that one of my new-found friends' good deed had been the prevention of a train wreck by giving warning of an accident to the line.

The scope of the health program of the Soviet Union is, of course, a broad one, since it recognizes no artificial boundary between prevention and cure and provides medical care to all the people as a right of citizenship—just as we provide education in the United States. As rapidly as circumstances would permit, hospitals, polyclinics (industrial and regional) and the services of regional physicians and nurses had been provided, organized to provide routine preventive service, prophylaxis and medical care. Medical education—as in all continental European countries—was conducted by the state but with the interesting provision—without cost—of refresher courses for physicians every three years. Vigorous efforts were being made to increase the meager supply of hospitals and physicians available during the pre-revolutionary period. In Georgia, for example, the hospital beds had been multiplied fourfold and the number of physicians, tenfold, since 1913. Five hundred and seventy-seven primary medical centers had been established in the rural areas of that province alone.

The Soviet Union fully recognized the importance of scientific research, as the basis for progress in medicine and public health. I have mentioned several of the lavishly equipped institutions which guide progress in the fields of maternity and infancy and in industrial hygiene. I can not omit reference to the Central Institute for Nutrition in Moscow with its three divisions for physiology of nutrition, food sanitation and food technology; the institute directed by Dr. Lena Stern at Moscow; and that mecca for physiologists, the Pavlov Institute outside of Leningrad. A monograph by A. D. Speransky on "A Basis for the Theory of Medicine," published shortly before our visit, is one of the most challenging approaches to the basic physiological problems of disease which has appeared in any country in the present century.

Seven years in the history of Soviet Russia is a long time as measured by the slow-motion progress of less dynamic lands. The one thing which the Commissar for Public Health emphasized to us was "We are never satisfied." What new progress was made between 1936 and 1941 we do not know. How the terrific sufferings of the past two years have set back that progress, we do not know. But of some things we may be sure. The Soviet Union is dedicated to the physical and emotional and social health of its people, with an unusually vivid consciousness of that aim. It has advanced on the road to that ideal at an almost unparalleled rate. It will go forward on the road after the war is won and the threat of Nazidom lifted from the world. We want to share with the health leaders of the Soviet Union in their glorious tasks. We want to help them—if in any way we can. We want to learn from them as they go forward in their future advance. We are comrades together, not only in the war for the four freedoms but in the longer even more fundamental war for the health and welfare of the human race.

OBITUARY

RUSSELL HENRY CHITTENDEN

WITH the passing of Russell Henry Chittenden on December 26, 1943, an era in physiological chemistry in the United States may be said to have come to a close. "The first definitive laboratory of physiological chemistry in America for the instruction of students was established in the Sheffield Scientific School at Yale University in 1874";[1] the direction of it was placed in the hands of Chittenden, a young man eighteen years of age, who at that time was a candidate for the bachelor of science degree in the Sheffield Scientific School. This young man was born in New Haven, Conn., on February 18, 1856, the son of Horace Horatio and Emily Eliza Doane Chittenden; his family traced back to William Chittenden, who came to this country from the parish of Cranbrook, Kent, England, in 1639. The young man was educated in the public schools of New Haven and prepared for Yale in the French Private School there. At first he intended to study the classics, but a growing interest in natural science turned him toward the study of medicine and therefore matriculation with the Sheffield Scientific School. At the age of nineteen Russell Chittenden received his B.S. degree, having offered a thesis entitled "Glycogen and Glycocoll in the Muscular Tissue of Pecten irradians," which was published in the *American Journal of Science and Arts*. Its translation into German and subsequent publication in Liebig's *Annalen der Chemie* was destined to be the open sesame for the young man's acceptance as a student in 1878 in Kühne's laboratory at the University of Heidelberg. The young man had made his plans to enter Hoppe-Seyler's Institute of Physiological Chemistry at Strassburg but was disappointed by what he saw when he arrived; neither the city nor the laboratory made a favorable impression on him. To use his own words, "Intuition is not to be wholly ignored, and I went on to Heidelberg

[1] R. H. Chittenden, "The Development of Physiological Chemistry in the United States," p. 33, American Chemical Society Monograph Series. Chemical Catalogue Co., New York, 1930.

with the feeling deep in my heart that the place where such men as Gmelin, Tiedemann, Bunsen, Kirchoff, Helmholtz and Kühne had worked should give inspiration and opportunity, and that there would be found an environment more in harmony with my needs." Kühne had remembered the article in Liebig's *Annalen*, and welcomed him.

No one can read the opening chapters of Chittenden's monograph, "The Development of Physiological Chemistry in the United States," without realizing that the author began his work when the foundations of this science were being laid in this country, and through his own pioneer work did much to give the science the standing and place it now holds in the present academic scheme of things. Stimulated by his association with Kühne, Chittenden returned to New Haven fired with the idea that his laboratory should develop physiological chemistry as a broad biological course of study not restricted to the requirements of any branch of applied science (its use in medicine, for example) but devoted "to the expansion of physiological knowledge in all its varied aspects." His more immediate research interests were concerned with the requirements for the doctorate which were met in 1880 when he was given his Ph.D. degree by Yale. His appointment as professor of physiological chemistry came in 1882; this post was held for forty years when he retired as professor emeritus. In 1898 he assumed the directorship of Sheffield Scientific School and served in this capacity until his retirement in 1922.

Between 1875 and 1883 twelve papers were published reporting studies made in the new Laboratory of Physiological Chemistry. The year 1884 saw four papers through the press, one of them dealing with albumoses written jointly with Professor Kühne and published both in German in the *Zeitschrift für Biologie* and in English in the *American Chemical Journal*. The influence of the year spent at Heidelberg seems evident in the eleven publications that appeared in 1885, seven of which dealt with various aspects of amylolytic and proteolytic digestion. Students in this field will remember that it was Kühne who gave us the word *enzyme* (in yeast). Further development of the theme stands out in the ten papers found in the second volume of collected papers covering the year 1885–86, five of which report observations concerning digestion or the chemical properties of some of the products of proteolytic activity. Volume III of Collected Papers, covering the period 1887–88, comprised nine communications, four of them again related to this same topic. In similar fashion one might review the publications of each of the succeeding years and show that the predominant topic of interest was the phenomena of digestion.

To students of nutrition Chittenden is probably best remembered for his work on the amount of protein needed for proper maintenance of the adult organism. This problem attracted his attention in the autumn of 1902 and early part of 1903, when Mr. Horace Fletcher, the advocate of extensive chewing of food in order to secure from it the maximum of its nutritive value, spent several months in New Haven, "thereby giving an opportunity for studying his habits of life." This eventually led to nitrogen equilibrium studies on professional men (Chittenden and four colleagues in his laboratory), eight college students and thirteen volunteers from the U. S. Army. It was shown that nitrogen equilibrium can be maintained with a daily intake of protein "one-half of the 118 grams of proteide food called for daily by the ordinary dietary standards" (by which was meant here the Voit standard). These studies also led Chittenden to conclude that "body equilibrium can be maintained on far less than 3,000 calories per day by the brain worker." The detailed report of this investigation appeared in a volume entitled "Physiological Economy in Nutrition" published in 1905. These experiments were again reviewed and interpreted in relation to various aspects of nutrition in a set of eight lectures delivered before the Lowell Institute in Boston in the early part of 1907, and published in a book entitled "The Nutrition of Man." Examination of this latter volume shows that the experimental approach to the problem had been extended to include experiments on dogs.

During the administration of President Theodore Roosevelt, Dr. Chittenden was a member of the famous referee board that passed on the question whether sodium benzoate in foods is toxic. Another public service was rendered during World War I when he served as a member of the executive committee of the National Research Council. After the war he represented the United States on the Inter-Allied Scientific Food Commission, which met in London, Paris and Rome. As further examples of the international position which he held one may cite his membership in the Société des Sciences Médicales et Naturelles de Bruxelles and the fact that he was a corresponding member of the Société de Biologie in Paris.

Dr. Chittenden died in his eighty-seventh year and retained his mental faculties to the last. It was his good fortune, therefore, to see the subject to which very early he had chosen to devote his career develop in the work of two generations after his own. Such an opportunity is not given to many men. What he saw as the fruit of the labors of so many people in a field which he literally started in this country must have given him much personal satisfaction, for it constituted a vindication of his early judgment of the

possibilities in this science. In a very real sense he merited the title which many had conferred upon him years ago, namely, "The Father of Physiological Chemistry in the United States."

GEORGE R. COWGILL

DEATHS AND MEMORIALS

DR. EDWARD BENNETT MATHEWS, professor emeritus of mineralogy and petrography at the Johns Hopkins University, died on February 4 at the age of seventy-four years.

DR. WILLIAM GEORGE MACCALLUM, from 1917 until his retirement last spring professor of pathology at the Johns Hopkins University Medical School, died on February 3 at the age of sixty-nine years.

DR. EDWARD PEIRSON RICHARDSON, John Homans professor of surgery emeritus at the Harvard Medical School, died on January 26 at the age of sixty-two years.

DR. DANIEL M. MOLLOY, who from 1914 until his retirement in 1940 was a field representative in Central America for the International Health Division of the Rockefeller Foundation, died on January 29 at the age of sixty-one years.

ROY A. NORMAN, professor of heating and ventilation in the department of mechanical engineering of Iowa State College, died on January 29.

EDWIN R. PEARSON, for many years a member of the staff of the General Electric Company, where he was a designer of power transformers, died on January 28 at the age of eighty years.

AN anonymous gift of $10,400 has been made to Cornell University to establish a Veranus A. Moore Research Fund, the income of which will be used for research in the department of clinical and preventive medicine. The fund is in honor of the memory of Dr. Moore, who was formerly dean of the Veterinary College at the university.

IN the wish to express their appreciation and regard for Barbara Stoddard Burks, whose death has meant a great loss, personal and professional, to many psychologists and geneticists, her friends are establishing a memorial fund. Because of her activities during five years as chairman of the American Psychological Association Committee on Displaced Foreign Psychologists, it is proposed to use the fund to promote international professional relations among workers in the fields of psychology and genetics—for example, as a loan fund for assistance to European scholars studying or carrying on research in the United States. For the present the administration of the fund will be in the hands of a committee composed of Gordon Allport, Katherine Brehme, Robert Cook, Kurt Lewin, Theodore Newcomb, Lewis M. Terman, Ruth S. Tolman and Robert S. Woodworth. Contributions may be sent to Ruth S. Tolman, 4420 Fiftieth Street, N.W., Washington 16, D. C.

SCIENTIFIC EVENTS

BRITISH NEW YEAR HONORS[1]

THE New Year Honors include the names of a number of scientific workers and others associated with scientific work. The principal honors are as follows:

Knight of the Grand Cross of St. Michael and St. George: Sir George Gater, Permanent Under-Secretary of State, Colonial Office.

Companion of Honor: The Right Honorable R. S. Hudson, Minister of Agriculture and Fisheries.

Knight Commander of the Royal Victorian Order: Sir Harold Hartley, chairman of the Fuel Research Board.

Knights: Professor Ernest Barker, emeritus professor of political science in the University of Cambridge; Professor J. C. Drummond, scientific adviser to the Ministry of Food, professor of biochemistry in the University of London; Professor F. L. Engledow, professor of agriculture in the University of Cambridge; Dr. J. J. Fox, Government chemist; Professor F. R. Fraser, director-general of the Emergency Medical Services; W. T. Halcrow, engineering consultant, War Office; C. R. Lockhart, chairman of the East African Production and Supply Council; T. R. Merton, scientific adviser to the Ministry of Production, formerly professor of spectroscopy in the University of Oxford; J. G. Nicholson, deputy chairman, Imperial Chemical Industries, Ltd.

Companion of the Bath: P. N. Harvey, director of statistics and intelligence, Ministry of War Transport, Department of the Government Actuary; C. Nathan, principal assistant secretary, Ministry of Agriculture and Fisheries.

Companion of St. Michael and St. George: Right Rev. Mgr. C. Gagnon, rector of Laval University, Quebec, and E. B. Hosking, chief native commissioner, Kenya, and Dr. R. C. Wallace, principal and vice-chancellor of Queen's University, Kingston, Ontario, for services to university education.

Companion of the Order of the Indian Empire: Colonel R. H. Phillimore, superintendent of the Survey of India; M. Carbery, director of agriculture, Bengal; Sri Pattipati H. Rama Reddi, director of agriculture, Madras; D. B. Sothers, chief conservator of forests, Bombay.

Commander of the Order of the British Empire: W. A. Akers, a director of research, Department of Scientific and Industrial Research; Professor C. H. Best, professor of physiology in the University of Toronto, for important medical research; Major R. F. Brebner, chairman of di-

[1] From *Nature*.