

Koch—A Quiet, Earnest Scientist

Convinced Scientists at Washington that Human and Bovine Tubercle Bacilli Were Different—Urged Medical Men to Study Prevalence of Disease, Not Number of Deaths

By F. M. POTTENGER, M.D.

MARCH 24 will be the sixtieth anniversary of one of the notable events in medical history, for on that day, in 1882, Robert Koch announced to the world the discovery of the tubercle bacillus.

This discovery swept aside the theory of the hereditary nature of tuberculosis which had held sway from the time that tuberculosis was first known, and substituted for it the fact that tuberculosis was an infectious disease. When the meaning of this discovery was fully understood, it provided our first hope for the eradication of the disease because infection could be prevented while heredity could not be changed.

When I was a lad of 12 I heard our family physician tell my parents that Robert Koch, a German physician, had discovered the cause of tuberculosis. I was especially interested because several families in our community had been decimated by the disease.

A short time before I entered medical school Koch announced the discovery of tuberculin. Unfortunately tuberculin was announced as a "cure" for tuberculosis. Patients from all over the world, suffering from all stages of the disease,

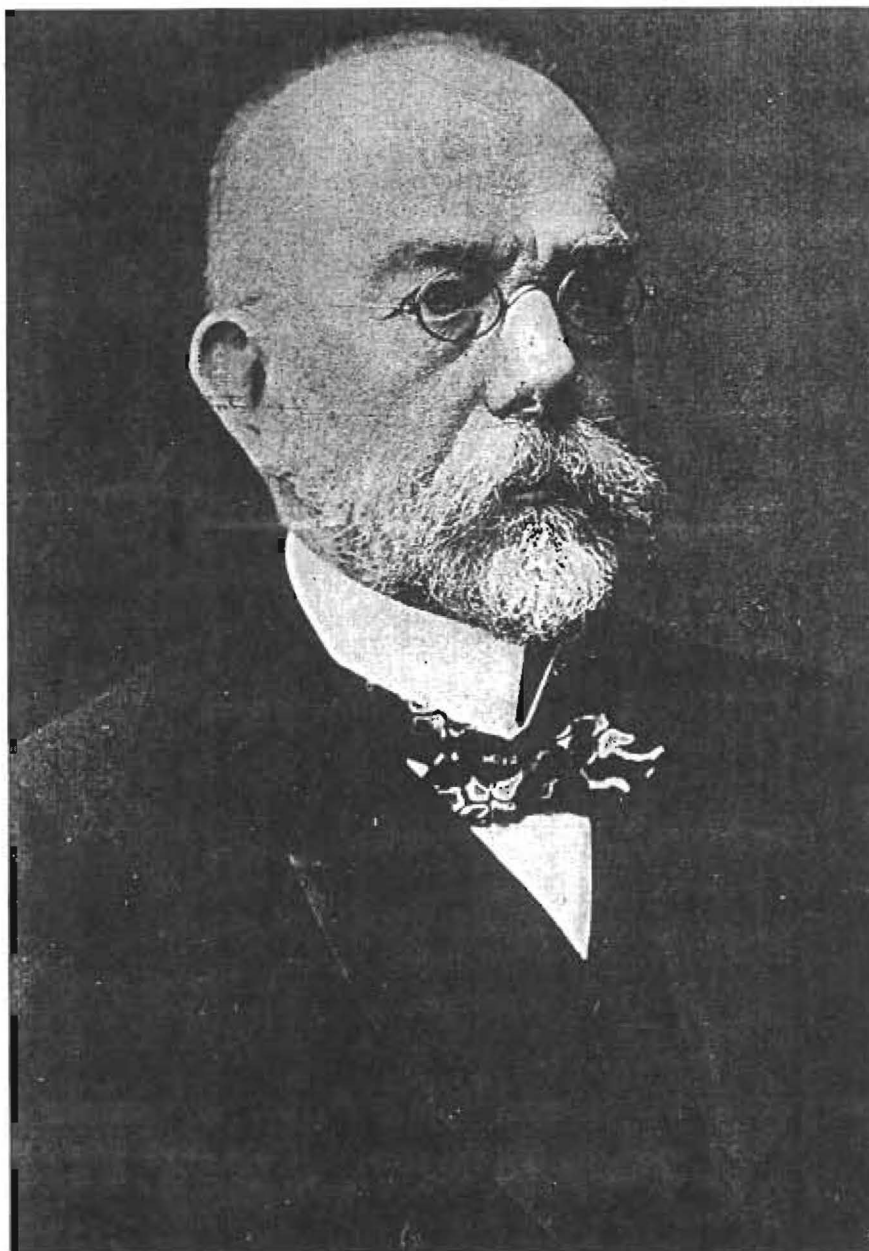
flocked to Berlin to be cured. Many died on the way; others went away disappointed. However, some showed improvement—just enough

to make Koch's pupils continue the therapeutic use of his tuberculin.

Able to Differentiate

The fact that it did not act in a manner similar to antitoxin in diphtheria was against its acceptance. Medical men were expecting a "cure" to act quickly, for they knew nothing of the fact that immunity in tuberculosis is largely a cellular affair and slow of development.

However, a very practical fact



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DR. ROBERT KOCH . . . his discovery pushed aside the theory of hereditary nature of tuberculosis . . . genius as original investigator . . . helped found science of bacteriology . . . his name immortal.

came from the discovery of tuberculin which depended on its value as a diagnostic test. By tuberculin we are able to differentiate those who are infected with tuberculosis from those who are not.

As a result, the Mantoux test has become one of the most important features in our modern crusade for case-finding. Wholesale testing of school children can be carried on without injury to the child. The result is that we are now learning what children are infected, and more than this, we are quite often, by searching for contacts, able to find the source of their infection.

In 1900 Koch startled the scientific world a third time with an important announcement regarding tuberculosis. This time he stated that from his studies he had been convinced that the bacilli which cause tuberculosis in human beings and in cattle are different.

Not Same Bacilli

This caused consternation because prior to that time all bacilli had been thought to be the same. Many nations appointed special commissions to investigate this sub-

ject, and after several years of research the fact of the difference was established.

As a result of careful observation and study, however, it was finally shown that much of the tuberculosis of the bones, glands and joints, in children, is due to bacilli of bovine origin, while nearly all tuberculosis of the lung is caused by bacilli of human origin.

This furnished the basis for the next move in the prevention of tuberculosis: (1) eradicating tuberculosis from dairy herds to prevent the nonpulmonary forms of tuberculosis; and (2) seeking out human cases and rendering them harmless by education, isolation and cure, to prevent pulmonary tuberculosis.

I was invited to attend an interesting private meeting at the New Willard Hotel, in Washington, in 1908. There Koch was questioned to see if he would not waiver in his statement that bovine and human bacilli were different, but before the session was over no one could have any doubt that Koch was positive of the correctness of his position.

I had the pleasure of knowing Koch. He was very approachable. He was not a man who sought antagonisms but rather a quiet, unassuming, earnest scientist.

Just before his death in 1910, Koch delivered an address in which he emphasized the fact that it was not the number of deaths from tuberculosis that medical men should study, but the instances of illness; that it was not the dead but the living that spread the disease.

25 Years Later

It has taken us a quarter of a century to arrive at the understanding which Koch had in 1910. Of course, we now see it clearly and are seeking to find the active cases in the community so that we may prevent them from infecting others. Today this is the key to the anti-tuberculosis program.

These great pronouncements of Koch should be sufficient to make his name immortal. When Koch discovered the tubercle bacillus there was scarcely an individual in the civilized world who did not have a relative or an intimate friend suffering from tuberculosis. But in the brief space of 60 years the incidence has been reduced to less than one-fifth of what it formerly was.

As a result there will be about 300,000 less deaths from tuberculosis in the United States this year than there would have been had the same deathrate continued as existed in 1882, when the bacillus was discovered.

PROPHECY

Dr. Koch closed his famous paper, "The Etiology of Tuberculosis," with the statement: "When the conviction that tuberculosis is an exquisite infectious disease has become firmly established among physicians, the question of an adequate campaign against tuberculosis will certainly come under discussion and it will develop by itself."

Big News Events in 1882

Back in 1882, the year in which Dr. Robert Koch announced the discovery of the tubercle bacillus, such things as the following were happening:

Charles Guiteau, assassin of President Garfield, was hanged . . . Jumbo, the African elephant for which he paid £2,000 was brought to America by Barnum from the London Zoological Society Gardens . . . the first excavation for Panama Canal was made . . . work was begun on the superstructure of Brooklyn Bridge . . . President Arthur vetoed bill prohibiting Chinese immigration for 20 years . . . copyright law was passed . . . Harvard Annex (later known as Radcliffe College) was chartered as a college for women. . . .

Edison inaugurated first commercial electric lighting in New York Central Station . . . Jesse James was fatally shot by two of his band . . . American Association of Red Cross was formed and incorporated under laws of District of Columbia . . . there were strikes, serious and of long duration, among iron workers, freight handlers, coal miners, weavers and spinners . . . U. S. population was 50,155,783 . . . Henry Irving, Ellen Terry and Sarah Bernhardt were in stage "hits" of the year. . . .