chemistry of atoms and molecules. It was largely a wet chemistry. The chemistry of the twentieth century will be that of the nucleus. It will be dry. The younger men may well see and take part in a remarkable revolution in physical science and in industry. Enormous stores of energy will be made available and mankind will be largely relieved from physical toil.

The methods of using this nuclear energy are not yet developed, but new discoveries will be made. The difficulties will be rapidly overcome. One might imagine the following hypothetical process: The bombardment of aluminium by α-particles gives high energy protons. The bombardment of lithium by protons gives high energy α-particles. By bombarding a mixture of aluminium and lithium with protons the future physicist may start a process similar to but much more intense than the more familiar thermite reaction. The mixture in a certain sense is an explosive mixture. It contains within itself the possibility of maintaining the action if it is once started.

The structure of the nucleus and its energy processes will become the commonplace of the newer physics. New discoveries will be made. One can even imagine the future physicist studying a divisible proton and electron as we study a divisible nucleus at the present day. It is unphilosophical to set a limit to the conquests of physical science. Man has not exhausted the secrets of nature in a few centuries. There are many things undreamed of in our philosophy.

To the younger physicist I would say it is a great thing to be young in this year 1932. The opportunities for discovery are very great indeed, much greater than for Faraday one hundred years ago.

The oasis of knowledge has been much enlarged, the desert of the unknown is still without limit.

OBITUARY

WILLIAM SYDNEY THAYER

IN the sudden death of Dr. William Sydney Thayer, at the age of sixty-eight, from a heart attack on December 10, the medical world lost an outstanding teacher and investigator—one who had been actively and successfully at work in the Johns Hopkins Hospital and Medical School for over forty years, an important contributor to the national and international prestige that those institutions enjoy.

Born in Milton, Massachusetts, on June 23, 1864, Dr. Thayer came from a distinguished family, of which Ralph Waldo Emerson and Oliver Wendell Holmes had been members. His father, James Bradley Thayer, was professor of law at Harvard, and his brother, Ezra Thayer, became dean of the Harvard Law School. In 1901, Dr. Thayer married Susan Chisolm Read, of Charleston, South Carolina. One of the great sorrows of his life was her prolonged invalidism, and her premature death in 1917. Of his immediate family only one sister, Mrs. John W. Ames, of Cambridge, Massachusetts, survives him.

In his physique and character, in his love of scholarship, and in his standards and ideals, Dr. Thayer was consonant with our ideas of the best that New England blood and training have to give. He graduated in arts at Harvard University in 1885 and received his medical degree from the Harvard Medical School in 1889. He served as interne in the Massachusetts General Hospital, engaged in postgraduate studies in Berlin and Vienna, and worked for a brief period as a general practitioner in Boston. In 1890, he joined Professor Osler's house-staff in the Johns Hopkins Hospital, acting first as "differentiating physician" for the out-patient department and, later, serving for seven years as resident physician. For many years he was professor of clinical medicine in the Johns Hopkins Medical School; in 1919 he became professor of medicine in the university and physician-in-chief to the hospital; and, in 1921, resigning the active professorship (to be succeeded by Professor Warfield T. Longcope) he continued as professor emeritus of medicine until the time of his death.

Dr. Thayer believed that internists holding university positions should not only be able practitioners and skilful teachers but should also exhibit intellectual curiosity and should engage therefore in the work of original research; throughout his career in Baltimore he set a laudable example in these several types of activity.

As an original investigator he made many important contributions to inner medicine, among which may be mentioned especially the results of his studies of the blood in leukemia (1891), in typhoid (1895), and in malaria (1893–1900) and of his researches upon the third heart sound (1908–9), upon cardiac murmurs (1901; 1919), upon the cardiovascular complications and sequels of typhoid fever (1903–4), upon chorea (1906), upon arteriosclerosis (1904), upon heartblock (1916) and upon gonococcal endocarditis and endocarditis lenta. He inspired younger men to undertake researches with him, and with some of them (G. Blumer, C. E. Brush, M. Fabyan, H. H. Hazen, J. Hewetson, J. W. Lazear, W. G. MacCallum, R. S. Morris, F. W. Peabody, B. H. Rutledge and G. H. Whipple) he made joint publications. It is interesting, too, that during his lifetime he had made

a number of reports upon angina pectoris, a malady from which he himself began to suffer some three years before his death.

As a teacher of medical students and of physicians after graduation, Dr. Thayer showed from the beginning exceptional ability. He, himself, regarded association with the young as the greatest privilege of the teacher—"the best vaccine against age and apathy." He was a clear thinker himself and had no difficulty in making things clear to others. He had no patience with slipshod work. From the time of his return from Ehrlich's laboratory in 1890, armed with the technique of the differential staining of blood smears, he was ever interested in the application of the methods of the clinical laboratory to diagnosis, and he drilled his students thoroughly in their use. At his ward-rounds and in his amphitheater clinics he knew how enthusiastically and skilfully to interweave the facts of the science with the technique of the art of medicine to the advantage of the teaching of both. His appreciation of careful anamnestic records, of painstaking and accurate physical examinations, of adequate laboratory tests and of systematic observations of the course of maladies in single patients created admiration and spurred his assistants and his students to their best endeavors. He was a great admirer of Laennec and often told his pupils of the life and work of the French clinician. Representing the United States, Dr. Thayer, in December, 1926, made an address in French at the ceremonies celebrating the centenary of Laennec's birth.

For many years Dr. Thayer and Dr. W. G. MacCallum held weekly clinical-pathological conferences, at which the students first heard the reports of the clinical studies and of the diagnostic conclusions that had been arrived at and then listened to descriptions of the actual findings at autopsy; through attendance upon these conferences they learned many salutary lessons and developed their powers of critical evaluation of data. It was Dr. Thayer's belief that it is "not the teacher's duty to feed the student with assertions but to teach him how to teach himself." That he was a master of English was very evident in his oral teaching and in all that he wrote. He also spoke and read French and German, as well as some Italian and Russian; and he encouraged his students to make free use of the library in order to acquaint themselves with the present status and the development of knowledge pertaining to the clinical cases under study. Dr. Thayer was a member of the editorial board of the *Archives of Internal Medicine*. In addition to his published researches, he contributed to medical literature many papers that are prized for their educational value. He was selected to deliver the Bright Lectures (London, 1927), the Gibson Lectures (Edinburgh, 1930) and the Frank Billings Lecture (1932).

As a practitioner, in addition to his care of patients in the hospital, Dr. Thayer was much in demand as a consultant. He was called by his colleagues not only in Baltimore and Washington, but in all parts of the United States, when they desired aid in cases in which diagnosis had been difficult or in which the sharing of serious responsibility seemed to be important. His clinical judgment (gained through long experience) concerning the relative significance of deviations from the normal when they were multiple and of the order in which measures of treatment should be applied in a given case was highly valued. In therapy he was neither a nihilist nor an over-credulous polypragmatist. He valued drugs in their proper use, though he strongly opposed their abuse; and he was constantly emphasizing the efficacy of the simpler methods of physical and psychical therapy rationally planned and applied. He understood the great importance of the direct personal relationship of physician to patient and was adept in establishing and maintaining it. Charming in manner and obviously straightforward, he quickly inspired a confidence in his patient that later ripened into an enduring trust.

As a friend he was sincere and faithful, sharing in the joy of another's success, but not hesitating to admonish when he saw tendency to what he believed to be error. He numbered among his close friends many of the leaders in medicine in this country and abroad. His especial capacity for friendship is obvious to the reader of his published notes upon Hewetson, Kanthack, Lazear and Howland and, especially, of his fine appreciation of his great master and friend, the first professor of medicine at Johns Hopkins.

Though known internationally by his scientific work, Dr. Thayer achieved further renown in foreign countries through his membership in the American Red Cross Mission to Russia (1917–18), and through his services as major, colonel and brigadier-general of the Medical Corps of the U. S. Army and as chief medical consultant of the American Expeditionary Force in France (1918–19). As a result of these several activities and of his contributions to medical knowledge, he was multiply honored, receiving the distinction badge of the Red Cross of Russia (1918), the Distinguished Service Medal of our own country (1919) and a Commandership in the Legion of Honor of France (1928); besides, he was made fellow, or honorary member, of more than a dozen foreign medical academies and societies. In America, he held membership in many important medical and scientific associations, was made president of the American

Medical Association (1928–29), and president of the Phi Beta Kappa (1929). He was a member of the board of overseers of Harvard University for two terms and was one of the trustees of the Carnegie Institution of Washington. He received many honorary degrees, including that of LL.D. from Washington College (1927), from Edinburgh University (1927) and from McGill University (1929), that of Doctor of the University of Paris (1928) and that of Sc.D. from the University of Chicago. In May, 1927, a group of his friends made a gift endowing in perpetuity the "William Sydney Thayer and Susan Read Thayer Lectureship in Clinical Medicine," the income to provide for one or more lectures annually in the medical school, the lecturer to be selected from men distinguished in clinical medicine, pediatrics, neurology or border line branches.

Though intensely devoted to medicine, Dr. Thayer knew the importance of rest, recreation and diversion. He was an ardent sportsman and spent many of his summer vacations with a few boon companions in the wilds, making use of rod and gun. He enjoyed the company of congenial persons in dinner clubs and other social groups. He spent much time in reading good literature and had an intimate acquaintance with the works of the better writers, especially the French. He was fond of poetry, learned many favorite poems by heart and wrote some verse himself. He was known to his friends as a lover of books, of people and of nature.

In the portrait of Dr. Thayer, painted by Leopold Seyffert, he appears in the U. S. uniform that he wore in France. A bronze tablet by J. Maxwell Miller (1912) is also much admired by those who knew him well.

A rare man, of unique personality—simple, courteous, attractive, high-minded, of unalterable integrity, just, tolerant and lovable—a cultivated man of many talents and of excellent qualities! In his death, Dr. Thayer's colleagues and friends and all who were fortunate enough to have the privilege of actual association with him experience a profound sense of sorrow and of personal loss; and internal medicine in the world at large laments the passing of a truly distinguished representative. The new generation, to which falls the task of finding the right way to further progress in clinical medicine, can not fail to be helped by a study of the life of, and by emulation of the example set by, Dr. William Sydney Thayer.

LEWELLYS F. BARKER

SCIENTIFIC EVENTS

SCIENTIFIC WORK UNDER THE GOVERNMENT

THE *Scientific Monthly* in its January number begins a series of articles on the scientific work of the government. President Hoover contributes an introduction and the Department of Agriculture is taken up first with articles by Secretary Arthur M. Hyde and Dr. A. F. Woods, director of scientific work. The introduction by President Hoover reads as follows:

The insatiable curiosity of the human mind to probe the mysteries of Nature through scientific research into the operation of natural laws has resulted in such wealth of new inventions and new products, so satisfying to material needs of the people, that the world is irrevocably committed to an eternal quest of further truth, with certainty of endless and ever more rapid change as new knowledge is translated into new conveniences and comforts. The social relations of mankind have already been altered by these changes beyond the utmost imagination of our forefathers. Further and more revolutionary changes will be wrought.

As government is the art of social relations under recognized authorities set up by the will of the people, any change wrought by scientific advance quickly produces new problems of government. The Federal Government itself long ago sensed the potentialities of science when it gave official status to the Smithsonian Institution. From that pioneer body has flowed a stimulation to scientific research of the most valuable character, both directly in its own discoveries and indirectly through its leadership and inspiration of private institutions. Science is also recognized and encouraged by the Federal Government in the researches of the Department of Agriculture in biology, entomology and other fields; and similarly in other Departments which promote research. Thus the Government still does, and increasingly should, lead the way by example toward the discovery of new knowledge to free mankind from ignorance, superstition, needless fears and poverty. Nor should it be unremarked that a spiritual value accrues in all this labor, for science requires a degree of unselfishness and devotion which calls out the finest qualities of the human spirit, and, since its goal is truth, the noblest aspirations of mankind.

THE NEW REFRACTING TELESCOPE OF THE FRANKLIN INSTITUTE

ANNOUNCEMENT is made by the Franklin Institute in Philadelphia, of the completing in Germany of the 10-inch refracting telescope with the "Urania" type of mounting, for installation in the new Benjamin Franklin Memorial and the Franklin Institute, now under construction on the Parkway.

The telescope will be the first of its kind in the country, the mounting being planned to overcome the