inoculated with the diphtheria bacillus or its poison. Then came the article published by Behring and Wernicke in 1892, in which these experiments were described, and which sets forth the fundamental principles under-lying serum therapy of diphtheria. Dr. Welch goes on to say: That the first trial of immune serum in the treatment of human diphtheria was made in Bergeman's clinic in Berlin in the autumn of 1890, the trial being of a tentative nature and made with weak serum and insufficient doses.

The author then traces the history of antitoxin during 1893 and the early part of 1894. It was at the International Congress in Rome 1894, that Heubner reported the results of his experience with the serum treatment of human diphtheria. His observations, however, were made in cases treated with much weaker anti-toxin than is now recognized as suitable. During these years various articles appeared concerning antitoxic serum.

"It is evident," says Dr. Welch, "from this brief historical summary, that the general principles of serum therapy of diphtheria were fully established and its application to human beings in active operation before Roux delivered his memorable address at the Eighth International Congress of Hygiene and Demography at Budapest, Sept. 1894." He says, however, that Roux presented the subject with such cleanness and force, as to draw the attention of the great body of physicians throughout the world to the healing power of diphtheria antitoxin.

In speaking of the theory of antitoxic treatment, the author says, that unless one denies absolutely the causal relation of the Löffler bacillus to diphtheria, it must be admitted that the treatment of this disease by antitoxin rests upon a sound experimental basis. The laboratory does not furnish any more impressive experiments than those which demonstrate the power of antitoxic serum to prevent and to cure the disease caused in animals by inoculation with the diphtheria bacillus or its poisons. The serum arrests the spread of the local processes and abates the symptoms of general toxaemia. And in relation to human diphtheria, he remarks: "It would be difficult to understand why an agent with the specific property of neutralizing in the bodies of animals the effects of these toxic substances should be unable to neutralize in human beings similar effects of the same toxic substances, provided that agent can be administered in the proper dose at the right time. Dosage and timely administration are factors of prime importance in determining the efficacy of antitoxic treatment. It is our inability to conform to the demands of these factors which has rendered thus far the treatment of tetanus by antitoxine in human beings disappointing."

"Only clinical experience can determine what practical difficulties there may be in the way of the successful employment of antitoxic serum in the treatment of human diphtheria; but there is no doubt, in my mind, that the results derived from experiments on animals justify, nay, demand the most careful and thorough trial of the new method of treatment upon human beings."

In speaking of the theories of the action of antitoxin, he mentions two prominent theories,—one may be called the chemical and the other the vital theory. The chemical is, that the antitoxin directly neutralizes, in a chemical sense, the toxins. The experimental evidence is in favour of the other theory, viz: that the antitoxin acts through the agency of the living body, and probably in the sense that it renders the cells tolerant of the toxin." This would explain why the introduction of antitoxin is not always followed by certain and precise effects. The cells must be in a condition to respond, in a proper way to the introduction of the serum. He emphasizes an import-