diphtheria antitoxin, which was a direct outcome of experiments devised according to the side-chain idea. Ehrlich's method, to the exclusion of others, is used all over the world; but the influence of the work carried out to test the side-chain theory of Ehrlich and his pupils still dominates investigation in all branches of immunity and the practical use of the knowledge obtained therefrom.

The side-chain theory is so well known that it is not necessary to restate it except in the most succinct form. A toxin or other antigen is without action on the animal body unless bound by molecular chains in the cells—receptors. But when so bound, the antigen causes injury to the cell, and subsequent repair, in the course of which there is an overproduction of receptors, which, passing into the blood and lymph, constitute the antibody for the antigen in question, because the antigen is now bound and neutralized or destroyed before it can reach the cell. As expressed by Behring, antibodies are free cell receptors, and the elements which, when situated in the cells, are essential for the action of toxins, for instance, are also the means of healing when free in the blood. In accord with the principles of this theory, Ehrlich's vivid mind coined numerous new words, which proved helpful in the discussion of new facts and ideas, and which soon passed into current international usage.

Ehrlich's last work was the development of the experimental chemotherapy of syphilis and certain other spirochetal infections. To discuss this wonderful work fully in all its ramifications is not possible at this time. The scientific world has accepted "the development through a lengthy series of systematic biochemical experiments, based on original conceptions of the affinities of cellular constituents, of a successful chemotherapy of important human infections, by direct attack on the parasites by substances specially built up for that purpose and introduced from without," as the fitting culmination of the tireless activities of an altogether unique investigative spirit. As pointed out elsewhere, Ehrlich's results in experimental chemotherapy fully justify Huxley's prediction in 1881 that through discoveries in therapeutics it would become possible "to introduce into the economy a molecular mechanism which, like a cunningly contrived torpedo, shall find its way to some particular group of living elements and cause an explosion among them, leaving the rest untouched."

Paul Ehrlich will live in the history of civilization as one of the great investigators, genial, creative, fertile, excelling in "that boldness of the scientific use of the imagination which alone can extend beyond the obvious fact and reveal the unknown," one of the great benefactors of mankind.

THE NEW YORK BOTANICAL GARDEN

THE New York Botanical Garden at Bronx Park is celebrating this week the twenty-fifth anniversary of its foundation. The first session was opened at nine o'clock Monday morning, September 6, with registration of delegates in the library, followed by an inspection of museums, laboratories, library and herbaria, with special reference to the exhibition of painting of plant life by Mary E. Eaton in the herbarium, and the Charles Finney Cox collection of Darwiniana. After lunch in the Museum Building the delegates and guests were formally welcomed by W. Gilman Thompson, president of the board of managers; by Henry H. Rusby, chairman of the scientific directors, and by Thomas W. Whittle, commissioner of parks for the Bronx. Dr. N. L. Britton, director-in-chief, then read "A History of the New York Botanical Garden."

Tuesday, September 7, was set for the reading of papers. According to the program these included: "Mechanism and Conditions of Growth," by D. T. MacDougal; "Mosses from Florida," by Elizabeth G. Britton; "Directing Factors in the Teaching of Botany," by Arthur H. Chivers; "Flora of the Mammoth Cave, Kentucky," by R. Ellsworth Call; "Triassic Plants from Sonora, Mexico," by Edwin W. Humphreys, and "A White-Cedar Swamp on Long Island and Its Significance," by Norman Taylor; "On the Nature of Types," by

R. A. Harper, and "Present Status of the Problem of the Effect of Radium Rays on Plant Life," by C. Stuart Gager.

Wednesday, September 8, was to be given up to a study of the flora of sand dunes and salt marshes on Crooke's Point, S. I., the excursion being planned in cooperation with the Staten Island Association of Arts and Sciences. On Thursday the reading of papers was to be resumed, including Clifford H. Farr on "Cell-Division: Bipartition and Quadripartition in Pollen Mother-Cells," and "Ecology and the New Soil Fertility," by Charles B. Lipman; John K. Small on "Recent Explorations in Southern Florida"; H. Hus on "A New Interpretation of Fascination"; P. A. Rydberg on "Life Zones in the Rocky Mountains"; Fred J. Seaver on "Bermuda Fungi," and Karl F. Kellerman on "Cooperation in the Control of Plant Diseases."

Following tea at the mansion, an inspection of the nurseries, arboretum, propagating houses, conservatory range and the Bronx River valley as far as Hemlock Forest will be made. A smoker at the Faculty Club, Columbia University, will be held in the evening. On Friday, September 10, the entire day will be devoted to a visit to the pine barrens of New Jersey, under the guidance of the field committee of the Torrey Botanical Club. On Saturday the delegates will visit the Brooklyn Botanic Garden.

SCIENTIFIC NOTES AND NEWS

Dr. Jacques Loeb, of the Rockefeller Institute for Medical Research, has been elected a foreign fellow of the Linnean Society, London.

Professor W. A. Bone has been elected president of the chemistry section of the British Association at the meeting held in Manchester this week, taking the place of Professor H. B. Baker who is unavoidably prevented from attending the meeting.

The South African medal, founded by the British Association in 1905, for scientific research in South Africa, was awarded at the Pretoria meeting of the South African Association, to Mr. C. P. Lounsbury for his entomological investigations.

Professor J. C. Arthur, who has been in college and experiment-station work for nearly forty years, and for the last twenty-eight years has held the chair of professor of vegetable physiology and pathology in Purdue University and chief of the botanical department of the Indiana Agricultural Experiment Station, retires on the first of September to become professor emeritus of botany in the same institution under the provisions of the Carnegie Foundation. He will continue the researches on plant rusts which have been in progress for a number of years. His successor in the experiment station will be Professor H. S. Jackson, of Corvallis, Ore.

The *Experiment Station Record* states that there has been held at the Iowa College of Agriculture a special convocation in honor of those members of the faculty who have been in service for at least a quarter of a century. The guests of honor were Vice-president E. W. Stanton, in service since 1874; General J. R. Lincoln, commandant, Henry Knapp, secretary, both in service since 1883; A. A. Bennett, professor emeritus of chemistry, in service since 1885, and Dr. L. H. Pammel, professor of botany and botanist, in service since 1889.

It is stated in *Nature* that the sum of £140 has been given to the Royal Society of Arts by Mr. R. Le Neve Foster for the purpose of founding a prize in commemoration of his father, Mr. Peter Le Neve Foster, who was secretary of the society from 1853 to 1879. The council has decided to offer the prize (consisting of £10 and the society's silver medal) for a paper on "Zinc: Its Production and Industrial Applications."

The Vienna Academy of Sciences has made a grant of about $800 to Professor R. Poech to enable him to conduct anthropological researches among the various races comprising the Russian prisoners of war.

It is stated in *Terrestrial Magnetism* that M. Lecointe, director of the Royal Observatory of Belgium, at Uccles, near Brussels, is at