

## Sidney Fernbach

*Born August 4, 1917, Philadelphia, Pa.; died February 15, 1991, Almo, Calif.; first (1952) head of the computing group at Lawrence Livermore National Laboratory, which used the very Univac I that predicted Eisenhower's landslide election; presented with the Computer Society W Wallace McDowell Award "for continuously challenging, inspiring, and supporting American designers and industry to produce many successive generations of supercomputers."*



*Education:* AM, Temple University, 1940; PhD, theoretical physics, University of California at Berkeley, 1952.

*Professional Experience:* physicist, Frankford Arsenal, 1940-1943; assistant instructor, University of Pennsylvania, 1943-1944; assistant professor, University of California, 1946-1948; member, staff, Stanford University, 1951-1952; physicist, 1948-1951 and 1952-1955, head, Computation Department, 1955-1979, head, Theoretical Division, 1958-1968, deputy

associate director for scientific support, 1975-1979, Lawrence Livermore National Laboratory.

*Honors and Awards:* fellow, American Physical Society; fellow, American Association for the Advancement of Science; IEEE Computer Society Richard E. Merwin Award; IEEE Computer Society W. Wallace McDowell Award.

Trained as a physicist, Fernbach received the PhD in theoretical physics from the University of California, Berkeley, in 1952. After receiving his PhD he began his long and productive career as a physicist at the Lawrence Livermore National Laboratory. Immediately he began work with Edward Teller and Herb York to acquire the world's largest computer, the Univac I. It was that machine, while still at Philadelphia, which was used to support the CBS television reports on the 1952 presidential election. In 1955 he was appointed head of the Computation Department, a position he was to hold for the next 20 years. He was internationally recognized as one of the most influential scientists affecting the designs of high-performance computers during the period that the modern electronic computer grew from embryo to adolescence. From the first supercomputer systems, such as the Univac I and the IBM-704, to today's supercomputers, almost one million times faster, Sid Fernbach played a pivotal role.

Early on, he recognized that the "Livermore Lab" required ever increasing power for its weapons designs. Fernbach developed important relationships with the primary computer vendors, but especially with Cray Research. Additionally, Fernbach's deep understanding of science, and his ability to abstract and generalize its needs, influenced the designs of the machines conceived in and built by one of the world's most innovative industries. Early on, he was able to convince his own laboratory management and the Atomic Energy Commission (later to become the Department of Energy) to support these multimillion-dollar acquisitions. No other individual at any of the other national laboratories has dominated the scene as strongly or for as long as did Sid, in a most complex position.

For the 10-year period between 1958 and 1968, Fernbach was also head of the theoretical division at Livermore. In 1975, until his retirement in 1979, he was deputy associate director for scientific support at the laboratory. He then became an independent consultant and maintained a long-term consultant relationship with Control Data Corporation.

He was involved in a broad array of committees for the Departments of Energy, Commerce, and Defense, and played important roles in the export control of high-performance computers. He was also in demand as a member of the board of directors of numerous high-performance computer start-ups. For a number of years he was a member of the Computer Science and Engineering Board of the National Academy of Sciences and of the NSF Computer Activities Advisory Board.

During his last eight years he founded and chaired the IEEE subcommittee on scientific supercomputing. In that role, he used his experience and understanding of the problems involved in high-performance computing to help mold US government policy to take cognizance of the importance of supercomputing to the economic and national security health of the country. Fernbach also founded the IEEE Computer Society Compcon Spring meeting in San Francisco and served for many years as an organizer and catalyst for that meeting. He organized the highly successful tutorial week preceding the conference.

He was a member of a number of professional societies and, driven by his broad interests, gave time and energy to many of them unstintingly. Although he eschewed them, he received many honors, including the Computer Society Richard E. Merwin Award and the McDowell Award, the latter “for continuously challenging, inspiring, and supporting American designers and industry to produce many successive generations of supercomputers.”

He also edited a number of books relating to computing and physics. He was the originating editor of the *Journal of Computational Physics*. From their founding in 1985, he was subject area editor for applications for *The journal of Supercomputing* and a member of the advisory board of the *International Journal of Supercomputer Applications*.

Perhaps Sid's most lovable attribute was an independent and a no-nonsense attitude toward getting the job done. He would not tolerate bureaucracy, and when discussing an issue, he would quickly get down to the core of the problem. This characteristic earned him the reputation of a no-nonsense sage who got things done. For these reasons, he was also an extremely effective member of visiting or oversight committees, often challenging the organization to perform at high levels. On a more personal level, he influenced many young colleagues by inspiring them to stretch and achieve higher goals.

He had close professional and personal relationships with leaders of supercomputing throughout the world. Those who worked closely with him developed great affection for him as well as enormous respect for him as an individual and as a scientist; we enjoyed his company enormously. He will be sorely missed.<sup>1</sup>

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<sup>1</sup> By the staff of the LLNL.

## **BIBLIOGRAPHY**

### **Biographical**

MacKenzie, Donald, "The Influence of the Los Alamos and Livermore National Laboratories on the Development of Computing," *Ann. Hist. Comp.*, Vol. 13, No. 2, 1991.

Williams, Michael R., "Pioneer Day 1984: Lawrence Livermore National Laboratory," *Ann. Hist. Comp.*, Vol. 7, No. 2, 1985, pp. 179-183.

### **Significant Publications**

Fernbach, Sidney, "Scientific Uses of Computers," in Dertouzos, Michael, and Joel Moses, eds., *The Computer Age: A Twenty Year View*, MIT Press, Cambridge, Mass., 1979, pp. 146-160.

## **UPDATES**

Portrait added (MRW, 2012)