ADDRESS AT OPENING OF JEFFERSON MEDICAL COLLEGE, PHILADELPHIA

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The following is in part the introductory address of Dr. G. C. Savage, of Nashville, delivered by invitation on the evening of September 26, 1910, in Philadelphia, at the opening of the eighty-sixth annual session of his Alma Mater, the Jefferson Medical College:

Within two hours we had our first lesson in surgery, while you must wait two years. The science and practice of medicine were morsels that we had to take into our unprepared mental stomachs from the first day on, and digest them as best we could. You must wander through a period of two years in Histology, Pathology and Bacteriology before your first meal in medicine will be served. To obstetric science and art you will remain strangers for two whole years, while we began our mastery of this branch on the second day. Times have changed and medical colleges have changed with them.

I have said nothing of laboratories. The Irishman who prepared an essay on "Snakes in Ireland" wrote, for his first sentence, "There are no snakes in Ireland." "Laboratories in Jefferson"—there were none in my student days. We had a dissecting room and the opportunities for work therein were splendid, but we did not call it the anatomical laboratory.

How we learned chemistry without a chemical laboratory such as you now have, will ever remain a mystery. The professor of chemistry had a laboratory in which he must have worked faithfully, but like the holy place of the temple at Jerusalem, we were not permitted to enter it. Our chemical experiments were all performed by proxy, while we sat silent lookers-on at varying distances. Some of us were too far removed to see "action," much less could we observe "reaction." The test tube was too sacred for our touch. Really,

did we learn chemistry? So far as I know, not a single member of the class of 1878 has become famous as a chemist. There was no physiological laboratory, and yet we had the never-to-be-forgotten privilege of seeing, through the microscope, the circulation of the blood in the web of the frog's foot, a most beautiful sight to behold. I fear that this use of the microscope has been abandoned, since there are so many other things that must now be shown. Our histologic views were only two; first, a section of a long bone, showing the haversian canals; second, a section of the liver, showing its cells. Why these did not create such an interest in histology as to speedily demand many others, I do not know. For many years these three microscopes had been performing each its single duty. Doubtless the sections of bone and liver had done a continuous service for a long series of years, but the procession of frogs must have been a long and interesting one.

Bacteriology was a term not heard by us, and germs as a cause of disease had only recently been first mentioned. Only a few of these had there been discovered, and no means had been provided for showing them to us. The bacillus leprae, discovered in 1873, would have had no special charm for us, though confined in a microscopic slide. Not even the plasmodium malariae had been discovered, hence could not be put on exhibition. The bacillus of anthrax had been discovered, but it was not introduced to us. Only these two of the now long list of known germs had been discovered when our class began its student career.

How different now! In the laboratory which has been provided for you, your eye will be permitted to see, and your mind will be forced to study, a great number of bacilli, spirillae and micro-cocci and all of the known

protozoa. You will be required to become so familiar with the form and features of each that you shall be able, ever after, to recognize it with promptness and positiveness, though it might appear in a mixed company. In the laboratory of Histology, you will not stop at bone and liver, but you will become acquainted with the intimate structure of every organ and tissue of the body. You will also be permitted, rather required, to study with the microscope the changes of tissue under disease, a privilege we did not have. I need not mention the work in other laboratories which you must do, in connection with the fundamentals of modern medicine. The time and labor that you must devote to these studies precludes the possibility of your undertaking work in the practical branches for two whole years. But when you finally get to these branches, you will feel a sense of preparedness that was foreign to us.

Some of you to whom I speak tonight have already passed successfully through the two years of preparation for the practical, and tomorrow will begin the study of surgery in all of its branches, of medicine in its multiplied and enlarged phases, and of obstetrics in the light of modern research and investigation. The studies you undertake tomorrow will be continued, but without repetition, for eighteen months. Others of you have not only completed a continuous and unrepented study of the fundamentals, through eighteen long and tedious months, but you have had also your first year in the practical branches. Tomorrow you start on the home stretch. Next June, if you pass successfully the examinations of your faculty, you ought to leave these halls better prepared for the practice of medicine and surgery than any class that has preceded you. There ought not to be, for you, a period of waiting, such as had to be endured by those of us who completed the then-prescribed course in two sessions of five months each—just ten months in all. I do

not know how it was with all of the old-time boys, but I can give you a little hint as to how long and painful was my period of waiting. After graduation on the 12th day of March, 1878, I hastened home and rested until the first day of May following. On that day I opened my office in the beautiful little city of Jackson, Tenn., and continued to rest, so far as practice was concerned, for many long months. During the month of May I did four dollars worth of work, and collected two dollars. June was not a great improvement on May, for I did six dollars worth of practice during that month, collecting just three dollars. On the first of January following I took an inventory of my practice, for the eight months, and found that I had done one hundred and eighty dollars worth, and that my collections had not been over ninety dollars. The people knew the unpreparedness of the young doctor at that time, and, of their own accord and in their own interest, gave him an opportunity for reviewing his college notes, for studying his books, new and old, and for reading what journals he might be able to buy or borrow. I had time not only for this, but I also had time for reviewing much of my Latin, Greek, mathematics and physics, and for reading history, biography and fiction. My time of waiting for patronage was not lost time; the fact is, I was so busy that I did not realize the smallness of my income, and the corresponding scarcity of my practice. If I had not been the possessor of a diploma from Jefferson, I am inclined to think that my waiting would have been longer and more painful.

The people who judged us correctly will not misjudge you. Your diploma will not grow old while you wait. But, after all, your period of waiting from the day of matriculation to the day of getting busy, will not be shorter than was ours, namely, four years; for most of us who did not turn to some other occupation for a life-work, be-

came busy practitioners in about two years after graduation—four years after matriculation.

Jefferson Medical College and the South could have been made the subject of this address. I would do violence to my own convictions if I should fail to say that Jefferson has done much for the South; and I can truthfully say that the South has done much for Jefferson. Almost from its organization it was called the Southern Medical College of the North. From its very beginning in 1825, Southern patronage was drawn toward Jefferson, and now that the college is eighty-six years old, the South is still sending to her some of her brightest sons. There was a time when forty per cent of the students in Jefferson came from the South; and there was also a time when forty-three per cent of the faculty were Southern men. The attendance last year from the South was ten per cent, and the present faculty is ten per cent Southern. This latter statement may need some explanation. No matter where a man has been born, if he casts his lot with our people for one year he becomes a Southron. Copelin was thus transformed a few years ago, through a sojourn of one year in Nashville, as Professor of Bacteriology and Pathology in Vanderbilt University. When he was taken from us we felt like having the authorities of Jefferson College arrested for grand larceny. Prof. Holland has been in the faculty so long that probably some of his colleagues do not know that he came from Louisville. He has beating in his bosom tonight a warm Southern heart, for once of the South always for the South. Her blue skies and balmy breezes, her fair women and fast horses, her woody mountains and fertile plains can not be forgot. Jefferson has drawn and held Southern patronage, as no other college in the North has done, because of her desire to be the best and her disposition to do the best. Advancement and enlargement have been with her a passion.

The earlier years of Jefferson were years of struggle and threatened disaster. Three times within her first seventeen years she was without a faculty, every chair for that number of times having been declared vacant by the board of trustees. During this period of seventeen years, eight different men had occupied the chair of obstetrics, an average of about two years for each. This is hard to understand in the light of the fact that, during the last sixty-eight years the occupants of the same chair have numbered only four: C. D. Meigs, Wallace, Pervin and Davis. A look at the present professor would almost convince one that the combined service of these four will come near rounding out a full century.

With the dissolution of the third faculty discord seems to have disappeared. In the inauguration of the fourth faculty, in 1841, there was incorporated not only marked ability but also perfect harmony. "This new faculty held together in peace, order and prosperity for fifteen years, without a change." Through the dark period and through the period of dawning light, the profession of the South stood nobly by the college, sending their students in great numbers.

There were advance thinkers and daring doers in that faculty of 1841. J. K. Mitchell saw the plasmodium malariae with the eye of his imagination thirty years before it was seen with the physical eye, aided by the microscope. Likewise he saw the comma bacillus as the cause of cholera many years before its existence was physically demonstrated. What is still more remarkable, he saw with the eye of his inventive genius the bacillus of yellow fever, which has not yet been shown by the microscope, but whose existence no one now doubts. Thus he paved the way for the two discoveries in medicine that are of most importance to the South: First, the fact that the anopheles is the source of malarial infection; and, second, that the steomyia is the carrier of the contagion of yellow fever.

low fever. The latter discovery by Reed and Carroll lifted a pall from our Southland, and marked the beginning of a new era in the battle against the yellow scourge. In the South the phrase, "pouring oil on troubled waters," has not the fullness of meaning that attaches to the newer expression, "pouring oil on stagnant waters." The doing of the latter not only devitalizes the ova and destroys the larva and the pupa of the stegomyia, but it also renders impossible the development of waves of fear, such as formerly swept over our country, whenever the existence of a single case of yellow fever became known. No longer will there be a shotgun quarantine against people fleeing from infected cities, for they now know that they may safely abide in their own homes, under the protection of wire screens at windows and doors, and mosquito bars about their beds; while the mosquitoes themselves are kept from infected people by a still more thorough screening. If Mitchell and others had not persisted in their advocacy of the idea that low forms of vegetable life were the causes of malaria, cholera, yellow fever and other diseases, the real nature of these troubles would still be unknown. Progress would be impossible if it were not for men who can see ahead of their day, and are not afraid to tell of their visions.

The daring of a member of the famous faculty to which Mitchell belonged was shown when Mutter, in his Jefferson clinic, performed the first surgical operation in Philadelphia, under general anesthesia. This was done on December 23, 1846, within a hundred feet of where I am now standing. In this connection let it not be forgotten that the boon of anesthesia must be credited to the South, for it was Crawford W. Long, of Jefferson, Georgia, who first discovered its powers in the doing of a painless operation on a patient to whom ether had been given by inhalation to the extent of unconsciousness. This epoch-marking event occurred on March 30, 1842, just four years and nine

months before Mutter's operation. Long's discovery antedated that of Wells by two years and six months. Long was only twenty-seven years old when he discovered the power of anesthesia; and he was still living and active when this college gave to the class of 1878 their diplomas. His discovery made possible the wonderful era of surgery in which we now live. Georgia has justly honored his memory by placing his statue in the Hall of Fame in the capitol at Washington. No longer is there just ground for contending that Long is not entitled to all the credit as the first to discover and actually demonstrate the anesthetic power of ether in the practice of surgery. If there had been no discords in the earlier faculties of Jefferson, it is not unlikely that Crawford W. Long's name would be in the list of our Alumni. He graduated at the University of Pennsylvania, but the name "Jefferson" is to be forever associated with his name for the reason that his greatest work was accomplished at his home, Jefferson, Ga.

Wonderful have been the advances in all departments of medicine and surgery in the last twenty-five years. The advances in surgery would not have been possible except for two men of my Southland: One, Crawford W. Long, who gave anesthesia to the world nearly a half century before the very material advances began; the other, Ephraim McDowell, of Kentucky, who by his skill and daring made possible the abdominal surgery of today and of all coming time. The tragedy of the matter is that the surgical awakening caused by McDowell's work did not occur until about a half century after his death. The legs of the tripod of modern surgery are Long and McDowell of America and Lister of England. It was the delay of Lister's aseptic and antiseptic teachings that so long deferred the coming of our marvelous surgery. It seems a pity that he was not born earlier in the nineteenth century.

The advances in every department of medi-

cine and surgery created the necessity for lengthening and multiplying the courses of medical colleges, and the adopting of new methods and the changing of old methods in teaching. There will be further advances and they may come speedily, but when they do come, the effect should be to make easier the studies of the four years as now established. I do not believe that new discoveries will ever serve to shorten the time to be spent in college, but I am certain that their coming should not add one more year. The teaching about diphtheria has been clarified and simplified since Klebs-Loeffler discovered the bacillus and since Behring, a little later, gave us antitoxin. The teaching about pneumonia has been simplified by the discovery of the pneumo-coccus, but how much greater will be the simplification when some man shall give us a serum, or some other agent, for its cure.

The search for germs should continue, but the great work of the future, as I see it, will be in the line of Therapeutics. There is yet enough of the unknown, especially in the field of therapeutics, to interest every medical man who has an investigative turn of mind. It may be that there is some one before me tonight who has not dreamed of greatness, and yet for him may be awaiting the opportunity to give to the world a real cure for tuberculosis, one that will be as certain in its effects as antitoxin is in diphtheria, or quinine in malaria. For such an one, no page in medical history would shine more brightly than that one on which his own name would appear.

There is a fascination about original investigation which would lead thousands afield, if it were not that this fascination is too often associated with an over-powering fear—a fear of the criticism which even a successful investi-

gator must face. The secret of success in original research is curiosity coupled with enough industry to satisfy it. Unfortunately every man who is curious to know is not industrious enough to work at an unsolved problem. Not every man who is industrious is endowed with an inquisitive turn of mind. The world cannot be advanced by two men, one of whom has a remarkable curiosity, while the other is painfully industrious. These two factors must be combined in one man if the world is to be moved by him. Even such a man must have the daring of a lion, the tenacity of a bull-dog and the hide of a rhinoceros. McDowell did not lose his temper or waste his time when one of his confreres, who had been a fellow-student in Edinburgh, said of him, "He went to Edinburgh a gosling and came back a goose." McDowell felt that he had the advantage of that critic in that he knew that he himself was no fool and that the other fellow was. It could not have been very pleasant to Jenner to look at cartoons representing him visiting his patients astride a cow, but conscious of the value of his discovery of vaccination, he grinned and endured. It is fortunate for scientific investigators and for medical science in particular that we live in a day when critics must be careful of their own reputation and courteous in their methods of criticism. I have known only one man in recent years who probably found an earlier grave because of caustic criticism.

My closing words must be the expression of a wish based on the fact that some medical colleges have closed their doors except to men with college degrees. My wish is that my alma mater shall always continue to accept men who have a high school education. A college degree is a thing to be desired, and should be attained when possible, but it is no guarantee that its possessor will attain greatness.