WE HEAR THAT . . .

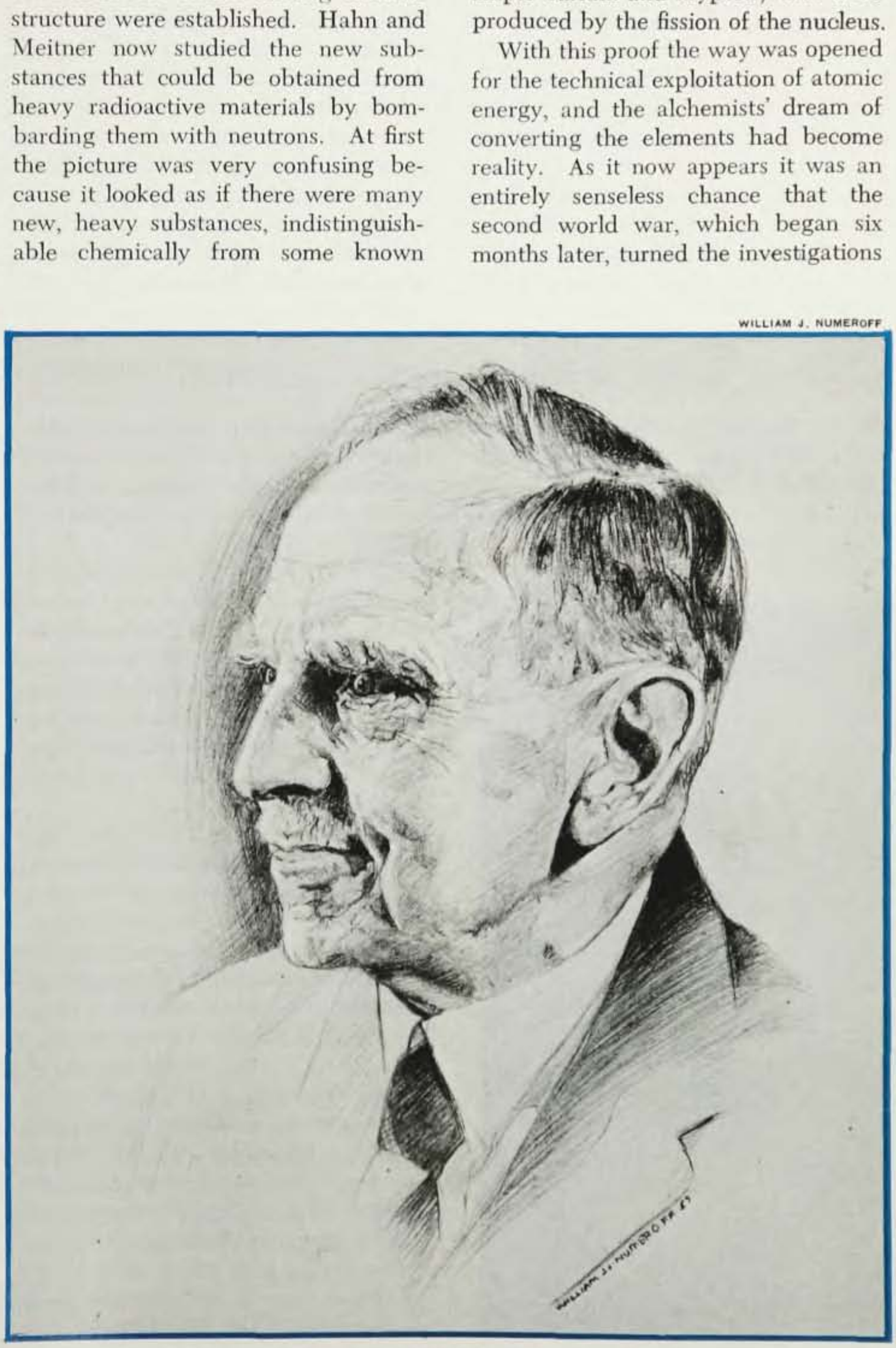
Otto Hahn, Discoverer of Nuclear Fission, Dies

With the death of Otto Hahn on 28 July the world has lost one of the most significant and successful scientists of our century. His most famous discovery, the fission of the uranium nucleus, has basically changed the political and economic world picture. Perhaps this discovery and its results have been more debated than any previous scientific step forward. There has hardly ever been a scientist who has been so generally respected and loved. It would be unjust, however, when considering Otto Hahn's scientific achievements, to think only of this one great discovery, made at the age of nearly 60, although it was the conclusion and crowning of his scientific career.

Otto Hahn, born 8 March 1879 in Frankfurt am Main, grew up in Frankfurt, and after studying in Marburg and Munich started his real scientific work in 1904 at University College London, where he investigated radioactive substances under the supervision of Sir William Ramsey. With this work Hahn entered new scientific territory, which a few years before had been opened up by the French scientists Henri Becquerel and the Curies. After only a short period he discovered a new chemical element, radiothorium. With the continuation of this work in Ernest Rutherford's laboratory in Montreal, he discovered in 1905 further radioactive substances. This work gained him an international reputation as a painstaking chemist and experienced specialist in the field of radioactivity. From 1906 until the end of the second world war, that is, roughly four decades, Hahn worked in Berlin. First he was an assistant in the Chemical Institute of the university, and later, after an interruption as a reserve officer during the first world war, was the director of the Kaiser Wilhelm Institute for Chemistry. From this period the work he did in coöperation with Lise Meitner became especially well known, for example the work on protactinium and on beta and gamma rays. His work was characterized by unusually great care in tracing chemical processes and by his indomitable energy, which allowed him to pursue his investigations more thoroughly than most of his competitors. A decisive turn took place in this scientific field at the beginning of the 1930's, when, with the discovery of the neutron by the Englishman James Chadwick, the conditions for understanding nuclear structure were established. Hahn and Meitner now studied the new substances that could be obtained from heavy radioactive materials by bombarding them with neutrons. At first the picture was very confusing because it looked as if there were many new, heavy substances, indistinguishable chemically from some known lighter substances. Finally in December 1938 Hahn and Fritz Strassmann, by very systematic and meticulous experiment, proved that the heavy nucleus of uranium can be split by neutrons into two not exactly equal parts. Hence the new substances were really lighter materials (for example barium and krypton) that were produced by the fission of the nucleus.

With this proof the way was opened for the technical exploitation of atomic energy, and the alchemists' dream of converting the elements had become reality. As it now appears it was an entirely senseless chance that the second world war, which began six months later, turned the investigations

WILLIAM J. NUMEROFF



OTTO HAHN

of the technical use of atomic energy toward the development of armaments and use for war. Otto Hahn never took part in this development of his discovery; during the war he restricted himself to an exact investigation of the products of uranium fission. News of the dropping of an atomic bomb on Japan reached him when he was living as a detainee with a group of ten atomic physicists in a country house near Cambridge, England. This information moved him deeply; this was probably the only time during his imprisonment when his fellow prisoners had to console him. Otherwise the roles had always been reversed. Hahn, as already mentioned, held the unlimited trust of all who knew him through the immediate impact of his personality and his obvious human kindness.

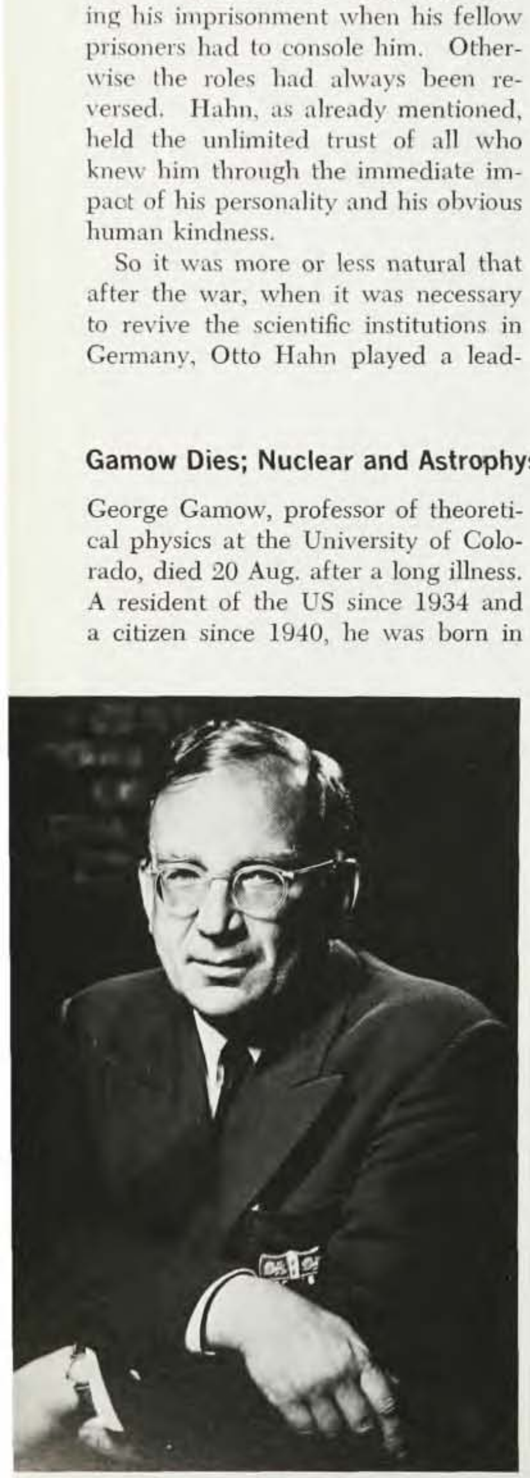
So it was more or less natural that after the war, when it was necessary to revive the scientific institutions in Germany, Otto Hahn played a leading role in this reconstruction. The Kaiser-Wilhelm-Gesellschaft, in which Hahn had worked for many years and which had played a central part in scientific research in Germany, had to be reorganized. In Göttingen, where in the first years after the war Max Planck still lived, a new center arose under Planck's protection. In 1947, after the death of Max Planck, the society was refounded under the new name "Max-Planck-Gessellschaft," and from 1948 to 1960, Otto Hahn as president directed the policy of the society. In the often difficult negotiations with the occupying powers and with the newly formed German authorities, always the amicable confidence and incorruptible objectivity of Hahn managed to clear the way of obstacles and made reasonable proposals successful. Thus the quick and successful rebuilding in the 1950's of a series of important research institutes of the Max Planck Society was to a large extent his work. After Hahn had been succeeded as active president by Adolf Butenandt, he continued as honorary president and honorary senator of the society. Only a few months ago, at nearly 89, he spoke in the senate of the society, and still this man, now bowed down with years, could win the hearts of his listeners by a well turned humorous remark. Perhaps his outstanding human and scientific success was deeply rooted in his unconditional "Yes" to life in spite of all difficulties and his ability to transmit this cheerful "Yes" to his coworkers and friends.

In the distant future Otto Hahn's great discovery appears as the beginning of an entirely new epoch of world history, in which natural science and technology, and the rational thinking on which they are based will govern men's lives up to a now unknown extent—an epoch that we can now, only fearfully, hope will be happier than the difficult past in which Otto Hahn worked joyfully.

WERNER HEISENBERG
Director, Max Planck Institute for Physics and Astrophysics

Gamow Dies; Nuclear and Astrophysicist Was Popular Writer

George Gamow, professor of theoretical physics at the University of Colorado, died 20 Aug. after a long illness. A resident of the US since 1934 and a citizen since 1940, he was born in Odessa, Russia on 4 March 1904. He was educated in the Normal School in Odessa and at the University of Leningrad, where he received his PhD in 1928.



GEORGE GAMOW

The period from 1928 to 1933 was an active and vigorous one as he worked at Göttingen, at the Cavendish Laboratory with Ernest Rutherford and James Chadwick, in Copenhagen with Niels Bohr and once again at Leningrad. During this period he was elected a member of the Soviet Academy of Sciences.

After a year at the Pierre Curie Institute he came to the US as a professor of physics at George Washington University in Washington, D. C. During and after the second world war he served as a consultant to many groups, including Los Alamos, the Johns Hopkins Applied Physics Laboratory and the military services. He remained at George Washington until 1956 when he accepted a professorship at the University of Colorado. Shortly before his death the faculty at Colorado awarded him its highest honor, the Faculty Research Lectureship, for the academic year 1968–69.

Gamow was a scientist of great breadth. He made fundamental and outstanding contributions to atomic and nuclear physics, astrophysics and cosmology and biology as well. His thesis on the theory of alpha decay immediately placed him in the first rank of physicists. During his years in Washington, his collaboration with Edward Teller led to the well known selection rules for beta decay. He also studied liquid models of the nucleus and thermonuclear reactions in stars.

A lifelong interest in astronomy led to research on stellar structure and evolution, neutrino energy loss in stars and the problems of nucleogenesis and the structure and evolution of the universe. He was one of the foremost proponents of the "big bang" model of the universe and with his colleagues predicted the existence of residual black-body radiation. Finally his pioneering work on DNA contributed significantly to the eventual breaking of the genetic code.

All through his career he maintained a deep interest in interpreting science for the layman. His flair for popular writing was unique and, coupled with his unbounded energy, led to nearly 30 volumes that have stimulated countless people, young and old alike, the world over. These outstanding contributions were recognized by UNESCO in 1956 when they awarded Gamow