



**Celebrating 125 Years
of Engineering the Future**

IEEE History Center

ISSUE 81, November 2009

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STATIC FROM THE DIRECTOR

I am happy to report that our August conference was a huge success (see p. 2 for details). We learned a great deal about the institutional history of IEEE, its constituent parts, and some of its sister organizations. The conference featured panels of Past Presidents of IEEE discussing the history of the organization. The event was a great kick-off for the final months of the year when our focus is going to be on disseminating the information on the history of IEEE that we have been gathering in this, IEEE's 125th anniversary year, such as the presidential oral histories. The papers from the conference will be available through IEEE Xplore, and much of the data in those papers will be posted to the IEEE Global History Network (GHN), which is being further developed to better accommodate IEEE institutional history (see p. 4). The GHN is also now the host for our oral history collection. Overall, I am also happy to report, the GHN is growing rapidly in content and use.

Of course our activities will not be limited to IEEE institutional history. The Milestones program for local recognition of technological events continues to expand at a record pace (see p. 5), and we are pleased to announce a new program, STARS. STARS will complement the Milestones by recognizing broad technological trajectories of worldwide importance, and will team with the GHN to bring the stories of those technologies to the broader public (see. P. 5).

Finally, let me take advantage of this opportunity to once again thank the supporters of the IEEE History Center and to wish you and yours a joyous holiday season and a happy, healthy and productive New Year.



*IEEE Past Presidents Panel at IEEE History Conference (left to right: Moderator John Meredith, Past Presidents Merrill Buckley, Charles Alexander, Joseph Bordogna and Kenneth Laker).
The Past Presidents Panels will be available on IEEE.tv*

The newsletter reports on the activities of the IEEE History 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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THE 2009 IEEE CONFERENCE ON THE HISTORY OF TECHNICAL SOCIETIES

The IEEE History Center and the IEEE History Committee organized a conference, the 2009 IEEE Conference on the History of Technical Societies. It was held from Wednesday 5 August through Friday 7 August 2009 in Philadelphia, Pennsylvania, U.S.A. The subject of the conference was chosen in part because 2009 is the 125th anniversary of IEEE, and in part because technical societies, through meetings, publications, education, and other activities, have been vital to the progress of electrical and computer technology in the past century. Joe Bordogna was honorary chair, John Meredith was conference chair, and Frederik Nebeker was program chair.

Some of the talks on the first day of the conference were "An Overview of 125 Years of IEEE History" by Sheldon Hochheiser of the IEEE History Center, "The Importance of the History of Technical Societies for the History of Technology" by Jonathan Coopersmith of Texas A&M University, and "Creating the IEEE Code of Ethics" by Emerson Pugh, formerly of IBM. Shoji Shinoda of Chuo University presented a historical overview of the Institute of Electronics, Information and Communication Engineers (IEICE), and Antonio Pérez Juste of the Technical University of Madrid spoke about the origins of the Spanish Association of Telecommunications Engineers (AEIT). Nina Borisova, director of a communications museum in St. Petersburg, told of the Russian experience in organizing



IEEE History Center Director Michael Geselowitz (left) with three past presidents of the IEEE, Arthur Stern, Henry Bachman, and Joseph Bordogna.

NEWSLETTER SUBMISSION BOX

The IEEE History Center Newsletter welcomes submissions of Letters to the Editor, as well as articles for its "Reminiscences" and "Relic Hunting" departments. "Reminiscences" are accounts of history of a technology from the point of view of someone who worked in the technical area or was closely connected to someone who was. They may be narrated either in the first person or third person. "Relic Hunting" are accounts of finding or tracking down tangible pieces of electrical history in interesting or unsuspected places (in situ and still operating is of particular interest). Length: 500-1200 words. Submit to ieee-history@ieee.org. Articles and letters to the editor may be edited for style or length.

THE IEEE HISTORY CENTER NEWSLETTER ADVERTISING RATES

The newsletter of the IEEE History Center is published three times per annum; one issue (March) in paper, the other two (July and November) electronically. The circulation of the paper issue is 4,800; the circulation of the electronic issues is 22,500.

The newsletter reaches engineers, retired engineers, researchers, archivists, and curators interested specifically in the history of electrical, electronics, and computing engineering, and the history of related technologies.

	<u>Cost Per Issue</u>
Quarter Page	\$150
Half Page	\$200
Full Page	\$250

Please submit camera-ready copy via mail or email attachment to

ieee-history@ieee.org. Deadlines for receipt of ad copy are 2 February, 2 June, 2 October. For more information, contact Robert Colburn at r.colburn@ieee.org.

professional societies for telecommunications. There were four talks on the technical societies for computing, and there were talks on societies for signal processing, information theory, and computational intelligence. Fumio Arakawa, of the Global Engineering Institute of Tokyo, spoke on "Remembering the Roots for the Sake of the Future". Eiichi Ohno, Chair of the IEEE Japan Council History Committee, talked on the history of IEEE in Japan, and Bruce Barrow gave some history of IEEE in Belgium, Netherlands, and Luxembourg.

At the end of the day on Wednesday there was a visit to the ENIAC Museum of the University of Pennsylvania. The ENIAC, a pioneering electronic digital computer, was built at the Moore School of Electrical Engineering from 1943 to 1946, and the museum, still housed in the Moore School, contains parts of the original machine, along with other artifacts and photographs. Professors Mitchell Marcus and Atsushi Akera, who co-wrote a historical article on the ENIAC, guided the visit to the museum.

The second day of the conference began with a presentation on the history of the Institute of Electrical Engineers of Japan given by Kouki Matsuse, President of the IEEJ, and Kohei Ohnishi, Vice President of the IEEJ. There followed talks



Senior Research Historian Frederik Nebeker with Nina Borisova, Director of the Popov Central Museum of Communications in St. Petersburg, Russia.

on the history of the American Society of Mechanical Engineers, the history of the American Society of Civil Engineers, and the history of the German Association for Electrical, Electronic & Information Technologies. Also on the second day were talks on the history of the IEEE in Asia, in Australia, in Italy, and in Spain. There was a session on accreditation of engineering programs; also a session on engineering education, which included a talk by Daishi Okada of Chuo University on "International Exchange between the United States and Japan on the Reform of Engineering Education". A plenary session in the afternoon had the theme "Drawing on the Past to Look to the Future of Engineering".

On the evening of the second day was a celebration of the IEEE anniversary with a reception and banquet at the Down Town Club, adjacent to Independence Hall in the historic district of Philadelphia. There were remarks by 2009 IEEE President John Vig and by past IEEE Presidents Joseph Bordogna and Richard Gowen. Henry Petroski, popular author and professor of both engineering and history at Duke University, gave the banquet address entitled "History and Engineering: Building Bridges Together".

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Banquet speaker Henry Petroski.

The IEEE Life Members gave generous support to the conference as a whole. The official banquet underwriter was the IEICE (The Institute of Electronics, Information & Communication Engineers, Japan). Additional support of the conference was provided by the IEEJ (The Institute of Electrical Engineers of Japan), the SICE (The Society of Instrument & Communication Engineers, Japan), the ASPEP (The Association of Scientists and Professional Engineering Personnel), the IEEE Philadelphia Section, and the Engineers' Club of Philadelphia. The Electrical and Computer Engineering Department of Drexel University and the History and Sociology of Science Department of the University of Pennsylvania were technical co-sponsors.

The third day of the conference included two panel discussions. The panelists, four in each session, were past IEEE Presidents. They discussed, with audience participation, important issues in the recent history of IEEE. Among the regular sessions was one on the history of organizations for biomedical engineering, and two on technical societies for control systems and automation. Among the speakers in the latter sessions was Hideki Hashimoto of the University of Tokyo, who spoke on the history of the Society of Instrument and Control Engineers (SICE). At lunchtime, there was a multimedia show entitled "Enjoying the Past and Heading for the Future", presented by Charles Alexander and Jim Watson. An afternoon session on power engineering included talks by Sture Eriksson of the Royal Institute of Technology on the power engineering profession in Sweden and by Gilmore Cooke on Fred Stark Pearson and transnational engineering in the early 20th century.

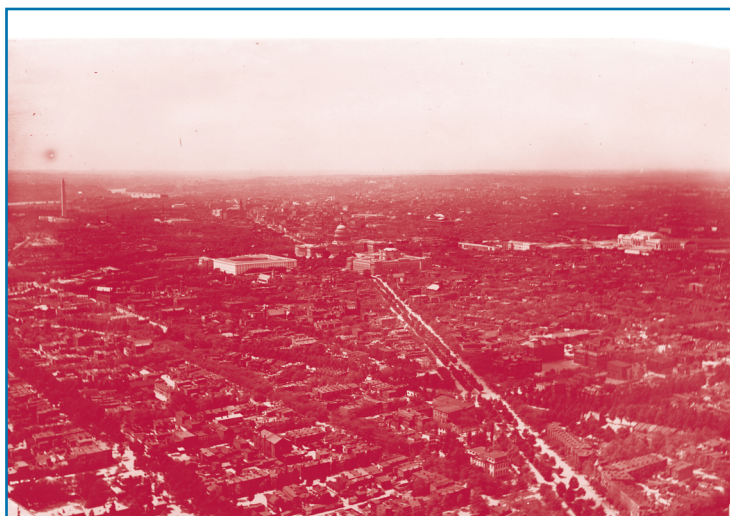
In the late afternoon there were two events at the American Philosophical Society Library, located in the historic district of Philadelphia. Roy Goodman, Librarian of the American Philosophical Society (APS), gave an introduction to the rich collection of historical materials in the APS archives. Particularly noteworthy are papers and books from Benjamin Franklin, one of the founders of the APS. There followed a dedication ceremony for an IEEE Milestone, the 1751 book by Benjamin Franklin entitled *Experiments and Observations on Electricity*. A reception followed in the Jefferson Garden of the APS.

All together, over the three days of the conference, there were about ninety presenters, and they came from eighteen countries on five continents. Many people commented that a great benefit of the conference was seeing friends from around the world and meeting new people, all with a common interest in the history of technology.

IEEE GLOBAL HISTORY NETWORK SHOWCASES WASHINGTON D.C. SECTION'S HISTORY

The Washington, D.C. Section offers a wonderful example of how an IEEE organizational unit can use the GHN to preserve and showcase its institutional memory. Many of the Section's early records have been lost. But fortunately, back in the early 1950s, someone in the Section put together a large scrapbook of photographs and extensive summaries of the records spanning the fifty year period from 1903 to 1953. Recently, this Section has placed all these documents on the GHN. Not only does this material offer a fascinating glimpse into the Section's past, but it also offers a window on to the early history of AIEE, the development of the engineering profession in the U.S., and even the history of the District of Columbia.

One photograph found in the Washington, D.C., Section, archives page on the GHN is a rare aerial view of the D.C. urban landscape, taken from a U.S. Army Signal Corps balloon.



Another photo shows a 1908 laboratory at the National Bureau of Standards.

In September 1904, the International Electrical Congress was held in St. Louis. Prominent electrical engineers made up the delegations from the world's industrialized nations. During their stay in the U.S.A., most visited the nation's capital and The Washington D.C. Section was the official host. From its archives we learn that the popular press in D.C. referred to electricity as "artificial lightning", and to electrical engineers as the "men who train and develop artificial lightning." The in-



teraction between the Washington, D.C. hosts and the British delegation, as recorded in the Section's archives, offers some information of broader historical interest. For example, we learn that for the British delegation of engineers, the highlight of the St. Louis Congress was the discussions between the AIEE and the British Institute of Electrical Engineers (IEE) on the "different methods and systems of using alternating currents in electrical railway motors." Another incident recorded in the archives illustrates the very high esteem in which British electrical engineers held Benjamin Franklin.

As members of the Washington D.C. Section were showing the British delegation around D.C., the group passed a statue of Benjamin Franklin. Suddenly, one of the Englishmen suddenly proclaimed, "Ah here is the statue of the first electrician. By jove I must have a snapshot of him." He then pulled out his Kodak and grouped everyone together for a shot in front of Ben Franklin. The Kodak "Brownie" camera had been introduced only four years earlier in 1900. The head of the British delegation explained to his Washington D.C. hosts that "the people Great Britain had a great reverence of Franklin who was regarded as having been not only great man but a good man, and the Father of Applied Electricity." To commemorate Franklin's contributions, in 2003, IEEE placed a Milestone plaque on the home that Franklin occupied during his stay in London from 1772 to 1775. For the Milestone see,

http://www.ieeeeghn.org/wiki/index.php/Milestones:Benjamin_Franklin%27s_work_in_London%2C_1757-1775

Another fascinating item in the archives that the Washington, D.C., Section placed on the GHN involves the development of the engineering profession in the U.S. In reading this archival material, one also gets a glimpse into an important debate within the engineering profession that arose when, in the late 1930s, attempts were made in Congress to "register engineers" and "regulate engineering". In Illinois, the matter went to the State Supreme Court, which ruled that the Illinois Act to regulate the practice of professional engineers invalid. We learn that in 1947, the AIEE, along with its sister organizations, lobbied to amend the Wagner Labor Relations Act to exempt engineers and scientific men from this legislative bill.

Preserving institutional "memory" and making it easily accessible to all is essential to the long-term continuity of IEEE. The GHN offers IEEE's technical and geographical units an easy to use platform to both preserve important historical documents and to share them easily with the membership at large. We encourage Societies, Regions, and Sections to preserve and showcase their memories on the GHN. If your organizational unit has not done this yet, we hope you will follow the examples of those that have done so. As an illustration of what can be done, examine the pages created for the Washington, D.C. Section on the GHN:

http://www.ieeeeghn.org/wiki/index.php/IEEE_Washington_Section_History
http://www.ieeeeghn.org/wiki/index.php/Archives:Washington_Section_Archives

A NEW PROGRAM: STARS

Later this year the IEEE History Center will launch a new program. Called STARS, an acronym for Significant Technological Achievement Recognition Selections, it will be an online compendium of invited, peer-reviewed articles on the history of major developments in electrical and computer science and technology. Although written for a general audience, these articles are meant to provide authoritative information, valuable in itself, but also useful as starting points for further investigations. STARS is an open-ended project, with new contributions added as they become available. Also, each entry is subject to continual review. This program will be implemented on the IEEE Global History Network (GHN), and readers may post comments in accord with GHN procedures.

The STARS Program will provide reputable core information on the GHN, serve as an organizing tool for technologies on the GHN, encourage other quality contributions on the GHN, and serve as a valuable resource for many. STARS will provide technological, development, and business perspectives, which receive little coverage by academic historians but are essential for technology literacy and are of value to policy makers and managers of technology developments.

The IEEE STARS Program is quite different from the

long-standing IEEE Milestones program. Each IEEE Milestone typically consists of one event that took place in one location. The achievement may have worldwide significance, but it can

also be primarily of local significance. In either case, it is recognized by a citation on a bronze plaque placed near where the event occurred. By contrast, each achievement on the list of IEEE STARS must have worldwide significance and may consist of many closely related events that took place in more than one location over a period of time. STARS are recognized only by having peer-reviewed articles placed on the STARS GHN portal. The absence of geographical limits to STARS enables the articles and citations to reference seminal papers and patents that were part of the achievements.

The next issue of this newsletter, after the launch of STARS, will contain more information about the program, including how readers can participate in it.

The STARS Program will provide reputable core information, serve as an organizing tool for technologies on the GHN, encourage other quality contributions, and serve as a valuable resource.

STAFF NOTES

HISTORY CENTER WELCOMES SIX GRADUATE ASSISTANTS FOR 2009-2010

Mario D'Penha grew up in Bombay and New Delhi, India. He was educated at Jawaharlal Nehru University, before he moved to Rutgers to pursue a PhD in History. At Rutgers, his research includes exploring various systems of knowledge about gender, especially through the figure of the eunuch in eighteenth century southern India. He is part of Nigah, a community-funded arts and activist collective in New Delhi and uses his research to link conversations between the queer academic and activist worlds.

Leigh-Anne Francis is a seventh year Ph.D. candidate in History at Rutgers, State University of New Jersey. She earned an MA in History (U.S. History and World History) from SUNY Brockport in 2003 and a BA in Fine Arts (Painting) from the Rochester Institute of Technology in 1999. At Rutgers, Ms. Francis is currently conducting dissertation research on women incarcerated at upstate New York's Auburn State Prison for Women between 1893 and 1933. She is especially concerned with the ways in which differences of race, gender, class and sexuality shaped African American, European immigrant, and native-born white women's experiences of freedom and unfreedom -- i.e., poverty, the law and law enforcement, crime, imprisonment, and life after incarceration. In addition to serving as a Teaching Assistant for both halves of the U.S. survey, African American History I, and Race and Sex in America, Ms. Francis has taught her own undergraduate courses including Development of the United States II (Modern U.S. History), Race and Sex in America,

and Expository Writing 101. She also teaches college courses voluntarily at Mountainview Correctional Facility for Men as part of Rutgers' Professor Donald Roden's Mountainview Prison Project.

Matthew Friedman is a graduate student in history at Rutgers University. His research focuses on postwar modernity, noise and the destabilization and production of subjectivity in the United States in the 1950s and 1960s. A native of Montreal, Matt worked as a journalist for a decade, for publications as diverse as the Montreal Gazette and the National Post and NetGuide and InternetWeek magazines. He is the author of three books on information technology electronic commerce, one of which was published just in time for the dot-com crash of 2000 and sank into obscurity.

Kathleen Manning is a doctoral candidate in history at Rutgers. Her dissertation studies examines education and charity care for at-risk girls in sixteenth-century Rome. She has also taught classes in European history at Rutgers and Princeton.

Rochisha Narayan is currently a fifth-year graduate student in the department of history at Rutgers University. She received her Bachelor's and Master's degrees in history from St. Stephen's College, Delhi University, and an M.Phil in history from Delhi University. At Rutgers, her areas of interest include the history of South Asia, Women and Gender history, and Global and Comparative history. Her dissertation examines the interlocking histories of family, caste *continued on next page*

and politics in colonial north India from the late eighteenth to the early twentieth century.

Meagan Schenkelberg, a third year IEEE graduate assistant, is a fifth year doctoral candidate working on her dissertation on seventeenth-century England. She is focusing on the importance of gender in political, social and cultural aspects of

the Restoration, particularly how women served as symbols of Charles II's court. Meagan is also co-organizing an interdisciplinary graduate conference on British history for the Spring, and beginning in September participating in a monthly dissertation writing seminar at the Folger Shakespeare Library in Washington, DC.

THINGS TO SEE AND DO

FORMER IEEE LIFE FELLOWSHIP IN ELECTRICAL HISTORY WINNER, CHRISTOPHER MCGAHEY'S DISSERTATION POSTED

The IEEE History Center is pleased to report that the dissertation of Christopher McGahey, the 2005 recipient of the IEEE Life Member's Fellowship in Electrical History, has been completed and is now available on-line at the SmarTech database. The title is "Harnessing Nature's Timekeeper: A History of the Piezoelectric Quartz Crystal Technological Community (1880-1959."

Conference on the Origins and Evolution of the Cavity Magnetron (CAVMAG 2010) 2010 marks the 70th anniversary of development of the high-power cavity magnetron by Randall and Boot at Birmingham University. This crucial invention was made into a practical device by the GEC Company in England and put into large-scale production in the U.S.A. following the Tizard Mission of 1940. Its origins, however, go back to the mid-1930s with key work being done in Czechoslovakia, France, Germany, Russia, Switzerland, The Netherlands, Japan and the U.S.A.

The purpose of the 19-20 April 2010 conference is to bring together knowledge of all this early work and to learn how the magnetron was improved and put into service since then. Several eminent engineers have already agreed to give talks on the following aspects: Origins of the magnetron in

the various countries involved, its subsequent development, the latest trends, applications to civil and military radar systems, other uses, such as microwave ovens. A pre-conference visit is planned to the Royal Signals Museum at Blandford on 18 April. The conference is sponsored by IET (History of Technology TPN), IEEE (UKRI Section) and IEEE History Center, IEEE Region 8 History Council, The Defence Electronics History Society (DEHS), and supported by a grant from the IEEE Life Members Committee. www.cavmag2010.org.uk

BOSTON COLLOQUIUM FOR PHILOSOPHY OF SCIENCE 50th ANNUAL PROGRAM

The Boston University Center for Philosophy & History of Science has become a premier stage for national and international dialog on all aspects of the philosophy and history of science, mathematics, and logic. All lectures are open to the public.

7 December 2009 – Darwinism Today: Historical and Philosophical Perspectives

15-17 April 2010 – Philosophy and History of Science: Then and Now. Day 1 – Perspectives; Day 2 Physics and Epistemology; Day 3 – Biology. www.bu.edu/philo/centers/cphs, Boston University, 745 Commonwealth Ave., Boston, Massachusetts, U.S.A. 617-353-2604

EE IN THE MOVIES

ELECTRICAL TECHNOLOGIES IN THE MOVIES: FROM GAS LIGHTING TO ELECTRIC LIGHTING

Before electricity, the night was lit only by flames. Because flame lighting was costly, dirty, and dangerous, the world was a fairly dark place at night. There were, of course, candles and lamps that burned various types of oil, and in the second half of the 19th century gas lighting became common in cities. Though more convenient and less polluting than earlier types of lighting, gas lamps still had the drawbacks of flame lighting. So when in 1879 Edison invented a practical incandescent lamp and when, soon thereafter, he and others set up electric-power distribution systems, electric lighting was eagerly adopted.



The transition from gas lighting to electric lighting is well illustrated in the movies. "Gone with the Wind" (1939), set in the Civil War period, shows gas lighting in an Atlanta mansion and in New Orleans.

In Orson Welles's 1942 movie "The Magnificent Ambersons" we see gas lighting in a home in the early 1890s, and in "The Cabinet of Dr. Caligari" (1920) we see a man lighting gas

streetlamps. Gas lamps are, of course, featured in the classic 1944 movie "Gaslight". A central clue in solving the mystery the movie presents is a dimming of the lamps, caused, it turns out, by someone using a gas light in the attic. The 1943 movie "Life and Death of Colonel Blimp" has a prolonged scene of the lighting of a gas chandelier.

The 1952 version of "Moulin Rouge", set in Paris in about 1890, shows both gas lighting, notably in Toulouse-Lautrec's apartment, and electric lighting, both inside buildings and along the streets. Paris was one of the first cities to use electricity for street lighting—this was in the form of arc lamps—so that Paris became known as the city of lights. The gas lighting of Paris, in about 1870, is shown in both the 1943 and the 2004 movie versions of "Phantom of the Opera". In the 1939 movie "Ninotchka", Greta Garbo and Melvyn Douglas look down on the city's lights from the top of the Eiffel Tower. Garbo, playing a delegate from the Soviet Union, comments that it is great waste of electricity. The 1954 movie "The Last Time I Saw Paris" shows the celebrating, when in 1944 following the Allies' recapture of the city, the lights of Paris are turned on for the first time since 1940.

For about half a century, beginning in the 1880s, gas lighting and electric lighting co-existed. Ingmar Bergman's "Fanny och Alexander" (1982), showing life early in the 20th century, includes gas, kerosene, and electric lighting. "Meet Me in St. Louis" (1944), which takes place in 1903 and 1904, shows a home having both electric and gas lighting. Professor Higgins's home in "My Fair Lady" (1964) has electric lights, but there are still gas lamps on London's streets. The 1999 movie "Angela's Ashes" provides close-ups of gas lighting in homes in Limerick in the 1930s, when, of course, electric lighting was also in use.

In Richard Attenborough's 1972 movie "Young Winston," Winston Churchill's father, Lord Randolph Churchill (played by Robert Shaw) is asked about the fact that their townhouse in London is one of the first to have electric lighting. He responds: "It's all rather up-to-date I suppose. That thing in the basement -- the dynamo, I think you call it -- is rather noisy and keeps going out at the worst times. No, I don't think electric light will ever replace gas...at least not in private houses."

As always, we would be grateful for reports from readers of other interesting movie scenes that involve gas and electric lighting. You may contact us at iee-history@iee.org

SPOTLIGHT ON THE IEEE ARCHIVES

INTERESTING THINGS COMING TO LIGHT IN THE IEEE ARCHIVES: THE 1963 IEEE CLASS OF FELLOWS

Sometimes, a treasure discovered in the archives is not a previously unknown document or photo, but rather the answer to a question on IEEE history. IEEE Fellows Program Administrator, Bernadine Lieblich, recently posed an interesting question to IEEE Archivist and Institutional Historian Sheldon Hochheiser—was there a Fellows class of 1963, the year that IEEE was formed from the merger of predecessor organizations AIEE and IRE?

The Fellows office had no record of such a class. Hochheiser thought that the answer might be found somewhere in the records in the Archives. First, he looked through the files of the 1962 merger committee, where he found in the minutes of their fifth meeting an agreement that a group of new fellows would be honored at the IEEE Annual Banquet and Awards Ceremony in March 1963, and that the honorees should contain approximately equal numbers of individuals from each predecessor society. Then he looked in the Proceedings of the IEEE, where he found in the April issue eight pages of names, photos, and brief citations for 76 new fellows. Surely, this was the group. But then he noticed that the heading said "IRE Fellows." So, it was likely only half the total list. Eventually, working with Bernadine, he found in the index to the 1963 Proceedings references to four separate articles on the AIEE electing new fellows during the latter part of 1962. But the articles were on pages with numbers like "20A," and the "A" pages were missing from the bound volumes. But he remembered that the Archives had a collection of unbound issues of the Proceedings, and in these he found the

"A" pages, which were mainly advertising. There he found lists of a total of 64 fellows that the AIEE elected on separate occasions in the fall of 1962. Apparently, it took the AIEE four rounds to come up with a list of roughly equivalent length to the IRE's. When Hochheiser checked several of this large group of fellows against their listings in the 1984 IEEE book *A Century of Honors*, he discovered that they were noted as either IRE or AIEE fellow class of 1962, not IEEE class of 1963.

Then he went looking for the next group of fellows. He found the list, with 118 names, in the very first issue of *IEEE Spectrum* from January 1964. The article noted that the 118 were named by the IEEE board on 30 October, 1963, for elevation on 1 January, 1964, and recognition at the IEEE annual banquet in the spring. The article further noted that these 118 people were the IEEE fellows class of 1964. That is how they were listed twenty years later in *A Century of Honors*.

So the answer to the question is that technically there was no fellows class of 1963. There was a group of fellows elected in the fall of 1962, honored in March 1963, and considered as the class of 1962. There was a group of fellows elected in the fall of 1963, elevated on 1 January, 1964, honored that March, and considered the class of 1964. The program never stopped or even changed its schedule, but with the merger the Institute changed the method by which it calculated fellows' dates, and in the change skipped 1963.

RECENT DONATIONS OF MATERIAL TO THE IEEE ARCHIVES

Life member Raymond Stahl of Pennsylvania, USA contacted the History Center this summer and offered to donate a vintage pre-World War II Weston Model 785, Type 4 Portable Industrial Circuit Tester, more commonly and generically known as a multimeter. Multimeters continue today to be an important tool for testing electrical circuits. The Weston Instrument Company of Newark, New Jersey was for many decades the leading manufacturer of these and similar pieces of test equipment. The meter Stahl had originally belonged to his father, who used it for many years.

IEEE Archivist and Institutional Historian Sheldon Hochheiser recognized that this meter was a classic example of a tool used by many IEEE members over the years, and was pleased to accept the meter for the IEEE Archives collection, because it is an item that could be used in a future historical exhibit at the IEEE Operations center. Until then, it is on display in Hochheiser's office at the IEEE History Center. As you can see from the picture, the meter is a handsome instrument in wooden case with a leather handle.

One thing the history center has been unable to determine are the dates when this particular model 785 was in production. If you have an idea of the date, or of where the date might be found, please contact Dr. Hochheiser at s.hochheiser@ieee.org.

We also recently received two donations from Life Member Elizabeth Livingston. The first was a collection of vintage vacuum tubes (including a Varian Klystron tube) that she collected during her years at General Electric. The second was a vintage railroad telegraph key and sender that her brother gave her when she was a young woman and wanted to learn Morse Code.

IEEE members periodically contact the History Center with items

they wish to donate. If items fit into the collecting strategy of the IEEE Archives, we are happy to have them; if not we try to help members find an appropriate repository elsewhere. The IEEE Archives chiefly collects material that documents the overall history of IEEE. There is a secondary focus on material that history center staff can use in its other work, such as teaching at Rutgers and mounting historical exhibits in several display cases at the IEEE Operations Center in Piscataway New Jersey.



Weston Model 785 Industrial Circuit tester, donated to the IEEE Archives by IEEE life member Raymond Stahl.

A FEW MISSING ISSUES OF THE INSTITUTE & IEEE SPECTRUM

The IEEE Archives, as part of its core mission to collect and preserve material to document IEEE's own history, has recently required a nearly complete set of IEEE's monthly newspaper, *The Institute*, from the first issue of January 1977 to the present. To complement this, The archives also acquired a run of *IEEE Spectrum* from its first issue in 1964 through 1976, because news of IEEE appeared in *Spectrum* before the creation of *The Institute*. We thank our colleagues Ken Moore and Lani Angso of the IEEE publications staff, and Kathy Kowalenko, editor of *The Institute*, for making this possible. They were able to supply all but a handful of issues. The missing issues are:

Spectrum:

1965 — May, July
 1970 — January, June
 1975 — March, April, May, July
 1976 — June

The Institute

1977 — September, October
 1978 — January, February, March
 1983 — January
 1985 — February, April, May
 1987 — November, December
 1997 — January
 1999 — March

If you have any of these missing issues, and would be willing to donate them to the IEEE History Center for addition to the archives, we would be grateful to have them. Please contact IEEE Archivist and Institutional Historian Sheldon Hochheiser (s.hochheiser@ieee.org) before sending anything, since we only need one copy of each missing issue.

PROGRAMS OF SUPPORT FROM THE IEEE HISTORY CENTER

The IEEE History Center offers two programs of support annually for scholars pursuing the history of electrical engineering and computing: An internship for an advanced undergraduate, graduate student, or recent Ph.D., and a dissertation fellowship for an advanced graduate student or recent Ph.D. The internship and the dissertation fellowship are funded by the IEEE Life Members Committee. The internship requires residence at the IEEE History Center, on the Rutgers University Campus in New Brunswick, New Jersey, USA; there is no residency requirement for the dissertation fellowship.

IEEE Life Member Fellowship In Electrical History

The IEEE Fellowship in Electrical History supports either one year of full-time graduate work in the history of electrical science and technology at a college or university of recognized standing, or up to one year of post-doctoral research for a scholar in this field who has received his or her Ph.D. within the past three years. This award is supported by the IEEE Life Members Committee. The stipend is \$17,000, with a research budget of up to \$3,000.

Reimbursable research expenses include economy class travel to visit archives, libraries, historical sites, or academic conferences, either to hear papers or to present one's own work. Hotel stay, meals while travelling, copying costs, reprints of scholarly articles, and books directly pertaining to research are reimbursable. Any research trip expected to cost more than \$1000 must be approved in advance by IEEE History Center Staff. Examples of non-reimbursable expenses include, but are not limited to: licensing fees for images for book version of thesis (book publisher should pay for those), computers or computer peripherals, digital cameras, clothing, and office supplies (paper, pens, printer cartridges, CDs, memory sticks, etc.).

Recipients are normally expected to take up the Fellowship in the July of the year that it is awarded. Fellowship checks are normally mailed to the Fellow quarterly in July, October, January, and April. For Fellows in the southern hemisphere who follow the southern hemisphere academic year, arrangements can be made to mail the checks in December (two quarters worth), March, and June.

Candidates with undergraduate degrees in engineering, the sciences, or the humanities are eligible for the fellowship. For pre-doctoral applicants, however, the award is conditional upon acceptance of the candidate into an appropriate graduate program in history at a school of recognized standing. In addition, pre-doctoral recipients may not hold or subsequently receive other fellowships, but they may earn up to \$5,000 for work that is directly related to their graduate studies. Pre-doctoral fellows must pursue full-time graduate work and evidence of satisfactory academic performance is required. These restrictions do not apply to post-doctoral applicants.

The Fellow is selected on the basis of the candidate's potential for pursuing research in, and contributing to, electrical history. Application forms are available on-line at http://www.ieee.org/web/aboutus/history_center/about/fellowship.html. The deadline for completed applications is 1 February 2010. This completed application packet should be sent to the Chair, IEEE Fellowship in Electrical History Committee, IEEE History Center, Rutgers, The State University of New Jersey, 39 Union Street, New Brunswick, NJ 08901-8538. Applicants will be notified of the results by 1 June 2010.

The IEEE Fellowship in Electrical Engineering History is administered by the IEEE History Committee and supported by the IEEE Life Members Committee.

BIBLIOGRAPHY

GODIN, OLEG and PALMER, DAVID, *A History of Russian Underwater Acoustics*, 2008

The book is an English version of *A History of Russian Hydroacoustics: Articles, Essays, and Reminiscences* published in St. Petersburg in 1999 to commemorate the 300th anniversary of the Russian Navy. A new chapter, *The Physics of Underwater Sound* has been added to the English version in order to make the translated book of interest to a wider audience.

Russian underwater acoustics began in 1882 with the publication of E. F. Petrushevsky's article proposing a formula for calculating the differences in sound propagation speed in the lower, colder, depths of the ocean. In 1910,



underwater pneumatic bells began being installed along certain dangerous coastlines as beacons to aid navigation. In 1915, radio-hydrophone devices were installed on Russian naval vessels, including the cruiser *Aurora*, which became famous as a result of her role in the October revolution.

The papers are grouped into chapters according to major topic areas. Following an introduction describing what Hydroacoustics is, there is an overview chapter on the history of hydroacoustics in Russia from the 19th century to the present day. The history of the development of sound propagation theories follows. Having laid the groundwork, the book proceeds to cover the history of the technologies used in hydroacoustics. Chapter IV is composed of papers on the major research institutes, laboratories, and research stations (Vodtranspribor, Morfizpribor, Andreyev Institute, Krylov, SRI Atoll, Shirshov, Nizhny Novgorod, Sakhalin, and Kamchatka), where the technologies were developed.

continued on next page

Chapters V-VIII are collections of papers on the histories of the major Russian sonar systems: Kerch, Rubin, Yenisei, Rubikon, Skat, Skat-3, arranged according to what type of platform they were primarily used on -- submarine, surface ship, stationary sonar systems, specialized systems (mines, fuses, echo sounders, hydroacoustic communication systems.) There is a chapter on sonar arrays, a chapter on the role of radio engineering in hydroacoustics, a chapter on the training of the engineering and research personnel. The book closes with a chapter "Veterans Remember." Zhurkovich and Umikov recall that, among the collateral technologies which came out of the World War II hydroacoustic research, was an ultrasonic detector of flaws in metal components, a technology which had industrial as well as medical applications. V. B. Idin recalls the sense of wonder at listening to the sounds of underwater life in the Black Sea during experiments during the 1950s.

World Scientific Company, Hackensack, NJ,
www.worldscientific.com, \$229.00, hardcover, ISBN-13/
 EAN: 978 981 256 825 0, viii + 1211 pages, illus., no index

HEIDE, LARS, *Punched-Card Systems and the Early Information Explosion 1880-1945*, 2009

This well written and thoroughly researched book provides an authoritative and rewarding account of the inventive, entrepreneurial, and sociological factors in the United States, Great Britain, Germany, and France that caused punched card equipment to create and expand the information processing industry.

The book is well illustrated and has easy-to-read descriptions of different types of punched card systems and the underlying technologies. The author discusses why certain development decisions were made at different times and by different people, and he provides an analytical basis for understanding these decisions, making use of methods previously introduced by leading historians of business and technology.

The first three chapters tell how Herman Hollerith got involved in the creation and use of punched card equipment for processing the United States Census of 1890 and of 1900. They describe modifications he and others made to this equipment to respond to other business opportunities, especially life insurance and railroads. Finally, they describe the many competitive challenges he faced, especially in the United States.

The fourth chapter tells why Hollerith merged his Tabulating Machine Company with other companies in 1911 to create the Computing, Tabulating and Recording Company (CTR), which changed its name in 1924 to the International Business Machines Corporation (IBM). It describes how the continuing growth of IBM was achieved through salesmanship and technical innovations developed internally or purchased from others and also how crucial patents, coupled with U.S. patent

law, greatly facilitated IBM's ability to dominate the punched card equipment market in the United States

The final four chapters provide an interesting view of the growth of punched card equipment in Europe, with emphasis on Great Britain, Germany and France. The effect of differing customs, business sizes, business regulations, and patent law are thoughtfully discussed in a manner that would not have been possible without the author's extensive original research and the materials he collected from thirty archives in six countries, which are referenced in the extensive notes.

The Johns Hopkins University Press, Baltimore, 2009.
<http://www.press.jhu.edu/>, \$65.00, 369 pages. ISBN 13:
 978-0-8018-9143-4

PARSONS, PATRICK R. *Blue Skies: A History of Cable Television*, 2008.

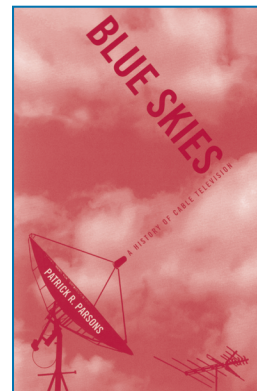
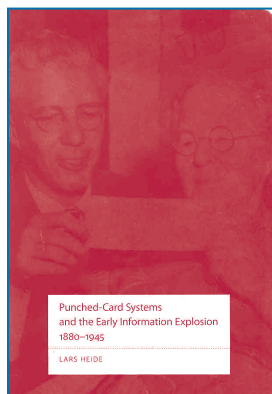
In *Blue Skies*, Patrick Parsons, professor in the College of Communications of Penn State University, tells the story of cable television from some precursors in the 1920s through community antenna systems of the 1950s and the cable-TV boom of the 1970s up to the present decade. It is a comprehensive history not only in the chronological sense, as it deals with technological, business, regulatory, and cultural aspects of the story, which Parsons sees as an example of the social construction of a technology.

The title of the book comes from the 1960s, when a dominant vision of the new technology was that it would be -- in the words of the author -- "... a ubiquitous flexible interactive communications system capable of providing news, information, entertainment and all manner of social services." This utopian view came to be called the "Blue Sky" vision of cable TV.

The history is presented in thirteen chapters that proceed in chronological order, though they sometimes overlap in the time period covered. The chapter titles indicate the main stages in the development, including "Mom 'n' Pop Business (1951-1958)", "Cablemania (1980-1984)", and "500 Channels (1992-1996)". The final chapter brings the story up to the year 2005.

Earlier books written by Patrick Parsons include *Cable Television and the First Amendment* (1987) and, with Robert Frieden, *The Cable and Satellite Television Industries* (1997). This is a scholarly book. The text is meticulously referenced in endnotes, three appendices provide historical statistics of the cable industry, and there is a detailed index. There are no illustrations.

Available from Temple University Press, 1601 North Broad Street, Philadelphia PA 19122; www.temple.edu/tempress, \$61.95, hardcover, ISBN 978-1-59213-287-4, ix + 805 pp.



SUPPORTING IEEE'S HISTORICAL ACTIVITIES

WILLIS E. DOBBINS REMEMBERS IEEE HISTORY CENTER

Willis E. Dobbins, an IEEE member for 58 years, died on 21 January 2008. Mr. Dobbins joined the IEEE as an Associate Member in 1949. He achieved full member status in 1955 and in 1985 attained life status. He was a member of the IEEE Coastal Los Angeles Section and at one time was a member of the IEEE Computer Society.

During his life, Mr. Dobbins generously supported several funds of the IEEE Foundation with charitable gifts made through his annual dues renewal. In his last will and testament, he continued his history of philanthropy to the IEEE by including a bequest to the IEEE History Center. His bequest will help facilitate the preservation of, research into, and promotion of the heritage of IEEE, its members, their technological areas, and their professions and industries.

Willis E. Dobbins' generosity is commemorated through his membership in the IEEE Goldsmith Legacy League. Named in memory of Alfred N. and Gertrude Goldsmith, the IEEE Goldsmith Legacy League is an elite group of donors who have arranged to leave a planned gift to IEEE or the IEEE Foundation.

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