



IEEE IEEE HISTORY CENTER

THE STATE UNIVERSITY OF NEW JERSEY
RUTGERS

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

Dear Friend of the IEEE History Center,

Almost one year ago we had the wonderful opportunity to announce that Trustee and long time *Friend*, Paul Baran, had pledged to match all donations to our *Friends* program for one year, up to a total amount of \$100,000. With the kick off of the *Friend-to-Friend Challenge* in August 2000, he promised that any gift to the IEEE History Center in the range of \$25 to \$2500 would be matched dollar for dollar, through August 2001. Paul knew that this would be a stretch for us based on our past annual solicitations, but he wanted to spur his fellow *Friends* to show that they felt as strongly as he did that the IEEE History Center is a critical part of IEEE's activities.

Your response has been overwhelming! To date we have received \$78,500 in eligible gifts. We are honored and humbled by the level of support from our *Friends*, a number of whom have been giving to us over many years. We feel that this justifies our efforts in preserving, researching, and promoting electrical and computer history, and we hope to continue to earn your trust in the future.

Even with this generosity, in a little over a month the Friend-to-Friend Challenge will come to an end and **\$21,500 in a potential gift to the Center remains unclaimed!** Please help us by rising to Paul Baran's unique challenge to make the IEEE History Center an even more vital and influential program. If you send a gift to the *Friends* program postmarked by 31 August 2001, it will have double the value. A minimum \$25 donation will be worth \$50 to us. A \$100 donation will be worth \$200. A maximum gift of \$2500 will be worth \$5000! So please, make a contribution as soon as possible, at as high a level as you are able to give. Just use the convenient form on the back of this special leaf of the newsletter, and return it in the envelope contained inside the newsletter. This time-sensitive appeal replaces our usual August solicitation, so please don't delay. You will not be hearing from us again until the IEEE dues renewal cycle, when it will be too late to take advantage of Paul's generosity!

We appreciate your past support, and we are counting on you now.

Yours sincerely,

Michael N. Geselowitz, Ph.D.

Director



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

In the last issue, I pointed to the banner of our newsletter, and our motto “Preserving, Researching, and Promoting the Legacy of Electrical Engineering and Computing.” I then went on to discuss some of our promotional activities. What I failed to mention is that when I am asked to present on the programs of the IEEE History Center, my (unavoidable) PowerPoint® slide has not three but four areas indicated by bullet points: Preservation, Research, Outreach, and Education. In other words, I have found through my day-to-day activity as director of the center that promotion has two aspects: The first is somewhat self-serving—just to get the word out; but the second is to transfer knowledge to others for their own good and that of society—to teach or educate.

In the 21st century we all face the challenges of a new social and economic world, brought about by the fundamental technological developments carried out in the 20th century by practitioners of electrical and informational sciences and technologies.

The effects of the changing nature of global telecommunications, of the generation and transmission of power, and of the penetration of computers into every aspect of life are visible every day around the world. Perhaps the greatest challenge produced by these changes is educating our young people in science and technology in our technological society. Enriching all of our children’s technical education will enable them to become more fully participatory citizens in the technological world. Encouraging careers in engineering for those young people who have the interest and ability which would make them contributing members of the profession will raise the number of engineering students, especially among groups such as women, who traditionally have been underrepresented in technological fields. Broadening the education of engineers by illuminating for them the business, economic, and social dimensions of their work will make them more

continued on back cover

Encouragement to retired engineers to write history

The distinguished telegraph engineer Willoughby Smith wrote the following in the preface to *The Rise and Extension of Submarine Telegraphy* (originally published in 1891 and reprinted in 1974) :

“For fear my hands should be considered idle, and the proverbial employment attributed to them, I have thought it advisable to be doing something. It has occurred to me that to note down some of the facts I have learned by experience in the electrical world would be employment, congenial to myself and at the same time serviceable to others.”

IEEE HISTORY CENTER

Issue 56 July 2001

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If you have been following the progress of the IEEE Virtual Museum (the VM) through this newsletter you are aware of the VM's commitment to reaching a preteen and teenage audience. If there's a teenager in your household, you're probably also aware of the way kids spend time on the Web. Chances are it's not surfing for cool science and technology sites.

Over the last few months VM staff have addressed this issue by working closely with teachers. As interesting and interactive as the site

may be, the fact is that the VM must fit into science and technology curricula if it is to reach those for whom it is intended. Teachers must find the site useful and valuable and recommend it to their students for research assignments.

In an effort to reach educators and assess their needs, VM and History Center staff have reached out to the experts. In March, staff attended the National Science Teachers Association (NSTA) convention, a meeting of more than 16,000 science educators, in St. Louis, MO. A focus group was conducted at the convention where participants (all teachers of pre-college level science/technology subjects) reviewed the site and provided feedback. The site proved a hit! Respondents repeatedly expressed interest in the combination of history and technology, something few

had seen elsewhere on the Web. Another boon was IEEE brand recognition. Of those familiar with IEEE, all felt IEEE sponsorship increased the veracity of the material as well as their willingness to recommend it to their students.

VM staff continues to work with educators in determining and fulfilling their needs. The VM is on target in meeting the history of technology portion of the Standards for Technological Literacy, which are put out by the International Technology Education Association. These standards have been adopted in at least 23 states in the United States and continue to gain advocates. Similar standards are gaining ground in Europe.

You (and your kids or grandkids!) can check out our progress by visiting <http://www.ieee.org/museum> where some samples of VM content have been posted. While there, please feel free to send us any feedback. ♦

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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Things to See and Do

Paul Bunge Prize 2002

The German Chemical Society extends an international invitation for applications for the Paul Bunge Prize 2002 of the Hans R. Jene-mann Foundation, which is administered by the German Chemical Society (Gesellschaft Deutscher Chemiker) and the German Bunsen Society for Physical Chemistry (Deutsche Bunsen-Gesellschaft für Physikalische Chemie). The 2002 award consists of 7,500 Euro and should honour outstanding publications in German, English or French in all fields of the history of scientific instruments. Besides the scientific work, applications should also include a curriculum vitae and—if available—a list of publications of the applicant. The deadline is 30 September 2001.

Applications for one's own work as well as proposals for honoring other persons' work can be submitted. The Advisory Board of the Hans R. Jenemann Foundation will decide the prize-winner. The awarding will be on 10 May 2002, on the occasion of the Annual Meeting of the German Bunsen Society for Physical Chemistry in Potsdam (Germany).

The prize is named after the most important designer of analytical, assay, and high-performance precision balances in the second half of the 19th century, Paul Bunge. Information for applicants is available at the German Chemical Society, Public Relations Depart-

continued on next page

Surf City

The Underwater Web Cabling the Sea

This web site is well done and a complement to a Smithsonian Libraries Exhibition, Behring Center at the National Museum of American History. The exhibit commemorates the 150th anniversary of the first successful undersea cable. *"A century and a half ago, the world suddenly became smaller when an underwater telegraph cable joined two nations divided by the sea. From that first link, a vast web spread across the globe."* <http://www.sil.si.edu/exhibitions/underwater-web/>

A Sightseer's Guide to Engineering

Designed by the National Society of Professional Engineers for National Engineers Week 2001, this guide provides a list of engineering sites of interest within the United States. This was a collaborative effort among numerous engineering societies and covers all disciplines of engineering. <http://www.engineeringsights.org/>

Heinz Nixdorf Museums Forum

This Museum, located in Paderborn, Germany, professes to be the largest computer museum in the world. Its web site is a wealth of information

on computing, workplace modernization, and inventors. It was named for Heinz Nixdorf, who founded Nixdorf Computer AG in 1952, which, under his management, was to become the fourth largest computer company in Europe. http://www.hnf.de/index_en.html

ECHOES

The History Center web site maintains a threaded bulletin board, ECHOES.

This is a forum for members and non-members to post messages on relevant topics—to ask questions about historic topics; to advertise old technical journals for donation, to discuss museums you have been to or books you have liked, or to acquire a missing artifact. We invite you to review and contribute to queries and discussions. http://www.ieee.org/organizations/history_center/board/board.html ♦

Mystery Photo Challenge

The IEEE History Center maintains an image archive of more than 2,800 images. From time to time, images are donated without specific identification. Can you help us identify this image? We are looking for details of the purpose of equipment, manufacturer, year, names of engineers, etc. The IEEE History Center now has a webpage which features one photograph per 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.html



Things to See and Do

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ment, P.O. Box 900440, D-60444 Frankfurt am Main, phone +49 69/7917-325, fax +49 69/7917-322, e-mail pr@gdch.de.

The Advisory Board is also pleased to announce that the winner of the 2001 Paul Bunge Prize is Dr. Jim Bennett from the Museum of the History of Science, Oxford (Great Britain). The prize will be presented on 25 September 2001, in Wurzburg (Germany) on the occasion of the Annual Meeting of the German Chemical Society (Gesellschaft Deutscher Chemiker).

Conference on History of the Lightning Rod

A Conference on the history of the lightning rod will be held 4-6 November 2002 at the Bakken Library and

Museum in Minneapolis, MN, USA. Scholars from all fields should email a brief description of their intended talk to: aliver.hochadel@univie.ac.at or peter.heering@uni-oldenburg.de by 31 July 2001.

Bibliography on "Electricity in Life" Now Available on Bakken Web Site

The Bakken Library has published on its web site a bibliography of 760 secondary works relating to the history of electricity in medicine and the life sciences. Included subjects are: histories of electrotherapeutics, electrophysiology, electrocardiology, bioelectricity, electrodiagnosis, galvanosurgery, and electroencephalography. Regular updates are planned, and scholars are encouraged to contribute additional citations via an email link. "Electricity in Life" may be accessed via the "Research" page of the Bakken's web site: <http://www.thebakken.org>. ♦

Bibliography

BURNS, RUSSELL, *John Logie Baird, Television Pioneer*, Institution of Electrical Engineers, 2000.

One of the most important pioneers of television, John Logie Baird, was born in Scotland in 1888, received a technical education and set up several businesses in the years from 1917 to 1923. It was in the latter year that, as an independent inventor, he began working full time on an electromechanical means of television. Success came on 2 October 1925, when he televised an imperfect image of a person. Earlier attempts at television had produced only crude shadows; with Baird's system there was tone gradation in the image. On 26 January 1926 Baird demonstrated his rudimentary system to members of the Royal Institution. Over the next decade and a half, Baird continued to improve his system, and some early broadcasts of the British Broadcasting Corporation used it, but in 1937 the BBC elected to use exclusively the all-electronic system of the Marconi EMI company.

Burns' book is a detailed account of Baird's efforts, often telling of his activities from day to day. It is based largely on primary source materials, some of them not heretofore available. Though subordinate to the technological story, the personal life and the character of Baird are also described. The book is carefully documented—many chapters have technical notes appended—and well illustrated.

Available from the Institution of Electrical Engineers, Michael Faraday House, Six Hills Way, Stevenage, Herts, SG1 2AY, United Kingdom; hardcover, ISBN 0 85296 797 7; xxv + 417 pp., index.

MCLEAN, DONALD F. *Restoring Baird's Image*, The Institution of Electrical Engineers, 2000.

Author Donald McLean tells the story of television from its beginnings to the present day, focussing on the work of John Logie Baird, the Scottish inventor of a "mechanical" television broadcasting system based on the Nipkow disk. McLean focuses on the recordings that Baird made of some of his television images, which are apparently the first such recordings ever made. Several of his recordings survive on phonograph records made by the inventor and by amateurs who recorded broadcasts off-the-air, making these the oldest extant television images. While his contributions to television technology are largely forgotten today, by making these recordings he preserved a prominent place for himself in history, capturing the earliest memories of an inherently ephemeral medium.

Engineers in England attempted to use analog techniques to play the Baird video discs from the 1960s on,

but success did not come until digital signal processing techniques and the PC became available. The author details the process by which the conversion to digital format was made and the videos cleaned up for reproduction. A compendium of information on the technical aspects of Baird's work, this book also does a fine job of explaining how it all worked, and why it did not work better.

Available from the Institution of Electrical Engineers, Michael Faraday House, Six Hills Way, Stevenage, Herts, SG1 2AY, United Kingdom; Harcover, ISBN 0 85296 795 0; xx + 295 pp., index.

GREATBATCH, WILSON, *The Making of the Pacemaker: Celebrating a Lifesaving Invention*, Prometheus Books, 2000.

This publication commemorates the 40 years since the first implantable pacemaker. The original manuscript was published privately in 1983, the 25th anniversary of that pacemaker. Greatbatch has updated some of the text, while adding information on a few new technologies, such as nuclear fusion. This book takes the reader systematically through the processes of developing the pacemaker, highlighting both the triumphs and defeats. He covers such topics as electrodes and leads, power sources and sterilization. The 12-chapter book contains numerous charts and figures illustrating experimentation. One of the pleasures of this book are the "The Way It Was" pieces which are scattered throughout the book. The book is well documented and contains "For Further Reading" sections at the end of each chapter. Although it is written by an engineer using technical terms, Greatbatch's style also allows the novice to understand the process. This publication is an excellent resource on the development of the pacemaker, not only by Greatbatch, but also by other engineers, e.g., Earl Bakken at Medtronic.

Available from the Amazon.com; hardcover, ISBN 1-57392-806-2; 260 pp., index.

JEPSEN, THOMAS C., *My Sisters Telegraphic: Women in the Telegraph Office, 1846-1950*, Ohio University Press, 2000.

Thomas Jepsen's book is an enjoyable history of the role women have played in the telegraph industry in the 19th and early 20th centuries. Although much of this book focuses on the U.S. telegraph industry, Jepsen broadens his discussion to include women operators in Europe and Latin America. IEEE members who are interested in the history of telecommunications will find that this book offers an engrossing history both of the telegraph industry and the women telegraphers who made it work efficiently.



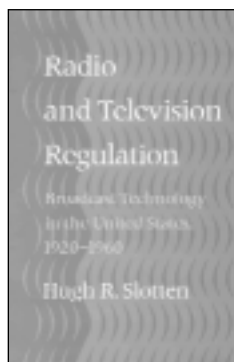
Jepsen tackles two important and related questions. First, he investigates why historians have been slow to acknowledge the presence of women in the telegraph industry, despite their importance and numbers. He finds that this gap existed partly because of “methodological, if not ideological, bias on the part of business and labor historians” (p. 197), who have typically ignored or downplayed the role of women in these areas. However, since the 1970s historians have rediscovered the presence of women in technology and the workplace, and Jepsen carries this rediscovery forward in his own work.

Second, Jepsen explores what the history of women telegraphers can tell us about gender relations in high-tech work. He finds striking similarities between telegraphing and computer programming: “One can think of the telegraphers’ instruments as ‘hardware’ and Morse code as ‘software.’ The telegrapher’s work, like that of a modern computer programmer, consisted of translating English-language instructions into machine-readable codes” (p. 195).

Jepsen concludes that “rediscovering the history of women in telegraphy serves a dual purpose: not only does it illuminate a little-understood area of nineteenth-century women’s work, it also gives us a deep historical perspective on the role of women in technology and how women in the past have sought to gain control over their professional lives and recognition in their fields. We can better understand the future by reclaiming the past” (p. 201).

Available from Amazon.com, paperback, ISBN 0-8214-1344-9, 231 pp., index.

SLOTTEN, HUGH, *Radio and Television Regulation: Broadcast Technology in the United States 1920-1960*, John Hopkins, 2000



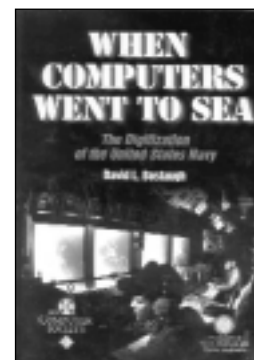
Hugh Slotten, a postdoctoral fellow in history at Harvard, has explored the public debates surrounding the adoption of several broadcasting technologies, including AM and FM radio and black-and-white and color television in the U.S. Federal agencies most concerned with their regulation, beginning with the Federal Radio Commission in 1927 and continuing to the Federal Communications Commission of the 1930s to the 1960s.

Slotten explores the complex relationships between government and industry, the importance of key individuals in the government, and the influence of political ideologies as they related to policy formation at the dawn of broadcasting. He reveals much about the creation of the “regulatory state” which defined the communications industries in the 20th century. Chapter one treats the formative years of the radio industry and the creation of the first federal regulatory agencies, focusing

on the role of engineer and future president Herbert Hoover in the process. Slotten shows how regulation contributed to the stunning commercial success of broadcasting and radio networks, despite the Great Depression. Some readers may be surprised to learn that television was being touted as the “next big thing” even in the 1920s, and Slotten analyzes the way TV regulatory policy emerged well before the technology itself was ready for deployment. By the time television re-emerged after being delayed by the Depression and World War II, the FCC had grown aware that the technical expertise needed to make informed regulatory decisions often relied on uncertain, incomplete, or highly biased knowledge. This, and the fact that the agency was now less likely than ever to make decisions which would threaten entrenched commercial interests, led them to delay the introduction of UHF television, limiting its success as a competitor to VHF (channels 2-13). By about 1950, the FCC had hired its own technical expertise and was less likely to rely on the opinions of (presumably biased) industry personnel. This was a key factor in the decision to reverse an early ruling that promoted the color TV system invented at CBS, which used a large, rotating disk fitted with color filters. The FCC now pushed for a color standard more in keeping with its new face: a standard which protected entrenched interests in the black-and-white TV field (the new color standard was backward-compatible with black-and-white) while promoting what was seen as the next logical step in TV technology. The resulting color standard, while criticized today as obsolete, nonetheless stood the test of time for half a century. Slotten’s work is a well-researched yet brief survey of a complex subject, and it should be read by those interested in the ways that federal agencies simultaneously nurture and reign in new communications technologies.

Available from Johns Hopkins University Press, ISBN 0-8018-6450-X (hardcover) 328 pp.

BOSLAUGH, DAVID L., *When Computers Went to Sea: The Digitization of the United States Navy*, IEEE Computer Society Press, Los Alamitos, 1999.



How did the United States Navy, in just a few years, move from an attitude of “Not on my ship!”—or even more stridently, “No damned computer is going to tell me what to do”—to accept, and eventually to embrace, the use of digital technology in shipboard operations?

Boslaugh argues that the principal reason for the success of the Naval Tactical Data Systems (NTDS) initiative was strong support from a select group of highly-placed

continued on next page

naval officials, even as the majority of officers opposed the new technology with every tactic short of sabotage. It is in these chronicles of human interaction—for example, Lieutenant Erick Swenson’s procurement of the USS *Oriskany* as an NTDS test ship, made possible by Swenson’s giving a senior admiral a ride back to his hotel after a navy wedding—that the book is strongest, revealing the contingencies, contestations and coincidences which shape a rather complicated and conflicted history.

But this book is no microhistory, either. Indeed, World War II and the Vietnam conflict form the bookends of Boslaugh’s account, and this most basic of imperatives runs throughout the book, from radar pioneer Irvin McNally’s posting to Pearl Harbor just a few weeks before the attack, to the developments in computer technology occasioned by the need to break German codes. Though the Cold War itself receives little attention, the early success of digital technology in Vietnam made possible later developments in weapons control and other tactical systems. NTDS ultimately succeeded because it worked; whatever their initial hostility, once they had seen the new technology in action, naval commanders’ most pressing question became when they were going to get more and better computers.

Finally, *When Computers Went to Sea* has much to tell us about the important role of the military in the development of computer technology in general—a role that we are only beginning to appreciate with the increasing presence of the Internet (a military innovation) in our daily lives. This richly detailed yet readable account should find a wide audience among those interested in military technology, the development of the computer industry, and recent U.S. history.

Available from the IEEE Computer Society Press, Customer Service Center, 10662 Los Vaqueros Circle, P.O. Box 3014, Los Alamitos, CA, 90270-1314; (714) 821-8380; fax (714) 821-4641; hardcover, ISBN 0-7695-0024-2; xxiv + 467 pp., index.

Staff Activities

Former IEEE History Center Intern Max Likin wins Chateaubriand Fellowship

Max Likin, who was a GA at the IEEE History Center in 2000, and also the Life Members Summer Intern, has just been awarded a Chateaubriand Fellowship, a program offered by the Office for Science and Technology of the Embassy of France in the United States. Every year, it permits more than 25 American students - PhD students or graduates - to conduct research in a French laboratory (public or private) for a 6 to 12 month period. Several of these fellowships are co-sponsored by French companies. ♦

TAKAGI, MAKOTO, *Wagakuni suiryoku hatsuden, denki tetsudou no rutsu: anata ha Devereaux shi wo shitte imasuka? (The Root of Hydroelectric Generation and Electric Railroad in Japan: Do You Know the Kindness of Mr. Devereaux?)*, Kamogawa Publishing Company, 2000.



The author offers a biography of his grandfather, Bunpei Takagi, an entrepreneur who worked for the industrialization and electrification of Kyoto, Japan’s ancient capital, after the Meiji Revolution. The author provides a story of Bunpei’s effort for the establishment of the first hydroelectric generator in Japan and the contributions of J. Henry Devereaux, a manager of the Roaring Fork Electric Light and Power Co., to its construction.

Part One, entitled “Aspen – Visit to the Birth Place of the Hydroelectric Generation”, focuses on Bunpei’s visit to the United States with Sakurou Tanabe, an engineer, in 1888. Their original purpose was to learn about the utilization of the drainage of Lake Biwa. During their stay in the United States, they realized the opportunities offered by hydroelectric generation and met Devereaux, who had begun constructing the Roaring Fork power station in Colorado. Devereaux generously provided technical information to Tanabe, who constructed the first hydro-power station in Japan at Keage, along the Drainage in 1891.

Part Two, “To Be a Best Citizen in Japan,” is a biographical story of Bunpei. Takagi was a major family at Kamiyoshi, now a part of Kyoto prefecture, and had been allowed to be a part of the ruling warrior class since the time of Bunpei’s grandfather. After the Meiji Revolution, Bunpei went out to Kyoto and worked for its industrialization. Adding to the construction of the Drainage of Lake Biwa, Bunpei became the first president of the Kyoto Commercial Chamber; established a trading company; and became one of the establishing members of Kyoto’s electric street car company, which was the first in Japan for commercial purposes. At the end of his life, Bunpei was working for construction of a hydro-power station at Uji, south of Kyoto. Thus, Bunpei’s efforts for Kyoto’s industrialization are focused on electrification.

The author calls Bunpei a “rural ex-warrior” on several occasions, but Bunpei’s story reminds the reviewer of the roles of “a man of high reputation in the regions” in Meiji Japan. In any case, the author succeeds in putting his grandfather’s story in the context of Meiji Japan’s efforts for national enrichment and security. He shows a personal story of Japan’s industrialization and electrification in that era.

Available from Kamogawa Publishing, Kyoto, 207 pp. ♦

PARTNERS OF THE IEEE HISTORY CENTER

Last issue's list of Partners inadvertently misclassified a few of our donors. We apologize for any inconvenience, but this turn of events also gives us an opportunity to reintroduce our Partnership Program. Our Friends Program, which is emphasized on the cover of this issue because of our current Friend-to-Friend Challenge, is for annual gifts of \$25 to \$2,499 which are used largely for the History Center's operating budget. The Partnership Program is for one-time pledges of \$2,500 or more which can be paid in up to five annual installments. The purpose of the Partnership Program is to raise an endowment for the History Center, which will ensure the ability of the Center to carry out its minimum operations independent of the rise and fall of other sources of revenue, and will permit it to undertake long-range planning and therefore to retain top-quality professional staff.

The Trustees of the IEEE History Center are a group of distinguished individuals appointed by the IEEE Foundation to oversee the fundraising activities of the Center [see masthead, page 2]. The Trustees have long felt that an endowment of \$10 million was necessary for the long-term stability of the Center. They have now set themselves a goal of reaching this \$10 million target by the end of 2005. So, when you are considering giving a donation to our Friends Program, you may also want to think about becoming a Partner if that is appropriate for you.

In the meanwhile, here is the list of our current partners (observant long-time readers will note that the Trustees have adjusted the names of some of the categories of giving, to mirror more closely those of the overall IEEE Foundation):

Founding Partners (\$500,000 or more)

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IEEE Foundation

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IEEE Communications Society

IEEE Life Members Committee

Harold W. Lord

IEEE Microwave Theory and Techniques Society

IEEE Power Engineering Society

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 Joseph Keithley*
 Nippon Telegraph and Telephone Corporation (NTT)

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Earl Bakken	NEC
John Bryant*	Jun-ichi Nishizawa
Central Japan Railroad	Thomas F. Peterson, Jr.
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Electro-Mechanics Company	Tokyo Electric Power Company
GE Yokogawa Medical Systems, Ltd.	Topol Family Fund at the Boston Foundation
Hitachi, Ltd	Toshiba Corporation
IEEE Antennas and Propagation Society	Rudolf A. Wassmer
IEEE Denver Section	Yokogawa Electric Company

* deceased

Center Activities

This Makes It All Worthwhile!

The History Center web site currently has more than 175 Oral History transcripts online. We are fortunate to have interviews of such luminaries as Ross Aiken, Thelma Estrin, Robert Galvin, and Jan Rajchman, just to name a few. In May we received an email from an eighth grade student asking permission to use quotes from the Vint Cerf Oral History. We were pleased to provide permission to Lindsay Schramm, with a request that she cite the oral history. We also asked her to let us know how she fared on her paper.

We are happy to report that Ms. Schramm won first place in both

the local and state division for the National History Day contest. Her paper is entitled "The Invention of the Advanced Research Projects Agency Network and Major Milestones in the Development of the Internet: A New Frontier Covering 1957-1994". She traveled to Washington, DC, USA to compete in the National in mid-June. Congratulations Lindsay!

IEEE History Center acquires *A History of JETS*

Among the interesting primary source materials which the Center has recently acquired, we are pleased to report that we have been

donated a copy of *A History of JETS: Junior Engineering Technical Society 1950-1986*.

2001-2002 IEEE Life Members Fellowship in Electrical and Computing History

This year's Fellowship in Electrical and Computing History has been awarded to **Cyrus Mody**, whose research is on "Scanning Probe Microscopy: The Genesis and Development of Tools and Practices in Engineering Science, 1970-2000." Cyrus Mody earned his A.B. in engineering science from Harvard University and is pursuing graduate studies at Cornell University. ♦

IEEE HISTORY CENTER

Donation and Pledge Form

Friends Program Giving Categories

Friend	\$25 - \$99
Sustaining Friend	\$100 - \$249
Senior Friend	\$250 - \$999
Patron	\$1000 - \$2,499

Please indicate amount of contribution
(Contributions of any size are greatly appreciated) \$ _____

Through August 2001, the "Friend-to Friend History Challenge Match supported by Trustee of the IEEE History Center Paul Baran will match, dollar for dollar, all gifts to the Friends Program to a grand total of \$100,000.

Partnership Program Giving Categories

Associate	\$2,500 - \$9,999
Partner	\$10,000 - \$24,999
Senior Partner	\$25,000 - \$49,999
Distinguished Partner	\$50,000 - \$99,999
Keystone Partner	\$100,000 - \$499,999
Founding Partner	\$500,000 or more

I pledge to contribute \$ _____ over 5 years

Enclosed is a payment of \$ _____ towards that pledge

Payment

Check (please make check or money order payable to "IEEE Foundation-Friends Fund ")

Money Order

Credit Card

American Express

Master Card

Visa

Diners Club

Card Number _____ Expiration Date _____

Signature _____

Name _____

Address _____

IEEE Number (if applicable) _____

Please return to:

IEEE Development Office

445 Hoes Lane

PO Box 1331

Piscataway, NJ 08855-9970

fax: +1 732 981 9515

Further Information

Please check below to receive information about one or more of the alternate methods for contributing to the Center

- Payment by bank transfer (for donations of \$2,500 or more)
- Payment in other forms (equities, bonds, etc.)
- Writing the Center into your will

Static from the Director

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aware and productive contributors to society. These educational issues can only become more important to the IEEE History Center and to IEEE as a whole. This is why the IEEE Educational Activities Department has increased its activities over the past couple years and opened a new front on the pre-college side (see <http://www.ieee.org/organizations/eab/index.htm>), and why the IEEE History Center staff were moved administratively into Education Activities in 1999.

Of course, all of our program activities overlap and interact. For example, the ever expanding Milestones Program is mainly conceived of as an outreach activity. We reach out to the IEEE Sections to get them inter-

ested in their own legacy, and they in turn are able to reach out to their local communities, to increase awareness of the importance of engineering and engineers to society. In carrying out the nomination process, however, the Sections are often called upon to do research, with which we of course assist them. At other times, individuals have used IEEE Milestone nominations to aid them in their efforts to preserve the local engineering heritage. I think it is safe to say, though, that outreach and education overlap the most (which is why they were originally thought of as one). To teach people about something one must first make them aware of it and its importance, and in making people aware you necessarily convey useful information.

Our formal education programs,

such as our teaching and service and Rutgers University or the IEEE Fellowship in Electrical History [see page 8], have been concentrated on the collegiate level. I am also happy to point out that we have often been able to serve the pre-college community through our reference service [see for example "This makes it all worthwhile" on page 8]. Now, as has been reported in previous issues, our pre-college initiatives will acquire a formal component, the IEEE Virtual Museum, which should become the focus of all of our pre-college activities. These are very exciting times for us. We appreciate all the support that you, our Friends and Partners, have shown in the past, and we look forward to continuing to work with you in the future on these important issues. The IEEE Virtual Museum will launch in early 2002; see the story on page 2. ♦



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