

IEEE HISTORY CENTER

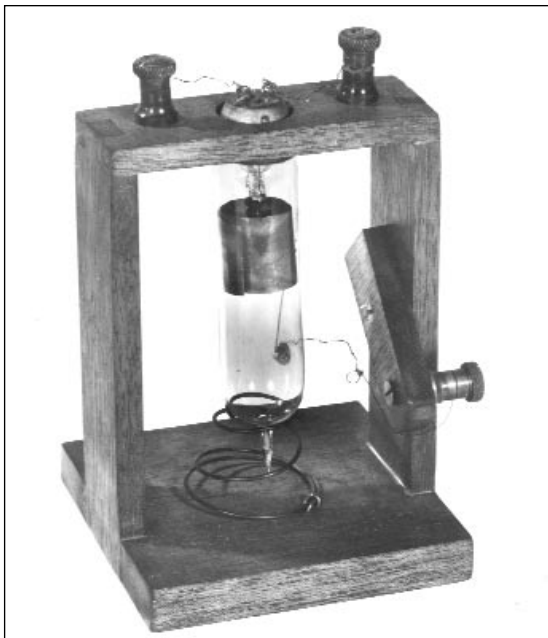
 THE STATE UNIVERSITY OF NEW JERSEY
RUTGERS

Preserving, Researching, and Promoting the Legacy of Electrical Engineering and Computing

STATIC FROM THE DIRECTOR

As I sit down to write this, I have just learned of the latest recognition for the IEEE Virtual Museum (VM)—perhaps our best so far—*PC Magazine's* “Site of the Week” for the week begin-

ning 30 May 2003 [see page 2]. This may in part be the result of the opening of our newest exhibit, a fascinating exploration of microwaves [see insert]. With the opening of the microwave exhibit, the content has ballooned about one quarter, with a total currently of over 300 pages. Visitors continue to flock to the site. Now is a good time for us to step back and take stock of the year-and-a-half-old site. We will be focusing on researching our users to determine exactly who is using the site and how, so that we can better serve our audience—particularly for the young people and educators for whom our site is principally designed—and so that we can seek out additional resources to enable us to continue to support and enhance the program. You will be hearing a great more about the VM in future issues.



Fleming Diode
 Courtesy of the Smithsonian Institute

continued on page 2

MICROWAVES: FROM YOUR KITCHEN TO THE EDGES OF THE UNIVERSE



The original 1940 cavity magnetron developed by J.T. Randall and Henry Boot. It was crucial to the success of the Allies' radar program and makes the microwave oven possible. Courtesy: Science Museum/Science & Society Picture Library.

The IEEE History Center is pleased to announce the launch of the latest IEEE Virtual Museum (www.ieee.org/museum) exhibit, *Microwaves: From Your Kitchen to the Edges of the Universe*. Exhibit visitors will learn about the many ways microwave technology impacts their daily lives. Like all VM exhibits, *Microwaves* offers descriptions of how various technologies work and then places those technologies into historical and social contexts. Discover how the same device that makes a microwave oven work helped the Allies win World War II. Learn about the

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Static from the Director

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In the meanwhile, our other programs continue to thrive. Our main website continues to provide a range of services to a diverse community—engineers, historians, journalists, policy makers, students, educators, and the general public. Our collection of oral history interviews of prominent engineers and scientists continues to grow, and many of these are posted on our website—it remains a popular feature [see page 5]. The Milestones program continues to expand in number, scope, and

quality. Finally, I would like to point out that we have begun the planning for our next international workshop on technological history, this one on the history of electronics. Next year will mark the centennial of the “Fleming valve” (diode)—arguably the first electronic device—and we will be holding our workshop in co-ordination with celebrations by the IEE and University College, London [see page 4]. There will be many symposia recognizing Fleming, but, as always, ours will uniquely bring together working engineers and hobbyists with professional historians and academics.

Of course, all of these programs require financial support. That is why I remain grateful for the continued support of you, the readers of our newsletter. I hope our programs will continue to engage your interest and support in the future. We will also continue to publish notes from the IEEE Development Office on the various ways you might support the Center [see page 6]. Thank you again for all your help. ♦

The newsletter reports on the activities of the Center and on new resources and projects in electrical and computer history.

It is published three times each year by the IEEE History Center.

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IEEE VIRTUAL MUSEUM IS PC MAGAZINE'S SITE OF THE WEEK

PC Magazine designated the IEEE Virtual Museum as its site of the week for 30 May 2003, and has given it a glowing review: “Those of you who’d like to enlighten yourselves a bit, can visit the fun, fascinating, and in-depth – yet surprisingly accessible — IEEE Virtual Museum at **www.ieee-virtual-museum.org**. The Museum’s simple and attractive layout should make even the most technophobic reader feel comfortable...the exhibits themselves are uncluttered running text highlighted with plenty of graphics, animations, and even short movies illustrating the more difficult topics...the information is pitch-perfect; not too tough for the neophyte, but not too watered down for those who once knew but now need a refresher.” ♦

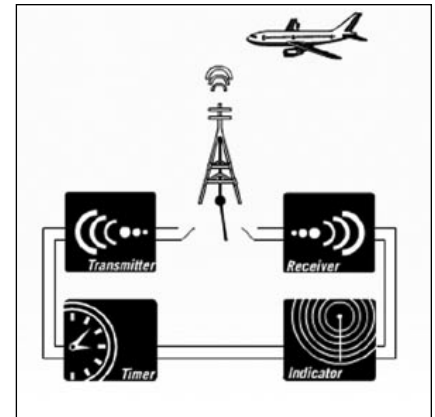
MICROWAVES: FROM YOUR KITCHEN TO THE EDGES OF THE UNIVERSE

continued from page 1

people who researched microwaves and developed radar, satellites, and space communications. Explore how microwaves are used to help keep our skies safe, guide missiles, predict the weather, and detect and treat cancer. Finally, learn what microwave engineers have in store for us in the future.

Microwaves is a milestone in the growth of the IEEE VM. Sponsored—and largely written—by members of the IEEE Microwave Theory and Techniques Society (MTT-S), *Microwaves* marks the first time an IEEE society has used the VM as a forum for presenting the history of their field. Back in 2002, MTT-S leadership was looking for ways of marking the Society's 50th

anniversary and decided on a special website. At about the same time, the IEEE VM was being launched. The two organizations joined forces in a project that served the needs of both parties: high-caliber content for the VM and an established audience and proven means of dissemination for MTT-S. *Microwaves* is the first complete online technical and historical overview of the technology. Moreover, because the presentation is designed for a younger, non-technical audience, it appeals to people not ordinarily reached by IEEE History Center programs and who may have little idea that a microwave is anything other than a way of heating leftovers—possible future engineers. ♦



An animation from the IEEE Virtual Museum Microwave exhibit.

Staff Notes

The History Center is pleased to welcome Jennifer J. Armiger as the 2003 Life Member Intern. Jennifer is a Hagley Fellow at the University of Delaware. Her major field is the History of Technology & Industrialization and her minor field is Modern China & Chinese Technology. Her areas of interest are computer history, software technology, Chinese industrialization & technology, and gender & technology. Additionally, Jennifer has an interest in architectural and plumbing technologies. She recently completed a research paper on cyborgs, computer languages, and COBOL.

Jennifer studied this past winter in China in the cities of Beijing, Xian, and Shanghai. Her research focused on Chinese architectural technologies, particularly the Old Hutong Residences of Beijing. She recently completed research on the Indian River Life-Saving Station in Dewey Beach, Delaware, where she built a database for the State of Delaware that enhanced the public history of the surfmen and keepers of the station. The United States Life Saving Service was the precursor to the U.S. Coast Guard, formed in 1915. Additionally, Jennifer completed a project in the summer of 2002 for the Longwood

Foundation and the Hagley Museum & Library in which she located, assessed, photographed and cataloged the African-American primary and secondary schools built by Pierre S. DuPont in Delaware, during the 1920s and 1930s.

Jennifer has been awarded the Salsbury Fellowship to attend the Business History Conference for two years running and plans to attend the SHOT conference in Atlanta later this year. Jennifer received her Masters in the History of Technology & Industrialization this spring and will move to Ph.D. pre-candidacy this fall. ♦

Visit our Website

http://www.ieee.org/history_center

THINGS TO SEE AND DO: ONE HUNDRED YEARS OF ELECTRONICS : THE CENTENNIAL OF THE FLEMING DIODE

28 June – 4 July 2004, Bletchley Park and London

Electronics permeate modern economies and cultures. The production of electronics hardware is the largest branch of the manufacturing sector, and all sectors of the economy make great use of electronics, especially in the form of communications and computing. Modern cultures are in large part mediated by electronic technologies, both for personal communications and for dissemination of cultural products. The remarkable growth of electronics—perhaps the most momentous of all 20th-century developments—may be dated to 1904, when John Ambrose Fleming, professor at University College in London, used the Edison effect to rectify a wireless signal so that it could be indicated on a galvanometer. On 16 November 1904 he filed for a patent on what became known as the Fleming valve or Fleming diode. This was the first of the radio

tubes, and it was radio that established the electronics industry.

To commemorate Fleming's invention and to promote greater understanding of how modern electronics developed, the IEEE History Center, the IEE History of Technology Professional Network, and University College London are organizing four coordinated events to be held in the early summer of 2004. From 28 June through 30 June 2004 the IEEE History Center will hold a conference at Bletchley Park, 50 miles northwest of London, on "Themes and Transitions in the History of Electronics". Immediately following this will be two conferences, first one organized by University College London (30 June to 2 July) and then one organized by the IEE History of Technology Professional Network (2 July to 4 July). Both of these will take place at University College, where there

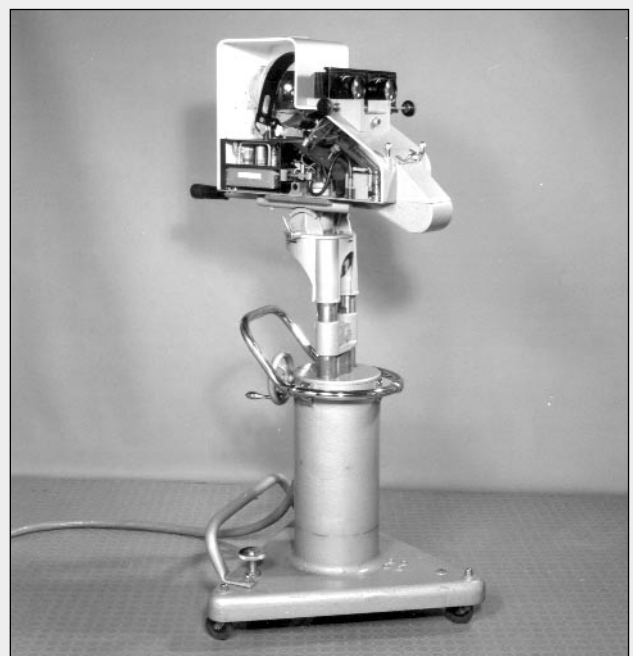
will also be an exhibition on the life and work of Fleming.

Each of the organizations will act as technical co-sponsor for the conferences held by the other organizations. Each conference will have its own character and emphases, and the three will complement one another. It is hoped that many people will take part in two or all three of the conferences, and there will be reduced registration fees in such cases. Fuller conference announcements with registration information will appear in September 2003. Inquiries may be directed to Frederik Nebeker (IEEE History Center, f.nebeker@ieee.org), Colin Hempstead (IEE History of Technology Professional Network, colin.hempstead@ntlworld.com), and John Mitchell (Department of Electronic & Electrical Engineering of University College, jmitchel@ee.ucl.ac.uk). ♦

MYSTERY PHOTOGRAPH CHALLENGE #12

The IEEE History Center maintains a photographic archive of more than 3,300 images. From time to time images are donated without any identification. Can you help identify this photograph? We are interested in details such as: type of equipment, approximate dates, manufacturer, how/where used, and anything else of historical interest you would like to tell us.

The IEEE History Center has a webpage that features the mystery photograph challenge. You may email us your answer at history@ieee.org, or you can fill out an on-line form. http://www.ieee.org/organizations/history_center/mystery_photo.html ♦



EE in the Movies

ELECTRICAL TECHNOLOGIES IN THE MOVIES: THE INTERCOM

Alexander Graham Bell's telephone not only made possible conversations between people in different buildings, it also allowed people in different rooms or offices of the same building to talk. This is shown, for example, in the classic movie "The Philadelphia Story" (1940), where telephones, present in most rooms of Tracy Lord's (Katharine Hepburn's) mansion, serve as an intercom. Early on, however, handset-free systems for room-to-room use were designed, and, beginning in 1911, they were called 'intercommunication systems'. By the end of the 1930s they were fairly common, and in 1940 the shortened designation 'intercom' was coined.

Office intercoms were most common. In many movies—such as "The Thin Man" (1934), "The Maltese Falcon" (1941), and "Three Coins in the Fountain" (1954)—they symbolize an executive's power, putting his secretary at his immediate call. In "Wild Things" (1998) a sleazy lawyer expects to impress some visitors by using his intercom, but the effect is spoiled when his secretary stands up and replies directly to him over the partition. In James Bond movies from the 1960s to the present, the intercom between M and Miss Moneypenny provides humor when the voice of



M suddenly interrupts the flirtatious repartee between Bond and Moneypenny. On television, the Carol Burnett Show featured an intercom in the skits involving Mr. Tudball and his secretary Mrs. Wiggins.

One of the most common uses of an intercom is for a visitor to request the remote unlocking of an entrance gate or door. This is shown in countless movies, one of the earliest being the Bob Hope – Dorothy Lamour comedy "My Favorite Brunette" (1947). Before there were specially designed baby monitors [seen, for example, in "I'll Do Anything" (1994)], house intercoms could be used for this purpose, as shown in the Spencer Tracy – Elizabeth Taylor movie "Father's Little Dividend" (1954).

The World War II movie "Twelve O'Clock High" (1949) shows fre-

quent intercom use on a military base, and intercoms became important on ships. For example, they are used repeatedly in the submarine classic "Run Silent, Run Deep" (1958). Intercoms even found their way into limousines and small airplanes. We see the former in "Sunset Boulevard" (1950) and the latter in "It Happened One Night" (1934). In both of these cases, one suspects that ostentation is as important as functionality.

The poor sound quality of the intercoms used for drive-in or drive-through food service brings laughs to the viewers of "American Graffiti" (1973) and "American Beauty" (1999); this is humorous because we've all struggled to communicate with such systems. John Cleese and co-writers made fun of the poor sound quality of intercoms in a different way in "The Strange Case of the End of Civilization as We Know It" (1977): a person is first heard over an intercom; he then enters the room and—shockingly—sounds exactly as he did over the intercom.

As always, we would be grateful for reports from readers of other interesting cinematic depictions of intercoms. You may contact us at history@iecc.org. ♦

NEW ORAL HISTORIES ON THE WEB

The Oral History portion of the History Center website remains one of the most popular areas. We continue to add new histories to the website as a service to scholars and individuals interested in the history of technology. The Center has over 400 Oral Histories in its collection, with over 200 full transcript Oral Histories on the website. Here are some of the most recent additions:

Herbert Kroemer – Dr. Kroemer is the 2002 IEEE Medal of Honor recipient and winner of the 2000 Nobel Prize in Physics. He is a pioneer in the area of heterostructure bipolar transistors.

Antonio Luque – Prof. Luque is a pioneer in the field of photovoltaics and has received numerous awards for his work.

Buddy Ratner – Dr. Ratner, University of Washington, is a pioneer in the area of biomaterials.

The Center continues to collect Oral Histories with the leading engineers of our time.

USING RETIREMENT ASSETS TO PROMOTE THE LEGACY OF ELECTRICAL ENGINEERING AND COMPUTING

By: Karen Galuchie, IEEE Development Office

In the United States, if you name anyone other than your spouse as the beneficiary of your qualified retirement plan, as much as 70% may be subject to income and estate taxes. This is because these assets are included in your gross estate for federal estate tax purposes AND also taxed when received by the beneficiaries as income. Both taxes are completely avoided if you name a charitable organization, such as the IEEE History Center, as the beneficiary of the assets remaining in your qualified retirement plan.

Unlike making changes to your Will, it is easy to change the beneficiary of your qualified retirement plan. In most cases, all you have to do is fill out and submit your retirement plan provider's benefi-

ciary change form. You have the option of naming the "IEEE Foundation for benefit of the IEEE History Center" as the primary beneficiary or as the contingent beneficiary. A contingent beneficiary receives the funds if the primary beneficiary predeceases you.

By naming the IEEE History Center as a beneficiary to your qualified retirement plan you will be providing the financial energy needed to preserve, research, and promote the legacy of electrical engineering and computing. Your commitment to the Center and its mission pushes us to expand and improve our programs so that they remain compelling and educational. In addition, you will become a member of the IEEE Foundation's deferred giving donor recognition group the

Goldsmith League, named for Alfred N. Goldsmith and his wife Gertrude (Maude) as a special tribute for their estate gift to the IEEE Foundation.

Please check with your financial advisor before you decide if including the IEEE History Center as a beneficiary to your qualified retirement plan is right for you. This decision will not only affect how your assets are distributed at your death, but may impact how your mandatory lifetime distributions are calculated. To request additional information or to hold a confidential discussion of giving opportunities to the IEEE History Center, contact the IEEE Development Office by telephone at +1 732.562.3915 or by electronic mail at supportieee@ieee.org. ♦

Surf City

Voices of Innovation

This website debuted in September 2002 and provides its listeners with a daily two-minute sound portrait of engineering, providing a window into the lives of people who transform imagination and ingenuity into technological wonders. It covers all disciplines of engineering, including electrical, mechanical, chemical and others. You can read all transcripts online, or download a small MP3 file. The American Association of Engineering Societies, through grants by other engi-

neering societies, sponsors the site. www.voicesofinnovation.org

Einstein Archives Online

The Archives Project is a collaboration between the California Institute of Technology and the Hebrew University of Jerusalem. It opened on 19 May 2003 and is the first real glimpse into the life of Albert Einstein. The Archival Database allows direct access to approximately 43,000 records of Einstein and Einstein-related documents. It also contains over 3,000

high-resolution images of his documents. www.alberteinstein.info

Television History – The First 75 Years

This is a fun website to visit, with literally thousands of photographs of televisions. It is a chronological listing of events related to the development of television, beginning in 1926. It contains information about televisions in the United States, Europe, Japan, Russia, and others. The images are high resolution and high quality. www.tvhistory.tv ♦

“RATS” – AN EARLY EXAMPLE OF CONTENT DEFACEMENT: THE MASKELYNE INCIDENT

The rise of the world wide web and its permeation through nearly all aspects of social and economic life have attracted various kinds of attacks by hackers on websites. There are the hijackings of accounts and identities; denial-of-service attacks, and even defacement of content. Many of these attacks have as their prime motive the rather puerile thrill of enabling the hackers to show the website owners or the rest of the world how clever they are.

It was no different a century ago. Almost as long as there has been electronic communication, there have been attempts to interfere with it. An early – and famous because of the people involved – content defacement occurred in 1903 when a wealthy self-educated electrician with an interest in wireless telegraphy named Nevil Maskelyne became determined to challenge Guglielmo Marconi's growing dominance of wireless telegraphy.

Among other things, Maskelyne attracted public attention by using wireless to detonate gunpowder.

Because of various patent complications, Marconi needed to demonstrate a method of transmission called syntonic, but there had been allegations that his radio stations interfered with the signals of other stations, and were vulnerable to tapping. To dispute these claims, Marconi issued a challenge to Sir W.H. Preece and or Prof. Oliver Lodge to try to intercept wireless messages in a speech at the February 1902 general meeting of the Marconi Company. That challenge itself was not taken up, but it apparently got some people thinking. *The Electrician* reported that messages between Marconi's floating laboratory on board the *Carlo Alberto* sailing around Italy and the Marconi station in Poldhu, Cornwall had been tapped in England.

Marconi set up a demonstration on 4 June 1903 at a lecture by John Ambrose Fleming at the Royal Institution. Because of his stature as a physicist and electrical engineer,

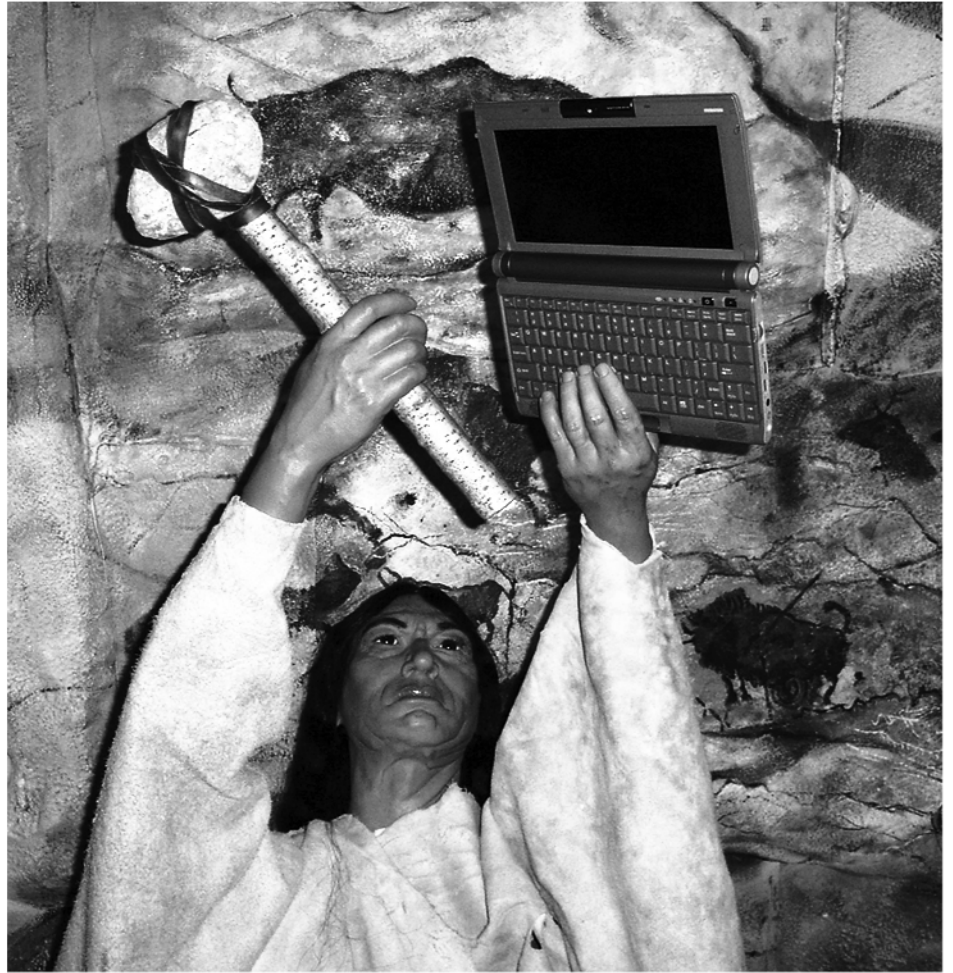
Fleming's imprimatur was much desired by Marconi. Meanwhile, Maskelyne had set up his own transmitting apparatus in the Egyptian Theatre near the Royal Institution to contradict Marconi's claim of non-interference. In order to find out whether his device was successful, Maskelyne needed to send a message sufficiently inflammatory to provoke a reaction.

Arthur Blok, the Marconi Company staffer assisting Fleming with the demonstration heard the astounding word “Rats” being spelt out in Morse Code instead of the expected message from Chelmsford. Next came a limerick uncomplimentary to Marconi, and quotations from Shakespeare, all spelt out on the paper tape. Ironically, the prank seemed to go unnoticed by the audience, under the spell of Fleming's lecture. Blok deftly tore off the section of tape with the intrusive messages and slipped it into his pocket. Maskelyne's messages ceased just before the real messages from Chelmsford came through. ♦

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From the Stone Age...

Stone Age Culture
Babylonian Clay Tablets
Antikythera Reconstruction
Abacus/Soroban/Astrolabe
History of Numerals & Mathematics
History of Writing/Printing/Gutenberg
The Enlightenment/Bacon/Locke
Newton's *Principia & Opticks*
History of Electricity
Franklin/Volta/Faraday/Edison
Telegraph & Pony Express
Arithmometers & Comptometers
Antique Office Appliances
Cash Registers/NCRs/...
Burroughs/Monroe/Marchant/...
Telephones & Phonographs
History of Wireless & Electronics
Maxwell/Hertz/Marconi/Einstein
Fleming/De Forest/Farnsworth
Pocket/Portable Adding Machines
Jacquard/Babbage/Lovelace/Hollerith
Stibitz/Zuse/Turing/Atanasoff/Hopper
Norden & Mark Series Bombsights
ENIAC/UNIVAC/IBM Mainframes
Bell Labs/Transistors/TRADIC
Analog Computers & Slide Rules
Kilby/Noyce/ICs/Fairchild/Micron/...
Apollo Moon Spacecraft Computer
Minicomputers/DEC PDP-8/HPs/...



Microprocessors/Intel/Zilog/Motorola/1st 4004 Wafers/4040/8008/Z-80/8080/80286...PCs/Altair/Apple 1/Osborne...
Calculators/Cal Tech/HP-35/SR-10/Software History/Internet/Games/Toys/Computer Space/Pong...and much more!

to the Information Age

Visit this award winning museum and experience the fabulous journey of humankind from the caves of the Cro-Magnon to the Internet!

American Computer Museum - Compuseum

234 East Babcock Street - Downtown Bozeman, Montana

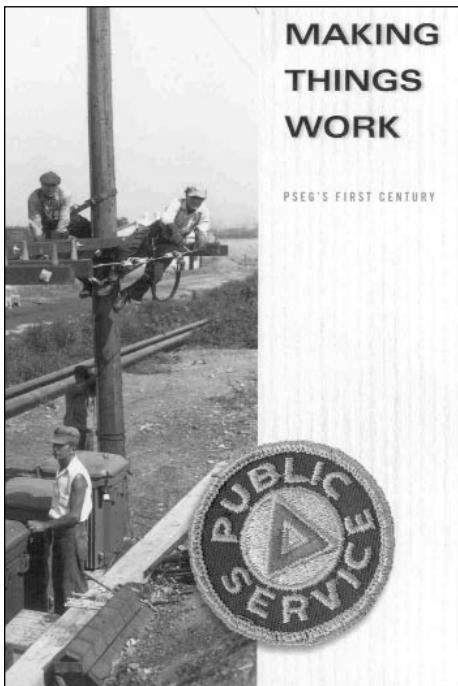
Call (406) 587-7545 for hours & admission charge or visit our web page at:

www.compuseum.org

Located just north of Yellowstone National Park

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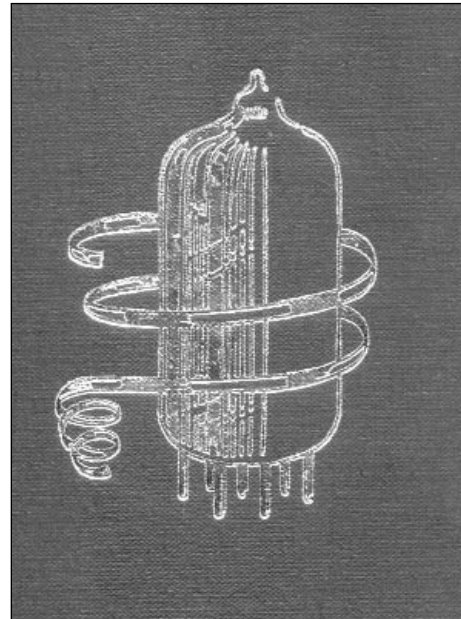


2003 marks the 100th anniversary of Public Service Electric and Gas Company. Incorporated as Public Service Corporation of New Jersey, it was a conglomeration of hundreds of local transit and utility companies. The publication chronicles the growth of the company and the industry over the last 100 years. Perhaps the most famous customer of PSEG is the Statue of Liberty. PSEG provides electricity to power her elevators, air conditioning, and her torch, a beacon of freedom for the millions of immigrants who came through Ellis Island. There are many fantastic historical photographs.

Available from PSEG, 100th Anniversary Book Order, PSEG, 80 Park Plaza - P3B, Newark, NJ 07102, \$15.00, ISBN: 0-944641-59-8, 129 pp. + Illustr.

HOOK, DIANA H., and JEREMY M. NORMAN, *Origins of Cyberspace: A*

Library on the History of Computing, Networking, and Telecommunications, with contributions by Michael R. Williams, historyof-science.com, 2002.



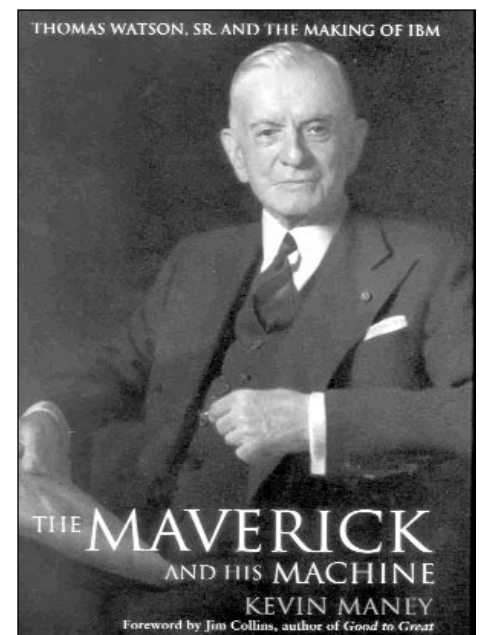
This handsomely produced, large-format book is in essence an index of printed and manuscript records on the history of computing, including networking and telecommunications, from 1613 to about 1970. Some 1400 items—technical reports, books, pamphlets, letters, typecripts, manuscripts, and more—are described. In addition to basic bibliographic information, including provenance, there is an account, sometimes a page or so in length, of the historical significance of the item. There are abundant illustrations, of people and equipment as well as of the printed material and manuscripts being described.

Jeremy Norman has written a 62-page introduction that discusses the collecting of sources on the development of computing and specifies the aims and methodology of the project that resulted in this book. There is a detailed 41-page chronology of events in the history of computing, and related items in the body of the book are noted where

appropriate. The bibliographic entries are divided into six chapters, several of which have substantive introductions. Particular emphases of the book are materials related to Charles Babbage, to Latimer Clark (entrepreneur of submarine telegraphy), and to Pres Eckert.

Available from **historyofscience.com**, Novato, CA, **orders@jnorman.com**, **www.historyof-science.com**, \$500, cloth, ISBN 0-930405-85-4, x + 670 pp., index.

MANEY, KEVIN, *The Maverick and His Machine: Thomas Watson, Sr. and the Making of IBM*, Wiley, NY, 2003.



Most people, when they hear the phrase, “corporate culture” think of one corporate culture in particular, that of IBM. Not only did Watson create arguably one of the most powerful corporate cultures ever for his own corporation, he created one which many other corporations would look to as well. Maney calls Thomas Watson, Sr. “the first celebrity CEO,” and credits Watson with changing the way executives ran their companies. Maney’s unprecedented access to Watson’s letters, transcripts of meetings and

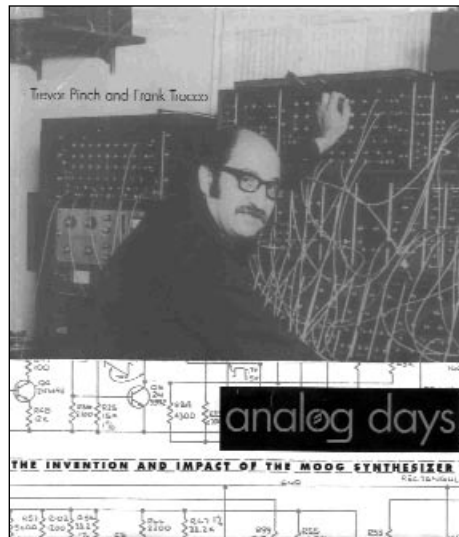
files — many of which had not been opened in decades — have allowed him to write about Watson with an immediacy and detail that leaves the reader with the feeling that the “direct eyes” and penetrating gaze of which Watson himself was so proud are staring back. Maney avoids the hero-worship which traps so many biographers; he is fully aware of Watson’s character flaws, and takes care that the reader understands the bullying of employees and family members which Watson engaged in, his conviction for anti-trust violations, and his relationships with the Nazis. The downside of the corporate culture is explored in chapters such as “Friends, Heroes, Sycophants” and “King and Castle.” The chapter on “Bringing up Baby IBM” is a superb self-contained essay on how a technology enters a wide-open field and recreates it, developing a technology to be not only successful, but world-changing. *The Maverick* is an excellent study of the nexus where innovation, power, and charisma meet.

Available from Wiley, 111 River St., Hoboken, NJ 07030, <http://www.wiley.com> \$29.95, ISBN 0-471-41463-8, 485 pp., +illustr., refs.

PINCH, TREVOR and FRANK TROCCO, *Analog Days: The Invention and Impact of the Moog Synthesizer*, Harvard University Press, 2000.

Trevor Pinch, one of the leading sociologists of technology, has chosen to write, with his student Frank Trocco, a book for the general public. The subject of this handsomely produced book is the history of the music synthesizer, with a focus on the Moog synthesizer and its inventor, Robert Moog.

The story is particularly engaging because it is told largely through oral history interviews of engineers, scientists, musicians, and fans, with



the backbone being a series of extended interviews with Moog himself. The 1950s, 60s, and 70s were obviously a time of huge technological advance in the field of electronics, signal processing, and computing, and we are now on the brink of losing the first-hand accounts of the individuals who were involved in something that has had historical impact.

Pinch and Trocco have two goals in this book. The first is to tell a historical story that they personally find interesting and important, and which they feel—rightly—that the general public will also find engaging. The nature of the source material leads directly to the book’s second goal, to illuminate some of the complex interactions between technology, markets, organizations, and culture (i.e., art). The social scientific theory is presented in a way that will not be off-putting to the engineer or other non-sociologist. Specifically, the authors argue that the synthesizer, being both instrument and machine, is a liminal object, and that those interacting with it are individuals with liminal identities. It is in these boundary areas that society and particularly social change are to be best understood. It is no coin-

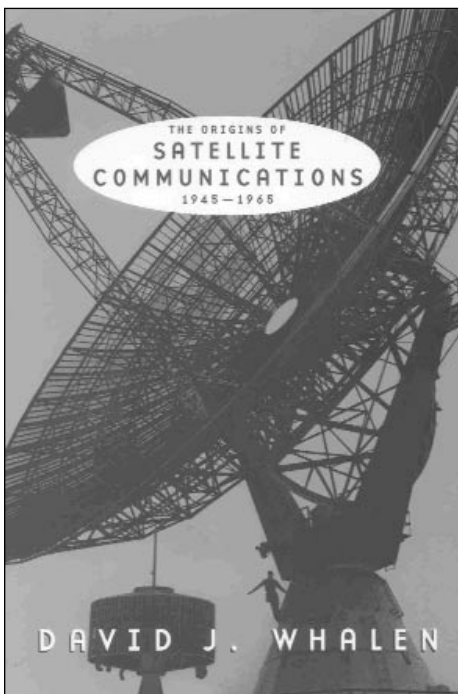
idence, therefore, that as society rapidly transformed in the 60s and 70s, interacting with and in part in response to evolving technology, the leading edge was to be found in the sphere where art meets commerce.

Finally, one of the great strengths of this book is that, while not an internalist view of the technology, it does not shy away from tackling the technological issues as separate, equal, and interactive with the social and economic issues. It lucidly explains the technology, and has a useful technical glossary in the back. The readers of the IEEE History Center newsletter will be gratified that technology is not being “dumbed down” or given a back seat. At the same time, their friends or relations need not fear taking up this book because of the technical aspects. It is a book worth reading for all.

Available from Harvard University Press, Cambridge, MA, \$29.95 cloth, 800-405-1619, HUP@harvard.edu, ISBN 0-674-00889-8, 368 + xvi pp, index.

WHALEN, DAVID G, *The Origins of Satellite Communications: 1945-1965*, Smithsonian Institution Press, Washington DC, 2002.

Whalen’s self-stated purpose in writing *Origins* was to challenge the conventional wisdom that the US government drove the development of satellite communications, and his book succeeds very well in showing that the lion’s share of the research and development, as well as the financial investment, came from private industry. NASA’s entire budget was miniscule compared to the money’s invested in satellite development by AT&T, RCA, ITT, GE, Hughes, et al. Whalen shows this convincingly in his text,



along with comprehensive graphs and tables. Free-market enterprise is a crucial driver of technological development, and Whalen has done a great service by demonstrating this solidly, backed up by a wealth of detail. *Origins* can be read as a cautionary tale on how the US government's participation in satellite development slowed the process rather than enhanced it (e.g. NASA's non-response to AT&T about launch services; the lack of technical understanding within the congressional committees overseeing the US's space policies). Sharp-eyed readers may be a little skeptical of assertions such as "the United States was always ahead of the Soviets," (Sputnik and Gagarin to the contrary), especially when later in

the book Whalen quotes from contrary evidence such as NASA Administrator Webb's report blaming the Eisenhower administration for having "emasculated" the civilian space program and guaranteeing Soviet space superiority for the next five to ten years. Satellite Communications is an excellent history of the many factors which can drive and direct the development of complex technologies, reminding us how fragile nascent technologies can be.

Available from Smithsonian Institution Press, PO Box 960, Herndon, VA 20172, +1 800.782.4612, Fax: +1 703.661.1501, \$32.95, ISBN 1-58834-022-8, 232pp, index, illus. www.sipress.si.edu ♦

LESLIE BERLIN IS 2003-2004 LIFE MEMBERS FELLOW IN ELECTRICAL HISTORY

The IEEE History Committee has selected Leslie Berlin as the 2003-2004 Life Members Fellow in Electrical History. She holds a doctorate from Stanford University in the Department of History and is revising her dissertation – *Entrepreneurship and the Rise of Silicon Valley: The Career of Robert Noyce, 1956-1990* for publication by Oxford University Press. The book will incorporate significant new sources recently made available to her by

the Noyce family. It will contribute to the academic literature on technical innovation, entrepreneurship, and regional industrial development, while at the same time engaging lay readers in an interesting, information narrative founded on serious research and primary-source documentation.

The IEEE Fellowship in Electrical History supports either one year of full-time graduate work in the his-

tory of electrical science and technology at a college or university of recognized standing, or up to one year of post-doctoral research for a scholar in this field who has received their Ph.D. within the past three years. The stipend is \$17,000, and a research budget of \$3,000 is available. The IEEE Fellowship in Electrical History is administered by the IEEE History Committee and sponsored by the IEEE Life Members Committee. ♦

Paul Bunge Prize, 2004

The Gesellschaft Deutscher Chemiker extends an international invitation for applicants for the Paul Bunge Prize 2004. The award consists of € 7.500, and should honor outstanding publications in German, English, or French in all fields of the history of scientific instruments. The deadline is 30 September 2003. The prize is named for Paul Bunge, the

19th century designer of precision balances. Please send your applications to: Gesellschaft Deutscher Chemiker, Jutta Broll, PO Box 90 04 40, D-60444 Frankfurt/Main, Germany. j.broell@gdch.de

California Institute of Technological Archives announces the Victor and Joy Wouk Grants-in-Aid Program in support of research in the Papers of

Victor Wouk at the Caltech Archives. Assistance up to \$2000 may be provided to applicants working towards a graduate degree or to established scholar. Applications will be reviewed quarterly on 1 January, 1 April, 1 July, and 1 October. <http://www.caltech.edu>, archives@caltech.edu or Archivist, Mail Code 0154-74, California Institute of Technology, Pasadena, CA 91125. ♦



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