unites with the toxiphoric group of cells, causes a destruction of their function, so far as the action of the cells is concerned, for after the union the cells are defective, and in consequence of this the cell is stimulated by what is a general pathologic law to produce more of that substance, and according to an equally well-known law, it is over-stimulated, so that an excess of the substance is produced to overcome the loss. If, then, you keep introducing toxine you continue producing a combination until so much of the substance is produced that there is no room for it any longer in the cells; it is set free and accumulates in the blood; so an antitoxine is a substance normally present in the cells, which are stimulated to excessive growth, and it is consequently set free to circulate in the blood. This has aroused the greatest interest among bacteriologists, and is certainly one of the most important and ingenious explanations ever offered.

Now if this be true there should be means of demonstrating it. In other words, if the brain or spinal cord does contain tetanus antitoxine normally, we should find that it neutralizes the toxine outside of the body, because if you mix toxine and antitoxine in a test tube in proper proportions the combination is harmless. Now it has been found that if you make an emulsion of the brain or spinal cord in salt solution and add to that ten times the fatal dose of tetanus toxine, let them remain for a few minutes and then inject the mixture, the toxine will have been neutralized just as if you made the experiment of mixing toxine and antitoxine. This experiment was, of course, made at once, and it is thought to bring evidence that there is in the brain and spinal cord a substance which has the power of binding the tetanus toxine and making a harmless combination. The mixture of tetanus toxine with the emulsion of liver, kidney or other organs of the body has no similar effect, and therefore it is something apparently specific for the nerve cells.

That is Erlich's view then, and he thinks the same will hold true as to other antitoxines. It remains to be found out, for instance, in diphtheria, what cells or group of cells has this special affinity for the diphtheria toxine. It is only a theory and it is not proven definitely that the identity of this substance in the brain and cord is the same as the antitoxine. The experimenter in the Pasteur Institute, Metchnikoff, Reux and others have brought forth arguments opposed to this interpretation, one of the most curious being that if you mix finely powdered carmine with the toxine you get very much the same action as if you mixed the brain emulsion with it, and if that be true it is certainly very important. The theory is so suggestive and so important I thought it might interest you to have your attention called to it.