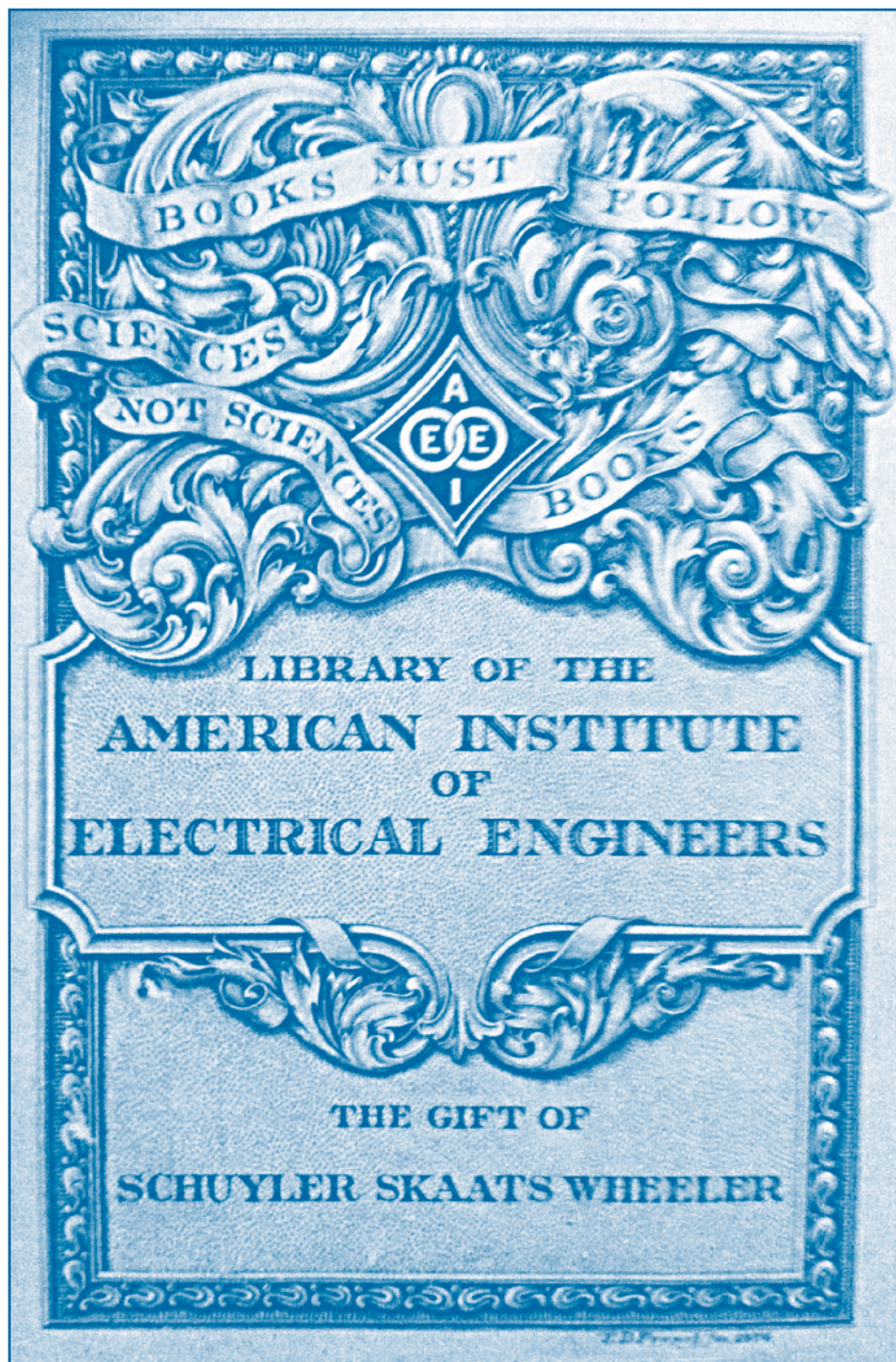


IEEE History Center

ISSUE 91, March 2013

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*Pictured Right:
Wheeler Gift Book Plate*



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—once in hard copy (March) and twice electronically (July and November) by the IEEE History Center.

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By Michael Geselowitz, Ph.D.

As you will see in this issue, our regular activities, such as Milestones, oral histories, the archives, and the IEEE Global History Network (GHN), continue to roll along. However, 2013 is also looking to be a key year for the IEEE History Center from a broader strategic perspective. Firstly, the results from our survey of engineering educators is in, and they suggest that we should push ahead with our initiative to develop an on-line history of engineering and technology course that could cover all technical fields and be available to institutions of higher education around the world. Secondly, our contract with our strategic partner,

Rutgers, the State University of New Jersey, is up for renewal, and we are exploring with them and with other potential partners ways to enhance our capabilities. All of the parties at the table agree that public history of technology is an important component in changing the conversation about engineering, in enhancing STEM education, and in raising technological literacy. Like the respondents to our on-line course survey, however, they also agree that such outreach efforts should not be limited to narrow disciplines.

Therefore, it is particularly exciting that the United Engineering Foundation has seen fit to fund us to host a workshop of all the founding engineering societies, in order to ex-

SUBSCRIPTION INFORMATION

The IEEE History Center newsletter is available free to all persons interested in technological history – whether engineers, scholars, researchers, hobbyists, or interested members of the public. It is published in hard copy in March, and in electronic form in July and November of each year.

To subscribe to the IEEE History Center's free newsletter, please send your name, postal mailing address, e-mail address (optional if you wish to receive the electronic versions), and IEEE member number (if applicable – non-

members are encouraged to subscribe as well) to ieee-history@ieee.org

Current and past issues of the newsletter can be accessed at: www.ieee.org/about/history_center/newsletters.html

The IEEE History Center is a non-profit organization which relies on your support to preserve, research, and promote the legacy of electrical engineering and computing. To support the Center's projects – such as the Global History Network, Milestones, and Oral History Collection, please click the "Donate Online" tab at www.ieee.org/donate or www.ieeefoundation.org/

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.

Cost Per Issue

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.

plore closer cooperation in history. In particular, we would like to see if we can leverage the investment that IEEE has already made in the GHN to provide a common web platform from which to launch our history and heritage programs. Stay tuned for the July newsletter for updates to all three of these exciting initiatives.

This issue is also the annual print edition when we get to

recognize you, our donors on our special Honor Role (see page 9). I am constantly gratified and humbled by your steady support for our program to preserve and make known the proud legacy of IEEE, its members, their professions, and the related technologies. I want to assure you that as we move ahead with our strategic initiatives we will only grow stronger, and we will honor your trust in us to carry out this mission.

STAFF NOTES

NIPPER VISITS THE HISTORY CENTER

Where does Nipper go when his master turns out the lights? That was the question raised last November at the final luncheon of RCA retirees in Mountainside, New Jersey. Some seventy-five former members of the semiconductor division in Somerville; the electron tube division in Harrison; the David Sarnoff Research Center in Princeton; the record pressing plant in Rockaway; and the semiconductor factory in Rocky Top, Pennsylvania, met for a last hurrah at L’Affaire. Lou Possemato, who oversaw the gathering, brought with him the four-foot-high plastic statue of RCA’s iconic trademarked dog, which had been signed by attendees ever since the luncheons began in the years after General Electric bought RCA in 1986. IEEE History Center outreach historian Alex Magoun attended, and suggested that a suitable home would be the Sarnoff Museum in development at The College of New Jersey. (<https://davidsarnoff.pages.tcnj.edu/>) This museum, recently the recipient of an IEEE Foundation grant, contains the artifacts of the David Sarnoff Library, everything from David Sarnoff’s desk to the first blue LED to one of RCA’s first commercial color television receivers. After a general assent by

the assemblage, Alex strapped Nipper under a seatbelt and drove him back to the Center before effecting the transfer to TCNJ curator Emily Croll.



During his brief visit to New Brunswick, Nipper consented to a photograph with the available staff of the Center.

CENTER ACTIVITIES

LOCATING THE SCEPTICAL CHYMIST: A RESEARCH REQUEST

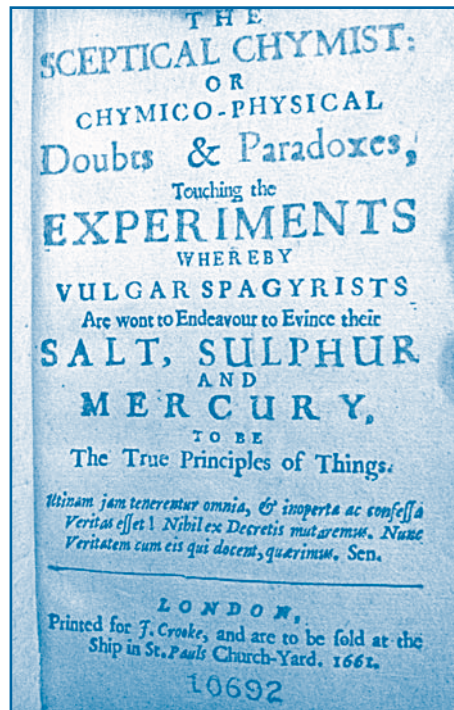
In late 2012, IEEE received a telephone inquiry from Professor Gregory Girolami, a distinguished chemist on the faculty of the University of Illinois, Urbana-Champaign. Girolami, a student not only of chemistry but of the history of chemistry as well, was attempting to develop of a comprehensive list of all known copies of the first 1661 edition of Robert Boyle’s *The Sceptical Chymist*, one of the seminal works in that discipline. According to the British Library’s Short Title List—an authoritative union catalog of English-language books, serials, periodicals and ephemera published before 1801—one of thirty-one cataloged copies of *The Sceptical Chymist* was held by the “Library of the Institute of Electrical and Electronics Engineers, Piscataway New Jersey”. As Professor Girolami soon found out, IEEE did not have a library. It had closed a few years earlier, a victim of the growth of online resources. But figuring that if anyone in IEEE knew anything about a seventeenth century book, it would be

IEEE Institutional Historian and Archivist Sheldon Hochheiser, the call was transferred to his line. Hochheiser was familiar with the holdings of the closed library, and was certain that there had been no copy of Boyle’s book, or any other old or rare book there.

Hochheiser had a good idea what had happened, and— as he explained to Girolami—it was a tale that went back to 1900. In that year, Dr. Schuyler Staats Wheeler purchased a most remarkable private library, that of Latimer Clark. This library was a collection of 7000 titles—books, pamphlets, journals, ephemera—on electricity and magnetism, with many rare titles going back to the earliest years of the printing press. Dr. Wheeler in turn donated the collection to the library of the American Institute of Electrical Engineers (one of IEEE’s predecessors) in 1901, with certain conditions: that it be properly cataloged and housed as a reference library available for all in New York City. Over the

years, AIEE came to share its headquarters building in New York with other engineering societies, first from 1907 in the Engineering Societies building on West 39th St. and—after 1961—in the United Engineering Center on East 47th St. The Wheeler Collection was incorporated into the Engineering Societies Library, which became one of the largest technical libraries in the world, with not only historical material but a comprehensive collection of relevant periodicals and books.

Circumstances change, and by the early 1990s the United Engineering Trustees, representing the component societies, decided to close the library because of declining use and revenue. Responsibly, they sought out other libraries that might be able to take the contents of the library so that material would continue to be available for use. They chose the Linda Hall Library in Kansas City. But Wheeler's original deed of gift mandated that his donation be kept intact in New York City, or else be given back to his descendants. Thus, disposal of this part of the library required the approval of the Attorney General of the State of New York, acting on behalf of the New York State Supreme Court. So a solution had to be found that would satisfy the state. Fortunately, there was an appropriate institution,



with major rare book holdings, in the city—the New York Public Library. The NYPL was interested, so the United Engineering Library staff separated the contents of the Wheeler collection from the rest of the library, and the United Engineering Trustees and IEEE donated the collection to the Rare Books Division of the New York Public Library in 1995, where it can be found today.

Hochheiser checked the History Center's copy of the original 1909 printed catalog for the Wheeler gift, and indeed found listed as item #146, Robert Boyle, *The Sceptical Chymist*, London, 1661. He also found the book in listed in the "Survey of the Wheeler Gift" prepared in 1986 by the IEEE History Center. He suggested to Girolami that the book should be in the Rare Books Division of the New York Public Library.

Girolami contacted the New York Public Library, which responded that indeed they had the book. They enclosed several

photographs of the front of the book, including one with the book plate of the American Institute of Electrical Engineers. In total, Girolami's census of *The Sceptical Chymist* now includes fifty-five copies with verified locations, a number he notes is "far fewer than is characteristic of other well-known science books from the period."

GHN UPDATE

NEW SEARCH ENGINE FOR GLOBAL HISTORY NETWORK

Replacing the previous Sphinx search engine, the Global History Network now uses Lucene, a far more powerful tool, which is currently used on all Wikimedia Foundation wikis. It incorporates distributed search and indexing for rapid return of ranked results. The major improvement over Sphinx, the previous search engine installed on the GHN, is its advanced relevancy ranking capabilities. Lucene's ranking algorithm is based on term proximity, relatedness, and anchor text, and allows for a far superior ranking to Sphinx. It also features an accentless search, which allows the parsing of accented characters; for example if one searches for "Ampere", it will also recognize results for "Ampère." Another useful feature of Lucene is that it has a form of spellchecking; if one types in "transittor," it will suggest "transistor" as a possible match. When the search results are returned, the search engine will show the search term highlighted within the context of the page.

IEEE INSTITUTIONAL HISTORY VIDEOS

Since November, sixteen VHS and U-matic tapes have been digitized and posted on the Global History Network. These tapes include a number of programs related to IEEE Institutional History, including a 1972 video for section leadership hosted by Bill Middleton, a 1987 overview of IEEE activities hosted by long-

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IEEE Global History Network
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time Executive Director Eric Herz, and a taped debate of the 1996 IEEE Presidential candidates. These videos, in addition to the remainder of the video collection, can be viewed here: <http://www.ieeeeghn.org/wiki/index.php/Archives:Videos>

LIFE MEMBER LEGACIES

In the 1980s and early 1990s, the IEEE Life Member Fund Newsletter invited any interested Life Member to submit their life story for publishing. Over 200 first hand accounts from IEEE Life Members were collected and published in the 1994 book *Legacies*. The IEEE History Center has digitized these stories and posted a total of 78 on the Global History Network and is planning to post the rest in the future.

50 YEAR MEMBER FIRST HAND HISTORIES

2012 marked the 50th year of IEEE in its current incarnation, and as a token of recognition, all IEEE Members who have been a continuous member since 1963 were awarded a 50 Year Member pin, and invited to submit their stories to the IEEE Global History Network. Over the course of 2012, the IEEE History Center collected and posted 63 of these First Hand Histories on the Global History Network. The History Center is still accepting submissions for 50 Year Member's First Hand Histories, which can be sent through the website, through email or as a hard copy through the mail.

To view the Life Member Legacy First Hand Histories and the 50 Year Member First Hand Histories, or to submit your own, please visit the First Hand Histories landing page: <http://www.ieeeeghn.org/wiki/index.php/Special:FirstHandHistories>

THANK YOU TO OUR HISTORY CENTER DONORS!

Your support helps preserve the heritage of IEEE's technologies.

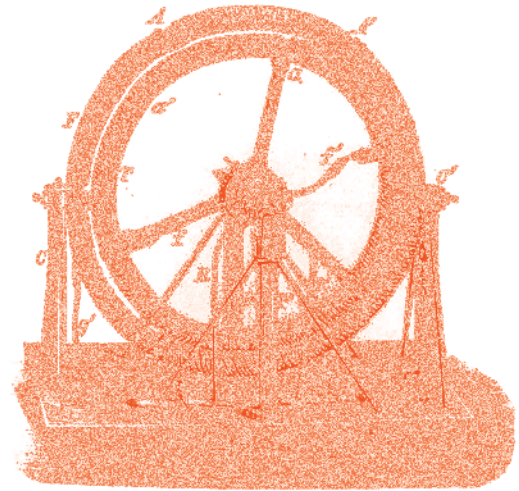


Image courtesy of Smithsonian Institution

MULTISOCIETY WORKSHOP

AICHe, AIME, ASCE, ASME and IEEE, collectively known the "founding engineering societies" (of the U.S) have each recognized the importance of raising public awareness of the role of engineering in society; improving technological literacy among the citizens of an increasingly technologically-based society; and enhancing the image of the engineer in order to improve the morale of the profession; and to attract the best and brightest young people to its ranks. At least implicitly, and in most cases explicitly, all recognize that the histories of their organizations, their members, their professions, and the related technologies play a key role in this public visibility and outreach effort. IEEE, ASCE, and ASME have active standing history and heritage committees. AICHe defers much of its historical activity to the Chemical Heritage Foundation, which was once a cooperative venture with the American Chemical Society but is now a stand-alone organization. All of the founding societies also recognize that, in outreach to the general public, the public does not make distinctions between different branches of engineering.

Of the founding societies, IEEE has the largest history operation and the most cutting-edge web presence, the IEEE Global History network (GHN; see pp. 4-5 for an update).

Therefore, the IEEE History Center approached the United Engineering Foundation (UEF) that represents the founding societies about supporting a workshop to bring together all of the founding societies to discuss cooperative historical activity, and especially the idea of using the GHN as a joint platform. The UEF granted our request. The Alfred P. Sloan Foundation, while not supplying funds at this time, also endorsed the concept.

The workshop was held at the IEEE Operations Center on 4 and 5 February 2013. In attendance were: seventeen volunteer and staff representatives of IEEE (including History Committee Chair Lyle Feisel), AICHe, AIME, ASCE, ASME, SPE, and SWE; Dennis Martenson, President of UEF; and an outside facilitator. The workshop produced an overwhelming consensus that the societies should collaborate more closely in their historical activities, particularly with regards to web presence, and that the IEEE Global History Network (GHN) is an outstanding platform that should form the core of the new site. The participants agreed to form a consortium to more specifically envision the combined site and to approach the UEF for implementation funding. Stay tuned for exciting further developments!

A BRIEF HISTORY OF TIME... KEEPING

Continuing our efforts in pre-university social studies education, on 8 February Center staff members Michael Geselowitz and John Vardalas presented an all-day workshop to twelve New Jersey High school history teachers. Once again teaming with the Rutgers University's Center for Historical Analysis' Institute for High School Teachers, the staff's topic was the interplay among the technology of timekeeping, other technologies, and other human activities throughout world history, from Stonehenge to the sundial to the Seiko Spring Drive Watch. The ed-

ucators learned how to integrate this important technological area into their teaching of history, and worked with the History Center to produce corresponding curricular material to be made available to instructors around the world through the Education Portal on the IEEE Global History network. The feedback from the teachers shows that this continues to be an important resource for them, and we will be exploring converting the workshops into webinars which could be delivered around the globe.

MILESTONES

MILESTONES IN ELECTRICAL ENGINEERING EXPANDS PROGRAM TO NEW COUNTRIES DURING 2012

The IEEE Milestones Program saw milestones dedicated in two additional countries, recognizing the important achievements made in those places. There were two milestones dedicated in India – Bose's Millimeter Wave Experiments and The Raman Effect – which were the first IEEE Milestones dedicated in that country. Uruguay also dedicated its first Milestone: the Rincon del Bonete hydroelectric plant. In addition, the IEEE Boston Section hosted a bravura celebration of three Milestone dedications at once during the June IEEE Board of Directors meeting series.

Field Effect Electron Microscope, 31 January 2012 (R10 – Tokyo)

G3 Facsimile, 5 April 2012 (R10 – Tokyo Section)

Low Loss Optical Fiber, 1 May 2012 (R1 – Photonics Society)

B&O Railroad electrification 21 June 2012 (R2 – Baltimore Section)

LORAN, 27 June 2012 (R1 – Boston Section)

Whirlwind Computer 27 June 2012 (R1 – Boston Section)

SAGE system, 27 June 2012 (R1 – Boston Section)

First Reliable HV Fuse, 3 August 2012 (R4 – Chicago Section)

Floating Gate EEPROM, 21 August 2012 (R6, Santa Clara Valley Section)

Bose experiments in radio, 15 September 2012 (R10 – Central India)

Raman Effect, 15 September 2012 (R10 – Central India Section)

Bar Code, 22 October 2012 (R2 Philadelphia Section)
http://www.ieeeeghn.org/wiki/index.php/Milestone-Nomination:Birthplace_of_the_Bar_Code,_1948

First Optical Fiber Laser and Amplifier, 26 October 2012, Photonics Society
http://www.ieeeeghn.org/wiki/index.php/Milestone-Nomination:First_Optical_Fiber_Laser_and_Amplifier

Rincon del Bonete [LF] (R9 – Uruguay Section)
http://www.ieeeeghn.org/wiki/index.php/Milestone-Nomination:Rincon_del_Bonete_Hydroelectric_Plant_and_Transmission_System

For more information on the IEEE Milestones Program, including a list of all dedicated milestones in chronological order, as well as information on proposing technical achievements as milestones, we invite you to visit the IEEE Global History Network's Milestone page at <http://www.ieeeeghn.org/wiki/index.php/Special:Milestones>

THINGS TO SEE AND DO

ANTIQUÉ WIRELESS MUSEUM 2013 GRAND RE-OPENING & CONVENTION

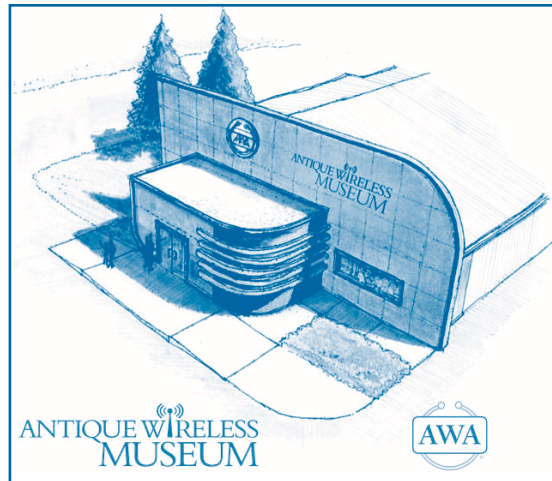
The *Antique Wireless Museum* will be re-opening at its new location on August 20, 2013, in conjunction with the *2013 Antique Wireless Association World Convention*. The convention will be held August 20-24, 2013, at the *Rochester Institute of Technology Conference Center* in Henrietta, New York. The

New York. The dual themes of this year's convention are the "GRAND RE-OPENING" of the museum and "HEATHKIT"

The Antique Wireless Association preserves and shares the history of the technologies used for communication and entertainment. These include electrical science, telegraph and wired communication, wireless, radio, television, and cellular tech-

nologies. Founded in 1952, AWA is the oldest and largest U.S. organization of its kind with an international membership of approximately two thousand collectors, academics, and historians of all ages and walks of life.

The Antique Wireless Museum is located in Bloomfield, New York, U.S.A. near Rochester. The collections represent the past 150 years of scientific and technological development of electronic communications and contain more than 25,000 artifacts and more than 150,000 vacuum tubes. AWA's new three-building campus includes the museum, the Max Bodmer Library and Media Center, and a restoration center and exhibit-construction facility. Future plans for the Museum include the installation of a new theater and further development of exhibits and programs. The Museum



library contains more than 200,000 books, catalogues, magazines, rare documents, slides and photographs, and it is the depository for the 100-year historical archive of the Radio Club of America.

2013 CONVENTION – The AWA Annual World Convention offers approximately 500 participants four-and-a-half days of total immersion in telegraph, wireless, and radio history, including presentations and seminars, historical displays featuring rare equipment artifacts and documentation, a book fair, flea market, and banquet.

Visit www.antiquewireless.org

for more information about AWA including a membership application. The dedicated website www.awamuseum.org includes information about the 2013 Convention and Museum grand reopening.

NATIONAL MUSEUM OF MATHEMATICS, NEW YORK, NY

In the city that never sleeps, it makes sense that a museum should never close. The National Museum of Mathematics, or MoMath, the latest addition to such offerings in New York City, opened 15 December 2012. Founder Glen Whitney—a logician-turned-hedge-fund-analyst who wanted to give back to society some of what he's earned—and his associate director Cindy Lawrence, along with Tim Nissen, created a showcase to promote the fun and excitement of mathematics. Ten days after MoMath opened, IEEE History Center Outreach Historian Alex Magoun, CUNY mathematics instructor Hong Yuan, their 12-year-old son, and Magoun's mother paid it a visit.

Even on a holiday, the two-story (Floors 0 and -1) facility facing Madison Square Park was packed at midday. In keeping with current understanding about the preferences of most museum visitors, there is no sequence to follow, and minimal explanation on exhibit labels. Unlike formal mathematics, one does not need to learn from a simpler exhibit to engage a more sophisticated one. The museum's charge is to "stimulate inquiry, spark curiosity, and reveal the wonders of mathematics," and many of the activities accomplished at least one of those objectives within or beyond the target audience of 8- to 12-year old children.

We descended to Floor -1 to try the Math Square, "a good puzzle" per Alex's son, which used LEDs to engage people in graph theory, albeit without telling them: how do you get to the end of a maze without taking a left turn? The Enigma Café featured a wide variety of two- and three-dimensional puzzles that were hugely popular with older children. Feedback Fractals offered an infinite mirror using three cameras and four screens, while the fractal Human Tree station based on Microsoft's Kinect motion-sensing input device led the oldest visitor—a for-

mer gardener—to try generating a conifer from her wheelchair instead of the deciduous trees typically produced. A shape changing display introduced the concept of limits by challenging users to maximize the area inside various regular polygons, which would have been better if the computer recognized all four given shapes.

On the ground, or 0, Floor, the String Product Times Table features eighty-one electroluminescent rope lines connected to ten rings, demonstrating another way of thinking about what we traditionally associate with a two-dimensional matrix. The Institute of Creative Problem Solving provided the "Tracks of Galileo," where one can adjust the slope of two rails to test the law of inertia. Kx Systems, an applied mathematics software company owned by Whitney's brother, contributed Sixth Sense, which uses a programmed matrix of Nixie tubes to predict the sum of six numbers chosen by a visitor. As the mathematics instructor noted, there was no explanation of this example of number theory. An interactive Formula Morph display lets visitors set and adjust parameters to Klein bottles, Chmutov Surfaces, etc., and view the results onscreen. Besides the programs, there are physically-realized mathematics in the tricycle with square wheels that rides on a series of catenary curves, and the Hyper Hyperboloid, where someone rotating a chair controls the angles of two sets of colored ropes encircling it.

MoMath can be recommended for all ages regardless of interests or talents. By the time of publication, the exhibits labeled "Problem Solving in Progress: Solution Underway" should be operational. National Museum of Mathematics, 11 East 26th Street, New York, NY 10010, www.momath.org 212 542-0566, 10 AM - 5 PM, daily.

2012 IEEE LIFE MEMBERS' PRIZE PAPER AWARD WINNER IS BERNARD GEOGHEGAN

The Society for the History of Technology (SHOT) has awarded the 2012 IEEE Life Member Prize Paper award to Bernard Dionysius Geoghegan. Geoghegan won for his paper "From Information Theory to French Theory: Jakobson, Levi-Strauss and the Cybernetic Approach," published in *Critical Inquiry* volume 38 (Autumn 2011). The IEEE Life Members' Prize in Electrical History, supported by the IEEE Life Members' Fund and adminis-

tered by the Society for the History of Technology, is awarded annually to the best paper in the history of electrotechnology—power, electronics, telecommunications, and computer science—published during the preceding year. Any article published in a learned periodical is eligible if it treats the art or engineering aspects of electrotechnology and its practitioners.

DONORS AND SUPPORTERS

DONOR HIGHLIGHT: PERHAPS IT IS TIME TO GIVE BACK



"much of the wisdom in electrical engineering is in its history"

L. Dennis Shapiro, IEEE Life Fellow, joined IEEE in 1951.

Dennis grew up wanting to be an Electrical Engineer. When he was a student he joined the Institute of Radio Engineers and the American Institute of Electrical Engineers before they merged in 1963 to form IEEE. He continued membership because he was proud of his profession, as represented by IEEE, and wanted to support its programs. Dennis feels that the greatest benefit of IEEE membership was the publication of technical papers in his earlier years and elevation to Fellow recently, which he says is his fondest IEEE memory.

When Dennis was elevated to Life Member his IEEE dues were waived, as they are for all IEEE Life Members. It opened up his thinking, he said, "perhaps it is time to give back to the organization that helped me to develop my professional skills, to achieve personal success and to do work benefitting millions of elderly people with Lifeline Systems, Inc." Throughout the years Dennis belonged to a number of IEEE Societies and attended some conferences, but he became more active recently. In 2006, while attending the Consumer Electronics Show in Las Vegas, NV, USA, he became aware of the International Conference on Consumer Electronics (ICCE), a conference sponsored by the IEEE Consumer Electronics Society (CE Society), of which he had been a member of for many years. He attended ICCE and became acquainted with the CE Society leaders. Realizing that there was no CE Society chapter in Boston, he set out to establish one, which was accomplished in September 2011. He became more active with the CE Society and was asked to join the Administrative Committee as VP Industrial Relations in 2013. "I believe that a healthy organization is important for a healthy profession, and I want to do my

part," Dennis said about his participation in IEEE activities.

The impact Dennis had on IEEE did not stop there. Dennis recently made donations to the three IEEE Foundation held Funds of the IEEE History Center: the IEEE History Center Fund, the IEEE History Center Oral Histories Fund and the IEEE History Center Endowment Fund. When asked why he directed his support to those funds Dennis said, "I feel that much of the wisdom in electrical engineering is in its history. Learning about how technology was discovered or invented and applied historically can be helpful in creating new technologies for the future. Knowing about individuals who are role models will inspire new engineers for generations to come."

Dennis feels that it is important for IEEE members to support the IEEE Foundation because, "the Foundation's programs of education, inspiration and preservation serve IEEE, its members and the public to better know, understand and appreciate the importance of the profession and the opportunities it brings to our youth and our world," he said.

The IEEE History Center relies on donations to maintain and expand its programs. You can support the IEEE History Center by making a donation online at www.ieee.org/donate. You may direct your gift to the IEEE History Center Fund of the IEEE Foundation.

IRA CHARITABLE ROLLOVER IS BACK!

The IRA Charitable Rollover provision was extended through the end of 2013 within the U.S. The "rollover" provision allows U.S. IRA owners aged 70½ and older, to make federally tax-free charitable distributions up to \$100,000 per year per person from their IRAs directly to eligible charities, such as the IEEE Foundation. Charitable distributions must be issued directly from the IRA administrator and may be used to satisfy the annual IRA required minimum distribution. Visit the www.ieeefoundation.org to learn more.

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ALTSCHULER, EDWARD E.

The Rise and Fall of Air Force Cambridge Research Laboratories, 2013



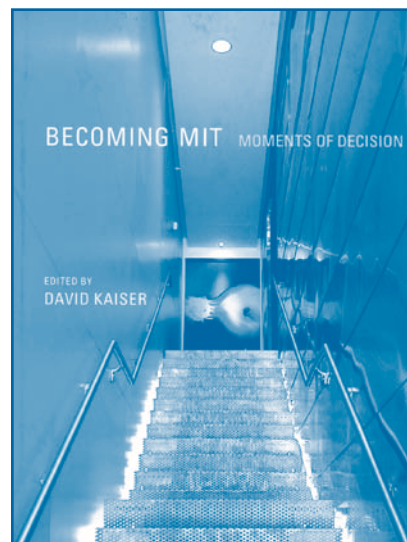
This monograph provides a chronological account of how a fledgling research laboratory, which evolved from the MIT Radiation Laboratory and the Harvard Radio Research Laboratory after World War II, rose to become one of the premier research laboratories in the world. It contains extensive primary documents (letters, faxes, emails) of interest to the historian.

Available from Amazon.com at: www.amazon.com/

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KAISER, DAVID, editor

Becoming MIT: Moments of Decision, MIT Press, 2012



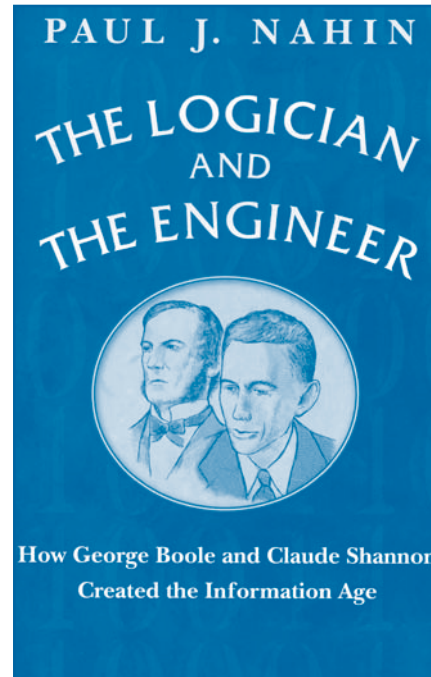
2011 marked the 150th anniversary of the Massachusetts Institute of Technology, arguably the best known institution of technoscientific higher learning in the world. At the time we reviewed an "unofficial" biography of MIT founder William Barton Rogers, and wrote about the long-term connections between MIT and IEEE. Now we have an opportunity to review an "official" book that came out of the celebrations, which has just been reprinted in paperback.

As explained in the introduction, this is not meant to be a survey history of MIT (at fewer than 200 pages, how could it be?), but rather a collection of eight essays about particular moment's in MIT's history that were affected by, and in turn had impact on both American society and global technology and education. Therefore, one will miss some of one's favorites—no entries in the index for Jerry Lettvin or hacking—while each chapter may seem at first glance to be quite distinct from the others. On the other hand, the prominence of the historians of technology recruited to contribute to this work again highlights the role of MIT in development of 20th century technology, and each contribution is worth reading

in its own right. At the same time, remarkably, taken together, the essays give a good picture of the development of MIT. The volume also wrestles honestly with some of MIT's political and social challenges, such as its role as a major military contractor during the Cold War, and the dearth of women in its ranks. It is well worth reading.

Available from The MIT Press, Cambridge, MA, 800-358-0343, fax: +1 617-625-6660, <http://mitpress.mit.edu>, paper, \$14.95, ISBN 978-0-262-51815-4 (original hardcover, 2010, \$29.95, ISBN 978-0-262-11323-6), 199 pp., index, 40 illus.

NAHIN, PAUL J.,
The Logician and the Engineer: How George Boole and Claude Shannon Created the Information Age, Princeton University Press, 2013



Nahin's fascinating book shows the historical connections between the system of algebra developed in the late 1840s and early 1850s by George Boole, the papers on information theory published by Claude Shannon in the late 1940s and early 1950s, and the way the ideas in those publications govern the operations of electronic circuits thereafter.

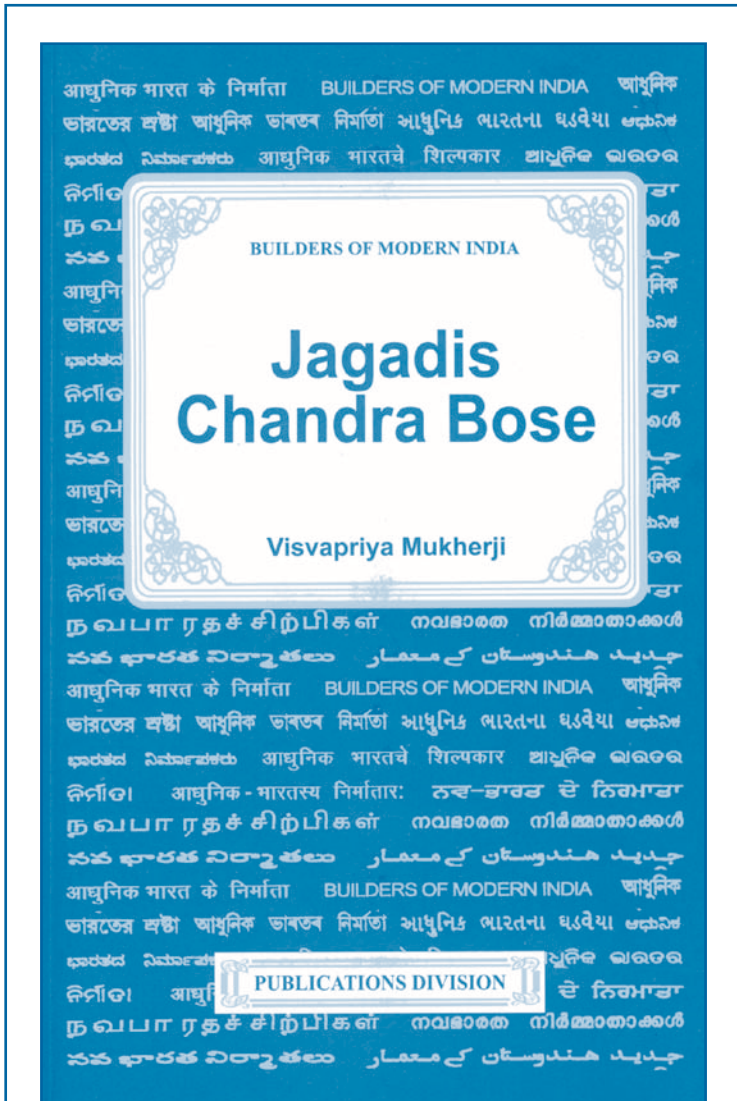
The book begins with a short biography each of Boole and Shannon, followed by a chapter on Boolean Algebra, a chapter on Logical Switching Circuits; Boole, Shannon

and Probability; Some Combinatorial Logic Examples; Sequential-State Digital Circuits; Turing Machines, and concludes with a chapter "Beyond Boole and Shannon."

Shannon was particularly interested in probabilities of failure in relays, and the chapter "Boole, Shannon, and Probability" shows how Shannon's work is used in the design of reliable relays. "Combinatorial Logic Examples" shows how Shannon's logic is used to determine channel capacity and to detect and correct errors in information transmission.

In addition to the history, the book is full of logical puzzles to engage the reader who enjoys working with the underlying algebra.

Available from Princeton University Press, 41 William St, Princeton, NJ, 05840, U.S.A., www.press.princeton.edu hardback, \$24.95, ISBN: 978-0-691-15100-7, 228 pp, index, illus.



Book Note: A reprint of the 1983 book, *Builders of Modern India: Jagadis Chandra Bose* by Visvapriya Mukherji ISBN 978-81-230-1611-5 has been published by the Ministry of Information and Broadcasting, Government of India, <http://publicationsdivision.nic.in> A pioneer of microwave physics, J.C. Bose is remembered for his millimeter wave communications experiments.

BELL LABS MEMOIRS: VOICES OF INNOVATION

published by the IEEE History Center

BELL LABS MEMOIRS: Voices of Innovation



EDITED BY A. MICHAEL NOLL
AND MICHAEL GESELOWITZ

The innovative spirit and creative energy of Bell Labs during the directorship of William Baker are described in this new book by twelve people who worked there. The first-hand accounts are by: John Pierce, father of communications satellites; Manfred Schroeder, speech encoding; Walter Brown, developer of silicon semiconductors; Carol Maclennan, computers and the Ulysses spacecraft; Alan Chynoweth, materials research; David Dorsi, expert glassblower; Edward Zajac, submarine cables and economics research; Edwin Chandross, optical memories and organic materials (inventor of the now ubiquitous light stick); Italo Quinto, chauffeur to William Baker; Mohan Sondhi, inventor of the adaptive echo canceller; William Keefauver, Bell Labs' general patent attorney; and lastly, William Baker himself. Through their eyes and words, the culture of Bell Labs comes to life.

The research done at Bell Labs led to many devices and techniques that helped build our present world. Acoustic cameras, adaptive predictive coding, block diagram compilers, cryptography, diamond crystal research, digital communication, echo research, inverse filtering, light-emitting diodes (LEDs), magnetic bubble memories, microwaves, organic field effect transistors, pulse code modulation, synthetic speech, transistors, traveling-wave tubes, and vocoders are among the topics recalled by the contributors to this book.

Available from Amazon.com in hard copy, and also on Kindle at:

http://www.amazon.com/Bell-Labs-Memoirs-Innovation-Geselowitz/dp/1463677979/ref=sr_1_1?s=books&ie=UTF8&qid=1320151019&sr=1-1

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