



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

The Electrochemical Society Interface (USPS 010-327) (ISSN 1064-8208) is published quarterly by The Electrochemical Society, Inc., at 65 South Main Street, Pennington, NJ 08534-2839 USA. Subscription to members as part of membership service; subscription to nonmembers \$53.00 plus \$10.00 for postage outside U.S. Single copies \$6.00 to members; \$13.00 to nonmembers. © Copyright 2007 by The Electrochemical Society, Inc. Periodicals postage at Pennington, New Jersey, and at additional mailing offices. POSTMASTER: Send address changes to The Electrochemical Society, Inc., 65 South Main Street, Pennington, NJ 08534-2839.

The Electrochemical Society is an educational, nonprofit 501(c)(3) organization with more than 7500 scientists and engineers in over 70 countries worldwide who hold individual membership. Founded in 1902, the Society has a long tradition in advancing the theory and practice of electrochemical and solid-state science by dissemination of information through its publications and international meetings.



Published by:

The Electrochemical Society
65 South Main Street
Pennington, NJ 08534-2839 USA
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

Advisory Board: Daniel A. Scherson (*Battery*), Barbara Shaw (*Corrosion*), Durga Misra (*Dielectric Science and Technology*), Gery Stafford (*Electrodeposition*), George K. Celler (*Electronics and Photonics*), S. Narayanan (*Energy Technology*), Prashant V. Kamat (*Fullerenes, Nanotubes, and Carbon Nanostructures*), Enrico Traversa (*High Temperature Materials*), Venkat Srinivasan (*Industrial Electrochemistry and Electrochemical Engineering*), Cornelis R. Ronda (*Luminescence and Display Materials*), James Rusling (*Organic and Biological Electrochemistry*), Gessie Brisard (*Physical and Analytical Electrochemistry*), Peter Hesketh (*Sensor*)

Publication Committee Chair:
Subhash Singhal

Society Officers:
Barry R. MacDougall, *President*
D. Noel Buckley, *Vice-President*
Paul Natishan, *Vice-President*
William D. Brown, *Vice-President*
Petr Vanysek, *Secretary*
John R. Susko, *Treasurer*
Roque J. Calvo, *Executive Director*

Statements and opinions given in The Electrochemical Society *Interface* are those of the contributors, and The Electrochemical Society, Inc. assumes no responsibility for them.

Authorization to photocopy any article for internal or personal use beyond the fair use provisions of the Copyright Act of 1976 is granted by The Electrochemical Society, Inc. to libraries and other users registered with the Copyright Clearance Center (CCC), 222 Rosewood Dr., Danvers, MA 01923. Copying for other than internal or personal use without express permission of The Electrochemical Society, Inc. is prohibited. For reprint information, contact Society Headquarters. The CCC Code for The Electrochemical Society *Interface* is 1064-8208/92.

Production Notes
Design Consultant:
O&Y Design,
Trenton, NJ

Printed by:
Cummings Printing Co.
Hooksett, NH