The ultimate goal of Planck's operations was to derive the law of the distribution of energy in the spectrum of a black body, or in the spectrum of a hollow cavity in thermal equilibrium with absorbing and emitting matter. Strange to say he made at first no application of statistical mechanics to the linear oscillators which he employed as model sources of light. Because of his thermodynamic bias he chose to treat the equilibrium between the oscillators and radiation from the point of view of entropy and so to reduce the problem to that of determining the entropy of a system of ideal linear oscillators as a function of their energy and frequency. Still adhering to the phenomenological method of thermodynamics he was able by plausible hypothesis to formulate an expression for the oscillator entropy which led to the Wien radiation formula—then the best representation of the existing experimental facts. For a moment it seemed that the problem was solved, but new experimental data showed the Wien formula to be incorrect for low frequencies and required a modification of the theory. Planck's first step was to invent a purely formal alteration in the differential equation for the oscillator entropy, thus deriving a better radiation formula—the famous one we now associate with his name. Only then did he turn to the microscopic point of view and to Boltzmann's correlation of entropy with probability in search of a genuine physical meaning for his revised entropy formula. And here Planck made the culminating discovery (1901) that the entropy expression required by radiation measurements can be reconciled with the statistical interpretation of entropy if, and only if, the possible oscillator energies are assumed to be integral multiples of a finite unit proportional to the frequency. Later investigation was to replace the proposed energy quanta by equivalent quanta of action.

When we consider how violently contradictory to every previous concept this new hypothesis was, we need not be astonished to find it practically forced upon the unwilling investigator by obdurate experimental facts. A revolutionist in spite of himself, Planck felt as keenly as any one the difficulties in his hypothesis and spent much energy during subsequent years in the effort to reconcile the quantum concept with the wave theory of light. Recognition of the existence of an element of discontinuity in the microscopic world came slowly, but doubt was followed by growing interest and after a quarter of a century of intensive research the initial difficulties of the quantum theory found their solution.

Space does not permit more than a passing mention of Planck's many other important contributions to science, to his reputation as a teacher, and to his books. He is a staunch defender of religious faith and an able and vigorous proponent of the conservative point of view with respect to the philosophy of physics. In 1913 he became rector of the University of Berlin. In 1920 he was awarded the Nobel prize in physics. To-day we acknowledge our indebtedness to his achievement and draw inspiration from the story of his disciplined life.

E. C. KEMBLE

THE FIFTIETH ANNIVERSARY OF THE AMERICAN PHYSIOLOGICAL SOCIETY

AT a banquet on the evening of April 1 at the Lord Baltimore Hotel in Baltimore, the American Physiological Society celebrated the fiftieth anniversary of its founding. The actual invitations to the organization meeting were dated December 30, 1887.

The celebration was planned by a semi-centennial committee appointed by the council consisting of Drs. Charles W. Greene, William H. Howell and Walter J. Meek, *chairman*. The celebration took the form of a special program at the annual federation banquet and the preparation of a history of the society.

At the banquet four of the five living original members were present as guests of honor: Professor R. H. Chittenden, emeritus professor of biological chemistry at Yale; Professor William H. Howell, emeritus professor of physiology at Johns Hopkins; Professor Joseph Jastrow, formerly professor of psychology at Wisconsin, and W. P. Lombard, emeritus professor of physiology at Michigan. Dr. F. W. Ellis, the fifth surviving original member, was unable to be present.

For the occasion Dr. W. T. Porter had been made honorary president by the society and he presided as toastmaster. Dr. J. J. Abel, emeritus professor of pharmacology at the Johns Hopkins University, was also a distinguished guest. Dr. W. H. Newton brought the cordial greetings of the British Physiological Society, and Dr. C. H. Best represented the Canadian Physiological Society.

The program consisted of the roll call of the original members by Dr. Walter E. Garrey, president of the society, and the introduction of Dr. Porter, the toastmaster. The introduction of the original members present followed. Eulogies of the three founders of the society were then given: Henry P. Bowditch, by Dr. Walter B. Cannon; H. Newell Martin, by Dr. William H. Howell, and Silas Weir Mitchell, by Dr. A. J. Carlson.

An account of the celebration would not be complete without a word in regard to the toastmaster and the authors of the eulogies. It is safe to say that never in the history of the society had the membership ever listened to such eloquent and finished speeches. From the literary remarks of Dr. Porter, which were filled with humor, to the vigorous words of Dr. Carlson,

who closed the program, there was not an instant when the audience did not give rapt attention. Not only was the applause in honor of the society, but it expressed the affection and admiration of all physiologists for four of the greatest scientists and characters that America has produced: Howell, Porter, Cannon and Carlson.

The semi-centennial meeting was the largest in the history of the society. It was fittingly held at Baltimore, where worked Dr. Martin, perhaps the most active of the three founders in details of its organization.

A history of the American Physiological Society from 1887 to 1937 was one of the undertakings sponsored by the semi-centennial committee. The first twenty-five years of this story has been written by Dr. Howell, an original member, an early president and one long associated with the actual workings of the society. To Dr. Charles W. Greene, long an efficient secretary and recently president, has fallen the lot to write of the period of growth which has taken place in the last twenty-five years. The history will contain the speeches made at the banquet. It will be distributed to all members during April or early May of the present year.

At the end of fifty years the American Physiological Society is more active and prosperous than ever in its history. Its achievements have been due to the spirit of its founders and the true devotion to physiological investigation as exemplified by its members.

WALTER J. MEEK
Chairman of the Semi-centennial Committee
A. C. IVY
Secretary of the American Physiological Society

RECENT DEATHS

DR. LAUNCELOT W. ANDREWS, research and consulting chemist, formerly professor of chemistry at the Iowa State University and the Iowa State College of Agriculture, died on April 14 at the age of eighty-one years.

DR. H. S. MINER, since 1888 chemist of the Welsbach Company at Gloucester City, N. J., died on April 14. He was in his seventy-fourth year.

PROFESSOR J. E. JOHANSSON, for many years professor of physiology at the Caroline Institute in Stockholm, died on March 31 at the age of seventy-six years.

PROFESSOR JOHANNES W. THIENEMANN, member of the Kaiser Wilhelm Society and curator of the Zoological Institute of the University of Königsberg, founder and formerly director of the aviary at Rossitten in East Prussia, known for his studies of the migration of birds, died on April 13 at the age of seventy-five years.

SCIENTIFIC NOTES AND NEWS

THE first civic achievement medal of the Rochester, N. Y., Municipal Museum Commission was awarded on April 12 to Professor Herman LeRoy Fairchild, professor emeritus of geology at the University of Rochester. Professor Fairchild will celebrate his eighty-eighth birthday on April 29.

THE Philadelphia County Medical Society on April 13 presented to Dr. Leonard G. Rowntree, director of the Philadelphia Institute for Medical Research of the Philadelphia General Hospital, the Dr. I. P. Strittmatter medal, awarded for "meritorious service redounding to the credit of the medical profession." The presentation of the medal and of the accompanying scroll was made by Dr. Basil R. Beltran, chairman of the award committee. Dr. Strittmatter, who founded the medal in 1923 with an endowment of $5,000, died on April 14.

THE William Wood Gerhard gold medal of the Pathological Society of Philadelphia was presented on April 14 to Dr. Warren Harmon Lewis, professor of physiological anatomy at the Johns Hopkins Medical School and research associate of the Carnegie Institution, and to Dr. Margaret R. Lewis, research associate of the Carnegie Institution. Dr. and Mrs. Lewis will deliver the annual conversational lectures on "Cultural and Cytological Characteristics of Normal and Malignant Cells." The Gerhard award was established in 1925. Its first recipient was the late Dr. William H. Welch.

AT the recent meeting of the Society of Experimental Psychologists, held at the University of North Carolina, the third annual award of the Howard Crosby Warren medal was made to Professor Elmer A. Culler, of the University of Illinois, "for his work on the fundamental mechanisms of hearing and on the physiological basis of the conditioned reflex."

AT a meeting of the Metropolitan Section of the Society of Automotive Engineers, Richard V. Rhode, of Langley Field, Va., an engineer with the National Advisory Committee on Aeronautics, was awarded on April 12 the Wright Brothers Medal, in recognition of his paper entitled "Gust Loads on Airplanes." The medal was presented at a dinner of the society after a tour had been made of the Wright Aeronautical Corporation plant at Paterson, N. J. Dr. Stephen J. Zand made the presentation.