# SCIENCE:

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## LATEST DETAILS CONCERNING THE GERMS OF INFLUENZA.

DR. R. PFEIFFER, overseer of the scientific division of the Institute for Infectious Diseases at Berlin, has the credit of discovering, isolating, describing, and inoculating the germs that are the cause of influenza. The following results are based upon his thorough investigation of thirty-one cases of influenza, in six of which autopsies were made.

1. In all cases there was in the characteristic, purulent, bronchial secretion a definite kind of bacillus. These rods were shown in uncomplicated cases of influenza, in an absolutely pure culture, and for the most part in large numbers. Very frequently they lay in the protoplasma of the pus-cells. Where the patient has been subject to other bronchial troubles, one finds in the sputum, in addition to the influenza bacilli, other micro-organisms. The bacilli can enter from the bronchi into the peri-bronchial tissue, even to the surface of the pleura, where in purulent coats in two autopsies they were found in pure culture.

2. These rods were found only in influenza. Numerous control-experiments showed their absence in common bronchial catarrh, pneumonia, and phthisis.

3. The condition of the bacilli varied with equal force in the course of the disease; first with the exhaustion of the purulent bronchial secretion the bacilli also disappeared.

4. Two years ago, at the first appearance of the influenza, I saw and photographed the same bacilli in large numbers in preparations of sputum from influenza patients.

5. The influenza bacilli appear as small rods, of about the thickness of septicæmia bacilli in mice, but one-half their length; frequently three or four bacilli are found arranged one after the other like in a chain; it is difficult to stain them with the basic-aniline dyes; one obtains better preparations with Ziel's solution and with the hot methyline blue of Löffler. In this way one sees almost regularly that the end-poles of the bacilli stain more intensively, so that forms arise which might be very easily mistaken for diplococci or streptococci. The bacilli are not stained by Gram's coloring matter; and in hanging drops they are immovable.

6. These bacilli can be obtained in pure cultures; in one and a half per cent sugar-agar the colonies appear the smallest. The continued culture in this nutrient medium is difficult, and I have not been able to go beyond the second generation.

7. Many experiments for transmission to apes, rabbits, guinea-pigs, rats, pigeons, and mice were made. Positive results could be obtained only in apes and rabbits. The other species of animals were refractory to the influenza.

8. These results justify the conclusion that the above described bacilli are the cause of influenza.

9. Infection comes very probably from the germs of the disease in the sputum; and therefore for prevention of contagion the sputum of influenza patients must be made innocuous.

Dr. Kitasato has succeeded in cultivating the bacilli of influenza to the fifth generation upon glycerine-agar.

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## A SERIES OF ABNORMAL AILANTHUS LEAFLETS.

A STURDY trumpet creeper (*Tecoma radicans*) has entwined itself about an ailanthus tree which stands in our yard, near the veranda. Together, they form quite a charming bower during the summer time, when the bright trumpet flowers are so profusely intermingled with the dark green foliage of vine and tree.

It was here that I had taken my chair one afternoon, to enjoy an hour's undisturbed reading. My anticipations of quiet, however, were very soon interrupted, by a sudden gust of wind, which set the leaves of my book a-fluttering so, that I was obliged to close it. But "it is an ill wind that blows nobody good," I said to myself, as I stooped to pick up some leaflets which came fluttering down from the ailanthus tree.

Although it was only June, these leaflets were of a bright yellow color, like the tints of early autumn. But what attracted my attention especially was their variation from the typical form. Every leaflet had a peculiar notch, lobe, or lop-sided outline which would cause it to be classed among monstrosities, or abnormal leaves. These abnormal specimens were more to me, however, than mere "freaks of nature." They were the tablets on which their own history was inscribed.

If we take one of the large ailanthus leaves, with its long rachis and numerous leaflets, we are led to inquire into the manner of its numerical increase of leaflets. At a cursory glance at the leaves we find that although the vast majority are odd-pinnate, there are many which we are scarcely justified in calling odd, nor yet should we denominate them even-pinnate. That is, transition stages between odd and even pinnate quite commonly occur, and I would call these "abnormal leaves" transition stages. They are the keys which will unlock for us the mystery of their development. Let us see if such is not the case: let us make use of these keys and thereby learn whether such is not the verdict rendered by the leaves themselves. We will put our queries to the terminal leaflets, because they seem to be the centre of evolutionary activity in nearly all pinnate leaves.

We have quite an advanced transition stage in Fig. 1 of our series; it has quite a conspicuous projection beyond the typical outline on the left side; a prominent vein is seen extending to the apex of this abnormal projection, from which