

IEEE History Center

ISSUE 113, July 2020

THE IEEE HISTORY CENTER TURNS FORTY



An early exhibit by the IEEE History Center in the lobby of the United Engineering Center in New York City in the 1980s.

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August 2020

Dear Friends of the IEEE History Center, and all who have an interest in the History of Technology,

We would like to express our concern and support for all the members of the IEEE community and others affected by the global health pandemic.

Last year, the History Center's FOOTSTEPS program celebrated the contributions of thousands of members' to solving the enormous technical challenges of human spaceflight. We little imagined that, within months, IEEE members would be engaged in the even more enormous challenges combating the COVID-19 pandemic.

2020 is the 40th anniversary of the IEEE History Center. Since its founding in 1980, the IEEE History Center has served the IEEE membership by preserving IEEE's institutional history, the history of the technologies in IEEE's fields of interest, and the personal accounts and achievements of IEEE members. We thank you for your past support, and hope you will continue to support our work.

The History Center makes this content available to the world via the Engineering & Technology History Wiki

The History Center will continue to serve your needs as staff work remotely. Here is a sample of some of the Center's on-line resources we invite you to enjoy:

- History Center Outreach Historian Alexander Magoun on television pioneer Vladimir Zworykin and the FBI's investigation of his visits to the Soviet embassy during World War II (<https://youtu.be/WjRJKureyA>)
- REACH is a fantastic resource for parents and teachers working with their kids through distance learning. Please share the IEEE REACH website (reach.ieee.org) with your IEEE communities and with your personal/local communities.
- History Center staff recorded classes repurposed and oral histories shared
- While working through the pandemic, a stable electrical grid maintained and managed by qualified people is crucial. The History Center, via its content on the ETHW, tells the story of IEEE members doing that.
- History Center staff are preparing a flier directed to University professors and researchers promoting the use of primary historical documents freely available on ETHW, https://ethw.org/Main_Page including Oral Histories and First Hand Histories, and encouraging them to include IEEE *Xplore* in their research course syllabi. This PDF document will be posted to relevant academic listserves, and to History and American Studies department chairs.

Feel free to contact us via email at ieee-history@ieee.org we will ensure your message gets to the appropriate staff member.

Please join us in celebrating the 40th anniversary with a donation to preserve your history and inspire future generations to understand the important work IEEE and our members have accomplished in shaping our society today. https://www.ieeefoundation.org/donate_history

Regards,



Janina Mazierska, IEEE History Committee Chair

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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By Michael N. Geselowitz, PhD

As you peruse this issue, you will see that all of our programs that you are used to reading about in our newsletters—Milestones, Oral Histories, Archives, the Engineering & Technology History Wiki—are going strong. Despite the pandemic, the staff of the IEEE History Center continues to work with the IEEE History Committee, other IEEE volunteers and staff, history and museum colleagues, and our many supporters to carry out IEEE's historical activities. The IEEE REACH Program <https://reach.ieee.org/> (see page 7) is particularly well pre-adapted to serve in a world where education is increasingly moved online.

However, while glancing at this issue's Table of Contents highlighting progress in these activities since the last newsletter, did you realize that it is almost forty years to the day that the IEEE History Center was founded? How and why did this come to be?

The full story is told in "Jim Brittain and the Allure of Electrical History" by Alexander B. Magoun, *Proceedings of the IEEE*, Volume 107, No. 4, April 2019:847-855. (generating articles for *Proceedings* is another of our important programs. Our Outreach Historian, Dr. Alex Magoun, serves as the Associate Editor of History for *IEEE Proceedings*, and the history articles he edits...or in this case, writes himself...are made publicly available outside the IEEE Xplore paywall, through the generosity of one of our donors.) Following is a brief outline of the IEEE History Center's story.

The interest in the history of the predecessor organizations of the Institute of Electrical and Electronics Engineers (IEEE)—the American Institute of Electrical Engineers (AIEE) founded in 1884, and the Institute of Radio Engineers (IRE) founded in 1912—pre-

Continued on Page 4

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

List of dedicated IEEE Milestones: https://ethw.org/Milestones:List_of_Milestones

How to Propose an IEEE Milestone: http://ieemilestones.ethw.org/Milestone_Guidelines_and_How_to_Propose_a_Milestone

Milestone proposals in process: http://ieemilestones.ethw.org/Milestones_Status_Report

Oral History Collection: 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/Support_for_scholars

Fellowship in the History of Electrical and Computing Technologies:
<https://www.ieee.org/about/history-center/fellowship.html>

Pugh Young Scholar in Residence:
<https://www.ieee.org/about/history-center/internship.html>

Middleton History Prize (awarded to a book in the history of technology):
<https://www.ieee.org/about/history-center/middleton-award.html>

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: 500-1200 words. Submit to ieee-history@ieee.org. Articles and letters to the editor may be edited for style or length.

dated their merger in 1963 to form IEEE. However, because earlier attempts to preserve and promote history had been institutionally sporadic, the decision was made to create, in the very first set of bylaws, an IEEE History Committee reporting to the IEEE Board of Directors. The History Committee was responsible for promoting the collection, writing, and dissemination of historical information in the fields covered by IEEE technical and professional activities, as well as historical information about IEEE and its predecessor organizations, and to provide assistance and advice to the IEEE Board of Directors and to major organizational units on historical matters.

For the first several years, the Committee was not particularly active. In 1971, Bernard S. “Barney” Finn, then the associate curator of electrical connections at the Smithsonian Institution (now senior curator emeritus), was invited to join the Committee as a “Consultant” (later the bylaws were changed to allow nonmember experts to serve—only the Investment Committee does likewise—and Finn at one point even served as Chair). Over the years, other historians came to be consultants and then committee members, often several at a time. The key turning point came in 1973, when James E. “Jim” Brittain joined the Committee. Brittain was an engineer turned well-regarded historian of engineering, and he maintained his IEEE membership. Building bridges between engineers and historians, together, Brittain and Finn pushed for a more active Committee.

In 1975, the Committee began to conduct occasional oral history interviews with pioneers whose memories they feared would be lost. They similarly started to collect archival material. In the late 1970s, the Committee cooperated with ASME and ASCE to award joint “Landmarks,” existing programs in the other two organizations that recognized engineering achievements with the placement of a bronze plaque. In 1975, an opportunity arose to push IEEE’s historical activities even further. John D. “Jack” Ryder, a past president of IRE and a past Vice President of IEEE, became chair of the History Committee. The United States was gearing up to celebrate its bicentennial in 1976, and many educational and professional organizations were preparing to participate. Not wishing to be left out, IEEE had Ryder and Brittain prepare a special issue of *IEEE Proceedings* on U.S. electrical history. The success of that en-

“All of our programs that you are used to reading about in our newsletters—Milestones, Oral Histories, Archives, the Engineering & Technology History Wiki—are going strong. Despite the pandemic, the staff of the IEEE History Center continues to work.”

deavor led the History Committee to point out to the Board that IEEE’s own centennial was approaching in 1984, and that they would need professional support to properly commemorate it. IEEE allocated additional funds to the Committee to commission an external report on feasibility of such a history “center.”

This “Wolff Report” recommended a staff of two: a Ph.D. historian with an administrative and/or archival assistant. In December 1978, the IEEE Board of Directors approved the “establishment of a Center for the History

of Electrical Engineering,” and allocated the initial funds. Finn recruited Robert Friedel, a young up-and-coming historian of technology who had spent some time at the Smithsonian. After being interviewed by Ryder and IEEE General Manager Eric Herz, Friedel was hired. In August 1980, he walked through the doors of IEEE’s New York City office, and the rest is...pardon the expression...history.

And what a history! Over the years, as our newsletters (Friedel soon began publishing newsletters twice and later three times per year...you will note that this is issue #113!) have and continue to attest, our programs have grown, and our staff has grown commensurately. Always under the guidance of the IEEE History Committee, however, we have remained true to the core missions of the committee and of IEEE. But there is another major partner of this endeavor. From the beginning, it was decided that the IEEE financial support of historical activities could be supplemented by philanthropic donations from members and others, first channeled through the IEEE Life Members fund, and later through dedicated history funds in the IEEE Foundation.

YOU, our loyal supporters, have been with us on every step of this wonderful four-decade journey. None of this would have happened without you—not the more than two hundred IEEE Milestones https://ethw.org/Milestones:List_of_Milestones, not the world’s most important collection of oral histories of engineers https://ethw.org/Oral-History:List_of_all_Oral_Histories, not the Engineering & Technology History Wiki https://ethw.org/Main_Page, not the IEEE REACH Program <https://reach.ieee.org/>. I want to take the opportunity of this anniversary to once again thank you from the bottom of my heart, and to wish IEEE forty more years of exciting historical activity, and look for a more formal celebration in the fall.

2020 IEEE DAY WILL BE 6 OCTOBER

The IEEE History Center encourages the inclusion of IEEE and technical history in IEEE Day activities. Please contact the His-

tory Center at ieee-history@ieee.org if you are interested in making history part of your activities.

CAPTURING YOUR VOICES AND PRESERVING YOUR HISTORY: THE IEEE HISTORY CENTER'S WORLD-CLASS ORAL HISTORY COLLECTION

The IEEE History Center maintains the largest oral history collection devoted to the history of engineering. It conducts oral histories (https://ethw.org/Oral-History:List_of_all_Oral_Histories) to preserve the history of IEEE and related fields of technology and it helps capture the voices and experiences of its members, engineers, and technologists. The Center has posted more than eight hundred full-transcript histories on the Engineering and Technology History Wiki.

In the category of oral histories documenting the history of women in engineering and computer sciences, the IEEE History Center collection is of vital importance, as well as the largest in the world. Janet Abbate collected these oral histories for her dissertation and two books. The most recent is, *Recording Gender: Women's Changing Participation in Computing*, (MIT Press, 2012). With the book's completion, the original oral histories are being made available for the first time to other researchers through the ETHW (<http://ethw.org>) which the History Center maintains. Our women's oral history collection also includes an undergraduate student project supervised by IEEE member Mary Lanzerotti, *Distinguished Female Leaders: Inspiring the Next Generation in STEM*.

In addition, the ETHW makes available oral histories conducted by associated engineering and technical societies that choose to post their material alongside ours, including ASME Presidents, AIME and Its Member Societies, Marconi Fellows, the Society of Women Engineers, and others.

Recent additions include:

Queen Elizabeth Prize for Engineering Recipients,
Global Positioning System, and
IEEE Computer Society Presidents

In the past, IEEE societies have either conducted oral histories, after receiving training from the History Center, or provided a subsidy for the IEEE History Center Staff to conduct them,

"In the category of oral histories documenting the history of women in engineering and computer sciences, the IEEE History Center collection is of vital importance, as well as the largest in the world."

including IEEE Control Systems Society, Robotics History: Narratives and Networks, IEEE Signal Processing Society, and IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society, and the IEEE Council on Superconductivity.

During the next year or so, our oral history collection strategy will focus on special projects including, "IEEE Past Presidents," "IEEE Medal and Award

Recipients," and "IEEE Fellows." Before the end of the year, we will start a new project funded by an anonymous donor to document the history of the IEEE Antennas and Propagation Society, and its technologies.

You might be wondering why we call these documents "oral histories" rather than "interviews." An interview is a finished product that you might see in the newspaper, on TV, or in some other medium. It is meant to convey particular information. An oral history, in contrast, is a "primary source," raw data from which historians and researchers will, in combination with other primary and secondary sources, create historical narratives. Historian Donald A. Ritchie informs us, "Oral history collects spoken memories and personal commentaries of historical significance." (*Doing Oral History*, 1995).

An oral history is a document created by the informal recording of a dialogue between interviewer and interviewee. A digital recording is made using a small video camera and a back-up voice recorder. The transcript is edited by the interviewer to conform with the IEEE Social Media Operations and Best Practices Guide, flow, style and consistency, and by the interviewee to confirm that his or her words have been appropriately captured. Oral history transcripts are relatively unedited when compared to other forms of interview.

The IEEE History Center thanks you for your support of our Oral History Project.

Another way to record your history is by writing a First-Hand Account, which you can do on the ETHW at <https://ethw.org/Create>.

THE ETHW'S EXPANDING RESOURCES: AN UPDATE

The Engineering and Technology History Wiki, <http://ethw.org> continues to increase its offerings for hundreds of thousands of visitors. One of the world's premier sites for information about and understanding of the people, organizations, and technologies that have shaped our world, the ETHW is maintained by the IEEE History Center on behalf of numerous engineering societies. Here is a small sample of the latest additions:

New IEEE President First-Hand Histories

Among the more than three hundred First-Hand Histories available on the ETHW, two past IEEE Presidents, Richard Gowen (1984) and Emerson Pugh (1989), have recently posted recollections of episodes in their long



Richard Gowen



Emerson Pugh

careers. In the extensively illustrated "A Quest for Understanding Weightlessness," Gowen relates how he led a research team in the 1960s to give the National Aeronautics and Space Agency (NASA) a spacesuit that could measure and evaluate physiological changes in astronauts that occurred during the weightlessness of zero-gravity spaceflight. In "Polio and Education," Dr. Pugh recounts highlights of his childhood, his experiences with polio and its treatment in the 1940s, and his return to public school education in a suburb of Pittsburgh, Pennsylvania. It concludes with Pugh's admission to Dartmouth College, and is continued by and linked to his oral history.

To read these First Hand Histories, or to submit your own, please visit the ETHW First Hand History Page:

https://ethw.org/First-Hand:List_of_First_Hand_Histories

Society of Women Engineers Oral Histories

There are nearly nine hundred oral histories available on an enormous range of engineering, technological, and scientific activities in the 20th century, recorded with members of IEEE, Society of Women Engineers (SWE), American Institute of Mining Engineers (AIME), and Society of Petroleum Engineers (SPE). The SWE archives have recently added oral histories with Prinda Wanakule, Jill Tietjen, Sue Parsons, Allison Machtemes Lunde, Beth Holloway, and Gail Mattson to its collection of more than seventy-five interviews. To read these or some of the other oral histories on the ETHW, please start with https://ethw.org/Oral-History:Society_of_Women_Engineers_Oral_Histories

"One of the world's premier sites for information about and understanding of the people, organizations, and technologies that have shaped our world, the ETHW is maintained by the IEEE History Center on behalf of numerous engineering societies."

Queen Elizabeth Prize for Engineering Recipient Oral Histories

Some oral histories in the collection detail the stories of people recognized internationally for their efforts in solving the world's problems. The Queen Elizabeth Prize for Engineering is a £1 million prize that celebrates a ground-breaking innovation in engineering. The IEEE History Center has conducted oral histories with all four of the 2019 recipients—Hugo Fruehauf, Bradford Parkinson, Richard Schwartz, and James Spilker—for their contributions to

the development of the Global Positioning System (GPS). Additionally, the History Center has also interviewed four previous Queen Elizabeth Prize winners: George E. Smith, Tim Berners-Lee, Vinton Cerf, and Robert Kahn. To view these, visit the Queen Elizabeth Prize for Engineering oral history page at https://ethw.org/Oral-History:Queen_Elizabeth_Prize_for_Engineering_Recipients

IEEE Electromagnetic Compatibility Society Newsletters

The IEEE History Center has recently been digitizing runs of various IEEE newsletters, as reported in the last edition of this newsletter. These invaluable publications detail the histories and heritage of organizing units and the people or technologies associated with them. Thanks to Dan Hoolihan, a nearly complete run of the *IEEE Electromagnetic Compatibility Society Newsletter* from its beginning as the *IRE Professional Group on Radio Frequency Interference Newsletter* in 1958 to 2011, has been posted and can be viewed on the EMCS page on the ETHW: https://ethw.org/IEEE_Electromagnetic_Compatibility_Society_History

If you have copies of newsletters of any other IEEE organizational units and would like to have them posted on the ETHW, please email ieee-history@ieee.org.

IEEE Awards Biographies

There are nearly 5,000 Encyclopedia articles on the Engineering and Technology History Wiki, supported by nearly 17,000 image, audio, and PDF files. The most recent additions are brief biographies of recent winners of IEEE's sixteen medals and thirty-one technical field awards. History Center Research Assistant Sabin Thapa, Stevens Institute of Technology '23, compiled or wrote these for the Center in time for the IEEE Vision/Innovation Challenges Summit and Honors Ceremony in May. The event has been converted to a series of virtual award ceremonies, and readers can learn about the awards and honorees at the ETHW's IEEE Awards page. This contains complete links to each medal, award, other recognitions, and discontinued awards, and their illustrious honorees:

https://ethw.org/IEEE_Awards#About_IEEE_Awards.

IEEE'S HISTORY CENTER AND EDUCATIONAL ACTIVITIES ELEVATE THEIR PARTNERSHIP

As the United States, as well as much of the world, has moved to remote learning platforms because of the COVID-19 pandemic, IEEE's History Center and Educational Activities have elevated their partnership so as to bring eLearning to the forefront. Both Education Activities' TryEngineering and the History Center's REACH program provide pre-university remote educational opportunities to the general public.

In mid-April, Educational Activities began a new virtual event webinar series titled, *TryEngineering Live: Hands-on Design Challenge*, and invited the IEEE REACH team to participate in the live event series on 14 May. The May 14th *Hands-on Design Challenge* was *Electric Lighting through the Lens of History*. The webinar highlighted the interdisciplinary nature of STEM found in the free online resources from IEEE REACH (reach.ieee.org). The REACH resources bring to life the relationships among science, technology and society through the lens of history. The webinar can be seen on demand. It describes how to use the REACH website to find a range of resources, from inquiry designed lesson plans with excerpted documents for students to short, engaging videos and primary sources that are digitally linked to the archive where they are housed. It also demonstrates a REACH hands-on activity. The activity was *How to Make a Light Bulb from Cardboard and Pencil Lead*. The on-demand webinar may be seen here: <https://bit.ly/3BCNy1S>. In addition, a video of a student completing the REACH hands-on activity can be seen here: https://bit.ly/EL_HandsOn

The webinar was extremely well received with 350 total registrants and 210 live attendees. In a post-event survey, 90.5% agreed that the quality of the event was excellent or very good, and 100% agreed that it was excellent, very good, or good. In addition, 74.5% said the event was either a lot better than expected or better than expected, and 100% felt the length of the event was just right.

The REACH team was thrilled to have the opportunity to partner with Educational Activities on this series. It was not the first time our two teams have partnered. Around the same time last year, the two teams participated in the International Technology and Engineering Educators Association's (ITEEA) annual conference, and they continue to develop a great partnership with additional collaboration planned for the future. The goal of this elevated partnership is to bring all of the great IEEE pre-university resources to the forefront with the general public.

IEEE REACH, an IEEE Foundation Signature Program, is grateful to its donors who make the program possible. Please, if you haven't already, go to the IEEE REACH website <https://reach.ieee.org/> to experience all the resources the program has to offer. These eLearning resources are not only available to teachers and for use on remote learning platforms, but they are also terrific for parents who find themselves with students at home. For example, check out one of the latest REACH videos, on *Edison, The Wizard of Menlo Park*, <https://bit.ly/WizardOfMenlo>

IEEE ARCHIVES WISHLIST

The IEEE Archives is a repository for IEEE institutional history and records. We aim to collect several classes of records, publications, and ephemeral material generated by IEEE and its organizational units. Examples of what the archives aims to collect include:

- IEEE Organizational Unit administration records and minutes
- Conferences and journals which have not been digitized in *IEEE Xplore*

- Photographs and multimedia of award ceremonies or IEEE events
- Newsletters covering IEEE activities

If you have such material and would be interested in donating it to the IEEE Archives, please email ieee-history@ieee.org

A virtual tour of the IEEE Archives is available at <https://ieeetv.ieee.org/mobile/video/ieee-history-center-archives-tour>

IEEE MILESTONES UPDATE: DESPITE PANDEMIC, ACTIVITY CONTINUES

Three Milestone proposals, ALOHANET, Push-Pull Technology for Fiber Optic Connectors, and μ PD7720 Signal Processor were approved by the Board of Directors at its May teleconference. Thanks to all the proposers and advocates who researched, wrote, and reviewed these proposals. More proposals are currently working through the submission and review phase. We encourage this activity to continue. The status of Milestone proposals is frequently updated and can be found at: http://ieeemilestones.ethw.org/Milestones_Status_Report

Although Covid-19 has forced the cancellation or postponement of upcoming milestone dedications, some Milestone proposers have contacted us about holding virtual dedications, with a full in-person ceremony later when people can travel

again. The History Center believes this is a workable approach, and will assist any sponsoring organizational units who wish to pursue that path.

History Committee members and former members who would like to represent the IEEE History Committee at a ceremony, especially one near where they live or work, are invited to check the Milestone Status Report http://ieeemilestones.ethw.org/Milestones_Status_Report (Part C) for upcoming dedications, and let the History Center Staff know (r.colburn@ieee.org). Although the History Center does not have the budget to cover travel expenses, History Center staff can solicit an invitation to the ceremony on your behalf.

MEET THIS YEAR'S FELLOW IN THE HISTORY OF ELECTRICAL AND COMPUTING TECHNOLOGY

DANIELA RUSS IS 2020-2021 IEEE LIFE MEMBERS' FELLOW IN THE HISTORY OF ELECTRICAL AND COMPUTING TECHNOLOGY



Daniela Russ is a post-doctoral fellow and historical sociologist at the University of Toronto and the University of Guelph, Canada. She earned her MA in Social Sciences from Humboldt University, Berlin, and a PhD in Sociology (summa cum laude) from Bielefeld University. She was a Fulbright scholar with Timothy Mitchell at Columbia University (2016-17) and, together with Thomas

Turnbull (Max Planck Institute for the History of Science), holds an ISRF Flexible Grant for Small Groups (2020-21).

Her research focuses on the making of energy resources

since the 19th century and the organization of capitalist and socialist energy economies in the 20th century. Her thesis title is *Computers, Optimal Planning, and the Science of Energetics in the Soviet Union (1951-1982)*.

She is currently working on a book manuscript titled "Working Nature: Steam, Power and the Making of the Energy Economy (1830-1980)".

The Fellowship is funded by the IEEE Life Members' Committee, is given annually and supports one year of full-time graduate work or one year of post-doctoral research in the history of any of IEEE's designated fields of interest. <https://www.ieee.org/about/history-center/fellowship.html>

TECHNOLOGY UNEXPECTEDS

EEG CONTROL, BRAIN COMPUTER TECHNOLOGY, AND THE ARTS

Submitted by Stevo Bozinovski

In 1988 a team of scientists used EEG (electro-encephalography) to control a robot using signals recorded from a human brain. The subject directed the robot to follow a line on the floor by sending brain signals from an EEG machine to BCI software connected to the robot. This experiment was the first successful control of a physical object using an EEG machine. Today, brain signal computer technology controls robots, drones, wheelchairs, prostheses, cars, exoskeletons, home appliances, and other physical and virtual objects.

EEG control has also found a use in the arts. The artist Lisa Park uses the EEG connected to speakers, which vibrate water in vessels. She uses both brain waves and emotions computed from those brain waves to create original art and sound. Places she performed include Smithsonian Asian Pacific American Center, New York, NY, and South by South West Art, Austin, Texas.



Artistic exploration of the use of a neurofeedback device/EEG

TECH HISTORY ON THE WEB: STAFF FAVORITES

SURFING THE WEB: ELECTROHISTORY PODCASTS AND VIDEOS

Have you become tired of reading after months of quarantine or isolation? Looking instead for something to listen to as you take some exercise on a staircase? A number of organizations and people offer podcasts—a series of recordings that can be downloaded, if you like, onto your smartphone or audio player—that discuss histories related to electrical technologies; as well as recorded lectures you can listen to or watch online, all for free.

BBC 4's "The Life Scientific" series of includes interviews with Jim McDonald, Principal of Strathclyde University, a director of Scottish Power, and President of the Royal Acade-

my of Engineering. He speaks on preparing the National Grid for anticipated demands in the face of radically changing electrical power supplies. He also relates his experiences growing up in Glasgow, being the first in his family to go to university, majoring in electrical and electronic engineering at Strathclyde, commissioning a substation at the age of twenty three, and discussing the changing trends in the industry over the course of a forty-five year career: www.bbc.co.uk/sounds/play/m000hvkp

BBC News World Service's "World Wise Web" offers thirteen ten-minute interviews by teenagers around the world with some

of the people responsible for cell telephony (Marty Cooper), Internet routing (Radia Perlman), Google Search (Ben Gomes), GPS (Bradford Parkinson), and Pixar animation (Danielle Feinberg), among others:

www.bbc.co.uk/programmes/w13xtzz/episodes/player

J. P. Burke, a software engineer at NASA's Goddard Space Flight Center, has recorded more than one hundred carefully researched and well-told histories of each of NASA human spaceflights, from John Glenn's Mercury Freedom-7 to STS-138: <http://thespaceabove.us/>. For the easiest access to the full set, he suggests clicking on the YouTube or LibSyn links.

The Computer History Museum has an online archive of lectures recorded originally on magnetic tape going back to its tenure in Boston, Massachusetts, U.S.A., in the last millennium. Among others, you can listen to Admiral Grace Hopper recount in 1983 her encounters with Howard Aitken and the Mark I, or

Ivan Sutherland discuss in 1996 his initial steps toward virtual reality at Harvard University in the 1960s:

<https://computerhistory.org/playlists/from-the-archives/>

Amateur organizations also have recordings of electro-technical historical interest. The New Jersey Antique Radio Club, for example, offers videos of its monthly meetings on YouTube. Included among tutorials on adapting analog radios to Bluetooth, and club meeting show-and-tells are Princeton University's Prof. Michael Littman recreating, measuring, and explaining Joseph Henry's signaling with "oscillatory" or electromagnetic waves in 1842 (<https://youtu.be/aR8W2vnutMo>); and the IEEE History Center's Alexander Magoun presentation on television pioneer Vladimir Zworykin and the FBI's investigation of his visits to the Soviet embassy during World War II (<https://youtu.be/WjRJKureyA>).

GIVING AND SUPPORT FOR IEEE HISTORY CENTER PROGRAMS

HONORING ONE OF THE CONSTANTS IN HIS LIFE: BOB DENT



Member Grade: Life Senior Member

An active IEEE member and volunteer since his college days at Stevens Institute of Technology more than fifty years ago, Bob Dent describes IEEE as "a source of education, networking and social events, and one of the constants in my life."

After joining the IEEE Society on Social Implications of Technology (SSIT) in the mid-1990s to explore further the effects of technology on humanity, Bob took on successive leadership roles, including presidency of the Power & Energy Society (PES) in 1996-1997 and presidency of SSIT for 2019-20.

The IEEE Smart Village initiative caught Bob's attention as soon as he learned of it. "Bringing electricity, education, and entrepreneurship to remote areas around the globe is a very noble aim and I financially support this signature program because it brings technology to very needed uses," he said.

Bob also supports the IEEE History Center and Eta Kappa Nu as well as the IEEE Foundation's 'Raising Engineering Awareness through the Conduit of History' (REACH) program. According to Bob, "this signature program helps young people understand basic principles behind the technology that has entered our lives, and how that technology developed."

In terms of his preferred donation mechanism, "the recurring gifts method eliminates my need to remember to donate each month and also allows me to have a reduced amount per month rather than one single large amount," he said. "The IEEE Foundation acknowledges my contributions and I can track them through 'My Account' on the Foundation website."

For anyone unsure of where to direct their IEEE donation, "simply donate to the Foundation Fund or 'where the need is the greatest,'" Bob advised. "The IEEE Foundation staff is very competent and capable and will invest your donation wisely."

ANDREW HOLMES-SIEDLE INVESTS IN PRESERVING HISTORY

By Karen Kaufman, IEEE Foundation

Born in Brighton, England, Dr. Andrew Holmes-Siedle served in the U.K. Royal Air Force, graduated in chemistry from Trinity College, Dublin in 1954, and completed his Ph.D. and post-doctoral research at Cambridge University from 1954-1960 on the transfer of energy within biological and chemical systems. His career spanned decades during which he worked in both industry and academia serving as researcher, entrepreneur, professor, mentor, and author.

Andrew joined IEEE in 1966, and at the time of his passing in 2019 had reached the level of IEEE life senior member. He was an active volunteer, serving for many years as a member of

"Janet Barth, 2020 Chair of the Radiation Effects Committee, called Andrew "a true gentleman whose contributions to the field of radiation effects will have lasting impact. The well-known Handbook of Radiation Effects he co-authored is essential to anyone starting out in the field. I continue to use it frequently."

the IEEE Nuclear and Plasma Sciences Society Radiation Effects Committee. Janet Barth, 2020 Chair of the Radiation Effects

Committee, called Andrew “a true gentleman whose contributions to the field of radiation effects will have lasting impact. The well-known *Handbook of Radiation Effects* he co-authored is essential to anyone starting out in the field. I continue to use it frequently.” In 2001, Andrew was awarded the IEEE NPSS Radiation Effects Award for contributions to the field of radiation dosimetry and his encouragement of young researchers in the field of radiation effects.

Andrew generously remembered the IEEE History Center in his estate plans. His eldest child, Emma Siedle-Collins, recalls many fond memories of attending IEEE events during her childhood and believes it was her father’s passion for “learning from history to inform the future” that motivated him to leave the bequest to the History Center.

The IEEE History Center truly benefits from Andrew’s belief and investment in its efforts to preserve and promote the history of technology. To acknowledge his generosity, Andrew’s name has been added to the roster of the IEEE Goldsmith Legacy League, IEEE’s legacy donor recognition group where donors are forever generous.

Read more about Andrew in his biography on the IEEE History Center’s Engineering & Technology History Wiki:

https://ethw.org/Andrew_Holmes-Siedle

Discover how easy it is for you to include the IEEE History Center in your legacy: <https://www.ieeefoundation.org/how-to-give/tomorrow/trust-provision>



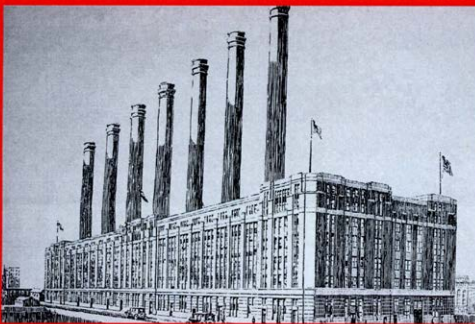
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Your contributions to the IEEE History Center Fund preserve the heritage of the profession and its contributions to humanity. We invite you to find out more about the Center and its programs at ieeefoundation.org/about/history-center/index.html and more about the Engineering & Technology History Wiki (www.ethw.org)

NEW YORK POWER



Joseph J. Cunningham

NEW YORK POWER

by Joseph J. Cunningham, published by the IEEE History Center

New York City’s density placed unique constraints on its electric light and power supply. Electrification began during the 1880s, but many innovations were required to supply urban service at a cost that would make possible large-scale consumption.

New York Power tells the story of the electrification of the one of the densest electrical load areas in the world, it was also where alternating current challenged and then ultimately vanquished the original direct-current system.

Author Joseph J. Cunningham has consulted a variety of historical sources to bring us the story of the massive and sustained effort to develop New York City’s electric utility system. He has researched and authored numerous articles and books on topics such as industrial electrification and electric rail transportation, and has taught widely on the history of electric power systems and consulted on numerous electro-technology projects and television productions. Lionel Trains has consulted him on the historical details of its model trains.

Available from

http://www.amazon.com/New-York-Power-Joseph-Cunningham/dp/1484826515/ref=sr_1_1?s=books&ie=UTF8&qid=1383598253&sr=1-1&keywords=cunningham+new+york+power
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