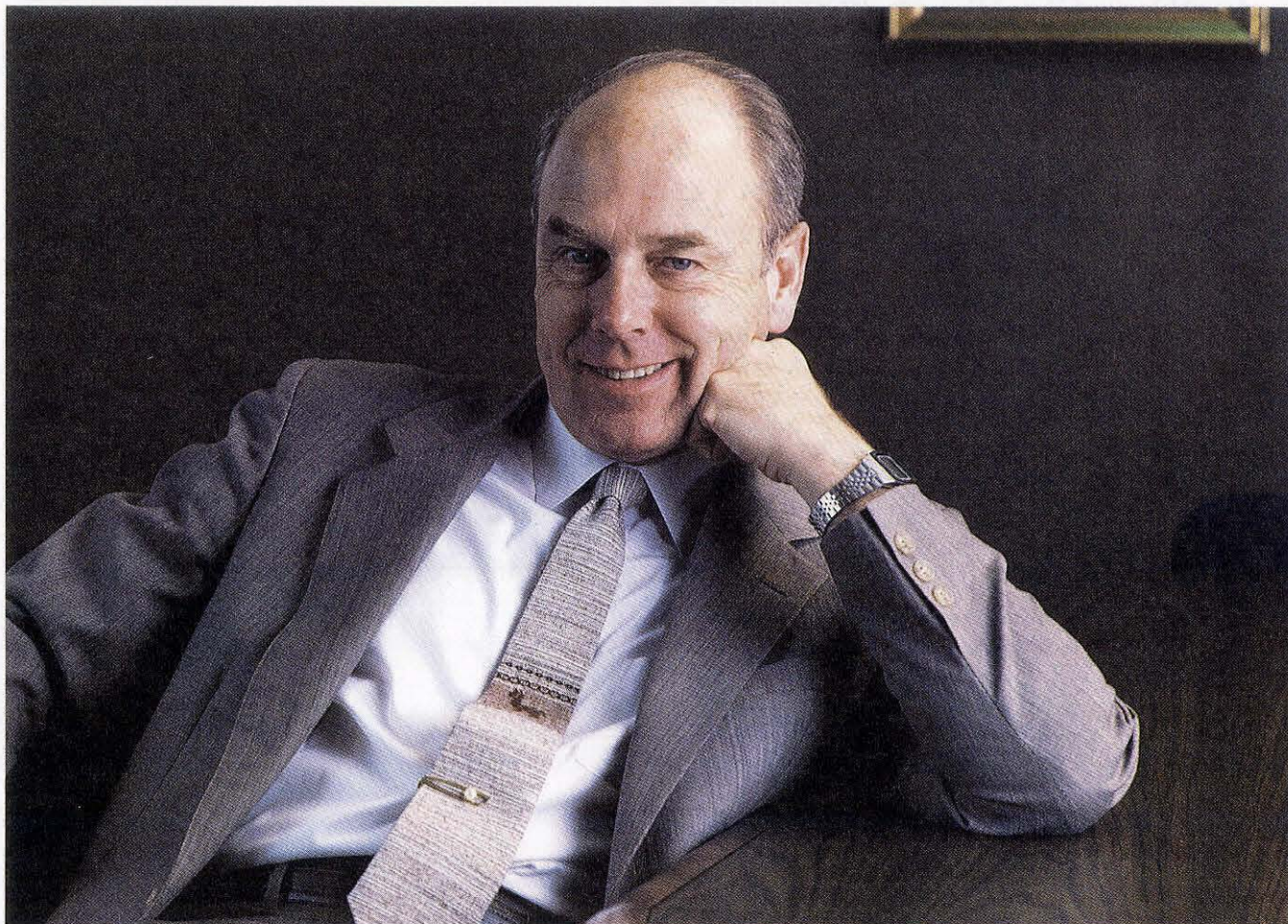


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# Caltech's New President

*Tom Everhart, former chancellor, dean, department head, and professor of electrical engineering, starts the new academic year — and a new era.*

THOMAS E. EVERHART began his new job as Caltech's president on September 8. His timely arrival marks the happy outcome of an ideal search and also represents a little bit of luck. The search committee for a new president had been formed last year after "Murph" Goldberger announced his decision to retire as Caltech's president by June 1988. But by last February, when Goldberger was appointed director of the Institute for Advanced Study in Princeton, effective September 1987, the search committee had only pared its original list of some 175 candidates down to a "manageable number" — 15 to 20 names.

Don Cohen, professor of applied mathematics, led the seven-member faculty search committee. "Caltech is exceptional among educational institutions in the substantial role its faculty plays in choosing a president," according to Cohen. At most places the trustees do the job essentially alone. The Institute faculty and trustee search committees were in constant contact during the search ("We're privileged at Caltech to have superb relations with the trustees," says Cohen), and it was decided that in the end the faculty committee would

present a short list of three to five names to the trustees. That seemed possible, but by late spring the committee members could not imagine that they would actually be able to get anyone here by fall. "We wanted the best person even if we had to wait," says Cohen. Fortunately they didn't have to.

At the time of the announcement of Goldberger's imminent departure, the committee was rolling along pretty well, even though "none of us had ever hired a president before," says Cohen. Their task was a bit easier (or perhaps a bit harder) because Caltech's requirements are somewhat specific. No rule existed that the president had to be a scientific person, but it was certainly highly probable that he would be, because the committee was looking for someone with a deep commitment to science and an understanding of it. But the prime requirement on the committee's list of criteria was academic and intellectual ability that would command the respect of the Caltech community. "Otherwise, our faculty would just chew him up," says Cohen.

Everhart's background leaves him in no danger of getting chewed up. After earning his AB in physics from Harvard in 1953, he

came out to the other coast for graduate school. While at UCLA Everhart also worked at the Hughes Electron Tube and Microwave Laboratory in Culver City on the Hughes Fellowship Program. Also working at Hughes was Roy Gould, then earning his PhD at Caltech and now the Simon Ramo Professor of Engineering. (Both continued to consult at Hughes for many years thereafter.) That particular lab was a very exciting place to be in the mid-1950s, because it was in the vanguard of research on microwave devices, and “people were involved in some really interesting things,” recalls Gould. The problem Everhart was working on — a backward-wave amplifier — was an exceedingly interesting one, making him one of the pioneers in that area even as a grad student, according to Gould. It was from Gould that Everhart got his first impressions of Caltech — “a small school over in Pasadena — very smart students.”

After Everhart earned his MSc degree in applied physics from UCLA in 1955, a Marshall scholarship took him abroad to Cambridge University for his PhD in engineering, which was granted in 1958. At Cambridge he was one of the early students of and collaborators with Sir Charles Oatley, pioneer in the development of scanning electron microscopy. This technology, which sweeps a beam of electrons over a surface and then measures the intensity of the electrons bouncing back (secondary electrons), can produce a high-magnification, high-resolution image of that surface in relief. The Everhart-Thornley detector, a secondary-electron detector, is a principal component of the imaging electronics of the scanning electron microscope.

Broadly described, Everhart’s field is “physical electronics,” according to Bill Bridges, who considers him more of an applied physicist, even though Everhart went to UC Berkeley in 1958 as an assistant professor of electrical engineering. Bridges, now the Carl F Braun Professor of Engineering at Caltech, and Amnon Yariv, the Thomas G. Myers Professor of Electrical Engineering and professor of applied physics, were both graduate students at Berkeley when Everhart got there. Since they were all about the same age, Yariv wasn’t sure at the time whether Everhart was a faculty member or another grad student.

Bridges and Everhart shared two sections (and lecture notes) of the course, “Introduc-

tion to Communication.” Their backgrounds fortunately complemented each other. “Tom was helpful to me in teaching the newly invented transistor, which had just been introduced into the engineering curriculum,” says Bridges, “and I helped him with some of the communication ideas.”

During his two decades at Berkeley, Everhart’s research represented a consistent thrust in advanced electron beam applications. His early contributions to the understanding and development of scanning electron microscopy (particularly for semiconductor device applications) and to the physics of electron beam energy loss and scattering were of enormous importance. He was one of the first investigators of electron beam lithography (which uses a focused beam of electrons to etch patterns on microdevices such as semiconductors), an early and active proponent of computer-controlled scanning electron beam systems, and co-inventor of the erasable electron beam addressable MOS memory. He also did a comprehensive analysis of the electron optics of the field-electron emission source for scanning electron microscopy.

Everhart became associate professor at Berkeley in 1962 and full professor in 1967. He served as chairman of the department of electrical engineering and computer science from 1972 to 1977, during which time all of computer science was consolidated under its jurisdiction. Robert Middlekauff, director of the Huntington Library, knew Everhart at Berkeley in the early 1970s, when both served on a university committee that dealt with budget and faculty personnel issues. It was a small committee of “great spirit and closeness,” says Middlekauff, and its members, from various parts of the university, got to know each other well. He remembers Everhart as a very cultivated person, “sympathetic to activities and fields outside his own and interested in a whole range of scholarship. He had a fine reputation on the Berkeley campus, both as a scientist and a colleague. Everyone thought well of him.”

Everhart’s administrative experience, which began with the department chairmanship at Berkeley, met another requirement that was high on the presidential search committee’s list of necessary qualities — proven ability as an administrator. In 1979 he left Berkeley to become dean of Cornell’s College of Engineering, bringing with him a new openness to the college administration,



according to Ed Wolf, professor of electrical engineering there. Everhart played an important role in the development of the National Research and Resource Facility for Submicron Structures there (now the National Nanofabrication Facility). This interdisciplinary laboratory was established by the National Science Foundation as a collaboration among government, academia, and industry to catalyze the exploration of submicrometer science and technology — exploring the limits of miniaturization.

Wolf, who is also director of the National Nanofabrication Facility, has known Everhart for 20 years, starting with collaboration at Hughes. When the Cornell facility played host to a group of scholars from the People's Republic of China, Everhart and Wolf together acted as advisers to the visitors, discussing their research plans with them every Saturday morning. Everhart also traveled to China with Cornell's president to secure scholarly exchange agreements with the Chinese.

"At Cornell he turned outward as well as inward," says Wolf. "He was willing to be committed to making things happen on a national level."

Perhaps the most telling assessment of Everhart as an administrator comes from Jim Mayer, former professor of electrical engineering and master of student houses at Caltech, who arrived at Cornell at about the same time as Everhart, and has also known him for about 20 years. ("Even Jim Mayer likes him," says Carver Mead, the Gordon and Betty Moore Professor of Computer Science, "and Jim has less use for administrators than any human being I have ever known.") At Cornell there wasn't an opportunity for Mayer and Everhart to work together, but "we talked in depth about particle and solid interactions, and his suggestions were always germane to the issue," says Mayer. They also talked a lot about "education and the role of undergraduate and graduate students in science and technology."

"He's a marvelous person to have as a colleague," says Mayer, "incisive, knowledgeable. He's absolutely a bright cat."

From Cornell Everhart went on to become chancellor of the University of Illinois at Urbana-Champaign in 1984. During his tenure there (before his discovery by the Caltech search committee), two national supercomputing centers were established, and the campus was named the site of a federally

funded biotechnology building; construction began on the Arnold O. and Mabel M. Beckman Institute for Advanced Science and Technology and on the Kinkead Pavilion of the Krannert Art Museum.

Everhart had a serious commitment to the University of Illinois. But Caltech, which offered, among other things, a national platform on issues of science and technology, as well as the autonomy of a less complex and more focused institution, was very attractive to him.

And the attraction was mutual. Besides meeting all the criteria the committee had established, Everhart impressed the committee members with his astute perceptions. "He's a good listener, but he had interesting things to say and asked us some terrifically good questions," says Cohen. "It was clear he had the sense of values and the gut instincts that the Caltech faculty looks for."

When Cohen's committee presented its short list to the trustees, it didn't have to recommend one in particular. "But we did," says Cohen. "We said we really liked Everhart best." After conducting their own interviews, the trustees concurred. "There was complete harmony between the trustees and the faculty," Cohen adds.

Those who know Everhart praise his integrity, honesty, forthrightness, fairness, thoughtfulness, and good sense. As Carver Mead puts it, "He has a lot of appreciation for science, but he honest-to-God has his feet on the ground."

Mead also tells an anecdote that illustrates an adventurous side of the new Caltech president. In the late 1970s he and Everhart were part of a task force assigned to travel around the country conducting an assessment of the future of lithography as applied to microstructures. Mead credits Everhart with much of the insight that came out of that trip ("he knew what to look for and how to think about it"), but the incident that Mead remembers best involved getting stuck in Boston in a terrible snowstorm. "We had to get to Yorktown Heights, New York, and the planes weren't flying and the trains weren't running. So Tom says, 'Let's drive!'" And drive they did, not even stopping to put on chains. "It was really coming down, but Tom had a ski cabin in the mountains and knew how to drive in the snow," recalls Mead, laughing.

And the message to Caltech from Jim Mayer is: "You will have fun." □ — JD