

IEEE HISTORY CENTER



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

STATIC FROM THE DIRECTOR

To write this, I glanced back at my last column from the previous newsletter, in October 2002. I found that I was writing about the anniversary of 9/11, and what that event had shown about the importance of technological appreciation by society at large. Now I am writ-

ing less than five months' time later, and I find myself sitting just days after the destruction of the Space Shuttle Columbia. I can only quote myself: "Recent occurrences make more vital our efforts to give the public a better understanding of technology and

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Panama Canal



ELECTRICAL TECHNOLOGIES IN THE MOVIES: LONG-DISTANCE TELEPHONE CALLS

Movies illustrate quite effectively how making long-distance calls has changed over the years. Even before the development of the triode electron-tube as a telephone repeater, which happened in about 1912, it was possible to make a long-distance call halfway across the North American continent. The 1944 Vincente Minnelli movie "Meet Me in St. Louis" shows a call made in 1903 between New York City and St. Louis; the callers need to speak loudly to be understood, and they comment on how expensive their conversation is.

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Static from the Director

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engineering, and a better appreciation of their place in society, and their potential to benefit humankind."

The latest disaster also reaffirms the importance of distinguishing for the public between science and engineering. These are both noble pursuits, but they are distinct, and IEEE is the main worldwide membership organization for the engineer.

We therefore continue to take our outreach mission seriously. Two examples of our relevant programs are the IEEE Virtual Museum and Milestones in Electrical Engineering and Computing. The Virtual Museum continues to be a successful outreach effort, with the imminent opening of a exhibit on microwaves—prepared in cooperation with the IEEE Microwave Theory and Techniques Society—, citation on may other Web sites, and an impressive, growing number of visitors [see page 3].

On the IEEE Milestones front, two more were recently approved: Marconi's Earliest Wireless Experiments, 1895 (IEEE Switzerland Section, Region 8); and The Panama Canal Electrical and Control Installations, 1914 (IEEE Panama Section, Region 9). This brings the total number of Milestones to 51 (I won't say which one should claim the honor as the magic #50; they were approved simultaneously). The dedication this spring of these two Milestones plus two Milestones in the UKRI Section previously approved (Benjamin Franklin's Work in London, 1757-1775; Code-breaking at Bletchley Park during World War II, 1939-1945) will afford these Sections an opportunity to reach out to the local community, and to communicate the importance of engineers to society.

The year 2002 was of course a rough one for the global economy, making it even more difficult for units of nonprofit corporations such as ourselves to raise money. Corporate and government grant funding were certainly harder to come by than in past years. I therefore am pleased to announce that you, our individual supporters, came through in 2002 with the same level of giving as in 2001 (in truth, up a couple percent!). I take this generosity to indicate recognition of the value of our programs. Therefore, in turn, we would like to recognize YOU for the value of your support of those programs, and to acknowledge you, as we do every year, in our honor roll of donors [see page 6]. We also hope you will continue to track our progress on the Virtual Museum, the Milestone programs, and all our other wonderful activities through this newsletter and our Web pages, and that we will continue to earn your trust and support. Thank you again! ♦

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

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Center Activities

IEEE VIRTUAL MUSEUM CELEBRATES ONE-YEAR ANNIVERSARY



IEEE Virtual Museum web site

This February marks the one-year anniversary of the launch of the IEEE Virtual Museum (<http://www.ieee.org/museum>). The IEEE VM was conceived of as a site that would enhance the public's understanding of the technologies that underpin modern society and which would place those technologies into social and humanistic contexts. In the past year we have made great inroads into achieving this goal. Currently the IEEE VM contains about 300 unique pages, which are organized into four exhibits. These pages cover such diverse topics as explaining how a television picture tube works to examining the life of a 19th century telegraph operator. As one journalist wrote, the IEEE Virtual Museum may be the only place on the Internet to highlight both Thomas Edison, and the singing cartoon characters, "Alvin and the Chipmunks." Although we knew we were onto a unique idea, the success of the VM

surprised even us. Within a year we were chosen by the Internet Scout Project to be part of their Scout Report, one of the Internet's longest-running weekly publications. The Scout Report offers "a selection of new and newly discovered online resources of interest to researchers, educators, and anyone else with an interest in high-quality online material." This honor was followed by being chosen as a SciLink by the National Science Teachers Association (NSTA). In addition, the VM is a link on many other education-oriented websites such as that of the International Technology Education Association (ITEA) and the UK's Spartacus Educational. Finally, there is hard proof in our user numbers. Upon the first week of launch in February 2002 we had several hundred Web "sessions." In the last months of 2002 we've been averaging about 15,000 sessions per week. As we move into our second year of activity we hope to continue

growing the IEEE VM despite a hostile economic climate. This expansion includes adding more features and more exhibits, as well as creating more materials for use by educators. The first major IEEE VM enhancement in 2003 will be the launch of our newest exhibit, *Microwaves: From Your Kitchen to the Edges of the Universe*, which will go live in the first quarter. In the meantime, we'd like to take a moment at this one-year milestone to thank all the people and organizations that made the IEEE Virtual Museum possible. These include the Trustees of the IEEE History Center, the IEEE History Committee, the IEEE Foundation, the IEEE Life Members Committee, the IEEE Microwave Theory and Techniques Society, The Charles Edison Fund, and Mr. Lawrence Crooks. Finally, we thank all the visitors to the IEEE VM for their enthusiasm and support. ♦

ELECTRICAL TECHNOLOGIES IN THE MOVIES: LONG-DISTANCE TELEPHONE CALLS

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Until the 1950s (even later in many places) a long-distance call began with a request to an operator to set up the connection, which took several minutes or longer, the operator calling back when it was established. This procedure is shown in numerous movies, such as the Joseph Mankiewicz movie (starring Bette Davis) "All About Eve" (1950), the Jules Dassin movie "Rififi" (1955), and the Federico Fellini movie "8 1/2" (1963). In 1950 AT&T introduced area codes and the following year inaugurated direct-dial long-distance. This new service was shown rather ostentatiously in the 1963 Jerry Lewis movie "The Nutty Professor".

Old movies frequently remind us that long-distance calls used to be very expensive. In "The Thin Man" (1934) Nick and Nora Charles, who are very well off, are hosting a party; a guest asks if he might use the phone to call his mother; when it turns out to be a long-distance call, Nick glares at him. When a

woman gets a long-distance call in "A Place in the Sun" (1951) she assumes that there must be a serious problem to warrant such a call. In "Gentlemen Prefer Blondes" (1953) Lorelei Lee wants to get the son of a millionaire to France so that his father cannot be calling him twice a day—even a millionaire, it is understood, could not make daily calls to Europe. Sometimes the actual cost is mentioned: in "Grand Hotel" (1932) we learn that a call costs 2 Marks 90 per minute ("so talk quickly" it is advised), and in "National Lampoon's European Vacation" (1985) a teenager, who makes several calls from London to Chicago, runs up a bill of \$250.

Ship-to-shore telephony (between yacht and hotel) is depicted in "Some Like It Hot" (1959). The longest distance telephone call made in the movies—science fiction movies excepted—must be the call, shown in "The Dish" (2000), between President Nixon and the astronauts on the moon. In "Hackers" (1995) we learn how to get free long-distance from pay

phones: tape record the sound after depositing lots of quarters and then use that recording. Krzysztof Kieslowski's "Trois couleurs: Rouge" (1994) shows the path, along wires and cables, taken by telephone signals.

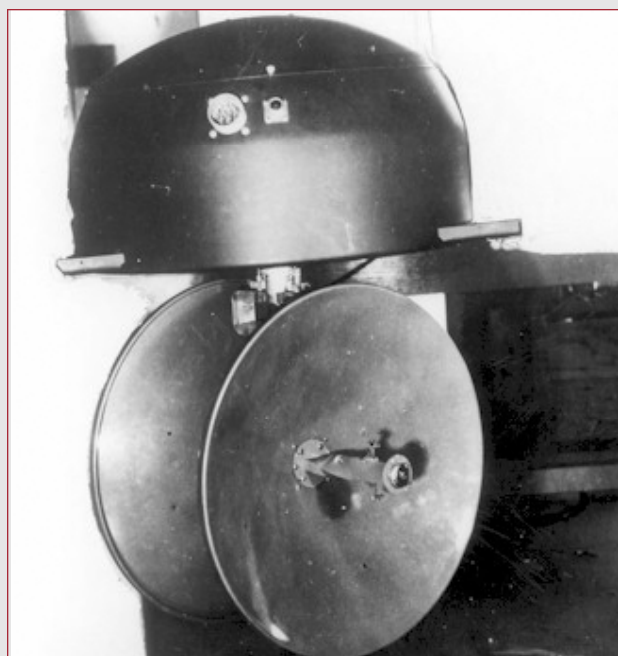
Finally, we might comment on the red telephone seen on the desk of world leaders in many movies, notably James Bond—and later Austin Powers—movies. This, of course, indicates a "hot line" to another world leader. This started with the direct connection between President Kennedy and Premier Khrushchev which the United States and the Soviet Union agreed to establish immediately following the Cuban missile crisis in October 1962. Just over a year later it appeared in "Dr. Strangelove or: How I Learned to Stop Worrying and Love the Bomb".

As always, we would be grateful for reports from readers of other interesting cinematic depictions of long-distance telephony. You may contact us at history@ieee.org. ♦

MYSTERY PHOTOGRAPH CHALLENGE #10

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 now has a webpage which features a mystery photograph challenge every month. 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 ♦



Planned Giving

PERPETUATING THE LEGACY: YOU AND THE IEEE HISTORY CENTER

Perpetuating the legacy of electrical engineering and computing is what the IEEE History Center is designed to do so that we are all able to understand and recognize the impact that people and technologies from the past have on the development of our future. In much the same way, you can perpetuate your personal legacy of hope, opportunity, and security through estate planning.

By including the IEEE History Center in your plans, you can be a partner in preserving, researching, and promoting the history of electrical and information technology. Your commitment to the Center and its mission pushes us to expand and improve our programs so that they remain com-

PELLING and educational. In addition, you will become a member of the IEEE Foundation's Legacy Giving 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.

Estate plans come in many different shapes and sizes depending upon your needs and the needs of your loved ones. Perhaps you want to set up a Charitable Remainder Trust to provide income for yourself and/or another member of your family and you could name the IEEE History Center as one of the charitable beneficiaries of the Trust. To reduce your estate tax exposure, perhaps you would

like to leave a bequest in your will to support the Center's Oral History Program or name the IEEE Virtual Museum as the beneficiary to your life insurance policy or retirement plan. Whatever your goals, the IEEE Development Office is available to help you design a gift that will fulfill your personal philanthropic goals and make certain that your legacy will make the impact you desire.

Please consider including the IEEE History Center in your plans. To request additional information or to hold a confidential discussion of giving opportunities to the IEEE History Center, please contact the IEEE Development by telephone at +1 732.562.3915 or by electronic mail at supportieee@ieee.org. ♦

Surf City

February is Black History Month, and March is Women's History Month. Annually the History Center web site features prominent African American and Women engineers. You can view this year's feature on the What's News section of the web site. Previous years feature can be found under Web Archive.

To research Black History Month in depth, visit The Encyclopedia Britannica's Guide to Black History Month: www.blackhistory.eb.com/.

To research Women's History Month in detail, visit the National Women's History Project, www.nwhp.org/

The Hagley Museum and Library is located in Wilmington, along the

beautiful Brandywine River of Delaware. Situated on 230 acres of land, it tells of the story of life in the nineteenth century, and the beginning of DuPont Company. It also contains an extensive library that houses an important collection of books, pamphlets, trade catalogs, photographs, and audiovisual materials documenting the history of American business and technology. The Hagley web site allows you to search its online catalog and inventories. <http://www.hagley.lib.de.us/> And for those close enough to visit, it is a relaxing afternoon of education and entertainment.

The new International Spy Museum opened in Washington, D.C. in July 2002. Its web site offers an insight

into the technology used for espionage and reconnaissance work. Although the web site is just at its infancy stages, it makes for interesting reading. www.spymuseum.org

IEEE Xplore adds Historical Content

In January 2003, IEEE added select content from 1950 to 1987 to the IEEE Xplore® online delivery platform. Currently, IEEE periodicals and conference proceedings published after 1988 are available through IEEE Xplore Thirteen IEEE societies have provided legacy content to be loaded into IEEE Xplore, contributing approximately 85,000 documents to the more than 900,000 currently available. ♦

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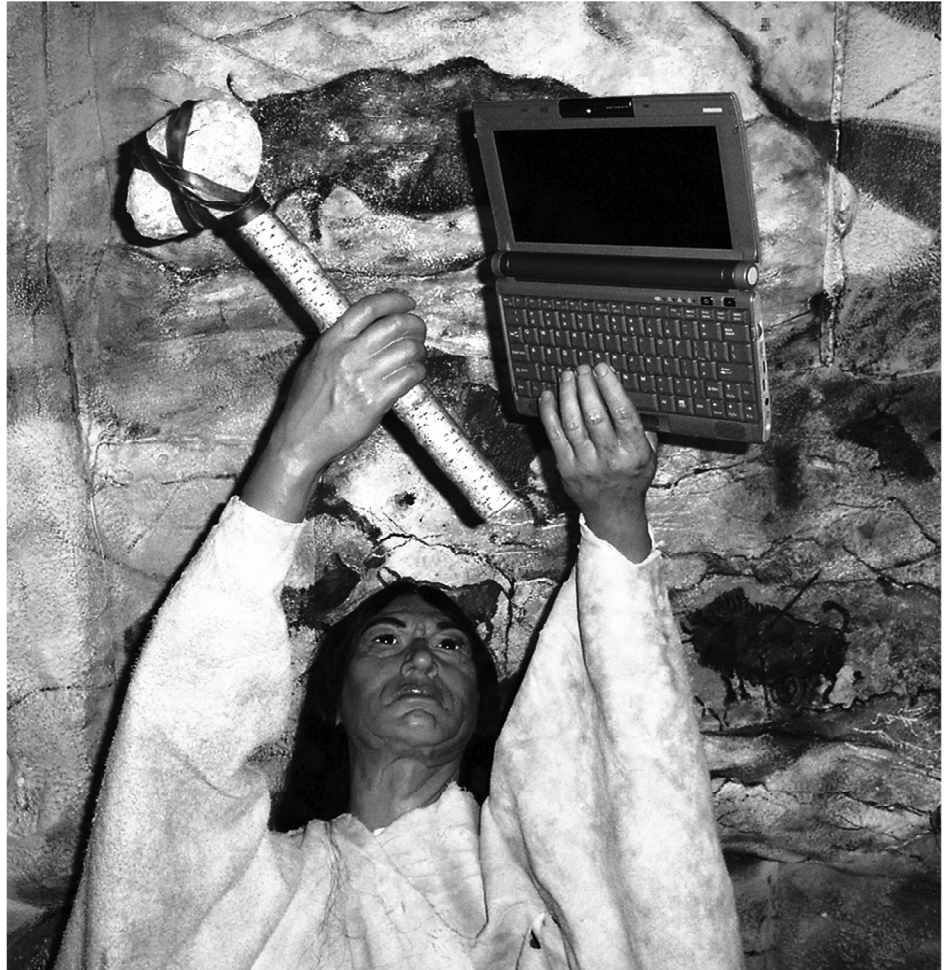
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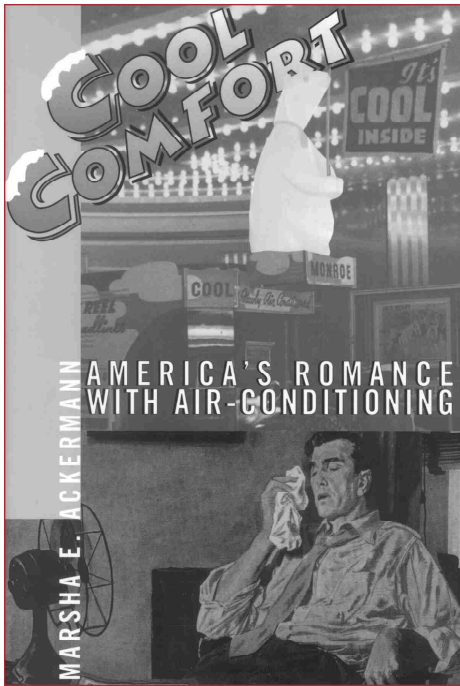
Call (406) 587-7545 for hours & admission charge or visit our web page at:

www.compuseum.org

Located just north of Yellowstone National Park

Bibliography

ACKERMANN, MARSHA A. *Cool Comfort: America's Romance with Air-Conditioning*, Smithsonian Institution Press, 2002.

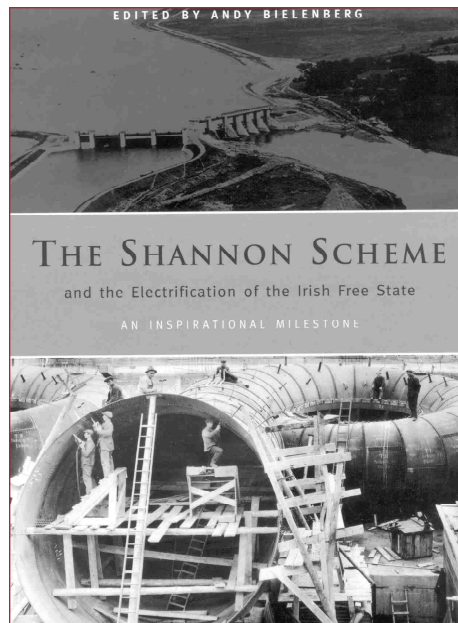


In 2000, the National Academy of Engineering listed air-conditioning and refrigeration tenth on the list of the twenty greatest engineering achievements of the 20th century. In the hundred years since the first installations, air conditioning has become ubiquitous in the United States: it is found in 83 percent of U.S. homes, in 98 percent of new cars, in most public buildings, and in most public forms of transportation. Yet there are many people who do not like air conditioning and think that often the disadvantages of the technology outweigh the advantages.

This book is not about the technology of air conditioning, but rather about the marketing and reception of the technology. It begins by looking at attitudes toward, and ways of dealing with, summer heat in the late 19th-century (such as the electrically-pow-

ered fan). Ackermann describes early proponents of air conditioning, such as C.-E. A. Winslow and Ellsworth Huntington, and the experiences of early installations. She recounts the growing interest in air conditioning during the 1920s and 1930s, an interest heightened by presentations at the Chicago and New York World's Fairs. It was after World War II, especially in the 1950s, that the market for home air-conditioning surged. The book considers how air conditioning was advertised, how it changed conceptions of domestic comfort, and how it became an indicator of modernity. The last two chapters of the book deal with air-conditioning's "malaise", the period of reappraisal of and doubt about the technology which continues to the present.

Available from Smithsonian Institution Press, Washington, DC (202 275-2300; www.sipress.si.edu), \$27.95, ISBN 1-58834-040-6, ix + 214 pp., index.



BIELEBERG, ANDY (EDITOR). *The Shannon Scheme and the Elec-*

trification of the Irish Free State. Dublin: Lilliput Press, 2002.

DELANEY, BRENDAN, and DELO COLLIER (COMPILERS). *ESB Art Portfolio: The Sean Keating Collection*. Dublin: ESB, 2001.

In the year 2000, Siemens Limited, as part of its 75th anniversary celebrations, signed an archival and heritage cooperation agreement with ESB (formerly the Electricity Supply Board of Ireland). Last year, ESB celebrated its own 75th anniversary. The Irish Free State had only been born in 1922, and among its earliest actions was a call for proposals for a giant hydroelectric scheme on the Shannon, leading to the German electrical engineering pioneering and giant corporation Siemens-Schuckertwerke to create an Irish subsidiary. Siemens began work on the huge undertaking in 1925, and the system came on-line in 1929. Meanwhile, in 1927 ESB had been formed to oversee the project—the first semi-governmental agency in the country, and one of the first public utilities in the world.

As part of the ESB anniversary celebrations, the Shannon Scheme was named an IEEE Milestone (see October 2002 newsletter). Also as part of the celebrations, and through the cooperative agreement with Siemens, these two volumes were produced. The first is a collection of essays by engineers and historians discussing the origins and carrying out of the project, and its social, political and economic aftermath. It is extremely well written, and represents an interesting and enjoyable case study in electrical history.

The second volume is in effect a visual companion. ESB had the foresight to engage a well-known Irish painter, Sean Keating (1889-1997) to record the progress of the Shannon Scheme in drawings and paintings. These interesting

and beautiful works of art are presented, for the first time, in a small, softbound commemorative volume.

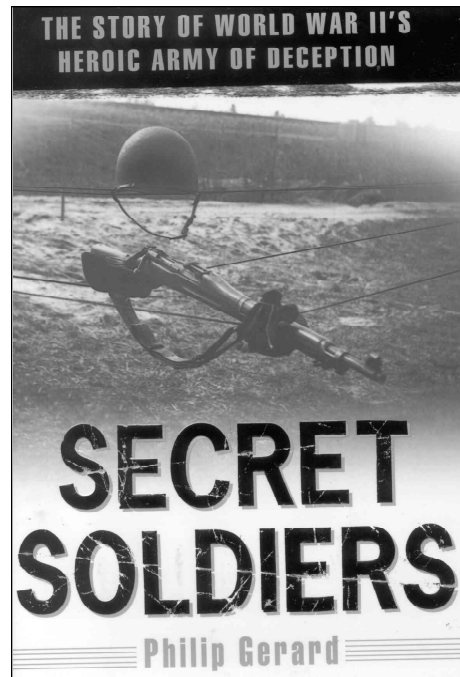
Both of these works should be of great interest to our readers. The Shannon Scheme is available from The Lilliput Press, 62-63 Sitric Road, Arbour Hill, Dublin 7, Ireland, +353 1 671 1647, Fax: +353 (01) 671 1233, <http://www.lilliputpress.ie>, €25.00, cloth, ISBN: 18453510073 (or €25.00, paper, ISBN: 18453510081), viii + 168, 48 color, 12 black and white images. The Sean Keating Collection is not commercially available, but may be obtained from the ESB Press Office, +353 1 676 5831.

BRAY, JOHN, *Innovation and the Communications Revolution: from the Victorian pioneers to broadband Internet*, The Institution of Electrical Engineers, 2002.

This publication is an account of the advances made in telecommunications, broadcasting, and information technology over the last 150 years. It reviews the lives and achievements of the individuals responsible for the revolution in science, engineering and mathematics. Bray provides brief, high-level biographical information of the men behind these innovations. He covers, in over 20 chapters, the technology behind the telegraph, telephone, radio, transistor, information theory, and fiber optic communications, just to name a few.

Bray's book is a general overview of communications. He touches upon the innovations that have made a profound impact on the world in which we live. This book is for a more general audience and may not be of interest to our readers. It also would have benefited from some more in-depth research of certain topics.

Available from the IEE Press, London, www.iee.org \$65.00; ISBN: 0852962185; 336 pgs.

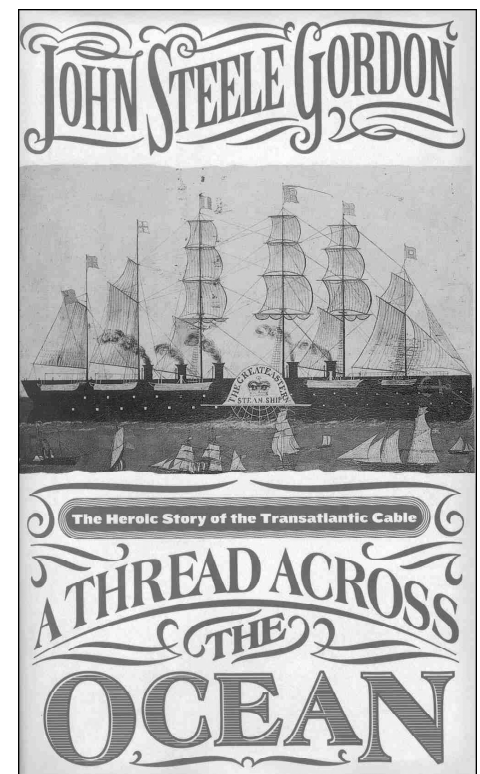


GERARD, PHILIP, *Secret Soldiers: The Story of World War II's Heroic Army of Deception* Dutton, 2002

During World War II, the United States Army created the 23d Headquarters Special Troops as specialists in camouflage and concealing real troop dispositions, but, even more importantly, to create dummy tank and artillery units in places where there were none or few, and to draw fire so that the real troops could advance elsewhere. Gerard's book tells the story of the battle of wits waged by actors (such as Douglas Fairbanks Jr.), painters, set-designers, and radio operators who used their special talents to confuse enemy intelligence. Readers interested in the history of electrical technologies will find the detailed chapters on sonic deception especially interesting. The Special Troops used wire recorders and sound trucks to project the impressions of tank units maneuvering, clanking up hills, backfiring, their officers swearing at the crews in the

mud. All of these were skillfully recorded in ways which would give the most lifelike sound "presence." The Special Troops also used radio deception, and Gerard shows how radio specialists with 23d would "understudy" real radio operators to imitate their mannerisms and "fist" so they could seamlessly maintain a fictitious radio volume as the real units moved elsewhere. Such deceptions could be dangerous – success often meant drawing down an enemy artillery barrage on your position (defended solely by inflatable tanks and canvas guns). The successes of the 23d saved enormous numbers of lives, especially in the push across the Rhine.

Available from Dutton Press, +1 800 788 6262, <http://www.penguinputnam.com>, \$25.95, hardback, ISBN 0-525-94664, 400pp., index, chronology, illus., ref.



GORDON, JOHN STEELE, *The Thread Across the Ocean: The Heroic Story of the Transatlantic*

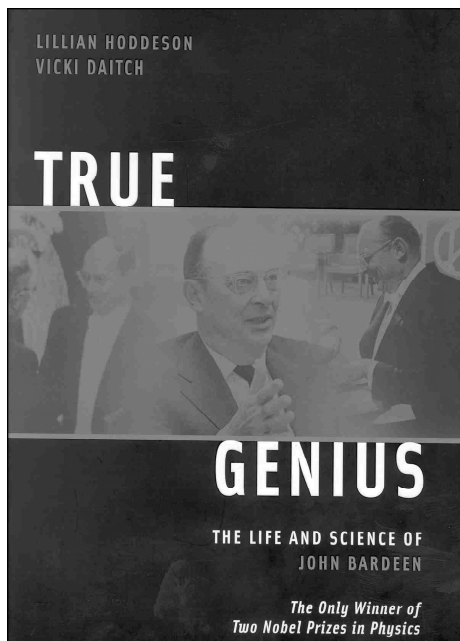
Cable, Walker & Company, New York, 2002

This publication chronicles the laying of the transatlantic cable in the 1860s. Gordon begins with a biography of Cyrus Field, providing some information concerning Field and his family. He discusses the logistics of St. John's, Newfoundland, and provides details concerning the financing of the project. This well written book provides information concerning the development of the cables and interesting details concerning the ships used to lay each of the cables. Throughout he provides interesting facts about each of the investors. This is not a technically oriented book, and makes for easy reading.

Available from Walker & Company: www.walkerbooks.com/ \$26.00, ISBN. 0-8027-1364-5, 272 pages.

HODDESON, LILLIAN and DAITCH, VICKI, *True Genius: The Life and Science of John Bardeen* Joseph Henry Press, 2002

This intriguing book is a must read for individuals interested in the life of John Bardeen. The details covering



his personal and professional life provide a fascinating insight into a true genius. In the first chapter, Hoddeson and Daitch describe Bardeen as a quiet and unassuming gentleman, with a true value for family life. This is reinforced in each Chapter. The authors had the support of Bardeen's wife and family in the project, which adds to the richness of the content.

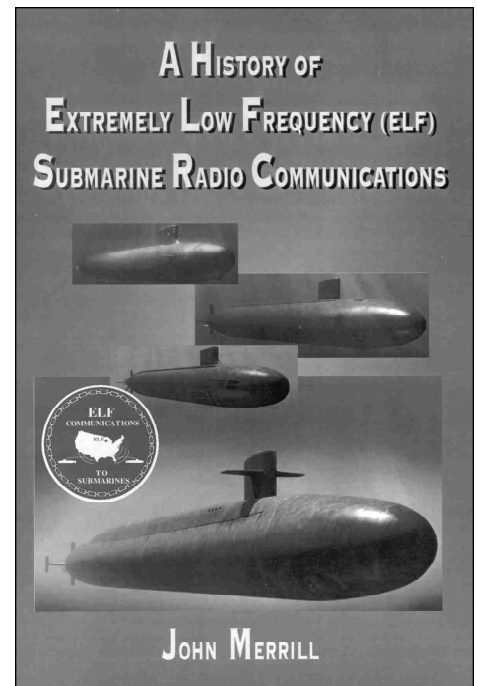
The book carefully chronicles Bardeen's life, through his education, World War II, Bell Labs and the Transistor to his tenure at the University of Illinois. It highlights his service on the President's Science Advisory Committee and his interaction with industry, particularly Xerox Corporation. This publication is as much about Jane, his wife, as it is of John.

Issues dealing with Shockley are handled discretely. The author highlights the many lifelong friendships Bardeen maintained, including Walter Brattain and Nick Holonyak. The book also covers his two Nobel Prizes, but does not mention that the IEEE honored him in 1971 with its IEEE Medal of Honor. It is written for the non-technical reader.

Available from Joseph Henry Press, www.jhpress.org/ \$27.95, ISBN. 0-309-08408-3, xi+ 444 pp., index, illus, ref.

MERRILL, JOHN. *A History of Extremely Low Frequency (ELF) Submarine Radio Communications*, Publishing Directions, 2002.

At the end of the 1950s the United States Navy began putting into service a fleet of ballistic missile submarines. The Navy needed continuous communication with these submarines whether they were submerged or not, and whether in transit or on station. Because the electromagnetic waves used in most radio systems do not penetrate water to any depth, a new technology was required.



This small book tells the story of the new means of communicating with submarines that the Navy developed: extremely low frequency (ELF) radio. The author, John Merrill, is an electronics engineer who formerly headed the Submarine Electromagnetics Systems Department of the Naval Underwater Systems Center in Connecticut. The book is based upon personal experience, published articles, files of the Congressional Record, and the unclassified papers of Donald Miller, long-time ELF program manager. The story is told in eight chapters, beginning with the communications challenge posed in the 1950s by the new submarines and ending with an operational system in the 1980s. Special attention is given to the environmental concerns raised by the new technology.

Available from Publishing Directions, LLC, 615 Queen Street, Southington, CT 06489, ISBN 1-928782-32-9, 96 pp., index.

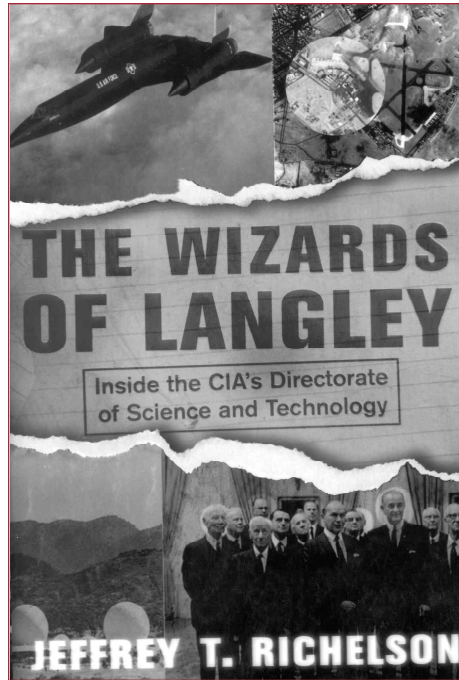
MUSSIO, LAURENCE B. *Telecom Nation: Telecommunications, Computers and Governments in Canada*, McGill-Queen's University Press, 2001.

Dr. Mussio's publication is a look into how the Canadian state navigated through an era of major technological transformation from 1942 to 1975. His in-depth research is largely based on primary sources from the National Archives of Canada, Cabinet records, provincial archives, and private sector repositories. It provides background information to contemporary public policy issues in communications by examining how governments dealt with technology, the private enterprise, consumer demand, and the public good. This detailed publication covers telecommunications, and computing both within Canada, and in an international context. It contains an extensive bibliography and statistical tables, providing a solid background and great resource for the book.

Available from McGill-Queen's University Press, Quebec City, www.mcgill.ca/mqup US\$49.95, ISBN 0-7735-2175-5, 328 pp., Illus.

RICHELSON, JEFFREY T., *The Wizards of Langley: Inside the CIA's Directorate of Science and Technology*,

Richelson's excellent and very readable book chronicles the Office of Scientific Intelligence, the research and development arm of the Central Intelligence Agency from 1948 to 2000. The stories of CIA's technological triumphs, such as the U-2 reconnaissance airplane, telemetry-monitoring equipment, and reconnaissance satellites are recounted,



along with some of its more embarrassing digressions (e.g. psychic research, implanting microphones inside living cats so they could be used as bugs). Some of the research has non-secret applications. Lithium batteries for pacemakers, and automatic change recognition technology (initially developed for analyzing

reconnaissance photographs, and now a vital tool for the detection of breast cancer) are two examples.

Overshadowing the technology, however, is the bureaucratic infighting and frequent restructuring, not only among branches of the Agency, but also between the CIA and branches of the US military. The US Air Force -- which particularly wanted operational control of the U2 and the reconnaissance satellites -- and the CIA wrangled frequently, and the disputes sometimes went all the way up to the level of the oval office.

Wizards is detailed and revealing, the product of many interviews and thorough exploration of sources (a useful list of which is included in the appendices). The reader gets a sense that much of the material must be barely or only recently declassified.

Available from Westview Press, Perseus Books Group, 11 Cambridge Center, Cambridge, MA 02142, www.westviewpress.com, vii + 353 pp., index, illus, ISBN 0-8133-6699-2 (hardcover, \$26.00). ♦

HISTORY OF POWER ENGINEERING

Those interested in the history of electric power will appreciate volume 1 of The Proceedings of the Thirty-Second Annual North American Power Symposium (23-24 October 2000, University of Waterloo, Waterloo, Canada). It contains reprints of four landmark papers in the development of electric power (a 1918 paper by Charles Fortescue, a 1926 paper by John R. Carson, a 1929 paper by Robert Park, and a 1956 paper by James Ward and Harry Hale) along with an article explaining how these four papers were selected from a list of 39 papers nominated as high-impact papers.

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http://www.ieee.org/history_center

HISTORY CENTER ARCHIVES RECEIVES COPY OF HANSON BIOGRAPHY

The IEEE History Center is pleased to acknowledge the receipt of a copy of *The Story of Malcolm Hanson*, which was privately published in 1946 based on the letters of Malcolm Hanson, one of the radio pioneers who worked with Admiral Byrd on his Antarctic expedition. Hanson also worked in the Naval Research Lab. Byrd considered Hanson



CD of Nelson Rodgers' Papers

one of the most knowledgeable persons working in radio. Adding such a source to its archives, especially in the words of one of the pioneers of radio, enhances the IEEE History Center's ability to preserve electrical engineering heritage, and make rare sources available to scholars and researchers. The History Center

gratefully acknowledges Mrs. Priscilla Hanson and H. Walcott Brown's efforts in making a copy of this source available.

Nelson Rodgers Papers

Prof. David Hodges has provided the IEEE History Center archive with a CD of 82 letters of his maternal grandfather, Nelson W. Rogers (ca. 1875-1950), a former member of AIEE.

Rogers contributed to progress in development of mercury vapor lamps and the mercury vapor rectifier, working as an assistant to Peter Cooper Hewett in New York City from 1898-1907. Rogers was listed as an inventor or co-inventor on several U.S. Patents, one of which was sold to General Electric in

about 1906 for \$600,000. (Rogers received no share of the proceeds.) Rogers' total papers amount to a few hundred pages, including letters, technical documents, drawings, and a few photos. [Editors note: The IEEE History Center is working with Prof. Hodges to locate an appropriate repository for the complete papers of this important collection].

Try Your Hand at Breaking Real ENIGMA Ciphers

For our readers looking forward to the Bletchley Park milestone, there is a superb site maintained by Tony Sale where you can try your hand at breaking real ENIGMA ciphers, as well as find out more about the history of cryptography. <http://www.codesandciphers.org.uk/anoraks/scenios.htm> ♦



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