

OSU IMPACT



BREAKING
NEWground
in *engineering, architecture & technology*

2002 OKLAHOMA STATE UNIVERSITY

PC Inventor Opens Door to Information A



Without question, Dr. H. Edward Roberts, “father of the personal computer,” transformed our lives. More than any other invention, the personal computer opened the door to the Information Age, placing the power to communicate in the hands of ordinary people and altering forever the way we work and learn about the world.

Although we take it for granted today, scarcely three decades ago, in 1968, the PC existed only as a concept in the mind of OSU electrical engineering graduate Ed Roberts, who credits his OSU experiences for sparking the idea.

“OSU’s open policy was a bold idea for the times,” Roberts says. “OSU was one of the few universities that gave undergraduates direct access to the school’s mainframe computer instead of making them submit programs to white-coated operators who were the only ones authorized to touch the precious machines.”

As an OSU student, Roberts had access to the IBM 1620 located on the first floor of Engineering South. “We just signed up and used it as

much as we wanted,” he says. “There was never any problem as far as I know with the computer being damaged or abused. Everyone took care of it like it was their own.”

He says the power of computing opened up a whole new world, “and I began thinking, ‘What if you gave everyone a computer?’”

The College of Engineering, Architecture and Technology named Ed Roberts recipient of the 2002 Melvin R. Lohmann Medal, the highest honor CEAT bestows for alumni contributions to the profession.

“Almost every aspect of the multibillion-dollar personal computer industry began with Ed’s inventions and company,” says Karl Reid, CEAT dean. “These contributions include the first computer to be offered in kit form, the first personal computer, the first personal computer publication, the first personal computer convention and the first software publisher micros.

“In addition to his groundbreaking inventions, he exemplifies the very best qualities of the outstanding

engineer,” Reid says. “Ed possesses an inquisitive and inventive mind and a pioneering and generous spirit who uses his talents to improve the quality of life for others.

“He is just the caliber of person who would ask, ‘What if everyone had a personal computer?’ and then proceed to find out.”

By the time the Miami, Fla., native arrived on the OSU campus in 1965, he’d already accomplished a great deal. He held a Heart Association Fellowship at the University of Miami School of Medicine for four years — during which time he worked with heart surgeons who performed over 200 open-heart surgeries on dogs. He had also studied zoology at Stetson University and electrical engineering at the University of Miami, joined the Air Force and taught electronics.

Roberts attended OSU as part of the Air Force’s Airman Education Commission Program. He chose OSU because his brother-in-law had completed an

electrical engineering degree several years earlier and recommended it. Roberts originally planned to study medicine but got “sidetracked” with the Air Force and raising a family, and by the time the Air Force sent him to OSU, he was past the age limit for medical school.

After graduating from OSU, Roberts was assigned to the Weapons Lab at Kirtland AFB in Albuquerque, N.M., as a research officer working on “special weapons,” which at the time were top-secret laser weapons. He recalls, “I was the only electrical engineer in my solid state laser weapons group. Most of the group consisted of Ph.D. physicists involved in making the lasers operate.”

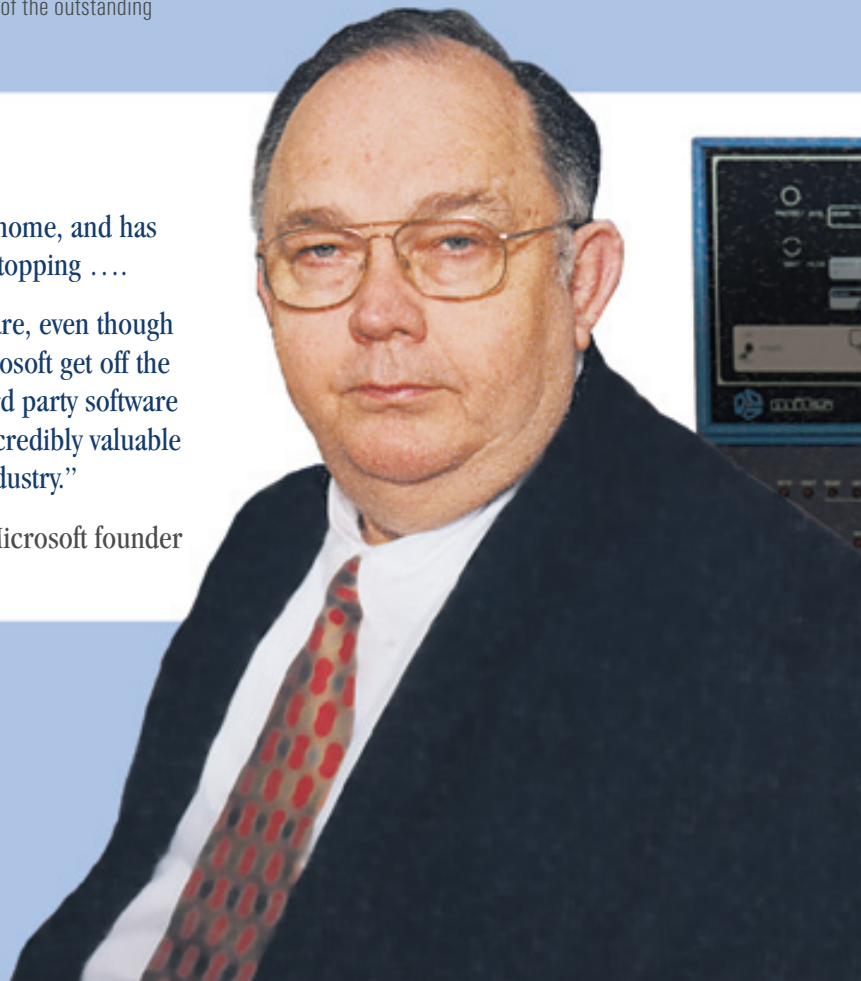
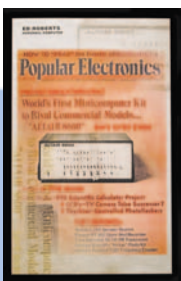
Roberts, who discovered that no one knew how to point these systems with accuracy, spent the next four years becoming an expert on high accuracy pointing systems and designing the first laser fire control system in the U.S. military. “For four years, a new OSU electrical engineering graduate was the Department of Defense expert on laser fire control systems,” he says.



“Ed’s MITS Altair personal computer, launched back in 1975 ... was the first time you could have real computing power in your home, and has inspired a quarter century of innovation that shows no signs of stopping

“He made the decision to license Paul Allen’s and my Basic software, even though we were very young and had no track record. So he helped Microsoft get off the ground. And he incorporated an open bus into his design so third party software developers could write software for his machine. Ed made an incredibly valuable contribution — one that helped shape the modern computer industry.”

— Bill Gates, Microsoft founder



While serving as a commissioned officer in the Air Force, Roberts started his own company called Micro Instrumentation Telemetry Systems. MITS designed and produced one of the first hand-held electronic calculators. When Hewlett Packard and Texas Instruments entered the calculator business, MITS introduced the Altair 8800, the first inexpensive general-purpose microcomputer. It used Intel's new 8080 microprocessor, which, unlike the logic chips that animated calculators or electronic watches, could be programmed to do a significant number of tasks.

When *Popular Electronics* featured the Altair on its January 1975 cover, phone calls poured in from people wanting to sell him software. "We decided that the first person to show up with operating software would be the one we hired," says Roberts, who subsequently hired Bill Gates and Paul Allen to write a basic programming language that could run on the small machine.

"People laughed at us when we said we were building desktop computers," Roberts says. Yet before Roberts sold the company to Perotec in 1977, MITS sold approximately 50,000 Altairs.

Following the sale of MITS, Roberts served as vice president of Perotec and invented what could be considered today as the first laptop computer. Perotec didn't foresee any potential for the product, Roberts says, "so I figured it was time for me to go somewhere else."

Roberts, who signed a five-year, non-compete clause when selling MITS, purchased a 1,000-acre farm in southern Georgia and began producing cattle, hogs, corn and soybeans. In 1978 he started, and served as president of Agridata Inc., a firm that designed management software for farmers and ranchers.

Because age limits no longer affected eligibility for medical school, Roberts then turned his attention to his lifelong dream of becoming a physician and, at the age of 39, entered Mercer University School of Medicine.

In 1988, after a two-year residency at the Medical Center of Central Georgia, Roberts established a practice as doctor of internal medicine in Cochran, Ga., foregoing a more prominent or prestigious medical appointment to serve the small community. During the first 10 years of his medical practice, he also served as president of Data Blocks, a process control computer business, and as an adjunct professor in electrical engineering at Mercer University from 1988 to 1994.

Roberts, who invented a basic relay computer for the heart-lung machine and an electronic vital signs monitor, still tinkers with computers in his machine shop. Most of his work relates to medical applications and involves software rather than hardware, but he says, "I've always loved computers. For me, working with them has been an avocation rather than a vocation."

With his home workshop full of new ideas or inventions, the Georgia Hall of Fame and OSU Hall of Fame member admits, "I see myself as more of an engineer than a doctor."

JANET VARNUM

NAE President, Members Visit OSU

William A. Wulf, AT&T Professor of engineering at the University of Virginia, gave the 2002 Lohmann Lecture, "The Urgency of Engineering Education Reform," which coincided with the spring meeting of the College of Engineering, Architecture and Technology Associates.

Wulf is president of the National Academy of Engineering (NAE), one of the nation's most influential professional groups whose members volunteer their time and counsel to Congress, the White House and high-level government agencies. Election to the National Academy of Engineering is the highest honor paid to an engineer or engineering educator in this country.

Thirteen Oklahomans have been elected to the academy, and four of those are OSU faculty members: Regents Professor Ken Case, adjunct faculty member Marvin Johnson and professors emeritus Joe Mize and Charles Haan. OSU is the only university in the state to produce more than two NAE members.

In addition to Wulf, eight of the 13 Oklahomans who are members of NAE attended a reception and dinner that concluded the associates meeting.

ADAM HUFFER

BREAKING NEWground in alumni impact

CEAT Dean Karl Reid, left, and National Academy of Engineering (NAE) president William A. Wulf, are shown here with eight of Oklahoma's 13 NAE members: Kenneth Richards, Marvin Johnson, Kenneth Case, Joe Mize, Wulf, Kenneth Blenkarm, James Brill, Charles Haan and John Campbell Sr.

Adam Huffer

