responsible for research at its Leatherhead, Manchester, and Berkeley laboratories in England and remained there until he retired in 1970. To say that he ever retired, however, is something of a misstatement. His mother had reminded him in his youth of the old Yorkshire tag, "Wear out, not rust out," and he followed it to the letter. During his "retirement," he wrote numerous technical papers and continued as external professor of electrical engineering at Leeds University until 1979. Subsequently, he retained the status of emeritus professor, the first occasion such an honor was bestowed on someone other than a retired professor who had held a chair at the university. In addition, he was visiting professor of physics at City University in London from 1971 and the first Frank Poynton Professor of Physics there until his death.

Throughout his career, T.E.A.'s personal research focused on high-voltage phenomena and high-voltage and vacuum devices. When Basil Schonland demonstrated in the 1930s the stepped development of the downward lightning leader, T.E.A. and coworkers quickly demonstrated the analogous growth of the long laboratory spark. T.E.A.'s research on long electric sparks gave important information about the mechanism of discharge, and he did valuable work on the breakdown of liquid insulators. That was work he continued in his retirement years.

T.E.A. was elected to the Royal Society in 1948; appointed Commander, Order of the British Empire (CBE) in 1960; awarded honorary doctorates from a number of universities; and made an honorary fellow of the Institution of Electrical Engineers—no other engineer has presented two of its Faraday Lectures, which he did in 1947 and 1957. He also was vice president of the institution (1948–52).

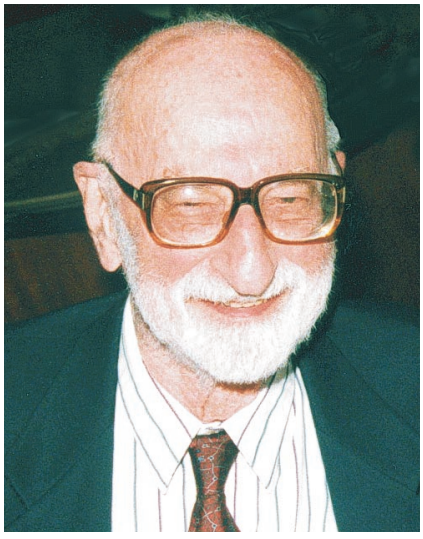
T.E.A. was an outstanding physicist and one of the last survivors of Rutherford's research team at Cambridge. His death marks the end of a direct link in the UK with that most significant period of physics research.

Peter Tanner
Reading, UK

Morton Hamermesh

With the death of Morton Hamermesh in Minneapolis, Minnesota, on 14 November 2003, the world of physics and the University of Minnesota lost a distinguished elder statesman and a dear colleague. He died of complications following a heart attack.

Mort was born in Brooklyn, New York, on 27 December 1915. He received his undergraduate degree, with a major in mathematics, in 1936 from the City College of New York, which later (1966) honored him with the Townsend Harris Medal, reserved for their most distinguished alumni. He obtained his PhD in 1940 at New York University, under the guidance of adviser Otto Halpern. His thesis dealt with the passage of neutrons through crystals and polycrystals; in it, he examined the deviations from the assumed additivity of nuclear cross sections.



Morton Hamermesh

Mort continued work on the magnetic scattering of neutrons, with an emphasis on the atomic form factors, while a postdoc with Felix Bloch at Stanford University. He returned to NYU and took a leave of absence to work at the Radio Research Laboratory at Harvard University on problems related to the scattering and absorption of radar. On returning a second time to NYU in 1945, he resumed an old collaboration with Julian Schwinger on the scattering of slow neutrons by ortho- and para-hydrogen and deuterium and obtained results that were important in the determination of nuclear scattering lengths.

Three years later, Mort accepted a position at Argonne National Laboratory, where he soon became head of the physics division. His standards and his vision of how to go about doing science set the direction for the division even beyond the 17 years that he spent at Argonne. He established the style that the prime responsibility of a scientist was to do first-rate science and that it was the role of management to protect scientists from bureaucratic distractions. He was deeply involved with everything that was going on in the division, and he worked on a number of experiments, including a measurement of the electron–neutron interaction. He contributed to postgraduate education at Argonne by his lecture series on group theory, which led to the publication in 1962 of his highly regarded and timely book *Group Theory and Its Application to Physical Problems* (Addison-Wesley), largely written while he was on sabbatical at ETH Zürich. In 1959, Mort became associate laboratory director in charge of basic research. He continued to involve himself as much as possible in the scientific work being done in chemistry, biology, and materials science.

In 1965, Mort accepted a position as head of the School of Physics and Astronomy at the University of Minnesota. He came at a time when there was a great need to expand the faculty. In a very collegial fashion, he worked with the faculty to start or enhance a number of programs that were previously understaffed: High-energy physics, condensed matter physics, and astronomy began their growth under his direction. Mort left for a year in 1970 to head the physics department at SUNY Stony Brook (now Stony Brook University), but to the great relief of his Minnesota colleagues, he returned to continue to lead the School of Physics and Astronomy through 1975.

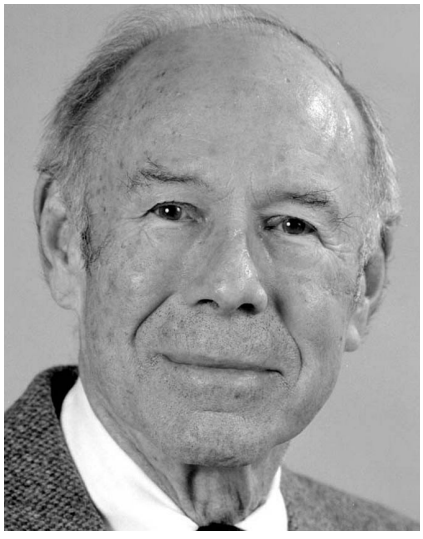
Throughout Mort's tenure as head, he and his wife, Madeline, opened their home to faculty, which enhanced the collegiality in the school. Mort retired in 1985 but continued his activities until shortly before his death. He was editor of the *Journal of Mathematical Physics*, and he went on extended visits to UCLA and to universities in China, where he spent a year while his wife taught English literature.

In addition to physics and mathematics, Mort had two passions: chess and languages. In chess, he achieved world-class status, coming in sixth in the US Chess Open in 1945. He studied languages all his life. One of the earliest benefits that the physics community had from that passion was his translation of Lev Landau and Evgenii Lifshitz's *The Classical Theory of Fields* (Addison-Wesley) in 1951, which alerted many readers to the riches to be found in the books by those authors. Mort's activity as a translator of Russian physics literature played an important role in creating an awareness of the high quality of Russian physics during a period when normal contacts were blocked because of the cold war. He continued his studies of Mandarin and Hebrew

well into his eighties.

Mort made time to eat lunch with his colleagues at the faculty club whenever possible. We relied on him to relay to us the details of the international chess matches that took place every few years, and he served as an impromptu reviewer of books, movies, plays, and concerts. He was only one or two degrees of separation away from the founders of modern 20th-century physics, and he brought to life the personalities that many of us had only read about. Interested in everything, he shared his enthusiasm with colleagues on the faculty and staff. We miss him.

Benjamin Bayman
Steven Gasiorowicz
Allen Goldman
University of Minnesota, Minneapolis



August Carl Helmholz

August Carl Helmholz

August Carl Helmholz died of complications from pneumonia on 29 October 2003 at his home in Lafayette, California. Carl was a distinguished member of the University of California, Berkeley, physics community for more than 65 years.

Born on 24 May 1915 in Evanston, Illinois, Carl spent most of his early years in Rochester, Minnesota. He received his AB in physics from Harvard University in 1936. After a year of study at the Cavendish Laboratory, he began graduate studies at Berkeley and earned his PhD in 1940 under Edwin M. McMillan with a thesis entitled "The Energy and Spin Change in Nuclear Gamma Ray Transitions."

From 1940 to 1946, Carl was an instructor and then an assistant professor in the Berkeley physics department and a physicist on the Manhattan Project. He became associate professor of physics in 1948 and professor in 1951. He served in a number of administrative positions, the most important of which was as chair of the physics department from 1955 to 1962.

Carl's work on the Manhattan Project during World War II was in the magnetic separation of uranium isotopes. His PhD research in nuclear physics dealt with possible ways to determine the multipole order of various isomeric transitions. After the war, he continued his study of nuclear states produced by the bombardment of beams from Radiation Laboratory accelerators. That work culminated in 1949 with the publication, with Emilio Segrè, of what at the time was a definitive review of nuclear isomerism.

As with many of the nuclear physicists of the time, his interests naturally migrated to high-energy particle physics. While he continued isotope studies on the Berkeley campus, he worked with McMillan on the design and construction of the Berkeley 350-MeV electron synchrotron. A number of Berkeley students and visiting physicists used that accelerator to study both the production and properties of pions and muons. That effort, which was complementary to the work on the 184-inch cyclotron, was the beginning of accelerator-based research in particle physics. As accelerator energies increased, Carl turned his attention, with Berkeley colleague Burton J. Moyer, to the study of the pion–nucleon interaction. Results from their measurements were among the first signals of resonant behavior arising from the subatomic forces.

Carl was an excellent and popular classroom teacher; the names of his 54 PhD students read like a who's who of the physicists of the last half of the 20th century. Students found his lectures to be extremely well organized and presented clearly and with humor. He was a very humane man and showed great respect for his students, who did not feel intimidated by him. Carl's greatest scientific impact may well have been through the large number of his students who became distinguished researchers in their own right and then trained yet new generations of scientists. Carl also participated on numerous national committees dealing with education. With Moyer, he revised volume 1 of the Berkeley physics course.

Some of Carl's most important contributions came during his chairmanship of Berkeley's physics department. He succeeded Raymond T. Birge, who had held the post for 23 years. Given that Carl had been promoted to professor just four years earlier, the chairmanship was a challenging responsibility, especially because his distinguished predecessor continued to occupy an office adjacent to the chairman's. Carl's success over his seven years as chairman provides striking testimony to his diplomatic and administrative ability. The department grew from about 30 to 50 tenured faculty; the expansion was fueled by the rapid development of particle physics and the interest in space exploration. Not only in particle physics but in other emerging fields did many outstanding young physicists find a home among the Berkeley faculty. Carl deserves much credit for that.

Carl's service to Berkeley also extended outside the physics department. He chaired many academic senate committees. After his retirement in 1980, he continued service on numerous committees of the senate and was a very active member of the committee on emeriti relations.

Carl will long be remembered at Berkeley and in the community of physicists for his scientific accomplishments, the enormous number of first-rate researchers who received PhDs under his supervision, and his superb contributions to the administrative affairs of the Berkeley campus. On a more personal level, we shall remember the kindness, generosity, hospitality, and warmth that Carl and his wife, Betty, unfailingly demonstrated throughout the years.

Leroy Kerth
Howard Shugart
George Trilling
University of California, Berkeley

Ija Pavlovna Ipatova

The international condensed matter community tragically lost a leading member on 10 November 2003, when Ija Pavlovna Ipatova was struck down by a car while crossing the street near her home in St. Petersburg, Russia.

Ija was born in Smolensk, in the Soviet Union, on 19 December 1929. Her family moved to Leningrad one year later. During World War II, she was evacuated to Kislovodsk and to Tashkent. In 1945, she returned to Leningrad, the city she would call home for the rest of her life. She entered the physics department of Leningrad University in 1946 and graduated with honors five years later. She remained at the university as a graduate student in the department of theoretical physics. In 1955, she received the degree of *candidate* (PhD) in physics and, in May of that year, joined