



Through the Eyes of History

"Some are born great, some achieve greatness, and some have greatness thrust upon them."

—*Malvolio in Twelfth Night by William Shakespeare*

The history of science and technology is now a legitimate sub-discipline within history. It examines how humanity's understanding of the natural world and our ability to manipulate it have changed over the millennia. This field of history also studies the cultural, economic, and political impact of scientific innovation. Attesting to the maturity of this discipline, I counted (in a Web compilation) some 37 universities across the globe that offer degree programs or courses in the history of science and technology or related topics (e.g., History and Philosophy of Science, History of Science, Technology, Environment and Medicine). Modern discoveries and advances did not occur in a vacuum but crucially hinged on the edifices built by the Greek, Roman, Egyptian, Mesopotamian, Oriental, Indian, and Arab civilizations. Sir Isaac Newton's quote—"If I have seen farther (than certain other men), it is by standing upon the shoulders of giants."—could not have been more appropriate in this context.

My own foray into the history of science and technology, I must admit, got off to a rather inauspicious start in the late 1960s. This was in a junior level undergraduate course I took in the History of Science that was taught by my college principal. He noticed that I was less enamored by the scientific exploits of Priestley, Dalton, and Lavoisier than by the usual sorts of things that engage a teenager's attention. Before I knew it, there I was being hauled off to his office to face a stern pep-talk on the importance of this topic. I suppose like many things in life, art and wine to mention two, history is something that we learn to appreciate more as we get older.

History is also about powerful personalities who shaped the course of their countries and empires in very positive ways and this is certainly true in science and technology as well. In my own research field of specialization, namely photovoltaic solar energy conversion for example, the strides that were made in making solar cells a practical reality would not have come about without the pioneering work of Becquerel, Adams and Day, Fritts, Hallwachs, Einstein, Millikan, Czochralski, Rappaport, Loferski and Jenny, Pearson, Chapin, and Fuller among others. However organizations played a key role as well. In world history one can point to political and governance systems that facilitated and fostered economic and cultural advances. In the science and technology arena, government initiatives (e.g., the U.S. and Soviet space programs) and private companies fulfill a similar role. In photovoltaics, agencies like NASA and companies like RCA, AT&T Bell Labs, and Hoffman Electronics enabled the translation of laboratory advances in solar cells to practical devices.

This special issue of the magazine (co-edited by Howard Huff and Michael Riordan) celebrates the seminal contributions of Carl Frosch and Link Derick to silicon oxide technology. Their research led to the establishment of the planar silicon process as the basis for the fabrication and efficient production of silicon transistors and integrated circuits. Indeed the subsequent explosive growth of silicon microelectronics hinges on the personalities and organizations involved in this field of R&D in the 1950s and 1960s. This issue also provides a glimpse into the future of dielectric technology for the nanoelectronics era. Stay tuned.

Raj K.

Krishnan Rajeshwar
Editor

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The Electrochemical Society
65 South Main Street
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Tel 609.737.1902
Fax 609.737.2743
Web: www.electrochem.org

Editor: Krishnan Rajeshwar
e-mail: rajeshwar@uta.edu

Guest Editors: Howard Huff and Michael Riordan
Contributing Editor: Mike Kelly

Managing Editor: Mary E. Yess
e-mail: mary.yess@electrochem.org

Production & Advertising Manager:
Dinia Agrawala
e-mail: interface@electrochem.org

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