eign to the classical immunological autonomy of organs and tissues as to be almost insulting in its implications. One must admit, however, that this Ehrlich autonomy is not in harmony with modern theories of protein, carbohydrate and lipoid metabolism.

SUMMARY AND CONCLUSIONS

The last three years of theoretical bacteriology and immunology have been characterized by four major movements:

(a) A tentative acceptance of a new dynamic concept of the infectious unit.

(b) A growing interest in the possible epidemiological importance of minor cross-reactions between pathogenic bacteria, environmental saprophytes and certain higher plant and animal tissues.

(c) An increasing skepticism of the classical belief that the protein molecule functions as a single antigenic unit.

(d) The beginning of serious interest in the basic genetic, enzymic, hormonal and neurological factors operative in specific immunity.

Professional bacteriologists and immunologists are divided into two schools in their acceptance or rejection of the newly suggested theories or plausibilities. The conservative school emphasizes the "intellectual recklessness"[29] that has led to futuristic theorizing before accumulation of absolutely conclusive experimental and observational evidence. The progressive school alleges that conservative theories are largely ancestral traditions, originally drawn from equally inconclusive data. If there is an element of truth in this allegation, the burden of proof rests equally on both schools.

Until the radical and conservative schools are harmonized, clinicians must apply the infectious logic of either school with an open mind,[30] depending for predictable clinical effects solely upon previous, adequately controlled clinical evidence.

OBITUARY

GEORGE KIMBALL BURGESS

ON July second, Dr. George K. Burgess, director of the National Bureau of Standards, was stricken with a cerebral hemorrhage while in his office at the bureau and died on the way to the hospital.

Dr. Burgess was born in Newton, Massachusetts, January 4, 1874, and was a direct descendant of Thomas Burgess, of England, who settled in Sandwich, Massachusetts, in 1638. He was educated in the public schools of Newton and later entered the Massachusetts Institute of Technology, where he graduated in 1896. Most graduate students of that period who were able to continue their studies abroad went either to Germany or England, but Burgess decided to study at the Sorbonne. This decision had a profound influence upon his later work. In Paris he became deeply interested in high temperature measurements under the guidance of Le Chatelier, and later translated Le Chatelier's book on this subject. Here he acquired a fluent use of the French language, which later was to prove of great service to him in important international conferences. Here also he met Mlle. Suzanne Babut, whom he married in 1902, and who survives him.

Following the award of his doctorate from the Sorbonne in 1901 with highest honors, Dr. Burgess joined the physics staff of the University of Michigan, and the following year was called to the University of California. In 1903 he entered the service of the Bureau of Standards, two years after its organization, and began a series of notable researches in the field of pyrometry, in large part in collaboration with Dr. C. W. Waidner. These investigations included an extended study of optical pyrometry, platinum resistance thermometry at high temperatures, the determination of the melting points of pure metals, and the study of the selective radiation from incandescent bodies.

It was during this period (1908) that Waidner and Burgess proposed as an absolute standard of brightness the radiation from the interior of a black body immersed in a bath of pure platinum at its freezing point. Lack of suitable refractories made it impossible to carry out the experimental procedure at that time, but twenty years later as director of the Bureau of Standards, Dr. Burgess had the keen satisfaction of seeing the Waidner-Burgess standard experimentally realized by members of the bureau staff.

His interest in the properties of materials at high temperatures led him into the field of physical metallurgy, and in 1913 he was made chief of the newly organized metallurgical division of the bureau. This marks the second stage of his career. He took up this work with characteristic energy and enthusiasm, and in the course of its development he demonstrated his marked ability as a technical executive. While directing this work, he still found time for his own researches on the causes of dangerous defects in railway materials. He demonstrated the practicability of measuring the temperature of steel rails as they pass

[29] H. Zinsser, SCIENCE, 75, 256, 1932.

[30] "Recommendations of the Allergic Research Council," *J. A. M. A.*, 94, 654, 1930.

through the rolls in the mill, which provides an important control as regards uniformity and quality. He also contributed to the development of an improved method for producing steel ingots from which sound rails could be rolled. His investigations have contributed materially to the safety of railway travel.

When Dr. Stratton closed his distinguished career at the bureau in 1923 by his decision to accept the presidency of the Massachusetts Institute of Technology, Dr. Burgess was appointed his successor as director of the Bureau of Standards. This selection met with the whole-hearted approval of the bureau staff. The progressive development of the work of the bureau during the past eight years under his direction bears witness to his wise administration. He was active in the development and final adoption of an international temperature scale and in support of the international program now under way to establish the electrical units in absolute measure. Through the research associate plan he developed industrial research at the bureau in cooperation with industry and technical organizations. During the last year of his administration the new national hydraulic laboratory was completed and extensive facilities were provided for the study of radio wave phenomena.

His office door was always open. Interruptions did not seem to worry him. His visitor found him dignified, but friendly, alert, attentive. He reached decisions promptly. His voice was low, his sentences crisp. His sense of humor was keen, and he responded to it with quiet body-shaking laughter. Sedentary in his habits, he had little interest in sports and games. Recreation to him meant a good book and a plentiful supply of tobacco, or a long drive in an open car with a friend. He loved the sea, and a long cruise was for him an ideal vacation.

Dr. Burgess gave generously of his time and energy to further the interests of organizations engaged in the advancement of research and standardization. At the time of his death he was president of the National Conference on Weights and Measures, chairman of the Federal Specifications Board, the National Screw Thread Commission and the Federal Fire Council, a director of the American Standards Association and a member of the National Advisory Committee for Aeronautics. His term of office as chairman of the National Research Council expired on June 30. He was a past-president of the American Society for Steel Treating, the Philosophical Society of Washington, the Washington Academy of Sciences, the American Society for Testing Materials and the Cosmos Club. He was a member of the National Academy of Sciences (past treasurer), the American Institute of Mining and Metallurgical Engineers, the Optical Society of America, the American Institute of Metals, the Physical Society of France, the Iron and Steel Institute of Great Britain and a fellow of the American Physical Society and the American Association for the Advancement of Science. Case and Lehigh had honored him with the degree of Doctor of Engineering.

His memory will be cherished by the staff of the organization to which he gave the greater part of his life, and by his numerous friends in scientific and industrial circles, not alone in America but throughout the world.

LYMAN J. BRIGGS

WASHINGTON, D. C.,
JULY 9, 1932

MEMORIALS

THE centenary of the birth of Sir William Crookes occurred on June 17, and the issue of that date of the *Chemical News,* founded by him in 1859, is dedicated to his memory.

ON the evening of June 8 the graduating class of Duke University School of Medicine planted ivy, from Sir William Osler's home at Oxford, at the entrance to the medical school. At this ceremony Dr. William Sydney Thayer, of the Johns Hopkins Hospital, a former pupil of Osler, made the address.

THE members of the class of 1897 at Lehigh University recently presented to the university a portrait of Dr. Mansfield Merriman, Lehigh's first professor of civil engineering, who served continuously in this position from 1878 to 1907; and of Dr. Joseph Frederick Klein, the first professor of mechanical engineering, who served the university from 1881 to 1918.

THE collected papers of the late Professor J. U. Nef, first head of the department of chemistry in the University of Chicago, have been presented to the University of Chicago Library by his son, Dr. John U. Nef, of the department of economics in the same university. These papers consist of Nef's own reprints of practically all his published articles. Most of them appeared in *Liebig's Annalen,* the *Berichten der Deutsche Chemische Gesellschaft,* and the *American Chemical Journal.* In some cases, Nef made a very considerable number of corrections and comments in the margin, and these have all been included. This collection makes it possible, for the first time, to consult all Nef's works together, and to take account of the changes which he made in them during his lifetime. The articles run to a little more than 1,700 pages, and they have been bound together in three volumes. These may be consulted in the library of the department of chemistry, where they are to be kept permanently.