

# IEEE History Center

ISSUE 129, November 2025



*The IEEE Archives supports a range of scholarship. Visiting Stanford researcher Mihai Codreanu uses our data for a project on Silicon Valley.*

Signals from the Director . . . . . 2

History Committee and Volunteer Activities . . . . . 3

IEEE History Committee Awards Middleton Book Prize to *Powering America's Farms: The Overlooked Origins of Rural Electrification*

Center Activities . . . . . 4

Tiny Tech, Big Impact: IEEE Global Museum Launches *Microchips That Shook The World*

Mihai Codreanu, Visiting Researcher

Archives and Research Library Update

New Oral Histories Posted to ETHW

Report from Germany: IEEE HISTELCON 2025

Scenery and Signals: Beacon Mountain, New York

IEEE Volunteers Leverage the Free IEEE REACH Resources & Inspire Future Generations

Interesting Reads . . . . . 10

Ramirez, Ainissa, and Setor Fiadzigbey (Illustrator), *Spark: Jim West's Electrifying Adventures in Creating the Microphone*, MIT Kids Press, 2025

Support for Scholars in Our Field . . . . . 12

Fellowship and Visiting Scholar Support from the IEEE History Center

Giving and Support for IEEE History Center Programs . . . . . 13

A Legacy of Support Securing the Future of Historical Preservation: IEEE Robert and Alice Dent Historical Fund

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 (July) and twice electronically (March and November) by the IEEE History Center.

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Michael N. Geselowitz  
Senior Director, IEEE History Center

As you can see from the table of contents of this newsletter, this is a productive time at the IEEE History Center. The IEEE Global Museum continues to grow and thrive (page 4). I had the honor of representing IEEE at the installation of a copy of the “Microchips the Shook the World” exhibit at the Connecticut headquarters of ASML, one of the exhibit sponsors. It was both an opportunity for corporate engagement and a chance to see the impact of our outreach. The ASML engi-

neers were thrilled to learn about the history of their field and to see it celebrated.

The IEEE REACH program is increasing its interactions with IEEE members and organizational units, leveraging the IEEE volunteer network to increase our efforts in pre-university education (page 9). The IEEE Oral History collection continues to grow and has made some interesting recent additions (page 6). We even had a visiting scholar using the IEEE Archive in a new and exciting way (page 5). Enjoy learning about these and other activities as you peruse the pages of this issue.

## HOW CAN THE HISTORY CENTER HELP YOU?

### *A Handy Guide to Some of Our Programs and Contacts*

Engineering & Technology History Wiki: [https://ethw.org/Main\\_Page](https://ethw.org/Main_Page)

List of dedicated IEEE Milestones: [https://ethw.org/Milestones/List\\_of\\_Milestones](https://ethw.org/Milestones/List_of_Milestones)

How to Propose an IEEE Milestone:

[https://ieeemilestones.ethw.org/Milestone\\_Guidelines\\_and\\_How\\_to\\_Propose\\_a\\_Milestone](https://ieeemilestones.ethw.org/Milestone_Guidelines_and_How_to_Propose_a_Milestone)

Milestone proposals in process: [http://ieeemilestones.ethw.org/Milestones\\_Status\\_Report](http://ieeemilestones.ethw.org/Milestones_Status_Report)

Oral History Collection: [https://ethw.org/Oral-History/List\\_of\\_all\\_Oral\\_Histories](https://ethw.org/Oral-History/List_of_all_Oral_Histories)

REACH Program (free online materials for teaching the history of technology): <https://reach.ieee.org/>

History Events Calendar: <https://history.ieee.org/news-events/events/>

Support for scholars:

Fellowship in the History of Electrical and Computing Technologies:

<https://history.ieee.org/programs/fellowships-prizes/ieee-life-members-fellowship-in-electrical-history/>

Pugh Young Scholar in Residence:

<https://history.ieee.org/programs/fellowships-prizes/pugh-young-scholar-in-residence/>

Middleton History Prize (awarded to a book in the history of technology): <https://history.ieee.org/programs/fellowships-prizes/ieee-william-and-joyce-middleton-electrical-engineering-history-award/>

## WAYS YOU CAN HELP HISTORY

As you read this newsletter, you will see the many success stories of the IEEE History Center and the ways it nurtures the heritage of the profession. As successful as the Center is, it relies on the support and contributions—financial, intellectual, and time and effort—of many people. We ask you to help further our work by:

**Proposing an IEEE Milestone**—Milestones recognize significant achievements in technology  
[ieeemilestones.org](http://ieeemilestones.org)

**Contributing a First-Hand History**—Written and oral histories help us chronicle important innovators and innovations <http://ethw.org/create>

**Authoring an article for the ETHW**—The Engineering and Technology History Wiki (ETHW) is an authoritative collection of historical information about technology's contributions to society  
[ethw.org/create](http://ethw.org/create)

**Supporting the History Center's mission with a donation.**

*However you can help, it is always deeply appreciated.*

## 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 did. 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: 500-1210 words. Submit to [iee-history@ieee.org](mailto:iee-history@ieee.org). Articles and letters to the editor may be edited for style or length.

In the meanwhile, I also have an additional exciting announcement. On the IEEE staff organization side, the History Center has been moved from Corporate Activities to Conferences, Events & Experiences. This change has no impact on the IEEE History Committee, which continues, with our support, to report to the IEEE Board of Directors, to carry out their Milestone and other recognition activities, and to oversee our programs. I also do not anticipate short-term impact on those programs. Longer term, however, this is a wonderful opportunity. The reorganization shows that IEEE sees the value of history as part of telling the story of IEEE, its members, their professions and industries, and related technologies. I foresee enhanced Milestone dedication events, better integration of

the IEEE Global Museum with IEEE conferences, and the use of our oral history recordings in more IEEE outreach materials. Please continue to follow us in this newsletter, or on our website (<https://history.ieee.org/>) as things continue to develop.

Finally, the November issue of the newsletter is my chance to remind you, our supporters, that it is your gifts to the History Center that enable us to carry out our full range of programs to preserve and make known the proud legacy of IEEE and its fields of interest (see page 13 for the recent generosity of Bob Dent). But, more importantly, it is my opportunity to express my gratitude to you for all you have done up until now. Thank you again, and best wishes to you and yours for an enjoyable holiday season and a healthy and happy new year.

## HISTORY COMMITTEE AND VOLUNTEER ACTIVITIES

### IEEE HISTORY COMMITTEE AWARDS MIDDLETON BOOK PRIZE TO *POWERING AMERICA'S FARMS: THE OVERLOOKED ORIGINS OF RURAL ELECTRIFICATION*



The IEEE History Committee has chosen *Powering America's Farms* by Richard F. Hirsh as the winner of this year's IEEE William and Joyce Middleton Electrical Engineering History Award. [ieee-history@ieee.org](mailto:ieee-history@ieee.org).

<https://history.ieee.org/programs/fellowships-prizes/ieee-william-and-joyce-middleton-electrical-engineering-history-award/>

In making its decision the IEEE History Committee believes that *Powering America's Farms* [https://www.press.jhu.edu/books/title/12690/powering-american-farms?srsId=AfmBOopI4VD7\\_FeFpMCRyCtLul4N9pseMw6UfeoHXI0p67fSVo97Ncax](https://www.press.jhu.edu/books/title/12690/powering-american-farms?srsId=AfmBOopI4VD7_FeFpMCRyCtLul4N9pseMw6UfeoHXI0p67fSVo97Ncax) has made the history of technology known and accessible to the public, and has increased the understanding of it. "In *Powering American Farms*, Richard F. Hirsh challenges the notion that electric utilities neglected rural customers in the years before government intervention. Drawing on previously unexamined resources, Hirsh demonstrates that power firms quadrupled the number of farms obtaining electricity in the years between 1923 and 1933, for example. Though not all corporate managers thought much of the farm business, a cadre of rural electrification advocates established the knowledge base and social infrastructure upon which New Deal organizations later capitalized." (JHU Press)

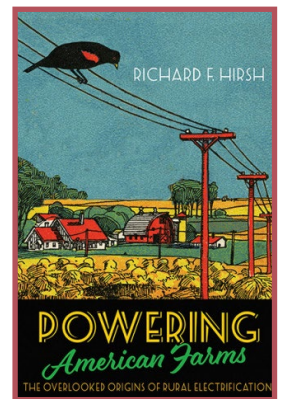
Richard F. Hirsh is a professor of History of Technology and Science & Technology Studies at Virginia Tech. He holds a Master's degree in Physics and a Ph.D. in History of Science from the University of Wisconsin-Madison.

Though previously writing about astronomy performed from outer space (published as *Glimpsing an Invisible Universe* in 1983), Richard turned his attention to the recent history of electric utilities after having served as chair of a citizen's committee

that created a new rate structure for the Gainesville (Florida) Regional Utilities System. In 1989, he published *Technology and Transformation in the American Electric Utility Industry*, a book that describes the technological, managerial, and cultural reasons for the industry's problems of the 1970s. He has also worked as a consultant for the Pacific Gas and Electric Company, co-authoring a management history on the utility's "ACT-squared" energy-efficiency R&D project.

In 1999, he published *Power Loss: The Origins of Deregulation and Restructuring in the American Electric Utility System*. He continues to publish and speak on policy-related issues dealing with electric power systems, renewable energy, and energy efficiency, working with engineers, scientists, and policy analysts at Virginia Tech and other universities.

One of the programs overseen by the IEEE History Committee is the IEEE William and Joyce Middleton Electrical Engineering History Award, established in 2014 by a gift from the estates of long-time IEEE leader William W. Middleton and his wife Joyce F. Middleton. The Middleton Award recognizes annually the author of a book (published within the previous three years) in the history of an IEEE-related technology that both exemplifies exceptional scholarship and reaches beyond academic communities toward a broad public audience. It carries a prize of US\$2,500 for the author. The 2015 inaugural winner was the book *Tesla: Inventor of the Electrical Age* by W. Bernard Carlson. Winners since then include: *Mind at Play: How Claud Shannon Invented the Information Age*, by Jimmy Soni and Rob Goodman, *The Innovators* by Walter Isaacson, and *Marconi: The Man Who Networked the World* by Marc Raboy.



## TINY TECH, BIG IMPACT: IEEE GLOBAL MUSEUM LAUNCHES MICROCHIPS THAT SHOOK THE WORLD

Dr. Daniel Jon Mitchell, Senior Historian, IEEE History Center

As we go to press, the IEEE Global Museum is launching *Microchips that Shook the World*.

Based on the Chip Hall of Fame created by *IEEE Spectrum*, this hands-on traveling exhibit explores different types of microchips and the vital roles they play through a series of iconic products, including a working Commodore 64 home computer. Interactive components, such as a magnifier rail and a gesture screen, offer visitors a rare chance to look inside several microchips and engage with a rich world of rivalries, gambits, and grand designs hidden behind the plastic packaging and metal contacts.

Funded by ASML, the IEEE Electronics Packaging Society, the IEEE Electron Devices Society, the Mensch Foundation and other generous donors, *Microchips* is designed to travel worldwide to museums, libraries and other public places, as well as IEEE conferences and events. “Chips do so many things in our lives, but they’re always hidden away. *Microchips that Shook the World* makes them visible, literally and figuratively,” says Kathleen Kramer, 2025 IEEE President. “This exhibit promotes awareness of how technological progress unfolds over generations and how engineers and researchers can build on past achievements to improve people’s lives.”

We made two identical copies of *Microchips* in order to show the exhibit at public venues and IEEE or other conferences



Andrew Judge, Chief of Staff and Strategy Execution Manager, ASML Wilton; Michael Geselowitz, Senior Director, IEEE History Center; and *Microchips* donor John Impagliazzo at the ASML *Microchips* launch.

*Chips do so many things in our lives, but they’re always hidden away. Microchips that Shook the World makes them visible, literally and figuratively” — Kathleen Kramer, 2025 IEEE President.*

and events at the same time. The first unit launched at ASML’s R&D and manufacturing site in Wilton, Connecticut, U.S.A. on 29 September and will travel on to the 71st Annual IEEE Electron Devices Meeting in San Francisco, California, U.S.A. in December. The second unit went on display to the public on 11 October / 27 December at the Attleboro Area Industrial Museum (AAIM) in Attleboro, MA, where for many years Texas Instruments based its Sensors and Control business. IEEE members and their guests can visit the museum for free until the exhibit closes on 27 December 2025.



*“Microchips that Shook the World” packs into a compact crate for easy transport.*

The IEEE Global Museum promotes an understanding of technology and its impact upon society by bringing traveling exhibits directly to IEEE and the public. It relies on support from the IEEE Foundation; to make a donation, please visit: <https://history.ieee.org/support-us/>. *Microchips that Shook the World* is the second Global Museum traveling exhibit. *Unseen Signals: E. Howard Armstrong’s Radio Revolution*, is currently on display at Infoage in Wall, NJ until 28 December 2025. For further details, see <https://history.ieee.org/programs/ieee-global-museum/>.

## MIHAI CODREANU, VISITING RESEARCHER



*Visiting Scholar Mihai Codreanu scanning documents from IEEE Archives for use in his research on the employment/innovation relationship in Silicon Valley*

In September, the IEEE History Center welcomed Mihai Codreanu as a visiting researcher. Codreanu is a fifth-year Economics Ph.D. candidate at Stanford University, California. His research uses applied microeconomic methods and large datasets to study the micro-foundations of business creation, technology adoption and performance. His thesis focuses on two programs, initiated by Fred Terman (IEEE Medal of Honor, 1950; IEEE past president) that helped jumpstart Silicon Valley. These are the development of the Stanford Research Park, the first university research park in the world, and the Honors Co-Op Program that allowed local engineers to take part-time courses at Stanford. At IEEE, he will help us scan and digitize old membership directories, mapping the expansion of the IEEE and its predecessor institutions over more than one century.

## ARCHIVES AND RESEARCH LIBRARY UPDATE

One of the main functions of the IEEE History Center is to maintain the IEEE Archives and Research Library, an essential collection for documenting the history of IEEE and the electrical engineering profession.

Since the return to office after the COVID-19 pandemic, IEEE History Center staff has been processing a massive library donation from Bill Beck, an author of more than one hundred corporate history books related to the electric utility industry in the United States. In addition to several hundred donated books, Beck also donated seventeen boxes of subject file materials pertaining to electrical utility and electrification history.

Out of this material, the IEEE History Center has accessioned and catalogued more than 2,600 documents that provide an incredibly thorough and detailed look at the development of the United States electrical utility industry.

Although the IEEE History Center Research Library is not a lending library, IEEE History Center staff would be happy to accommodate any researchers who are interested in accessing the collection or working with the materials. If you have a research project which would align with this collection, or any of the other material held by the IEEE Archives or Research Library, please email [ieee-history@ieee.org](mailto:ieee-history@ieee.org)

"Your contributions to the **IEEE History Center Fund** preserve the heritage of the profession and its contributions to humanity.

We invite you to find out more about the Center and its programs at <https://history.ieee.org> and more about the Engineering & Technology History Wiki [www.ethw.org](http://www.ethw.org) "

## NEW ORAL HISTORIES POSTED TO ETHW

The Engineering and Technology History Wiki (ETHW) is run by a consortium of engineering societies, who post various types of different content. One of these societies, the American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME), recently added three oral histories to the ETHW's repository. Containing more than 900 oral histories, the ETHW is one of the largest oral history collections in the world that pertains to the history of technology.

**Ramona M. Graves** is the retired vice provost for international initiatives, the retired dean of the College of Earth Resource Sciences and Engineering, and an emeritus professor of petroleum engineering at the Colorado School of Mines. Graves has an extensive background in multidisciplinary reservoir characterization, rock mechanics, environmental issues in petroleum development and production, and high-power-laser rock-fluid interaction. She served on international SPE committees, including the SPE Board of Directors, as the director of academia from 2018 to 2020. She received the AIME Honorary Member Award in 2024, is a 2009 SPE Distinguished Member, and received the 2017 SPE Distinguished Achievement Award for Petroleum Engineering Faculty. She holds a PhD from the Colorado School of Mines. In 2006, she was awarded an honorary doctorate from the Mining University of Leoben, Austria, becoming the first woman to receive this honor in the 166-year history of the university.

**Frank Goodwin:** Since his retirement from International Zinc Association in June 2020, Dr. Frank Goodwin has been active as an independent consultant on issues related to zinc production, downstream processing, and use. Before this, he served as Director of Technology and Market Development at International Zinc Association for sixteen years.

Dr Goodwin's initial exposure to the steel industry was a summer labor gang job in the Blast Furnace Division at the Bethlehem, Pennsylvania, U.S.A. plant of Bethlehem Steel Corporation in 1972. After many days working next to sintering plant machinery, he decided that his next visit to a steel mill would be with a college degree in hand. After completing his formal education, Dr. Goodwin joined Chambersburg Engineering Co., Chambersburg, PA, as Industrial Engineer/Metallurgist, working on process improvements for their gray iron foundry and large machine shop. He then moved to Chromalloy's Research & Technology Division in Orangeburg, NY as Assistant Director, Product and Process Development, involved in developing repairs for heavy frame gas turbines and their accessories. From there, he moved to International Lead Zinc Research Organization. Inc. in New York City with an initial

position as Manager, Metallurgy and Program Development. He progressed through a series of increasing responsibilities, becoming Vice President of Materials Sciences in 1987 and Executive Vice President at the time of the merger between ILZRO and International Zinc Association in 2004, when he assumed responsibility for all of IZA's global programs related to product technology and market development. He has served as a Visiting Adjunct Professor at Pohang University of Science and Technology and West Virginia University.

He is the author of several U.S. and foreign patents and more than 400 technical publications and contributions to books. His service to the steel industry includes co-chairmanship of the global Galvatech conference series and founding chairman of the AIST Galvanizing Technology Committee, where he continues to play an active role. He is listed in *Who's Who in Science and Engineering* and similar directories. His awards include the Nyselius and Doehler Awards of the North American Die Casting Association, the Nevison Award from the Galvanizers Association (USA), the EGGA Pin from the European General Galvanizers Association, Life Membership in Wire Association International and the American Galvanizers Association Hall of Fame.

**Dr. C. Dale Elifrits** is Professor Emeritus of Geological Engineering and Associate Director Emeritus of the Freshman Engineering Program at the Missouri University of Science and Technology, having retired after twenty six years on the faculty. He was also the Director of Pre-Engineering and Outreach at Northern Kentucky University's Center for Integrative Natural Science and Mathematics. Elifrits holds a B.S. degree with majors in mathematics and chemistry, plus secondary education. He holds M.S. degrees in earth science and geological engineering, as well as a Ph.D. in geological engineering. Before entering his career in university education and research, he taught earth science and chemistry in Missouri public schools. Elifrits is a Registered Geologist in Missouri and a Registered Member of SME. Before relocating to Northern Kentucky, he served as Vice President of the small Genius Consulting Group, LLC. He is a member of the Association of Engineering and Environmental Geologists, the American Society of Civil Engineers, and the American Society for Engineering Education. He is active in community organizations, including Rotary International, his church, the Council of the Boy Scouts of America, and CSR Academy, a charter school in Cincinnati. He has written more than eighty publications.

To read these, and other oral histories, please visit: <http://ethw.org/oh>

## REPORT FROM GERMANY: IEEE HISTELCON 2025

By Alexander B. Magoun, Ph.D., IEEE History Center Outreach Historian

The ninth IEEE History of Electrotechnology Conference (HISTELCON), sponsored by Region 8, took place in Bonn from 30 September to 2 October. It was a productive event for those interested in the historical development and social impact of electrical engineering, electronics, and computing. HISTELCON is IEEE's only history conference, but this was the first time that Germany has hosted it. Under the theme of "Knowing the Past for Preparing the Future: History of Technology for Meaningful Goals in the Age of AI," papers and discussions focused on how the history of technology and how we remember those histories provide lessons for military security, social comity, and future innovations.

The program was anchored by Histelcon chair Wolfgang Koch's ability to recruit exceptional speakers for discussions that integrated historical perspectives with current geopolitics and technological trends. The round table, "Knowing the Past for Preparing the Future: History of Technology for Meaningful Goals in the Age of AI," brought together prominent figures including IEEE President Kathy Kramer; NATO's chief scientist; Hensoldt's CTO; the commander of the German Armed Forces Space Command; Mercedes-Benz's head of radar and radar-perception; and the chair of the IEEE History Committee.

This gathering, together with others on radar and military technologies, had mixed results for historians. Of most interest

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*Two subjects received special attention: digitized recreations and emulations of hardware and software from the past, and IEEE Milestones.*

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was Rainer Kroth, former CTO of Diehl Defence, speaking from his first-hand experiences on the European side of the evolution of NATO's air-to-air missiles, from the Sidewinder to the IRIS-T series and broader air defence systems. However, the vast majority of the discussions stayed persistently in the present and recent past. It remains unclear, without examples, how engineers and scientists working on, say, the best approach to quantum computing or stopping swarms of hypersonic drones would benefit from greater awareness of history. Presumably they and their investors or commanders know that the future of any one approach is uncertain for technical, commercial, and political reasons. That requires, however, a broader historical perspective than engineers and their colleagues typically want to discuss. Those working in industry or government are not at liberty, for obvious reasons, to say more.

Nonetheless, HISTELCON 2025 was a vital international forum for historians, practitioners, and policy makers who document, analyze, contextualize, or use the history of IEEE technologies. By gathering the latest research on topics ranging from the evolution of communication and sensing technologies to the history of computational security, the conference solidified the role of historical scholarship in preparing the most thoughtful engineers and their colleagues for our uncertain future.

Two subjects received special attention: digitized recreations and emulations of hardware and software from the past, and IEEE Milestones. Carola Dahlke gave an update on a long project at the Deutsches Museum to restore and explain the history of Fritz Menzer's SG-41 cipher machine. The device was found in a German lake and the manufacturer's documents are currently inaccessible in Russia. She and Robert Jahn have drawn on private collectors, the Fraunhofer Institute, and select, declassified, digitized documents from the U.K. and U.S. Despite many closed doors of classification after eighty years, they continue to receive documents and have interviewed Menzer's daughter to piece together a digital version of the instrument, and create a documentary on her father and the secret world of the 1930s-40s. Video clips led this viewer to anticipating the finished work.

Jochen Viehoff, director of the Heinz Nixdorf Museum, explained how it arranged to borrow ten artifacts from the Whirlwind computer, which had migrated from MIT to the Computer History Museum in California. Thanks to Guy Fedorkow's emulations of Whirlwind's operations, the Heinz Nixdorf will be able to develop more interactive programs for visitors. Viehoff recognized the reality that Whirlwind, like the Enigma machines, is a tool for trained experts, not passing visitors, but the new display will open in 2026.

Mario Wolfram reviewed the digital preservation of technologies through the example of the Arithmeum's recreation of calculators. His presentation revealed the seven months of work required in 3D Animation to recreate Blaise Pascal's calculator. Like Viehoff, he concluded that it was worth the effort, for offering more detail and perspectives for viewer, with the ability to peel layers, label parts, and color code of printable parts.

On IEEE Milestones, History Committee chair David Michelson reviewed the program amid its increase in stakeholders - proposers, advocates, reviewers, and History Committee members - and the exploding number of proposals. IEEE leads other technical societies in highlighting far more accomplishments of its members, the program meets the interests of the public by recognizing, not awarding, achievements. Nonetheless the History Committee members must navigate the desire for myths rather than the facts that IEEE's reputation rests on.

Marie Hunter, managing director of IEEE's Conference, Events, and Experiences, explained how CEE can help expand public awareness of IEEE through more productive promotion of Milestone dedications and related publicity. Organizers and volunteers can draw on CEE to provide event resources, guidance in best practices, templates for publicity, and VIP arrangements. For an example of the storytelling that is possible, she showed IEEEtv's preview clip of the 30-minute karaoke machine documentary, created for the recent Milestone.

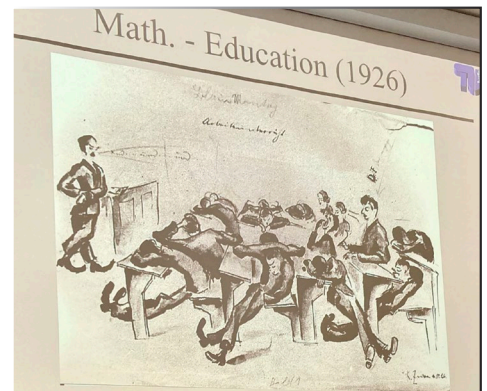
Amy Bix built on Michelson's remarks to go deeper into their use by IEEE and the broader public. She noted that the plaques do not commemorate failures, which play a crucial role in engineering progress, and that "progress" is not for everyone. The documentation rarely recognizes non-technical factors. Her example of John Atanasoff, digital computer pioneer honored by a Milestone, showed how Iowa State University and Bulgaria, among other institutions, promote themselves by making Atanasoff the inventor of modern computing.

Ishata Sharraf's "Hidden Dangers of 'Objective' Technologies" echoed Bix's observations. Her examples of algorithmic technologies – facial recognition, predictive policing, hiring software – offered progress for some, but embedded discrimination for others. Ideally, the corporations underwriting these technologies will find ways to work around biased historical data, depending on social, political, and economic interests.

One example of that potential for improvement appeared

in Nathan Brewer's review of the use of "Generative AI for History, Libraries and Archives." Having tested ChatGPT 4o on seven tasks last summer with variable results, Brewer discovered that ChatGPT 5 showed a 100 percent success rate on all seven tasks, which included fact checking incorrect historical statements. Future iterations will continue to improve AI radically.

HISTELCON is one of the Region 8's Flagship/Portfolio conferences and thanks to a multiregional operating agreement, it will also take place in Regions 10, 7, 9, and 8 from 2026. Next fall, the Japanese sections will host HISTELCON at the Hitachi Central Laboratories in Tokyo.



HISTELCON - Bonn - October 2, 2025



Dr. Horst Zuse showing one of his father (computer pioneer) Konrad Zuse's drawings at HISTELCON 2025

## SCENERY AND SIGNALS: BEACON MOUNTAIN, NEW YORK



Centuries of signal processing in one photo...Beacon Mountain station, New York.

On a recent summer weekend, IEEE History Center Research Coordinator Robert Colburn combined history and spectacular scenery in a hike up Beacon Mountain, New York, U.S.A. Beacon Mountain got its name from the northernmost location of a chain of twenty-three signal fires that ran north from New Jersey. In 1775, the colonists used the signal fires during the war of independence to alert local militias, as well as General Washington then headquartered at Newburgh, NY across the Hudson River, if British ships or troops were

observed moving north up the Hudson Valley. Before that, the mountain was already spiritually important to the indigenous Wappani and Melzingah peoples.

The very informative blog, <https://www.engineeringradio.us/> reports that "Today, the Beacon Mountain antenna farm comprises two TV stations, Media Flow, one radio station, three translators, several cell carriers, one paging company, some government two-way gear, and a few microwave relays. The 320-foot guyed tower in the center holds the main (top) and backup (bottom) antennas for WSPK." For detailed technical information on the towers, <https://www.fybush.com/sites/2010/site-101029.html>



## IEEE VOLUNTEERS LEVERAGE THE FREE IEEE REACH RESOURCES & INSPIRE FUTURE GENERATIONS

IEEE volunteers are learning how the IEEE REACH program uses a storytelling approach to engage and inspire students in STEM. Unlike traditional STEM programs that focus on “how” to design, IEEE REACH address the “Why” in STEM. It does this by using historical narratives, that focus on “why” a specific technology was developed, the societal problems it was trying to solve, and emphasizes the societal implications of technology, both in the past and present.

On 19 July, in Nairobi, Kenya, fifty-three IEEE volunteers and educators experienced the IEEE REACH resources first hand at a training event hosted by IEEE Sight Kenya, with support from HTB. The participants engaged in historical inquiry and learned how the free REACH resources can inspire students. The event served as a collaborative learning space, with hands-on activities, debates, and panel discussions that empowered participants to reimagine STEM teaching as a transformative tool for innovation and problem-solving. Training was delivered by Maryanne Karamagi, of the Bolt Club, an IEEE REACH implementation vendor, and organized by Allan Kimeli with assistance from Esther Muchiri, Immediate Past Chair of the IEEE Kenya Section. The event was a success with many looking forward to bringing the resources to their local communities. As stated by Allan Kimeli, this was a “powerful...session that used (a REACH) inquiry unit as a tool to ignite curiosity, debate and critical thinking.

Esther Muchiri and Maryanne Karamagi also presented the IEEE REACH program at STEMtastic Adventures Africa! Hosted by the Center for Mathematics Science and Technology in Africa (CEMASTE), a division of the Kenya Ministry of Education. The event had 600+ attendees which included African government and policy representatives, educators, 30+ nationalities, and eighteen Ministries of Education. An IEEE REACH educator workshop captivated educators and key stakeholders from Kenya, Uganda, Namibia, Ghana, Eswatini and South Africa. The participants learned how the program can be positioned to strengthen STEM education, gender equality and inclusive education initiatives, curriculum integration and enhance teacher professional development. The IEEE REACH team is currently exploring collaborations with some of the attendees. Allan Kimeli and four other IEEE volunteers also hosted an IEEE REACH exhibit booth at the event.

Membership in IEEE was also explored with participants from both events as many expressed an interest in how to become an IEEE member or an IEEE student member.

On 7 September 2025, IEEE REACH in association with SSIT and the annual ISTAS conference, brought together 700 students, educators, families, and technologists for a fun STEM Workshop day aboard the USS Hornet (Sea, Air and Space Museum) aircraft carrier! It was a gratifying event for all. A 12-year-old student shared, “The event was educational and engaging, offering lots of activities that made me understand more about naval history and sea navigation. The IEEE group was very helpful. They provided many informative educational videos and hands-on experiments that made learning about maritime navigation much more interesting... Overall, it was a valuable and enjoyable learning experience, and I hope that they will continue to have more events like this in the future.” Mohan Sankaran, an IEEE volunteer exclaimed, “It was a privilege to engage students and educators, sparking interest around STEM, history, and the social impact of technology... The future of STEM looks brighter than ever!” Another volunteer explained that the event provided an opportunity to witness the power of young professionals reaching out and encouraging the next generation of engineers. This event was a sequel to a successful inaugural STEM Workshop that was also organized by SSIT and IEEE REACH and brought together approximately 3000 students and educators to INAOE in Puebla, Mexico in 2024. The goal is to continue the program annually as a side event to SSIT’s ISTAS flagship conference.

IEEE REACH, an IEEE Foundation program, is only possible because of the generosity of the IEEE REACH donors, to whom we are extremely grateful. We are also thankful to all those who sponsored the SSIT STEM Workshop, the support of HTB for the IEEE Volunteer Training in Kenya, and all the wonderful volunteers, including a special thanks to Esther Muchiri and Allan Kimeli with IEEE Kenya, Luis Kun, Past President SSIT, Maureen Vavra, ISTAS25 Conference Chair, Karen Tovar IEEE Young Professional, IEEE Costa Rica and IEEE REACH STEM Workshop coordinator, Marcelo Aguero, IEEE Sr. Member, Argentina, and all the IEEE volunteers who participated in both events. It is because of your efforts that the IEEE REACH program can make a difference in a child’s life.

## RAMIREZ, AINISSA, AND SETOR FIADZIGBEY (ILLUSTRATOR), *SPARK: JIM WEST'S ELECTRIFYING ADVENTURES IN CREATING THE MICROPHONE*, MIT KIDS PRESS, 2025

Reviewed by Michael Geselowitz, Senior Director, IEEE History Center.

With all of the societal concern about STEM education, recent years have seen an increase in children's picture books biographies of engineers, scientists, and mathematicians. Many of these have focused on members of historically underrepresented groups, such as women. MIT Press, which has an MIT Kids Press imprint partnered with the well-known children's publisher Candlewick Press, has even started a series on "Black Innovators" aimed at kindergarten to grade 4. The latest entry is by the well-known science communicator Ainissa Ramirez, author of *Newton's Football: The Science Behind America's Game* (Ballantine Books, 2013) and the award-winning *The Alchemy of Us: How Humans and Matter Transformed One Another* (MIT Press, 2020). This is her first children's book, so she has been teamed with the accomplished children's illustrator, Setor Fiadzigbey, whose work has focused on sports (including, in the creative genius category, a biography of LeBron James). The result is a nice entry in this genre.

For those who don't know, James Edward Maceo West was an African-American scientist and inventor with more than 250 patents, the most important of which was the Electret condenser microphone developed at Bell Labs with Gerhard Sessler (we featured this invention in an IEEE Global Museum exhibit for IEEE Conference on Electrical Insulation and Dielectric Phenomena; you can find a PDF of the interpretive banner on our website at <https://history.ieee.org/programs/ieee-global-museum/interpretive-banners/>).

Kids and their adults will find the book interesting and inspiring. Born into Jim Crow south, Jim was determined to succeed in STEM despite the odds. He was inspired by his mother who was a teacher and mathematician who lost her job

due to her civil rights activism, but, perhaps more importantly, like many children who grew up to be engineers, he was a natural tinkerer. Ramirez engagingly tells the story, so I won't provide any more spoilers here. The back matter includes a more technical description of Jim's work for adults, a timeline of communication history, and a list of resources for further discovery.

Fiadzigbey's bright, active illustrations ably complement the clear prose.

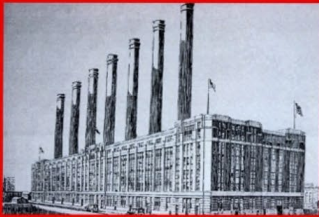
Despite the publisher's listing of the series being for k-4, there is a fair amount of text, so the book is very highly recommended for early readers at the upper end of that range. With the holidays coming up, this book would be the perfect gift for the children or grandchildren of engineers!

Available from The MIT Kids Press, Somerville, MA, <https://mitkidspress.com>, 617-661-3330, and anywhere books are sold, \$18.99 hardcover or E-book, ISBN 978-5362-2528-0, 41 pages.



# BOOKS FROM THE IEEE HISTORY CENTER PRESS

## NEW YORK POWER



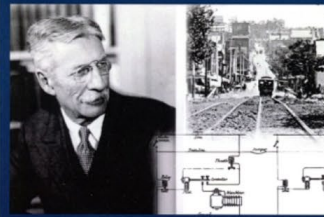
Joseph J. Cunningham

## BELL LABS MEMOIRS: Voices of Innovation



EDITED BY A. MICHAEL NOLL  
AND MICHAEL GESELOWITZ

## THE BIRTH OF ELECTRIC TRACTION



The extraordinary life of inventor Frank Julian Sprague

Frank Rowsome, Jr.

## SPRAGUE ELECTRIC



An Electronic Giant's Rise, Fall, and Life after Death

John L. Sprague

### NEW YORK POWER

by Joseph J. Cunningham

tells the story of the electrification of one of the densest electrical load areas in the world. Electrification began during the 1880s, but many innovations were required to supply urban service at a cost that would make possible large-scale consumption.

<https://www.amazon.com/New-York-Power-Joseph-Cunningham/dp/1484826515>

### BELL LABS MEMOIRS: VOICES OF INNOVATION

The innovative spirit and creative energy of Bell Labs during the directorship of William Baker are described by twelve people who worked there. Through their eyes and words, the culture of Bell Labs comes alive.

<https://www.amazon.com/Bell-Labs-Memoirs-Voices-Innovation/dp/1463677979>

### THE BIRTH OF ELECTRIC TRACTION: THE EXTRAORDINARY LIFE OF INVENTOR FRANK J. SPRAGUE

Sprague made enormous contributions in the areas of electric traction, control and safety, especially automatic signaling and brake control for railroads. He was active in the planning and construction of New York City's subway system, and in the electrification of Grand Central Terminal.

<https://www.amazon.com/Birth-Electric-Traction-extraordinary-inventor/dp/1490955348>

### SPRAGUE ELECTRIC

Sprague Electric Company's rise from a high-tech kitchen-table startup is representative of much of the U.S. electronics industry. Begun in 1926, it became a thriving manufacturer of components. More than 50,000 Sprague components rode aboard every *Apollo* mission, and more than 25,000 aboard every Space Shuttle. *Sprague Electric* provides a valuable business and technological history, a story of corporate success... and a cautionary tale of what to avoid.

<https://www.amazon.com/Sprague-Electric-Electronics-Giants-after/dp/150338781X>

## FELLOWSHIP AND VISITING SCHOLAR 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 IEEE Life Member Fellowship in the History of Electrical and Computing Technology

The IEEE Life Members Fellowship in the History of Electrical and Computing Technology 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 \$25,000 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 \$1,000 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 <https://history.ieee.org/programs/fellowships-prizes/ieee-life-members-fellowship-in-electrical-history/>. The deadline

for completed applications is 1 February of each year. This completed application packet should be emailed to [ieee-history@ieee.org](mailto:ieee-history@ieee.org) or mailed to the Chair, IEEE Fellowship in the History of Electrical and Computing Technology Committee, IEEE History Center, 445 Hoes Lane, Piscataway NJ 08854. Applicants will be notified of the results by 1 June.

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

### Elizabeth & Emerson Pugh Young Scholar in Residence

Scholars at the beginning of their career studying the history of electrical technology and computing are invited to contact the Center to be considered for the Elizabeth and Emerson Pugh Young Scholar in Residence at the Center's offices at the IEEE Operations Center, Piscataway, New Jersey, USA.

The residency seeks to provide research experience for graduate students in the history of electrical and computer technologies, while enlisting the help of promising young scholars for the Center's projects. The Young Scholar generally works full-time for two months at the History Center on a Center project that is connected to his or her own area of interest. This time is usually during the summer, but other arrangements will be considered. Pugh Scholars are also encouraged to consult with the Center's staff and its associates, and guided to research resources in the area. The residency is designed for those near the beginning or middle of their graduate careers, but advanced undergraduates, advanced graduates, and, on rare occasions, recent Ph.D.s will also be considered. Special consideration is often given to scholars from outside the United States who might not otherwise have an opportunity to visit historical resources in the United States.

The stipend is US\$5,000.

There is no formal application form. To apply, please mail curriculum vitae showing your studies in electrical history, a three- to five-page page (single or double spaced) writing sample, along with a cover letter describing the sort of project you would be interested in doing (see contact information below). The deadline for contacting the IEEE History Center is 1 March of each year.

The Pugh Visiting Scholarship is funded by an endowment from Emerson & Elizabeth Pugh.

IEEE is an AA/EO employer. Women and minorities are encouraged to apply for all positions. The IEEE History Center is cosponsored by the Institute of Electrical and Electronics Engineers, Inc. (IEEE), the world's largest professional technical society. The mission of the Center is to preserve, research, and promote the legacy of electrical engineering and computing. The Center can be contacted at: IEEE History Center, 445 Hoes Lane, Piscataway, NJ 08854, +1 732 562 5450, [ieee-history@ieee.org](mailto:ieee-history@ieee.org), <https://history.ieee.org/>.

## A LEGACY OF SUPPORT SECURING THE FUTURE OF HISTORICAL PRESERVATION: IEEE ROBERT AND ALICE DENT HISTORICAL FUND

By Jessica Arkel, IEEE Foundation

Robert Dent's lifelong involvement with IEEE began when he joined IEEE in 1965 while he was a senior at Stevens Institute of Technology in Hoboken, NJ, USA. Over the years, he has served in many IEEE volunteer roles, from his student branch to serving on the IEEE Board of Directors. Bob says, "IEEE provided an opportunity to read and hear technical information, to develop professionally, and to network with my peers in the profession and the industry in which I had chosen to work." After thirty-two years of volunteering for IEEE, he joined the IEEE staff as the Executive Director of the Power Engineering Society, now known as the Power & Energy Society (PES). After his time on staff, he returned to volunteering, and he and his late wife Alice have been generous donors to all of the IEEE social impact programs with which he has been associated. Bob says, "I want to pay forward to programs that benefit present and future electrical engineers and society in general." In recognition of their generosity, Bob and Alice are members of both of the IEEE Foundation's donor recognition groups, the IEEE Goldsmith Legacy League (planned giving) and the IEEE Heritage Circle (cumulative giving).

To cement their legacy within IEEE, Bob recently established the IEEE Robert and Alice Dent Historical Fund within the IEEE Foundation. This Fund will provide long-term support for the IEEE History Center, providing instrumental funding for historical initiatives, focused on the preservation and promotion of the history of technology as it relates to power, sustainability, and ethics. Initiatives that may be supported include activities such as the collection of oral histories, research conducted by the History Center, lectures by IEEE Historians, the purchase of artifacts, and the support of IEEE Global Museum exhibits.

Sadly, Alice passed away on 9 May 2025 before the Fund could be established. Its creation will help those who knew her mourn her passing and remember her warmth, kindness, and unwavering support for Bob's work with IEEE.



"The IEEE History Center is honored to be able to perpetuate the legacy of Bob and Alice Dent and are grateful for their generosity in promulgating our work to preserve and disseminate the history of technology," shared Michael Geselowitz, IEEE Senior Director, IEEE History Center. "I had seen Bob occasionally at IEEE activities over the years, but I first really met him in 2017 when he joined the IEEE History Committee (he eventually became Chair). Over the subsequent eight years, I have had the privilege of getting to know both Bob and Alice very well. Alice is greatly missed, but this Fund and the historical activities that it will enable will be a testament to their enduring spirit and the impact they have had on the IEEE community."

Bob invites donations in Alice's memory to the Fund. Donations can be made online via the IEEE Foundation's secure web portal [www.ieeefoundation.org/dent](http://www.ieeefoundation.org/dent) or by sending a physical check to IEEE Foundation, 445 Hoes Lane, Piscataway, NJ 08854.

If you have questions or would like to hold a personal consultation about the Fund or ways to contribute, contact Danny DeLiberato at [d.deliberato@ieee.org](mailto:d.deliberato@ieee.org) or +1 732.562.5446.



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