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PRESENTATION OF THE KOBER MEDAL TO DR. WILLIAM H. WELCH[1]

REMARKS OF GEORGE M. KOBER

Mr. President and Colleagues:

DR. WARTHIN doubtless with great self-denial, which I deeply appreciate, has assigned to me the most pleasing function in my life, to pay tribute on behalf of this association to William Henry Welch, the father of scientific medicine in America, and the most respected and beloved member of the medical profession. No words of mine can add luster to the laurel wreaths which have been bestowed upon him both at home and abroad, and worn with his innate modesty and dignity for so many years.

It may, however, be a source of inspiration to the younger generation of this association to recount briefly the achievements of a man to whom this country and the world is so greatly indebted.[2]

Dr. Welch was graduated in 1875 at a time when the outlook for the future of scientific medicine seemed brighter than ever before. Pathology under the leadership of Virchow and his pupils had made tremendous strides, and with the birth of bacteriology there was also a ray of hope for the prevention of human suffering and distress.

Welch, with his high ideals and noble aspirations, and conscious of the defects in our medical educational system, was determined to prepare himself well for the practice of one of the most difficult and responsible of all professions. In order to lay the foundations in modern pathology, he journeyed to Strassburg in the spring of 1876, where he pursued studies in normal histology under Waldeyer, physiological chemistry with Hoppe-Seyler and post-mortem demonstrations by von Recklinghausen. Later he went to Leipzig for further work in histology and physiology with Ludwig and Kronecker.

Among foreign students were Pawlow and Drechsel and Flechsig. Welch, in addition to his regular courses, was set by Ludwig to study the ganglia and nerves of the auricular septum of the frog's heart with the gold chloride impregnation method, in the course of which he actually brought into view the

[1] By the Association of American Physicians for Research in Scientific Medicine.

[2] See Simon Flexner's exhaustive Introduction to the Contributions and Addresses of Professor Welch published on his seventieth anniversary, 1920.

ganglionic cells with T-shaped fibers, which Ranvier described in detail somewhat later.

By a singular coincidence I was studying that year at Camp McDermit, Nevada, a collection of 250 specimens illustrating normal and pathological histology prepared in Ludwig's laboratory, and purchased for me by my friend, Dr. John S. Billings, of the U. S. Army.

At the end of his first year of European studies, Welch was fully prepared to take up the solution of unsolved problems in pathology, and his ambition was to do so under the direction of Virchow.

It was perhaps fortunate for our Jubilarian that he accepted the suggestion of Ludwig and others, to go to Breslau and study pathology under Cohnheim, a brilliant pupil of Virchow, then in the prime of life. At all events he spent a most profitable semester dividing his time between the autopsy demonstrations conducted by Weigert and the experimental investigations of Cohnheim. The particular theme assigned to Welch was "The Origin of Acute General Oedema of the Lungs." This thesis prepared in German proved to be a high testimonial to his thorough painstaking scientific qualifications at the age of twenty-eight years, three years after his graduation. It was published in Virchow's Archives and the *Berliner Klin. Wochenschrift* in 1878.

While at Cohnheim's laboratory he met Koch, Cohn, the botanist, Ehrlich and other great foreign students, among them Salomonsen, who afterwards became professor of pathology at Copenhagen.

On his way from Breslau to Vienna, Welch stopped at Prague to see Klebs and his excellent collection of preparations showing micrococci in the ulcerative lesions of acute endo-carditis, he was also equally impressed with his work on diphtheria and experimental syphilis.

In Vienna he entered Stricker's laboratory for experimental pathology, and likewise enjoyed unlimited opportunities with Chiari in gross pathology.

After the Christmas holidays he spent a few days at Würzburg with Rindfleisch and his assistant, Ziegler, and again went to Strassburg to visit von Recklinghausen, who chose as a theme for special study the inflammation of the cornea of the frog and also engaged him in the discussion of a number of other profitable topics. After a visit to Ranvier, the great histologist, and the main hospitals of Paris, he went to London and, according to Flexner, heard Lister lecture at King's College Hospital and shared in the prevailing excitement which arose from Lister's daring surgical exploit of opening the knee joint. Of course Mr. Lister was not aware of the fact that a young "soldier and cowboy doctor" at Camp McDermit, Nevada, had been bold enough two years before to treat successfully a perforating gunshot wound of the knee joint, which had become septic, with tincture of iodine and carbolic acid. Thanks to the advice of Dr. Billings, the case was published in the *Journal of American Medical Sciences* for October, 1876, and also in the third surgical volume of the War of the Rebellion. Although the use of iodine has become almost a universal procedure, I never saw any reference to this case in the surgical texts.

This incident has not shortened my life, and I trust you will pardon this immodest digression, when I tell you it had much to do with the foundation of a lectureship and the association medal, so that the work of members of the various associations with which I was connected might be properly evaluated.

But to resume the life work of the man in whose honor we have met, it is perfectly natural that soon after his return to New York he was offered a teaching position at his alma mater, the College of Physicians and Surgeons, which he declined, but recommended Dr. Thomas M. Prudden. He preferred to accept a professorship at the Bellevue Medical College, largely because of a promise that suitable laboratory facilities would be supplied. Here he lectured on general pathology and demonstrated the pathological lesions preparatory to Austin Flint's brilliant lectures; he also revised and largely rewrote in 1881 the pathological anatomical sections of Flint's "Treatise on the Principles and Practice of Medicine." It is easy to see that his thorough preparation had also attracted the attention of the planners of the Johns Hopkins University Hospital. The prospect of a full-time salaried position, prompted his acceptance in 1884, and with the establishment of the medical school in 1892 he became professor of pathology.

His splendid pioneer work in Cohnheim's laboratory was followed by thirty-three important contributions, many of these like his experimental study of glomerulonephritis, the pathology of fever, thrombosis and embolism, hemorrhagic infarctions, malignant diseases of the stomach were presented or discussed before this body. Among a total of 335 contributions, seventy appear in the transactions of this association.

During the six years after his first European tour, as Flexner has pointed out, the center of interest had begun to shift from Virchow's cellular pathology to microbiology, and the conception of the microbial origin of infectious diseases, based upon the rapid and startling discoveries by Pasteur and Koch and their pupils, appealed very strongly to Welch, especially as he had witnessed Koch's demonstration of his Anthrax work in Cohnheim's laboratory in 1877.

Hence his goal in 1884 was Berlin and Koch. Upon the latter's advice he went first to Bollinger's lab-

oratory at Munich, where he prepared himself under Frobenius in Koch's technique. Here he also met men like Buchner, Esherich, Lehmann, Neumann, Celli and others. He also became interested in animal pathology at the Veterinary School and the diseases transmissible from animals to man, and was likewise an enthusiastic worker in von Pettenkofer's Institute for experimental hygiene. In January, 1885, at the suggestion of Koch he took a course in bacteriology under Flügge at Göttingen, after which he was amply prepared to receive the final touch of preparation in Koch's laboratory, by the great master. Dr. Welch's association with these beacon lights in scientific medicine has always been gratefully remembered and the ties of friendship have never been broken, except by death.

That he has made good use of his opportunities in the field of bacteriology is evidenced by the fact that he himself discovered in 1892 the *staphylococcus epidermides albus* and its relation to wound infection and in the same year also the *bacillus aerogenes capsulatus;* in 1900 he grouped the diseases caused by this organism. In 1891–1892 he with Flexner demonstrated the pathological changes produced by experimental injection of the toxins of diphtheria, simultaneously with Von Behring. How well he cultivated this new field is attested by his thirty-one published contributions to the subject.

Thoroughly equipped as he was in the fundamental sciences of preventive medicine and the first, so far as I know, to enunciate, that the "highest aim of scientific medicine is the eradication of preventable disease," we find him spreading the gospel of public and personal hygiene in 1889, followed by sixteen other important contributions. In addition he devoted twenty-four years (*i.e.,* 1898–1922) of his precious life to the duties and responsibilities of the office as president of the Maryland State Board of Health. His humane efforts have been duly rewarded by the Rockefeller Foundation in the establishment of the School of Hygiene and Public Health in 1916, of which he was the director until a few months ago.

As a keen and competent observer and critic, Dr. Welch had recognized and deplored the glaring defects in medical education in our own country and with a truly patriotic spirit started his campaign for higher medical education in 1886.

Others had called attention to this subject and urged higher standards, and the employment of full-time salaried laboratory men and research workers, without much avail. His twenty-five contributions on medical education, based upon conclusive facts gradually made a profound impression.

The voice of a man, who had become a master in all of the medical sciences, who had turned out a long list of brilliant pupils as successful investigators, who, had stimulated into existence the Rockefeller Institute for Medical Research, and founded the *Journal for Experimental Medicine,* carried great weight, and to him largely belongs the credit for the establishment of full-time professorships and the present most creditable status of scientific medicine in this country.

The American temple of medicine is rapidly fulfilling the hope and expectation of every patriotic citizen, thanks to the generosity of the Rockefeller, Carnegie and numerous private foundations. Some of the most difficult and important problems have been solved, and these achievements have already attracted foreign professors and students, but the temple is unfinished, and to you members of this association and all other research workers the spirit of American genius cries, rear it upwards, upwards to the skies.

In addition to all we owe to Dr. Welch as the Father of Scientific Medicine, we are also greatly indebted to him for his example in the promotion of general culture in the languages, fine arts, poetry and literature. His recent acceptance of the Professorship of Medical History at Johns Hopkins University, is by no means fortutitous. No less than thirty-five contributions to Medical History, indited by his graceful pen, eloquently attest his great interest and fitness for the perpetuation of the memory of great men and noble deeds.

He probably accepted an endowed professorship, so that the good work in this field may be carried on effectively also in this country and thereby stimulate the younger members of the profession to perform deeds worthy of permanent preservation.

In conclusion, my good and beloved friend, let me tell you how much we older members of this association are indebted to you; we have sat at your feet and imbibed words of wisdom and knowledge. The present and future generations of our Association will profit equally well by the perusal of the three volumes of important contributions and addresses, the product of your bright and fertile mind, and it will be their duty and privilege to see that your life and work shall know no death.

It has been truly said that a single flower in a man's buttonhole is worth a ton of roses piled upon his grave. It is therefore a great pleasure to present to you the Association Medal for Research in Scientific Medicine, with the fervent hope that your days of usefulness and bliss may still be many, and that memories of this occasion may linger with you through the evening of life, and like the flowers that bloom in the sunlight spread their fragrance on your path.

REMARKS OF WILLIAM H. WELCH[3]

Mr. President, Dr. Kober, Members of the Association:

I beg to express my deep appreciation of the distinguished honor conferred upon me by the award by this Association of the Kober Medal for Research in Scientific Medicine provided by the Kober Foundation of Georgetown University and accompanied by its diploma.

It adds greatly to my pleasure to receive this medal directly from the hands of my dear friend for well nigh forty years, Dr. George M. Kober, the generous and eminent creator of this foundation. With his accustomed grace, even if in words all too generous in their estimate of the work and service of the recipient, he has performed the function, unusual and, it may be, difficult for a donor, of attempting to justify the action of the association in the bestowal of the medal. I wish time and occasion were suitable for me to say something of Dr. Kober's own important contributions and services to medicine, surgery, hygiene and public health and charities, and indeed I can not refrain from at least expressing here publicly what others as well as I have urged upon him in private conversation—the earnest wish that he should give the profession as well as the public the benefit of an autobigraphical narrative of a long and unusually varied, interesting and useful life.

My pleasure on this occasion is still further heightened by the circumstance that the award of this medal is by this Association of American Physicians, for I was present not only at its birth, but, I think now as the sole survivor, also at its conception, when, if my memory serves me correctly, in January, 1886, a small group of physicians, which included Osler and Pepper from Philadelphia, Francis Minot and Fitz from Boston, and Draper and Kinnicut from New York, were invited to meet in the office of Francis Delafield in New York to consider the desirability of founding a national association of the character realized six months later and of selecting the first founder members. Only those familiar with the factional troubles, the disturbed professional conditions and the general state of medical education, science and art in this country at that time can realize the full significance of the brief introductory remarks of the first president of the association, Dr. Delafield, who had in eminent degree the gift of multum-in-parvo speech, when he expressed our purpose to create a society without medical politics and without medical ethics, where no one cared who the officers were and where one would find fellow-workers in medicine and pathology understanding and capable of intelligently discussing the papers presented, and from whom one could learn. I need not tell you at this forty-second annual meeting that the hopes and wishes of the founders have been fulfilled beyond all expectation in the history of this association, membership in which still remains the high ambition of aspiring young clinicians and pathologists in spite of the later creation of many specialized national societies, not a few of these being offshoots from this parent stem.

Whatever may have been the illusions of those responsible for the bestowal of this medal inscribed as "Awarded for research in scientific medicine," I honestly believe that I am myself under no illusion on this score. I am glad that Dr. Kober has referred to my three years of preparatory graduate study in Germany and to my masters, to whom I owe an inexpressible debt of gratitude, Waldeyer, Recklinghausen, Hoppe-Seyler, Ludwig, Wagner, and above all Cohnheim, and later Robert Koch and Flügge, and to the friendship continued from my student days throughout their lives with Weigert and Ehrlich.

Few have been so fortunate in coming provided with scientific wares from sources such as these upon a scene so ripe for educational and scientific advance and at a time so pregnant in the history of scientific medicine and in finding opportunities so favorable, yes, even hungry for disposal of their wares, however meager these opportunities and these wares may appear in these more favored times, as I had the good fortune to find from 1878 for six years in New York and later and better up to the present day in Baltimore. Few have been more blest with the good will and support of their professional brethren and none more aided by colleagues and by a long line of devoted and loyal assistants and pupils, whose companionship and subsequent success have been the joy of my life.

Last week I saw at the National Academy of Sciences the demonstration by General Carty and Mr. Ives of television, and, if I correctly understood the principle, the seen image comes solely from a multitude of spots of light reflected from the object, whose self-luminescence, if present, appears only as darkness. In citing this example of reflected radiance as applicable to the individual whom you are honoring on this occasion, I trust that I shall not be interpreted as claiming any share in the later achievements of assistants, associates and pupils such as those of that distinguished line of pathologists who became first assistants in my pathological laboratory—to mention only these—beginning with Hermann Biggs, later my successor in the New York laboratory, and continu-

[3] At the session of the Association of American Physicians in Atlantic City on May 4, 1927.

ing in Baltimore with Councilman, Flexner, Barker, MacCallum, now my successor, Whipple and Winternitz.

To you, young men in this audience, to whose scientific papers I have listened with such delight and instruction, an *apologia pro mea vita*—my antiquity is revealed by my Latin pronunciation—would contain a far more useful message for me to deliver than to figure as an example, but on this score here and now I can only plead changed times and conditions no longer calling upon an investigator for activities which may once have seemed desirable.

I should, however, like to claim the privilege of years and of experience in addressing to the younger investigators a few words of advice and of precept, not conspicuously exemplified in my own career, which, though they may be trite, are not, I conceive, needless of emphasis under present conditions.

Allow nothing to divert you from your professional and scientific work. While maintaining a spirit of cooperation, resist the call to give general addresses, especially at a distance from home, to serve on committees, to assume time-consuming administrative duties and to show visitors around laboratories, clinics and buildings. The active scientific investigator should be at least as inaccessible to the intrusion of casual visitors as the financier or the railway president. Interruption beyond two or three years of investigative work is likely to be fatal to its successful resumption. If you have found your problem it should absorb you, and its successful pursuit should make you the happiest of mortals in the consciousness of adding something to the body of ordered knowledge. Strive for and be content with a scientific reputation based upon the judgment of the best workers in your own field, usually a relatively small group. Such reputations are enduring and often unrelated to merely local or even general professional reputations.

Investigators are usually, although not always, the most stimulating teachers, but it should be more widely realized that students in our American medical schools suffer from over-teaching. It is quite as important that educational and scientific institutions should learn how promising investigators may be and often are spoiled, and to protect them as their most precious asset, as it is to provide facilities for research. I firmly believe that the productive years of scientific discovery may be greatly prolonged by recognition and remedy of conditions which at present too often and unnecessarily shorten them.

I have, I fear unpardonably, encroached too long by these remarks upon this morning's program of scientific papers. Permit me to close by renewed expression of my grateful appreciation of the signal honor of enrollment among the Kober medallists.

THE PRODUCTIVE CAPACITY OF A UNIVERSITY[1]

RICHMOND COLLEGE is a name long familiar to me, for its baseball teams often visited our campus at Chapel Hill when I was connected with the University of North Carolina. Its buildings were familiar through annual visits to Richmond for our football game with Virginia—visits begun always in high hopes of victory and ending all too frequently with a dolorous return after defeat.

Knowing the Richmond College of former years, I was immediately struck with the name University of Richmond on the invitation to take part in these exercises. Securing copies of the catalogue and pamphlet announcements, I rejoiced over the views of the beautiful buildings, constructed and in contemplation; the extension of its teaching of women at Westhampton College; the Schools of Law and of Business Administration; the summer school, and other evident lines of activity.

Having noted the new title "University of Richmond" I naturally looked for an account of its graduate school. This was found to be very limited. May I congratulate the authorities of the university on making no false pretenses in this matter, and in not undertaking work of a more advanced character until the foundation work of the undergraduate departments is thoroughly developed, and adequate facilities have been provided in which the best type of graduate work can be undertaken.

I feel confident, however, that not only the faculty and the board of trustees, but also all those who have supported and will support this institution, agree that if this university is to measure up to the full realization of its name, all hands should be joined in bringing about the development of a graduate department which will equal in the sterling character of its training the work now given by the collegiate schools.

On this occasion I should naturally prefer giving an account of the remarkable achievements in recent years in the field of chemistry, but your problem, as I see it, is a much broader one than chemistry alone. It is fitting, therefore, that we dwell for a short while on the thought of the productive capacity of a university in the full significance of that term. An institution must send forth men and women trained in the methods and imbued with the spirit of research; through the publication of the results of such research it must make its contribution to truth and to the ever-widening bounds of human knowledge.

I note that you contemplate raising an additional fund for endowment. It may be helpful to remind

[1] Address delivered at the dedication of the new chemistry laboratory of the University of Richmond, Virginia, April 11, 1927.