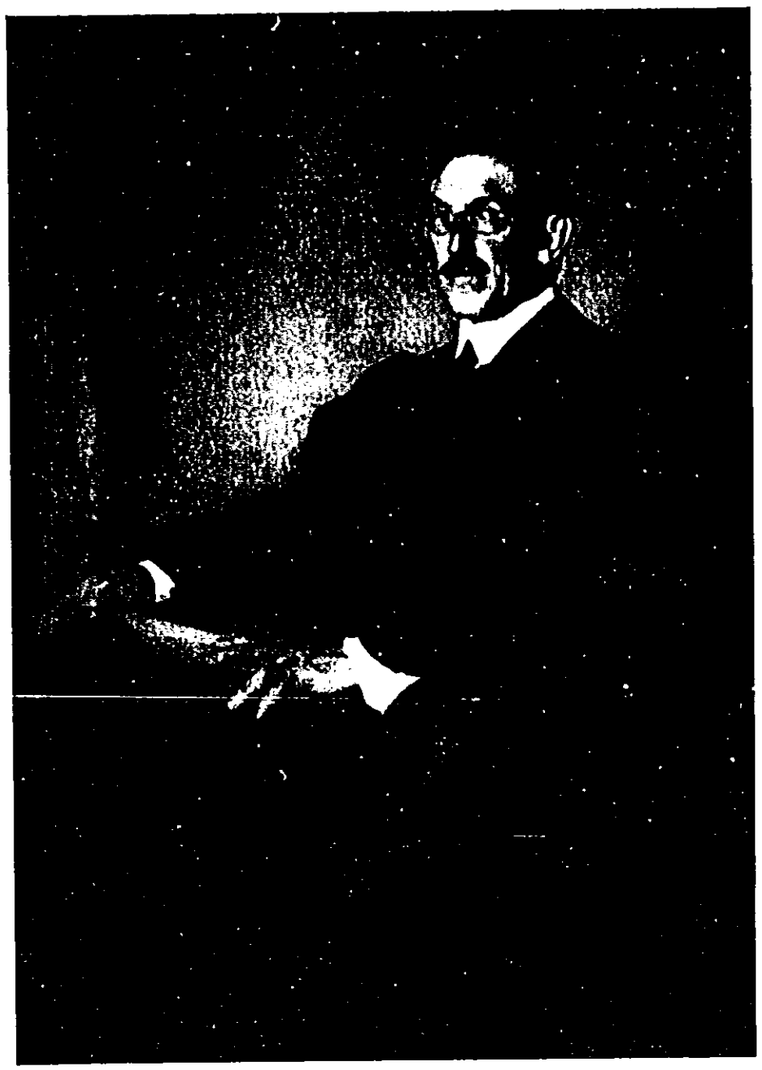

HERMANN M. BIGGS
1859-1923

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HERMANN M. BIGGS, M.D., LL.D., D.Sc.

1859-1923

Of Dr Hermann Biggs, one of the world's foremost health administrators, Dr Winslow, Professor of Public Health at Yale University, has said: "He was, all in all, the most outstanding sanitary statesman of the United States since the days of Lemuel Shattuck;" and, as if predestined to carry on the work of that Chadwick of America, Hermann Biggs was born in the year that Shattuck died.

Descended from George Biggs who emigrated from England in 1690, to settle first in Long Island and afterwards in New Jersey, Hermann Michael was the son of Joseph and Melissa Biggs, and a grandson of Peter Biggs who fought in the revolutionary war. He was born in Trumansburg, New York, on the 29th of September 1859, educated at preparatory schools in that town and at Ithaca, and worked in a general store until, in 1879, at the age of twenty, he entered Cornell University. His capacity for work and his remarkable powers of concentration enabled him to study medicine at Bellevue Hospital Medical College while he was still a student at Cornell, and thus to take his B.A. degree from Cornell in 1882 and his degree of M.D. from Bellevue in 1883, accomplishing in three and a half years the work to which seven years are usually allotted. This remarkable feat seems to have been only a promise of what

was in store, for in after years, in spite of a not too robust constitution, Biggs carried on an active medical practice while he directed the public health work of the State, taught clinical and preventive medicine, and maintained a personal interest in a multitude of voluntary health agencies, in great part initiated by himself, and kept in close touch with every advance in scientific research which concerned in any way preventive medicine. Any one of these activities would have filled the working life of an ordinary man, and it could only have been because, as a colleague said of him, he was the best user of his time ever known, never idle, never hurried, never seemingly under any special strain, that he was able to carry out so many important and varied tasks. The subject he chose for his graduating thesis at Cornell foreshadowed the direction of his future career, for it was entitled, "Sanitary Regulations and the Duty of the State in regard to Public Hygiene," and was inspired by his association with the brilliant band of workers at Bellevue, including such men as Joseph Bryant, Austin Flint and William Welch. In this essay, he refers to "The grandest discovery of the age—the discovery of a parasite as the cause of tuberculosis by Dr Koch of Berlin," a discovery which was full of meaning for Biggs's future.

From 1883 to 1884 he was house surgeon at Bellevue Hospital, and in the following year went to Germany to study under Professor Loeffler at Greifswald University, and later in Koch's laboratory in Berlin. Only two years had elapsed since Koch's famous discovery of the tubercle bacillus, and the scientific world was buoyant with the hope that a cure for the widespread scourge of tuberculosis was in

sight. Koch, too, following up Pasteur's revolutionary discoveries in fermentation, was establishing the new science of bacteriology on a firm basis, and it was therefore little wonder if Biggs returned to America imbued by that great master with some of his enthusiasm for the promised campaign against consumption. On his arrival in New York, he was appointed an instructor in the new Carnegie Laboratory, then under the direction of Janeway and Dennis, the first laboratory in America to give instruction in the new science of bacteriology. When Welch was appointed to Johns Hopkins University in 1885, Biggs and Prudden were the only teachers of this science in New York. At Bellevue Hospital, with which Biggs maintained his connection till the end of his life, he was constantly in demand to demonstrate Koch's technique, for he had the distinction of being the only physician in the city who knew how to stain the tubercle bacillus.

In 1886 he was appointed Lecturer in Pathology at Bellevue Hospital Medical College, succeeding to the Chair in 1889. He was also a demonstrator in anatomy, and visiting physican to the workhouse and almshouse hospital from 1885 till 1892. In 1887 with Prudden he isolated the cholera bacillus from steerage passengers arriving on the steamship *Brittania*, and this had not been done before except by Koch himself in 1884.

The first work in connection with preventive medicine with which Biggs's name was publicly identified, was that which followed the outbreak of cholera in Hamburg in 1892. This port was in regular communication by sea with New York, and something in the nature of a panic was created when,

following the arrival in New York harbour of some ships with several cases of cholera on board, ten cases occurred in the city itself. All the Southern, Central, South American and Mediterranean ports were closed against ships which had been in New York harbour and business was at a standstill. Chiefly through the precautions adopted by Biggs, the disease was arrested and a most serious interference with commerce avoided. In the same year, on his advice, the first municipal diagnostic laboratory was opened by the New York City Board of Health, and Biggs was appointed Pathologist and Director. His thorough training in the science of bacteriology and in the methods of Koch, combined with his great ability in the application of scientific discoveries to the problems of public health, fitted him well for the organisation of this department of pathology and bacteriology, and in his capable hands the new laboratory of New York City soon became a model for the world. Koch is reported to have said, when he visited New York in 1894, that Germany would have to wait till a new generation of doctors had been educated before such efficient measures for coping with disease as Biggs had established in New York could be carried out in that country. It was in this laboratory that the diphtheria antitoxin was immediately applied on the announcement of its discovery by Roux at the Congress of Hygiene and Demography in Buda-Pesth in September 1894, for under Biggs's direction, Dr W. H. Parks had already begun work on the diagnosis of diphtheria by culture methods in 1893, and New York was fully prepared for the advance in preventive medicine which this discovery foreshadowed. Biggs was in Europe when Roux's announcement was made, and

he did not wait for his return to New York before he set in motion the measures necessary for procuring the antitoxin, but cabled to Dr Parks, instructing him to begin immediately to immunise horses.

The diphtheria germ, the *Klebs-Loeffler bacillus*, was discovered by Klebs in 1875, and Loeffler, with whom Biggs had studied in Germany, obtained the germs in pure culture in 1882. It remained for Roux and Yersin, disciples of Pasteur, to separate by filtration the toxin produced by the germs from the germs themselves. This they accomplished in 1888-1890. They then had a toxin free of germs, and found that it produced, when injected into animals, the same effects as the disease itself. By 1890, Behring and Kitasato had succeeded, by giving graduated doses of this toxin, in immunising animals against diphtheria, that is to say, the animals were made proof against the diphtheria germ. The results of the first human cases treated with the antitoxin were published in 1893, and in September 1894, when there could no longer be any doubt about the success of the treatment, Roux announced it to the world. Thus it was that Biggs cabled to New York to have horses immunised so as to procure an antitoxin for American hospitals without delay. A healthy horse is painlessly immunised by graduated doses of toxin. In answer to the effects of the toxin, its blood produces an antitoxin with which to fight the poison, and it is this antitoxin which is taken from the horse's blood and given to the diphtheria patient to reinforce his own defences against the powers of the diphtheria germ. The horse is not necessarily any the worse for this operation. There is a story told in the *British Medical Journal* of the 24th March 1900, of a horse

presented to a Havana laboratory in 1895 which, by its contributions of antitoxin supplied from its own blood, had benefited 1858 individuals who had diphtheria and was none the worse itself.

Two months after Roux's announcement had been made, the Metropolitan Asylums Board of London used the antitoxin in all its hospitals. But not all the hospitals in Europe were so ready to apply the discovery till the enormous saving of life in those hospitals where it was used compelled them to do so. The rapidity with which Biggs immediately introduced the measures to New York and carried eventually medical opinion with him would, if he had done no other service, alone place him in the front rank of eminent hygienists. He saw at once the saving in life that would be effected, and with a courage which never failed him when he had taken his decisions, he led the way. The results of the introduction of the diphtheria antitoxin are a commonplace now. But the *British Medical Journal* of 20th October 1895, referring to the matter, said: "The most striking confirmation of the value of antitoxin has been afforded where the supply ran short during an epidemic. In Baginsky's clinic, the interruption of the serum-treatment promptly raised the mortality from 15·6 per cent. to 48·4 per cent." Acting on Biggs's advice, the Health Department of New York supplied antitoxin free of charge to all those who were unable to pay, and this practice was adopted by nearly all the municipal and State departments of the United States.

In 1902 Biggs was appointed General Medical Officer of Health for New York City, an office which he held until 1913, while continuing his work as

Director of the Laboratory. His effective work in the cholera scare of 1892, combined with the methods he introduced for the systematic examination of steerage passengers from cholera ports, the introduction of the diphtheria antitoxin in 1895, and the rapidity with which he stamped out a typhus epidemic in New York City in 1897, had already established his fame as a great health administrator; but the work with which his name is most generally associated is that which he carried out in the campaign against tuberculosis. Even as early as 1887, he had been a member of a committee appointed to advise the Health Commissioner as to the best means to be adopted for the prevention of this disease; but the recommendations of this committee that tuberculosis be classified as a communicable infectious disease, and that the health authorities should enforce regulations for its control, were greeted as being far beyond the power of the authorities to carry out in the prevailing state of public and medical opinion. It was not till 1894 that the Health Board felt itself in a position to ask physicians to report cases of suspected tuberculosis and, by the offer of free examinations of specimens sent to the laboratory for investigation, succeeded in getting some cases reported. But physicians were still reluctant to give the names and addresses of their patients. From the first, Biggs recognised the impossibility of enforcing effective preventive measures without the enlightened co-operation of the public and the profession, and not the least among his contributions towards a healthier city must be placed his effective handling both of public indifference and medical opposition. By his long continued efforts and his wise and moderate counsel

he succeeded in gaining the cordial co-operation of both parties. In an "Address on Sanitary Science, the Medical Profession and the Public," delivered before the New York Academy of Medicine in 1897, after defining what is meant by infectious, contagious and communicable disease, Biggs said: "I believe that much could be done to reduce the death-rate from the diseases under consideration if they were managed in an efficient and intelligent manner. Probably a satisfactory result will only be attained by the education of the masses." And, quoting the Medical Officer of Health for Birmingham, he said: "It is noted the social and professional objections to the act controlling infectious diseases have been proved to have no foundations whatever. The distrust and friction between the practitioner and the Medical Officer of Health, which were predicted, have not appeared; the concealment of disease, which was to have followed, has not occurred; the sacred confidence between patient and doctor, which was to have been destroyed with most disastrous results, remains inviolable. And so every theoretic objection which timidity, selfishness, or ignorance could find or invent has been refuted by practical experience."

In the year that this Address was delivered, the Board of Health, acting on Biggs's advice, made it obligatory upon physicians of New York City to report tuberculosis, facilities for the examination of specimens were greatly extended, and arrangements were made for visiting patients not under the private care of a doctor. But even then the new regulation was condemned by the profession and every effort was made to get the Order rescinded. It was not

till 1900 that active opposition to compulsory notification of tuberculosis ceased, and by that time its opponents had done the service of bringing the subject prominently before the public. During Biggs's tenure of the office of General Medical Officer, from 1902 to 1914, a most efficient system for the control of this insidious and disastrous disease was built up by the introduction of far-reaching legislative measures, compulsory reporting of deaths, the circulation of printed instructions of precautions to be adopted in the homes of the people, the establishment of dispensaries, hospitals for advanced cases, and a sanatorium for incipient cases. For these and a great many other measures, Biggs was almost entirely responsible, and the result can be seen by a glance at the death-rate. In 1900 deaths from tuberculosis in the United States were 202 per 100,000, and in 1920 they were 114.

In addition to his work in his official capacity, Biggs was associated with many undertakings of a private nature for the eradication of this disease, and his advice and guidance were eagerly sought by all bodies connected with the work of preventive medicine. He was President of the National Tuberculosis Association in 1905 and 1906, he served on the Tuberculosis Committee of the Charities Aid Association; he was a member of the Rockefeller Institute and its Scientific Director from the time of its organisation, and President of the American Hygiene Association, and his active help in the development of their work was ever at the service of all these bodies for, as Mr Homer Folks, the Secretary of the Charities Aid Association, has said: "Dr Biggs never gave his name without giving also his thought and help."

In the creation of the Bureau of Child Hygiene of the New York Public Health Department, Biggs played a prominent part, and he was in great part responsible for the enactment of the laws controlling the practice of midwives, first in New York City and later in the State and, when Commissioner of Health for the State, it was his influence that secured the passing of the Federal Maternity and Infancy Act, a measure which gave to New York State a larger appropriation of money for its child welfare than that assigned by any other state.

In 1912 it became evident that the work of the New York City Health Department was hindered by the backward condition of public health administration in other parts of the State. To remedy this state of affairs, the Governor of New York appointed a Commission, of which Biggs was elected Chairman, to draft a new public health law. Their report, which in effect was that of the Chairman, recommended the appointment of an expert Public Health Council, under a single administrative head responsible to the Governor, with power to establish a uniform State Sanitary Code; the provision of district sanitary inspectors, and an increase in the pay of local health officers. On this point Biggs had always laid stress, for he held it important to have men of adequate training and education in such positions and, indeed, adequately trained sanitary officers and public health nurses. The facilities he provided for practical courses during his Commissionership of the New York State Department effected great improvement in the efficiency of its personnel.

The Bill embodying the Commission's recommendations was passed by the legislature in 1914

without change in any of its provisions, the Public Health Council was appointed, and Biggs was elected Chairman. He had now resigned from his position as General Health Officer of the City, and when he was offered the office of State Commissioner of Health in addition to the Chairmanship of the Council, he accepted it somewhat reluctantly owing to the increasing pressure upon his time. Nevertheless, from 1914 till the time of his death, he filled both these offices with great distinction, bringing to their development his genius and administrative skill in the solution of the problems which confronted the new Department, and introducing in his splendid laboratory every new method of diagnosis which the rapid advance of science dictated. For science was the basis of all his activities. He had an insatiable desire to know all the facts and, knowing them, an extraordinarily clear conception of the best way to apply them. He seemed to know instinctively the right direction in which to set out for a goal, which was clear to his view, but often hidden from his co-workers, until the goal was at length attained and they could see the results of his foresight. All his life he held the confidence of executives and legislatures of every political opinion, of Governors and of the public.

In 1917 Biggs was appointed a member of the Medical Advisory Committee of the American Red Cross War Council, and early in the same year he was sent by the International Health Board of the Rockefeller Foundation, in company with Dr A. R. Dochez, to investigate the causes of the widespread prevalence of tuberculosis in France. As a result of his report, the Rockefeller Commission for the Prevention of Tuberculosis in France was appointed and

he was chosen Chairman. In 1919 he was one of the American delegates to the Inter-Allied Medical Conference at Cannes which formulated the plans for the League of Red Cross Societies. Of this League he was Medical Director at Geneva for a short time in 1920. In addition to all these activities, Biggs was a member of many professional societies and in 1920 President of the Association of American Physicians.

But the strain of the War years and the ever-increasing demands of his work had told upon his health. In the midst of his labours, he was taken ill in the summer of 1923 and died on the 28th of June at the too early age of sixty-three, leaving a widow, a son and a daughter.

Biggs was a contributor to many medical journals all his life. Such papers as the "Physiological Action of Cocaine," the "Koch Comma Bacillus," "Methods of Bacteriological Investigations," and the "Etiology of Rabies" and many others on tuberculosis, cholera, cerebro-spinal meningitis and sanitary science were the work of his pen. He received the honorary degrees of LL.D. of New York University in 1910, of Rochester University in 1917, and that of D.Sc. of Harvard in 1920. He was also an honorary member of the Royal College of Physicians of Edinburgh.

The news of his death was received in America with universal grief, for he was a man greatly beloved, and his work at the head of the State Department of Public Health had brought him the confidence and devotion of the great American public. In the Hermann Biggs Memorial Lecture for 1928, Professor Winslow of Yale who delivered it, said: "Hermann

Biggs's work must go on. The future holds new challenge for men of intellect and heart and vision. Pneumonia remains to be overcome; influenza, infantile paralysis, cancer, the great unexplored field of mental hygiene—open to us new unconquered countries. . . . We need more leaders like the one whom we commemorate to-night. The best of all tributes to his service will be the enlistment under the same banner of young soldiers of the public health who can realise, as he realised, that by the application of modern science preventable disease can be banished from this earth."

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