printed in English in 1954.

In the last decade of his life Gentner's research activities turned toward geochemistry and cosmochemistry. As director of a section of the Max Planck Institute in Heidelberg, he devoted much of his own efforts and those of his institute to the chronology of our planetary system and to the origin of meteorites and of cosmic dust. Later he also became interested in the application of nuclear and atomic physics to archeological questions, such as the dating and geographic origin of ceramic objects and coins.

After the Nazis occupied Paris in World War II Gentner was assigned the job of supervising nuclear research in France. Fortunately, the Nazi authorities did not know of his fervent opposition to their ideas. The leading figure of French nuclear physics of that time was Frederic Joliot, a man deeply committed to the fight against German Nazism. Joliot participated actively in the efforts of the French underground. Gentner and Joliot had a close personal friendship that dated from their earlier association in Paris. Gentner's position as Nazi representative and secret sympathizer with the resistance movement was delicate, to say the least. It required tact, prudence and an unusual amount of personal courage. At great risk to the life and safety of himself and his family, he supported and protected Joliot and his co-workers in their resistance activities on the very premises of the laboratory. The French Republic later bestowed upon Gentner the rank of Officer of the Legion of Honor. Rarely was this title awarded with comparable justification. Due to Gentner's modesty, his deeds of courage never became widely known.

After the war, Gentner's deep humanity and historical sense led him to perform another important task: to reestablish the relations between the scientists of postwar Germany and those of the rest of the world. He recognized the importance of international scientific enterprises as first steps toward a peaceful world. He was a most active participant in the creation and development of CERN, the well-known European international laboratory for particle physics. Furthermore, and closest to his heart, he wanted to do his utmost to create a bridge between the scientists of the young state of Israel and those of the new Germany. He initiated joint projects between German laboratories and Israeli institutions that resulted in a lively exchange of young scientists between the two countries. He also used his influence to enable Israeli physicists to participate effectively in the research at CERN. The Weizmann Institute awarded him an honorary degree in 1965 and made him a member of its board of directors.

His influence and reputation in postwar Germany brought him into a number of responsible positions in the management of German science and of CERN. He was most effective in these jobs because of his moral convictions, his sense of humor and his knowledge of human weaknesses.

For all of us, his life constitutes an example of how one should act as a scientist and as a human being under trying circumstances. We may not be spared such trials in the future. It will be hard to emulate him, but we should try to come as close as possible.

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Willard Frank Libby

Willard Frank Libby, Nobel Prize winner in chemistry in 1960, died on 8 September 1980. During his scientific career Libby was associated with the chemistry departments of three universities—the University of California, Berkeley, the University of Chicago and the University of California, Los Angeles. He was a painstaking, patient and effective teacher of undergraduate and graduate students. His scientific and professional career was characterized by an extraordinary versatility and breadth of interest, a consequence of his wide-ranging curiosity. He was director of the statewide University of California Institute of Geophysics and Planetary Physics at the time of his retirement in 1976 and remained active in his numerous professional activities until the time of his death.

Bill Libby, a tall, robust, powerfully built man, was born 17 December 1908 in Grand Valley, Colorado, where his parents had a farm. He went on to the University of California, Berkeley, where he obtained his BS degree in 1931 and his PhD degree in 1933.

Libby's contributions began while he was a graduate student at Berkeley. Here he developed his screen-walled counter, which could be used to detect radioactive isotopes emitting low-energy radiation, and it was his expertise in this area of investigation that laid the basis for some of his later significant discoveries. Using this technique while still a graduate student, he discovered, independently of the work of G. Hevesy and M. Pahl, the natural alpha-particle radioactivity of samarium. His continuing investigation in natural and induced radioactivity, isotopic-tracer techniques and "hot atom" chemistry during the years immediately following, was among the earliest work in the field of nuclear chemistry in the US.

In 1941 the young assistant professor took a sabbatical leave from Berkeley to go to Princeton University on a Guggenheim Memorial Foundation Fellowship. As fate would have it, he never returned to his faculty position

LIBBY

at Berkeley. Upon the American entry into the war in December of that year Libby immediately moved to Columbia University to work in the Manhattan District Project. Here his laboratory contributions helped create the gaseous diffusion process for the enrichment of the uranium isotope—uranium-235—a key step in the development of the atomic bomb.

At the end of the war, Libby accepted a position as full professor at the University of Chicago, in the department of chemistry and the Institute for Nuclear Studies (now the Enrico Fermi Institute for Nuclear Studies). It was here that he made what is perhaps his most important discovery—his radioactive carbon-14 dating method for determining the age of archeological artifacts up to 50 000 (and more recently, nearly 100 000) years old. He received the Nobel Prize in chemistry for this work, which was based on his exceptional insight and his long-developed expertise in the detection of small intensities of low-energy radiation.

He took a leave of absence from the University of Chicago in 1954 when President Eisenhower appointed him to the five-member Atomic Energy Commission. Until 1959 Libby served in this position, in which he played a leading role in launching the worldwide "Atoms for Peace" program and the Geneva Conferences on the Peaceful Uses of Atomic Energy in 1955 and 1958. He became involved in the controversy over "fall-out" by holding the

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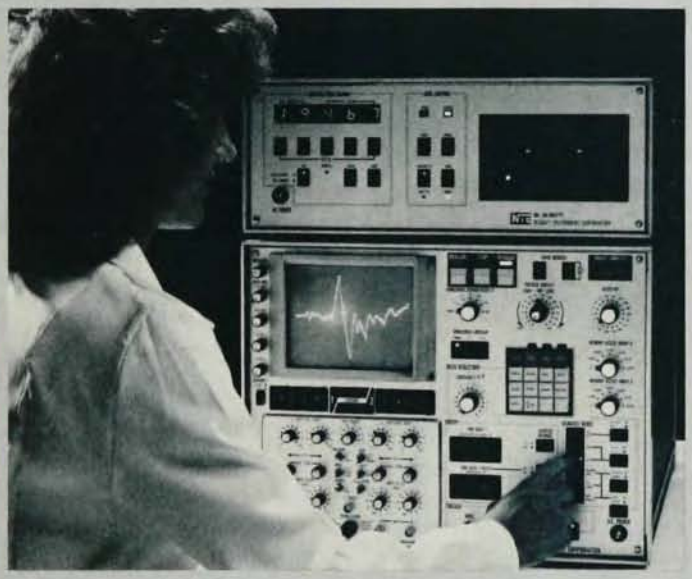

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view that the risks were minimal in comparison with the risk resulting from an inadequate nuclear arsenal.

Libby resigned his position on the Atomic Energy Commission in 1959 to return to the University of California, but this time to the Los Angeles campus. Here his interests turned toward geophysics, space chemistry (particularly that of planetary atmospheres), high-pressure chemistry, chemistry of high vacua and plasma chemistry—again illustrative of his fertile imagination and huge energy. He took special interest in the new field of environmental chemistry, particularly heterogeneous catalysis and applications to automobile exhaust problems. He was also a long-term member of the State of California Air Resources Board, helping to formulate California's air-pollution standards. Libby was particularly proud of his role in establishing an environmental doctorate program at Los Angeles.

Symposia held at UCLA on 17–19 December offered an opportunity for his friends and admirers to honor the memory of this remarkable man.

GLENN T. SEABORG
Lawrence Berkeley Laboratory

Nicholas E. Wagman

Nicholas E. Wagman, retired director of the Allegheny Observatory and professor emeritus at the University of Pittsburgh, died in Pittsburgh, Pennsylvania, on 28 August 1980. He will be remembered by many, including amateur and professional astronomers, as the "Dean of Astrometrists." Quiet and soft spoken, Wagman directed the largest study of stellar motion and parallax of his time and was responsible for more than 400 individual determinations of stellar distances.

Wagman was born in Saratoga Springs, New York, in 1905. He studied with Frederick Slocum at Wesleyan University in Middletown, Connecticut, receiving a BA in astronomy in 1927 and an MA in 1928. In September of that year he moved to the United States Naval Observatory, where he held the position of astronomer until 1930. In that year he joined the staff of Allegheny Observatory. Wagman received his PhD from Pittsburgh in 1937. In 1941 he became the eighth director of the Allegheny Observatory and chairman of Pittsburgh's department of astronomy, a position he held until he retired in 1970.

A modest man, Wagman never lost the feeling of awe that fills youthful eyes as they first look skyward. He participated in a full observing sched-