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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 we all know from "Millennial Fever," modern society does love anniversaries in multiples of 10, 100, etc. I therefore cannot let it pass without comment that this is the 50th newsletter to be published by the IEEE History Center.Issue #1 was published in October 1982, less than two years after the Center was established as the IEEE Center for the History of Electrical Engineering. A glance at the cover of that premier issue [see photo below] reveals a focus on the celebration of the IEEE's centennial, then two years away, and on exhibits. The Center has undergone shifts in focus over the years, moving to Rutgers in 1990 and changing its name to the IEEE History Center in 1998, but the general trend has been toward taking on increasing activities and functions. We still plan exhibits, but we also plan conferences, provide reference services, teach classes, maintain a Web site, conduct and publish scholarly research, and so forth: Whatever is necessary to help preserve, research, and promote the history of IEEE, its predecessor organizations, and their technical fields of interest.


IEEE CENTER FOR THE HISTORY OF ELECTRICAL ENGINEERING

If there is a new trend as we approach the year 2000, the new century/millennium (and 20th anniversary of the IEEE History Center!), I think readers of recent newsletters will agree it is increased interaction with the IEEE Technical Societies. On the heels of our successful IEEE Signal Processing Society (SPS) Project, managed by Senior Research Historian Frederik Nebeker, we are undertaking similar research projects for five other societies [see box at right]. In addition, the Center has just published the second of its monographs on the recent history of IEEE technologies (on the heels of Nebeker's *Signal Processing: The Emergence of a Discipline 1948 to 1998*), Research Historian David Morton's *A History of Electronic Entertainment Since 1945*. This volume drew on the cooperation of both the IEEE Consumer Electronics Society, celebrating its 50th anniversary this year, and the IEEE Broadcast Society, the second Technical Society, which celebrated its 50th anniversary last year, along with SPS [see page 2]. Out of this work Morton also produced an exhibit at the IEEE Operations Center in Piscataway, "Fifty Years of Broadcast Technology." The positive reception of that exhibit, as well as the previous "Fifty Years of Signal Processing"

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IEEE HISTORY CENTER

Issue 50 July 1999

CENTER WORKS WITH IEEE TECHNICAL SOCIETIES

The proliferation of electrical and computing technologies following World War II caused the Institute of Radio Engineers (IRE) to establish a system of Professional Groups to better serve members with increasingly diverse technical interests. The first two, the Audio Group and the Broadcast Group, formed in 1948. By late 1949 there were already seven such groups, and by late 1952 there were 19. With the merger between IRE and the American Institute of Electrical Engineers (AIEE) forming IEEE in 1963, the Professional Groups have continued as IEEE Technical Societies, the IEEE Signal Processing Society (SPS) for example descending from the Audio Group, while the Broadcast Group in a way led to both the IEEE Broadcast Technology Society and the IEEE Consumer Electronics Society (see page 2. This means that over the next four years there are almost 20 Societies that have an opportunity to celebrate their 50th anniversary. Societies can choose to celebrate in a variety of ways, and may wish to call upon the IEEE History Center in different capacities and at different levels of involvement. As mentioned in "Static from the Director," there have so far been one major project (SPS) and a number of smaller initiatives. Now the Center has entered in arrangement with five different Technical Societies to prepare materials for their anniversaries in 2000 through 2002. As with SPS, the projects are funded by grants from the Societies, with the IEEE History Center supplying a number of in-kind services for free.

In 2000, the **IEEE Aerospace and Electronic Systems Society** will be celebrating its 50th anniversary, and we will be working with them to prepare a text and photo exhibit on the history of their Society which can travel to various venues. We will be doing likewise for

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Staff Notes

Fellowship in Electrical History

Dr. Atsushi Akera has been awarded the 1999-2000 IEEE Fellowship in Electrical History. Akera has studied the relationship and tensions between technical developments and different disciplinary and institutional objectives. His dissertation was on the history of scientific and engineering computing since the end of World War II, and examined industrial and government funding, procurement, and the professionalization of computer engineers, scientists, and programmers.

Here's a Switch: Electrical Engineering Helps "Build Bridges"

This past academic semester, Center Director **Michael Geselowitz** was invited to attend a symposium on feminist science studies at Rutgers University entitled "Building Bridges." Rutgers, especially its Douglass College unit, is very concerned with issues of "women *in* science and engineering" and "women *and* science and engineering." The symposium was attended by a number of faculty from diverse disciplines, who engaged in lively and productive conversation about both these issues. Geselowitz was there as a representative of both engineering and history, and was also invited to a number of follow-up workshops. As a result, Rutgers University will be actively represented at the "Women and Technology" conference in July (ISTAS '99), of which the IEEE History Center is a technical cosponsor. ♦

Life Fellow Summer Intern

Günther Luxbacher, from the Lehrstuhl fur Geschichte der Technik in Aachen, Germany will be joining the History Center in July as the 1999 Life Fellow Summer Intern. While in the United States, Günther will be researching sources at the Hall of History, Schenectady, the Edison Papers, New Brunswick, the Corning Glass Archive, New York, and Osram Sylvania, Danvers.

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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Center Activities

Latest Center Monograph Published

The year 1999 is the 50th anniversary of the IEEE Consumer Electronics Society, and also marks the publication of the second of the IEEE History Center's monographs on the recent history of electrical engineering and computing: *A History of Electronic Entertainment Since 1945* by Center Research Historian David Morton. In the book, Morton discusses radio broadcasting, television broadcasting, high fidelity home sound equipment, the entertainment electronics revolution, and the eventual diversification and growth of home entertainment systems in a global setting. As Morton documents, soon after World War II there was a spectacular growth in many countries of FM broadcasting and then television broadcasting. A little later the development of recording technology led to a greater focus on home systems, and an explosion in the home entertainment electronics, with even computers eventually being brought into the mix. The effects of these home systems on our society are of course front page news these days, so the monograph comes at an opportune time.

It is also interesting to note the way these developments impacted professional engineers. The original growth in broadcasting led to the formation of two Professional Groups within the Institute of Radio Engineers (IRE), the first on Broadcasting, followed soon thereafter by one on Broadcast and Television Receivers. The development of home-based systems caused each Group to take on an increasingly greater interest in consumer electronics, until they merged (after various name changes each) to form the IEEE Broadcast, Cable, and Consumer Electronics Society in 1975 (IEEE had become the successor to IRE when IRE merged with the American Institute of Electrical Engineers in 1963). Ironically the subsequent explosion in home entertainment systems caused the Society to redivide in 1982 but along the new lines: Two new IEEE Technical Societies were born, the Broadcast Technology Society to cover all aspects of broadcasting that originally needed two separate Professional Groups, and the much larger Consumer Electronics Society, to deal with all of the new consumer technologies. The shift in focus was complete.

Those interested in purchasing the new monograph, or any other IEEE History Center publications, should visit the Center's Web site at http://www.ieee.org/history_center.

Center Activities

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The Mother-Load Has Finally Arrived!!!

19 March 1999 marked a milestone in the history of our Center. It was on that fateful Friday, late in the afternoon that our new computers were delivered to the Center. And in just a few days, thanks to outstanding efforts by IEEE IT staff, all the computers were hooked up and networked. We now leave behind our old Macintosh computers and enter the world of PC's and Microsoft Office (do you think a kind word about Microsoft products here will get us a donation from Bill Gates?)

The Center had been using Mac's since it first started using computers. But that lead to some problems and frustrations when we tried to communicate with the rest of the world. The simple act today of receiving an email message with an attached document took a very long time to download due to the Internet connection we had. Now we have a frame relay connection and are directly linked to the IEEE Operations Center in Piscataway, NJ, which is just a few miles away.

Our new computers arrived — and they're bigger than the house!

Accessing a web site is now no longer a opportunity to take a coffee break while the page uploads, and our Pagemaster can update the web site from the History Center, instead of traveling back to Piscataway. Please visit out site at **www.ieee.org/history_center**

Of course, this has also posed some challenges to the staff. For one thing, all our documents are Mac and must be converted to Word documents. We also maintain a number of databases, also in Mac format. The conversion of these is an adventure in itself. We hope to have all of the data bases converted by the end of the year. And of course, while all this conversion is taking place, we all have two computers to contend with on our desks (some of the luckier ones have three!)

We are certain that these new computers will lead to better services for IEEE members and the History Center is now ready for the new Millennium!!! (Yes, we are Y2K compliant!).

Rutgers Courses

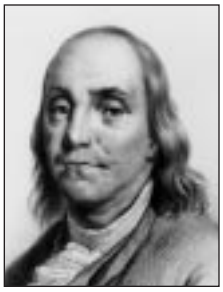
David Hochfelder, our postdoctoral researcher, taught "The Electric Century" this spring. The course focused on three topics: communications in the 19th century, electrification between 1880 and 1940, and television as a mass medium. Hochfelder will also be teaching "The Civil War and Reconstruction" this summer, and "Technology and Society in America" this fall. Frederik Nebeker, senior research historian, is also teaching Technology and Society in America this summer. In the fall Mike Geselowitz, the Center's director, is slated to teach "Introduction to Science, Technology, and Society", a course which he designed and taught for the first time last year.

Broadcast Technology Society Celebrates its 50th Anniversary.

In 1999, the IEEE Broadcast Technology Society is celebrating its 50th anniversary. To mark the occasion, IEEE History Center Research Historian David Morton has produced an exhibit, which is currently housed in the display case in the meeting area of the IEEE Operations Center in Piscataway. The exhibit touches on some of the highlights in broadcast electronics since 1945, emphasizing the connections between engineering and the broader social and economic context. Network radio broadcasting, for example, declined in importance after 1945, but engineers faced new challenges. The onset of the cold war led to the establishment of an important new system of emergency communications—the famous "this is only a test" announcement was part of it. The decline of radio was overshadowed by the meteoric rise of television. TV presented broadcast engineers with many new challenges, as broadcasters worldwide established this new system of communication in the space of a few short years. The artifacts for the exhibit were provided by Mike Feher of Howell, N.J, and include an Emergency Broadcasting System transceiver for use on ham frequencies, an example of a radio receiver with marks on the dial to indicate EBS stations, as well as an "Image Orthicon" tube used as a pickup in television cameras (and the inspiration for the name of the "Emmy" award). ♦

Things to See and Do

Franklin and His Colleagues



Benjamin Franklin

The United States Portrait Gallery in Washington, DC has mounted an exhibition of portraits and 18th century scientific instruments celebrating Benjamin Franklin and his scientific colleagues. The portraits of scientific pioneers such as the balloonist John Jeffries (and the barometer he carried on his 1785 flight over the English Channel), astronomer John Winthrop, and Thomas Jefferson are on display, accompanied by instruments of the period. Included is an electrostatic generator similar to the one shown in an engraving of Jefferson. The exhibit runs through 6 September, 1999.

Historic Electronics at Baltimore-Washington International Airport

The Historic Electronics Museum of Baltimore has installed an exhibit of historic electronics in a display case inside the entrance to Pier B at BWI airport. Photographs and artifacts pertaining to Radar, Computers, Space, and other fields of electronics will be on display through December, 1999. For more information on the museum itself, we recommend their web site at: **http://www.erols.com/radarmus**

Shoreline Trolley Museum Restores Earliest Known Sprague Motor

The Shore Line Trolley Museum in New Haven, CT has opened a new exhibit: *Frank J. Sprague: Inventor, Scientist, Engineer.* The centerpiece of the exhibit is the earliest known surviving Sprague motor (circa 1884), and which has now

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Things to See and Do *continued from page 3*

been restored to operating condition. The museum, established in 1945, is the oldest operating railway museum in the United States. **http://www.bera.org**

Edison House in Louisville, KY

The only surviving house of the three where Edison boarded when he lived in Louisville just after the Civil War is open as a museum. The collection contains some of his inventions, including a dictaphone, kinetoscope, wax-cylinder and disc phonographs, and prototype incandescent bulbs. **+1 504.585.5247**

More of Our Favorite Websites:

(a random selection of staff favorites. Be sure to check the History Center's "Related Sites" list at: **http://www.ieee.org/history_center/related_sites.html** as we are always adding new ones.)

American Memory Project – Images from maps, letters, documents, engravings, etc. in the collection of the Library of Congress. Want to see Jefferson's letters? Bell's sketch of a telephone? They're here. **http://memory.loc.gov/ammem/amhome.html**

Australian Science Archives Project – A well-organized, searchable site containing information on more than 3,000 Australian scientists and technologists. **http://www.asap.unimelb.edu.au**

Museu Virtual da Informatica – Portuguese site on the history of information storage and transmission, from the invention of writing to the Mac. Good graphics and overview. **http://piano.dsi.uminho.pt/ museuv/**

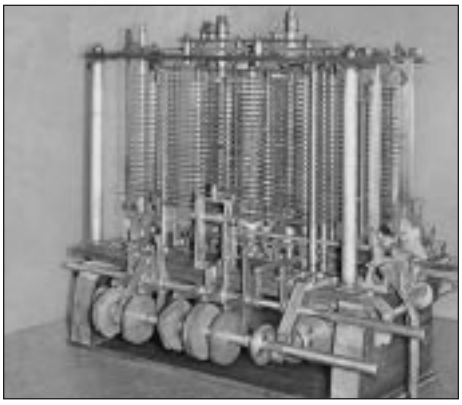
Virtual Computer History Museum – Year by year history, with images, of computer development. **http://video.cs.vt.edu:90/history**

Movie About Augusta Ada King, Countess of Lovelace

It is not often that figures from the history of electrical technologies are the subjects of feature films. About 60 years ago there were three such films: "The Story of Alexander Graham Bell" (1939), starring Don Ameche; "Young Tom Edison" (1940), starring Mickey Rooney; and "Edison the Man" (1940), starring Spencer Tracy. There was the 1980 film from Yugoslavia "Tajna Nikole Tesle" ("The Secret Life of Nikola Tesla"). More recent are two made-for-television movies: "Alexander Bell: The Sound and the Silence" (1993) and "Breaking the Code" (1996), with Derek Jacobi playing Alan Turing. To this short list may be added "Conceiving Ada" (1997), written and directed by Lynn Hershmann-Leeson.

Ada Byron, the daughter of the famous poet, was born in 1816. Her marriage to William King gave her not only a new surname, but also the titles Countess of Lovelace and Baroness Wentworth (thus making it difficult to predict where her entry will be placed in alphabetical reference works). She showed mathematical talent at an early age and studied with the famous mathematician Augustus De Morgan. In 1833 she heard a lecture on Charles Babbage's calculating machines and became fascinated with the subject of automatic calculation. She formed a lasting friendship with Babbage, collaborated with him, and explained his work to others. Because of her published description of how Babbage's Analytical Engine might compute Bernoulli numbers, she is sometimes considered the first computer programmer.

The movie uses the literary device of parallel lives, together with the science-fiction device of time travel, in an attempt to make the personality and experiences of Ada Lovelace interesting to a late-20th-century audience. Emmy Coer (played by Francesca Faridany) is a computer programmer today. By tapping into still-resonating information waves, she reaches Ada's world. There we see Ada (played by Tilda Swinton) frustrated by an arranged marriage and social expectations. Emmy has a similar problem: she is pregnant and her boyfriend very much wants them to have the child, but she is mainly interested in her work. Karen Black plays both Emmy's mother and Ada's mother (reinforcing the parallel-lives device), and an infirm Timothy Leary (he died not long after the film was made) plays Emmy's mentor. Emmy manages to communicate with Ada, and viewers learn something about Ada's life and (purported) views. A history buff, however, may complain that the movie seems to deal more with Emmy's life than Ada's.



Charles Babbage's Analytical Engine

Nebeker at the Evolution of Modern Electronics Symposium

Three organization — the Newcomen Society, the IEE history committee, and the Centre for the History of Defense Electronics — sponsored a well-attended one-day conference on the history of electronics at Imperial College in London on 21 February 1999. Frederik Nebeker presented a paper on World War I and the creation of an electronics industry. Six other invited speakers, including one from the Netherlands and one from Germany, presented research on various aspects of electronics history: the early history of radio, the work of Edward Appleton, German electronics between the wars, industrial electronics in the 1950s, satellite electronics, and microelectronics in East Germany. The organizer, Michael Duffy of the University of Sunderland, expressed the hope that this, the first such meeting, would become an annual event. While in London, Nebeker also conducted an oral-history interview of the signal-processing pioneer Anthony Constantinides and met with IEE volunteers and staff concerned with history, including Lenore Symons, IEE Archivist, and Colin Hempstead, chair of the IEE history committee. ♦

Bibliography

ROBERT D. PURRINGTON, *Physics in the Nineteenth Century*

Robert D. Purrington, a professor of physics at Tulane University, has written a brief survey of the development of physics between the Industrial Revolution of the late 18th century and the rise of relativistic and quantum physics in the early 20th century. This period is important to the history of physics for several reasons. From a purely scientific standpoint, it marked the full flowering of classical physics. 19th century physics was remarkably successful at solving the major scientific puzzles of its

day, and its success laid the foundation for quantum theory and relativity in the 20th century. From a professional standpoint, the 19th century witnessed the rise of physics as an independent and coherent branch of science, complete with professional societies and widely circulating journals. By mid-century, the scope, subject matter, and sub-specialities of physics were well-defined, and would remain so well into the 20th century.

Purrington gives a historical account from a scientist's perspective, an approach which he claims has become "increasingly rare" (p. ix) in the history of science. He targets his book at both historians of physics looking for a good survey of the discipline and physicists seeking a historical perspective for their scientific work. Although Purrington assumes that his readers have some scientific background, he explains his subject in a clear and accessible way.

The author covers five main topics in the history of physics: electromagnetism, thermodynamics, the energy principle, atomism, and statistical mechanics. Introductory and concluding chapters skillfully place the history of these disciplines in the broader context of 19th century history. IEEE readers will find that his chapter on electromagnetism is a clear summary of developments from Volta's invention of the battery at the end of the 18th century to developments in Maxwellian field theory in the last third of the 19th century.

Available from Rutgers University Press, New Brunswick, NJ, 800-446-9323, **http://rutgerspress.rutgers.edu**, $25.00 paperback, $55.00 hardcover, ISBN 0-8135-2442-3,

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CHARLES MUSSER, *Thomas A. Edison and His Kinetographic Motion Pictures*

"I am experimenting upon an instrument which does for the eye what the phonograph does for the ear, which is the recording and reproduction of things in motion…" wrote Thomas Edison in October, 1888. Musser's book describes how Edison's invention of reliable means to show moving pictures fostered an industry, as well as led an assault on Victorian mores by capturing activities (mostly masculine amusements such as sporting events) largely forbidden to women and opposed by church groups, thus exposing middle-class women to these amusements for the first time.

After initial success, sales of kinetoscopes waned, and Edison, spurred by the success of the European Lumiere Cinematographe, turned his efforts to developing reliable projectors, and portable cameras which could capture reality and bring it back into the theaters instead of merely recreating scenes from a stage. Steamship and railway lines were quick to see the effectiveness of motion pictures in promoting tourism, while at the same time journalists appreciated the power of the new medium to capture current events.

Musser's book contains many wonderful photographs from the early movies, and is full of insights of the relationship – from earliest days – between social issues (Edison's early films tended to sympathize with Progressive movement's demand for reform) and motion pictures. Some segments of American society objected to the violence and criminal behavior shown in the films, and worried about the behavioral effects on young moviegoers. Edison, as modern studios have done, inaugurated a series of "Conquest Films" to provide "cleaner and more wholesome films which could be exhibited with safety before any member of the family."

Thomas A. Edison and His Kinetographic Motion Pictures is a clear and entertaining look at the beginnings of the motion picture industry, and how in certain fundamental ways the world of movies has kept many of the attributes it began with.

Available from Rutgers University Press, New Brunswick, NJ, 800-446-9323, **http://rutgerspress.rutgers.edu**, $25.00 paperback, ISBN 0-8135-2210-2, 59pp

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STEPHEN B. ADAMS and ORVILLE R. BUTLER, *Manufacturing the Future: A History of Western Electric* (Cambridge University Press, 1999)

Butler and Adams' book, sponsored by Lucent, is decidedly a cut above the usual in-house corporate history. It surveys more than a century of the history of the Western Electric Company, a major electrical manufacturer, from its roots in the telegraph industry of the 1860s through its acquisition by AT&T and finally to its independence as part of the Lucent Corporation. Western Electric, once one of the largest manufacturing concerns in the world, was overshadowed by its more public-oriented parent, AT&T, though the company contributed in major ways to the development of communication technologies. Besides providing a thorough history of Western Electric's technological history, the authors also explore the company's contributions to the science of management, including its early development of what would be called "Japanese" management techniques. The study takes advantage of the spotty but relatively untouched Western Electric archives, interviews, and other primary sources to present the complex history of this company in a readable and succinct fashion.

270 pp., index, illus. bibl. Essay., available from Cambridge University Press, http://www.cup.cam.ac.uk, £25.00 hardback, ISBN 0 521 65118 2

BAUER, ARTHUR O. FUNKPEILUNG *als alliierte Waffe gegen deutsche U-Boote 1939-1945* [Radio Direction-Finding as Allied Weapon against German U-Boats 1939-1945]. Rheinburg, Germany: Liebich Funk GmbH, 1997. 323 pp. (Available from the author, email: aobauer@compuserve.com.)

For the Allies in World War II, victory in the Battle of the Atlantic was crucial to overall victory. Many factors contributed to the defeat of the U-boat threat. Two of them have received most of the attention: radar, especially airborne radar, and code-breaking, facilitated by electromechanical and electronic calculating devices. This book concerns a third which was also extremely important: high-frequency direction-finding, also called HF/DF or huff-duff. In the first world war, direction-finding was used on land and at sea, but only long-wavelength transmissions could be DF'd, so in the second world war the Germans discounted the danger incurred by U-boats using shortwave radios, especially because they used short-signal coding which compressed a message so that it could be sent in a 1-second burst. But the Allies — first the British, then the Americans — developed HF/DF equipment compact enough to be placed on escort vessels and rapid enough to take a bearing on a very short transmission.

This book discusses not only the technology itself, but also describes the context of its use — how wartime demands elicited certain devices and improvements and how the technology affected the course of the war. There is careful description of the radio equipment and radio practice of U-boats, which is what the Allies sought to exploit. The principal British high-frequency direction-finding equipment (FH 4) is presented in detail, along with first-person accounts of the use of that equipment during the war. The German U-boat codes and the Allied efforts to decrypt them is also covered. This carefully documented book is well illustrated with photographs, diagrams, and charts. An appendix contains reproductions of unpublished documents. The author, who has also written a book on German World-War-II radar (Deckname "Würzburg", Herten, 1992) has established a Centre for German Communication and Related Technology 1920-1945 at Diemen in the Netherlands. ♦

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Milestones

New IEEE Milestone in Electrical Engineering and Computing

The IEEE Denver Section, one of the most active in the history area, has struck again. The IEEE Executive Committee has approved their nomination, endorsed by the IEEE History Committee, of United Light and Power Company's Steam/Hydro Generating Plant in Georgetown, Colorado, as the latest IEEE Milestone, with the following citation:

> Electric generating plants, through their high-voltage lines, provided critical power to the isolated mines in this region. Georgetown, completed in 1900, was unusual in employing both steam and water power. Its owner, United Light and Power Company, was a pioneer in using three-phase, 60-Hertz alternating current and in being interconnected with other utilities.

A dedication is planned for 31 July, at the Georgetown Energy Museum. Interested parties can contact Charlie Wright (c.r.wright@ieee.org) for more information ♦

Georgetown Hydro-Electric Plant circa 1916

Paul Bunge Prize Announcement

In recognition of his book: *Picture Control: The Electron Microscope and the Transformation of Biology in America, 1940-1960,"* Nicolas Rassmussen has been awarded the Paul Bunge Prize, given by the Hans R. Jenemann Foundation. The Paul Bunge Prize is the world's largest prize for research in the field of the history of scientific instruments. Rasmussen's book shows how technical equipment, laboratory research, and the interpretation of results came together to form a complex system, and how, from this system, new scientific objects and new research and development organizations emerge. "Picture Control" is a study of scientific instrumentation within its larger social and cultural setting.

ASEE Call For Papers

The Liberal Education Division of the American Society for Engineering Education is seeking proposals for sessions or papers on the interaction of science, technology, and society, and the ways those interactions can be used to shape the education of engineers. The role of history of science and technology in engineering education is one of the suggested topics. Abstracts of 250-500 words (per paper proposed) may be submitted prior to 15 August, 1999 to: Joseph Herkert, Assistant Professor of Interdisciplinary Studies, Box 7107, North Carolina State University, Raleigh, NC 27695-7107, herkert@social.chass.ncsu.edu

Announcement: Volunteer Author/Editor Sought

Having initially "retired" in 1994, Prof. James Brittain of Georgia Tech has now retired from authoring his long-running and well-received column "Scanning the Past" in *Proceedings of the IEEE*. Over eight years, Prof. Brittain discussed each month in two to three pages the accomplishments of an important, though not always well-known, pioneer of electrical engineering and computing. *Proceedings* is looking for a volunteer to carry on this proud tradition, taking responsibility each month for authoring the column, or else lining up and editing a guest columnist where appropriate. The column has been of great interest to readers of *Proceedings* and has done a great deal to boost an awareness of history among IEEE members. Anyone interested in taking on this important assignment can contact either Mike Geselowitz at the IEEE History Center, or else directly *Proceedings* Managing Editor Jim Calder (j.calder@ieee.org). ♦

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the **IEEE Components, Packaging, and Manufacturing Technology Society**, which was founded in 1953, but which is choosing to celebrate 2000 as the 50th anniversary of the Electronic Components and Technology Conference, its major annual meeting which predates the Society.

The year 2002 will see the 50th anniversary of several large Societies. We will be undertaking for the **IEEE Electron Devices Society,** the **IEEE Communications Society** and the **IEEE Engineering in Medicine and Biology Society** major initiatives that will result in booklets combining histories of the society with histories of their technologies.

Besides helping the Societies to promote themselves, their technology, and their history, and besides helping with the communication of IEEE institutional history, each of these projects will help the IEEE History Center further its mission of preserving, researching, and promoting the history of all IEEE-related technologies. For example, each of these Society projects will give us the opportunity to enhance our oral history collection, will enable us to gather materials for exhibits at the IEEE Operations Center in Piscataway which can then be added to our archival collections, and will involve research that will be the backbone of our ability to continue to publish monographs on the recent history of electrical engineering and computing. ♦

Bowling and electrical technologies

Bowling has a long history, going back to ancient Egypt. But in the last century a variety of electrical technologies have significantly enhanced the sport. Electric lighting was of great importance. In the 1930s came sound systems and air conditioning, which must have increased the appeal of the sport considerably. Most momentous was the introduction of automatic pinsetters just after World War II. (Former IEEE General Manager Eric Herz worked, as a 17-year-old, on the first AMF automatic pinspotter, introduced in 1946.) With it came the electrical counting of frames, and there was also the use of an electric eye to indicate crossing the foul line. Perhaps the second most important contribution was automatic scoring, as a great many customers found it difficult or annoying to keep score themselves. AMF built an automatic scorer (using stepping switches as in telephone switching) in the late 1940s, but this was too expensive to become widely used. Finally in the 1980s the microprocessor made automate scoring common in bowling alleys. In recent years ultraviolet lights and laser beams have been used to create what is called Glow Bowling (or Cosmic Bowling or Laser Bowling or Extreme Bowling). ♦

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exhibit, has led the IEEE Facilities Department to begin to prepare additional cases for us, that we will fill with new exhibits. Furthermore, visitors to Piscataway will notice that the Facilities Department has dipped into some of the materials curated by the Center in its archives to place more historical displays throughout the Operations Center.

Besides monographs and exhibits, we hope to work with the Technical Societies on many other ventures. In addition to our regular columns in *The Institute* and *IEEE-USA Perspectives*, we have also taken on the responsibility for a monthly "millennial" feature in Proceedings of the IEEE, "The Electric Century," where we hope to investigate the impact over the past 100 years of the broad areas of IEEE technologies, as defined by the Societies. This series will only be temporary, however, as *Proceedings* hopes to find a successor to Professor James Brittain to continue the much beloved "Scanning the Past" columns (see page 7). Planning is in the final stages for a special addition of the IEEE Society on Social Implications of Technology's International Symposium on Technology and Society (ISTAS '99), of which we are hosts and technical cosponsors. Finally, on the Society fundraising front, the most recent news is that the SPS has upped its pledge to $60,000!

Of course, as I mentioned, a new focus does not mean that the IEEE History Center lets up on other areas. The IEEE Milestones in Electrical Engineering and Computing, our Sections-based program, continues to build momentum (see page 7). We are preparing to have a strong presence at IEEE Sections Congress in October, and I will be able to report back on that, and on a large number of new Milestones initiatives worldwide, in our November newsletter. We also continue to work on the Virtual Museum Workshop, the Sloan Project, and other Web-based initiatives. Keep reading the newsletter, and periodically check out our Web site, to see how all these activities turn out. ♦

PARTNERSHIP PROGRAM

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