From the Editor's Desk

Lars Heide
Editor in Chief

While writing this letter, I received the sad information that Erwin Tomash passed away. His work had a significant impact on the history of computer sciences. As founder of the Dataproducts Corporation, he contributed significantly to the emerging computer industry. Later, he founded and endowed the Charles Babbage Institute and was for years its guiding spirit. The next issue of *IEEE Annals* will include a biography assessing Tomash's role in the history of computing.

This issue features two important aspects of history of computing: computers in education and microcircuitry. Universities had key roles in early computer innovation, and many students wrote their master's theses within early computer building projects, such as the Whirlwind Project at the Massachusetts Institute of Technology. Computer innovation and production moved to industry in the early 1950s, and the focus of universities changed from building computers to their use. Universities across the world established centers facilitating the use of computers in research, and they launched basic training programs that facilitated research across the natural, technical, and social sciences. Computer science programs followed in the 1960s, making the universities a core provider of computer professional education.[1]

As these basic and professional computer science training programs grew, universities increasingly became sites for important technology innovation, which in turn improved instruction and helped shape computer technology. This issue's articles by Scott Campbell and Arne Martin Fevolden illustrate a series of events in this history. Scott Campbell's "'Wat For Ever:' Student-Oriented Computing at the University of Waterloo" tells the story of four undergraduates at the University of Waterloo in Canada in the mid-1960s who wrote Watfor, a fast student-oriented Fortran compiler, for the school's mainframe computer. At that time, programming was the most important element in most computer instruction programs, even in basic computer training. Before Watfor, however, the available Fortran compiler was slow and offered weak diagnostic and debugging tools. Campbell's article explores the Watfor development and the success and evolution of the University of Waterloo-created educational software packages.

Mainframe-style computers were still the basis for instruction at universities 15 years later, around 1980. At that time, early microprocessor-based single seat computers were emerging. Apple marketed the Apple II in 1977 and IBM marketed its PC in 1983. Microprocessors also became the basis for significantly improved large, mainframe-style computers. Arne Martin Fevolden's "The Best of Both Worlds? A History of Time-Shared Microcomputers, 1977–1983" tells the story of the often overlooked time-shared microcomputer. At universities, financial institutions, and several other locations they outperformed the period's microcomputers and mini-computer/mainframe technologies with smaller capacities and lower speeds.

"The Australian Educational Computer That Never Was" by Arthur Tatnall discusses the challenge of acquiring single-seat computers for primary and secondary school instruction in the 1980s. During this period, several countries launched programs to innovate and produce school computers. They focused both on supporting a national hardware and software computer industry and establishing a standard across schools that could facilitate professional development and diffusion of suitable educational software. Tatnall first reviews developments in the UK, New Zealand, Sweden, and Canada and then shares the story of Australia's educational computer, which was designed but never actually built.

Lastly, this issue also includes features on the early history of microcircuitry with articles by Mike Green and Jay W. Lathrop. These articles complement the six articles in "The Early History of Microcircuitry" *Annals* special issue that appeared in early 2012.[2]

Mike Green's "Dummer's Vision of Solid Circuits at the UK Royal Radar Establishment" tells the story of Geoffrey W.A. Dummer's semiconductor innovation at the British Royal Radar Establishment in the 1950s. Green explores Dummer's level of involvement in the progression of semiconductor science. "The Diamond

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New Editorial Board Member

I have the pleasure of welcoming Marie Hicks as a new associate editor. The *Annals* Editorial Board and I are looking forward to working with her.

Marie Hicks is an assistant professor of history in the Lewis Department of the Humanities at the Illinois Institute of Technology. Previously, she was a lecturer in the History Department and STS program at the North Carolina State University. Hicks has an AB in modern European history from Harvard University, an MA in history and a graduate certificate in women's studies from Duke University, and a PhD in modern British history with a focus on the history of technology from Duke University.

Her research focuses on computing, gender, and modern Europe, specifically Britain. She studies how connections between national prestige, labor, and productivity define collective understandings of technological progress and influence social change. She is particularly interested in the global history of computing and in the increasing number of studies that expand computing history beyond the US context. Her current book project looks at why the proportion of women computer operators and programmers declined as electronic computing matured in the UK and how this labor situation had grave effects on the technological aspirations of that waning postwar superpower. Hicks is also the vice chair of operations for the Society of the History of Technology's Special Interest Group on Computers, Information, and Society.

Ordnance Fuze Laboratory's Photolithographic Approach to Microcircuits'' by Jay W. Lathrop tells about his work on printed circuits at the US National Bureau of Standards and the US Army Diamond Ordnance Fuze Laboratory between 1952 and 1958. Lathrop and James Nall developed a photoetching approach they named photolithography, which immediately became a critical technique in the first efforts to produce semiconductor integrated circuits.

References

1. For example, see N. Ensmenger, *The Computer Boys Take Over,* MIT Press, 2010.
2. *IEEE Annals of the History of Computing,* special issue on the early history of microcircuitry, vol. 34, no. 1, 2012.