inferior vena cava. Their greatest success along these lines was having one animal live eight hours after the operation.

A piece of work done in Ann Arbor of which little record can be found was referred to as follows in the June 1891 number of *The University Record*, official organ of the University's administration:

#### The Chemical Club

At the third meeting Prof. Abel read a paper on "A Method of Detecting and Registering Minute Movements" with special reference to those occurring in the human body. Prof. Abel explained his method but reserves a description of it until the completion of quantitative experiments now in progress.

In his letter to Edmunds, Abel mentioned this project, saying it was never carried on further in Baltimore. He recalled having left a short manuscript describing it at the office of the University's President before he left Ann Arbor, with the assurance that it would be published in the *Record*. Apparently he was working on a type of ballistocardiograph.

Also in that small laboratory under the stairs Abel brought to light the physiological action of chloretone. He discovered its usefulness as a long-acting general anesthetic for dogs, and after he made this fact known, chloretone came into quite general use for a time in experimental laboratories.

In the summer of 1891 Dr. Abel did not go to Europe as he had originally planned. During August he worked in the Cook County Hospital in Chicago, trying to find out why children who had received large amounts of lime water had free ammonia present in their urine. Influenced by some earlier work that he had done in Europe with Drechsel, Abel referred the presence of this ammonia to the output of calcium carbamate which rapidly breaks down into calcium carbonate, carbon dioxide, and ammonia. He and Muirhead consolidated this work in Ann Arbor with experiments on dogs fed calcium hydroxide, and in 1892 a paper entitled "On the Secretion of Carbamic Acid in the Urine of the Dog and of Human Beings under the Excessive Intake of Calcium Hydroxide" was published in the *Archiv für experimentelle Pathologie und Pharmakologie* with Abel and Muirhead as authors.

The first laboratory, where in a short time much was accomplished, was supplemented later in 1891 by a larger laboratory on the second floor of the same building. The *Daily* of May 6, 1891, had this to say:

#### The New Laboratory of Materia Medica and Therapeutics

The laboratory, to be opened next fall, is intended for the preparation of class experiments to illustrate the physiological action of the more important drugs, and also for re-



search work on the action of medicines. The department of medical work is properly called Pharmacology. It implies a knowledge of the methods of experimentation of chemistry and physiology and its aim is to analyze the complex phenomena presented by the interaction of drugs with animal fluids and tissues. If the principles thus deduced be applied to the elucidation of hospital observations a rational system of practical therapeutics is the result. The secretions and excretions of hospital patients receiving medicines whose action is not yet understood, may also be studied in this laboratory and the results brought into harmony with other observations. The first requisite of this line of work is an accurate clinical study of the drug taken, so that what is put into the body in the first place shall be a known quantity.

For the present there will be room for the professor in charge and such advanced students as may wish to prepare themselves for professorships in this branch or who may desire to work up some special topics.

There were a few problems in regard to the equipping of the new laboratory. One of these was mentioned in the *Daily* of October 13, 1891:

The apparatus for Dr. Abel's laboratory of materia medica and therapeutics is lying in the custom house at New York. It seems that the house through which they were ordered tried to smuggle some goods in with them, in consequence of which they are held.

An amusing incident which took place that fall was written up in the *Daily* of October 27, 1891. A tussle broke out in the clinical amphitheater while junior and sophomore medical students were assembling for a lecture. The melee was the result of a sophomore taking a seat in the front row, an area which was considered by the juniors as being solely for their own occupancy.

The struggle was at its height when Dr. Abel appeared upon the scene. He rushed into the midst of the fray and mistaking the junior medics for dents, shouted, "back, dents, back." The disturbance soon subsided.

In November 1891, Dr. Abel organized a journal club, the object of which was to keep its members abreast of the therapeutic advancement of the day. Therapeutic journals and literature were read by the members, and the substance of the articles given at the fortnightly meetings. Some experiments were also performed. Membership was confined to the junior class and Abel invited some of the more promising students to join. In the Edmunds' letter, Abel wrote of this club:

I desired to interest only those who wished to go a little more deeply into the subjects that underlie practical medicine and who wished to get some idea as to how research work is carried on. As I recall it after all these years, the plan was not without profit to myself at least, and there was much evidence that most of the members of the club enjoyed our meetings.

The *Daily* reported a number of meetings of this club during February and March 1892. A November 1892 article announcing the first meeting of the following term stated about the club:

... The society was a success in every particular and the students were very grateful for this opportunity.

Abel's salary was raised from \$2,000 to \$2,200 by vote of the Board of Regents at their January 1892 meeting.

A brief article in the February 11, 1892 *Daily* ran as follows:

It is said that Dr. Abel intends getting out two books on materia medica, one to be used as a reference book, and the other as a textbook.

The *Daily* of May 20, 1892, in its column headed "Campus," had this to say:

Dr. Abel is finishing up his work in materia medica, with a few practical lectures on cooking.

On May 26 Abel left Ann Arbor to spend the summer in Europe pursuing further work in his field. Muirhead gave the remaining lectures to the medical students.

In June 1892 the Regents voted \$600 for apparatus for the laboratory of materia medica.

The Annual Announcement for the Medical School for the school year 1892-93 listed two courses in therapeutics which had not been offered before. These were graduate courses, and were described as follows:

A. A study of the influence of certain drugs on the metabolism of tissue.

B. A study of the methods of modern pharmacology.

Both of these courses will be laboratory courses and will require a knowledge of physiological chemistry and the methods of the physiological laboratory. \$10 for 6 weeks plus laboratory expense.

Abel did not return from Europe until early November 1892. Muirhead had charge of the course work until that time. The *Daily* reported that on Abel's first appearance before the therapeutics class, he was given an ovation by the medical students. It also reported on November 12, 1892 that:

Dr. Abel expects to receive a valuable lot of instruments from Germany in a few days, for the medical department.

Shortly after his late return from Europe, Abel received an offer from The Johns Hopkins University in Baltimore. That institution had begun the organization of a medical school which showed promise of becoming the country's best. Such famous men as Welch, Osler, Halsted, and Kelly were already appointed to its staff. In January 1893 Dr. Osler wrote to Abel asking whether Abel would be a candidate for the chair in pharmacology. Abel replied that he was strongly attracted by the prospect of intellectual contacts with Osler, Welch, and Martin, and that his main concern was the provision of adequate laboratory facilities.

The *Daily* of March 8, 1893 mentioned the Johns Hopkins offer and had this to say:

... It is now quite probable that Professor Abel will accept the offer, very much to the regret of the medical school here. This is his third year at the University, and it is safe to say that a more proficient and popular professor never lectured to a medical class at the University of Michigan.

The Board of Regents accepted Abel's resignation in May. The *Daily* of May 26 had this item:

The junior medic class will give Dr. Abel a present, in recognition of the many favors he has shown the class.



On May 30, under "University Notes," the following appeared in the *Daily*.

Dr. Abel left yesterday for Baltimore, Maryland. He expects to sail from New York for Europe tonight.

In the Edmunds' letter Abel wrote of Ann Arbor:

The intellectual environment was stimulating in the highest degree. . . . As I review the events of my few years at Ann Arbor, I find that under the stimulation of the friendly atmosphere, many ideas came to me that were afterward more fully elaborated and prepared for publication in Baltimore.

In the *Daily* of October 10, 1893, this item appeared:

. . . The only one missed from last year's faculty is Professor Abel, Professor of *Materia Medica*. Prof. Abel will be sorely missed, for he had proven himself a competent instructor and a man of large ability and resources.

#### ADDENDUM

To a large number of distinguished scientists and physicians and many generations of medical and graduate students at The University of Michigan the grey brick building which stood in the center of the old Campus adjacent to the main library was a shrine dedicated to the birth of American pharmacology under Abel and Cushny. This tradition was cultivated assiduously and it was common practice for staff members to point out to visitors the exact location of Abel's first laboratory and the room and even the desk used by Cushny. Even though architectural considerations rendered these niceties somewhat implausible they could be rationalized by recalling that the building had undergone a number of major operations since 1857. Possibly it would be better, now that this building has been demolished (1958) and pharmacology is housed in capacious new quarters, to permit these imaginings to stand unchallenged. Unfortunately, historical searchers cannot always be so generous. In spite of a feeling of personal loss, having participated actively but unwittingly in propagating this belief, or hoax as the case may be, it seems that the scientific, if not the emotional, interests of pharmacology would be served best if the record now shows that pharmacology never occupied space in that building prior to 1910, seventeen years after Abel went to Johns Hopkins, five years after Cushny accepted the chair at the University of London.

M. H. SEEVERS, Chairman  
Department of Pharmacology