

KOCH'S NEW THEORY

Important Parts of His Recent Speech Verbatim.

THE TUBERCULOSIS PARASITE.

His Recent Experiments With Consumption—Animals Fed With Different Bacilli—Evidence From Older Literature—Virulent Bacilli Consumed—New Cases of Alimentary Infection—Quarantine Unnecessary.

The following extracts from the verbatim address of Dr. Koch, before the British Congress on Tuberculosis, the other day, cover the subject of his new theory:

The real cause of the disease was a parasite, a visible and palpable enemy which we could pursue and annihilate. Strictly speaking, the fact that tuberculosis was a preventable disease ought to have become clear as soon as the tubercle bacillus was discovered and the properties of this parasite and manner of its transmission became known. In by far the majority of cases tuberculosis had its seat in the lungs, and had also begun there. As to the question of where the inhaled tubercle bacilli had come from there was also no doubt. On the contrary, we know with certainty they got into the air from sputum of consumptive patients, which almost always contained tubercle bacilli, sometimes in incredible quantities. By coughing and even speaking it was flung into the air in little drops, i.e., in a moist condition, and could at once infect persons who happened to be near the coughers, but then it might also be pulverized, when dried in linen or on the floor, for instance, and get into the air in the form of dust, which, in virtue of its smallness, could keep floating a good while in the air, and finally to new infection.

The sputum of consumptive people, then, was to be regarded as the main source of the infection of tuberculosis. It has been demonstrated by thorough investigation that though hereditary tuberculosis was not absolutely non-existent it was nevertheless extremely rare. Another possibility of tubercular infection existed, it was generally assumed, in the transmission of germs of the disease from tubercular animals to man. This manner of infection was generally regarded nowadays as proved and so frequent that it was looked upon by not a few as the most important, and rigorous measures were demanded against it in this congress. His investigation had led him to form an opinion deviating from that which was generally accepted. He begged their permission, in consideration of the great importance of this question, to discuss it a little more thoroughly. Genuine tuberculosis had hitherto been observed in almost all domestic animals, and most frequently in poultry and cattle.

Tuberculosis of poultry differed so much from human tuberculosis that we might leave it out of account. Strictly speaking, the only kind of animal tuberculosis remaining to be considered was tuberculosis of cattle, which, if really transferred to man, would indeed have frequent opportunities of infecting human beings.

Even in his first publication on tuberculosis he expressed himself regarding the identity of human tuberculosis and bovine tuberculosis with reserve. Proved facts, which would have enabled him sharply to distinguish between these two forms, were not then at his disposal, but sure proofs of their absolute identity were equally undiscoverable. In order to decide it he had repeatedly resumed investigations relating to it, but so long as he experimented on small animals such as rabbits and guinea pigs he failed to arrive at any satisfactory result, though indications which rendered the difference of the two forms of tuberculosis probable were not wanting. Not until the compliance of the Ministry of Agriculture enabled him to experiment on cattle, the only animals really suitable for these investigations, did he arrive at absolutely conclusive results. These experiments he had carried out during the last two years, along with Professor Schultz of the Veterinary College of Berlin.

He would tell them briefly some of the most important. A number of young cattle which had stood the tuberculin test, and might, therefore, be regarded free from tuberculosis, were infected in various ways with pure cultures of tubercle bacilli taken from cases of human tuberculosis. Some of them got tubercular sputum of consumptive patients direct. In some cases tubercle bacilli or sputum were injected

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under the skin, in others into the peritoneal cavity, in others in the jugular vein. Six animals were fed with tubercular sputum almost daily for seven or eight months. Four repeatedly inhaled great quantities of bacilli which were distributed in water and spattered with it in the form of spray. None of these cattle, and there were nineteen of them, showed any symptoms of the disease and they gained considerable in weight.

From six to eight months after the beginning of the experiments they were killed, and in their internal organs not a trace of tuberculosis was found.

The result was utterly different, however, when the same experiment was made on cattle free from tuberculosis with tubercle bacilli that came from the lungs of animals suffering from bovine tuberculosis. After the incubation period of about a week, the severest tubercular disorders of the internal organs broke out in all the infected animals. After death extensive tubercular infiltrations were found at the place where injections had been made, and in neighboring lymphatic glands, and also far advanced alterations of the internal organs, especially the lungs and spleen. The difference between human and bovine tuberculosis appeared not less strikingly in similar experiments with asses, sheep and goats, into whose vascular systems the two kinds of tubercle bacilli were injected. These experiments were not the only ones that have led to this result.

If one studies older literature on the subject and collated reports of numerous experiments made in form-

(CONTINUED ON FIFTH PAGE)

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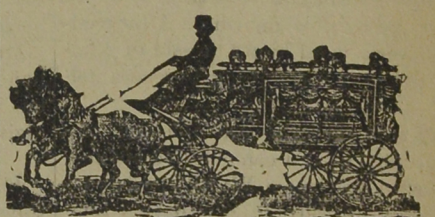
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