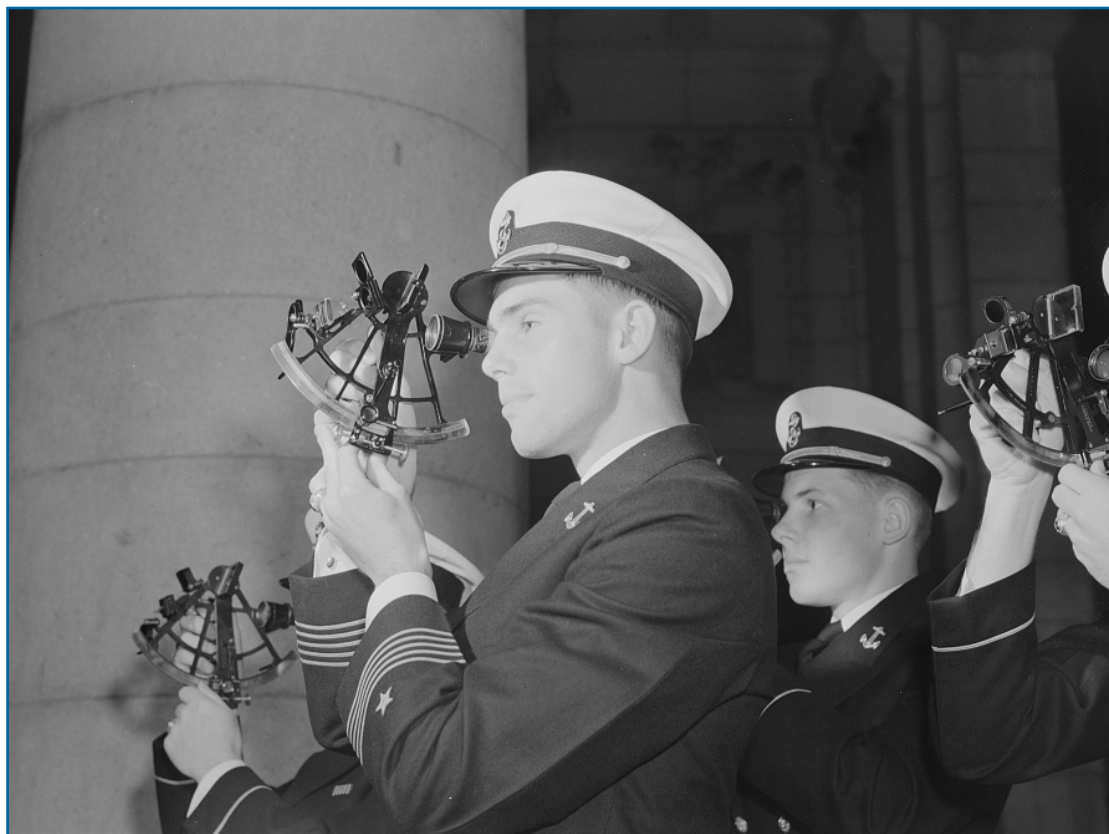


# IEEE History Center

ISSUE 99, November 2015



*REACH Signature Program's first educational resource will cover the history of navigation technologies  
(photo courtesy of Library of Congress)*

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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.

IEEE History Center  
at Stevens Institute of Technology  
Samuel C. Williams Library 3<sup>rd</sup> Floor  
1 Castle Point on Hudson  
Hoboken, NJ 07030-5991  
Telephone +1 732 562 5450  
Fax +1 732 562 6020  
E-mail: [ieeee-history@ieee.org](mailto:ieeee-history@ieee.org)  
URL: [www.ieee.org/history\\_center](http://www.ieee.org/history_center)

#### IEEE History Committee 2015

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Antonio Perez Yuste  
Antonio Savini  
Mischa Schwartz  
Isao Shirakawa  
Jorge Soares  
John Vig

#### IEEE History Center Staff

Michael Geselowitz, Senior Director  
[m.geselowitz@ieee.org](mailto:m.geselowitz@ieee.org)

Alexander Magoun, Outreach  
Historian  
[a.b.magoun@ieee.org](mailto:a.b.magoun@ieee.org)

Kelly McKenna, REACH  
Program Manager  
[k.mckenna@ieee.org](mailto:k.mckenna@ieee.org)

John Vardalas, Senior Historian  
[j.vardalas@ieee.org](mailto:j.vardalas@ieee.org)

Nathan Brewer, Digital Content  
Administrator  
[n.w.brewer@ieee.org](mailto:n.w.brewer@ieee.org)

Robert Colburn, Research Coordinator  
[r.colburn@ieee.org](mailto:r.colburn@ieee.org)

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By Michael Geselowitz, Ph.D.

The autumn (as it is now in the Northern Hemisphere) is a time of change. For many people, life is renewed with the start of a new school year. And so, here at the IEEE History Center, we can report on something old that has become new. The IEEE Archives has been renovated so that we will be in a better position than ever to preserve the heritage of IEEE and document its role in the history of engineering and technology. The full story appears on page 3.

At the same time, we are celebrating something completely new. Our new REACH program now kicks into full gear with the hiring of a Program manager (see page 3). I hope to report on great strides in this column in March.

Finally, this is also the time of year when I get to express my appreciation to you, our loyal supporters, who make the archive renewal, the REACH program, and so much more possible. Thank you again for your support, and best wishes to you and your families for a happy holiday season, and a healthy and successful new year.

#### 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 [ieeee-history@ieee.org](mailto:ieeee-history@ieee.org)

Current and past issues of the newsletter can be accessed at [www.ieee.org/about/history\\_center/newsletters.html](http://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 Engineering & Technology History Wiki, Milestones, and Oral History Collection, please click the "Donate Online" tab at [www.ieee.org/donate](http://www.ieee.org/donate) or [www.ieeefoundation.org/](http://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 [ieeee-history@ieee.org](mailto:ieeee-history@ieee.org). Articles and letters to the editor may be edited for style or length.

#### THE IEEE HISTORY CENTER NEWSLETTER ADVERTISING RATES

The newsletter of the IEEE History Center is published three times per annum; one issue (March) in paper, the other two (July and November) electronically. The circulation of the paper issue is 4,800; the circulation of the electronic issues is 22,500. The newsletter reaches engineers, retired engineers, researchers, archivists, and curators interested specifically in the history of electrical, electronics, and computing engineering, and the history of related technologies.

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

Please submit camera-ready copy via mail or email attachment to [ieeee-history@ieee.org](mailto:ieeee-history@ieee.org).

Deadlines for receipt of ad copy are 2 February, 2 June, and 2 October.

For more information, contact Robert Colburn at [r.colburn@ieee.org](mailto:r.colburn@ieee.org).

## HISTORY COMMITTEE CHAIR'S MESSAGE

The past year has revealed diverging contrasts in the work environment between my home here in Sydney, Australia and observations internationally. It is evident more and more people are seeking to aspire to working in specialised areas, but are too lazy to complete the necessary skills with a degree or doctorate. This is evidenced by unqualified persons rising to positions of power and leadership systematically downgrading the pay and conditions of genuinely qualified staff.

Indeed the 'new world' work ethic attributes that seem to be desired by companies led by the unqualified, seems to be one where new employment is solely based on mateship and camaraderie, rather than any ability to the deliver or accept responsibility. I've made an observation that many sources of

work and employment in the past eighteen months is akin to an 8 year old with a billion dollars of pocket money. As extreme as that may sound, the decisions and the naivete of the leadership play almost perfectly into that model.

While this observation may not translate well into the IEEE, I think we need to be acutely aware and be in a position to defend the IEEE's ability and reputation from being downgraded by the 'new world' order. Those who think that negative should consider what benefits would come to IEEE from having a non-technical, non-engineering leadership.

All the best for the festive season in the Northern Hemisphere, and the Summer Holidays in the Southern Hemisphere.

## CENTER ACTIVITIES

### KELLY McKENNA JOINS THE HISTORY CENTER STAFF



The IEEE History Center is pleased and proud to welcome Kelly McKenna as our newest full-time staff member. As you have been hearing, a lot of effort going forward will be put into our new REACH Program (Raising Engineering Awareness through the Conduit of History), a Signature program of the IEEE Foundation. Kelly joins us as the REACH Program Manager, a new position. She has a BA in Communication Arts/Broadcasting and

MFA in documentary film, and extensive and varied experience in sales, marketing, and education, as well as in film production. Kelly is based at the History Center and is part of the History center team reporting to Senior Director Michael Geselowitz, but she will also be working closely with the Foundation team, especially the REACH Development Officer, Natalie Krauser McCarthy.

On page 4, Kelly explains all the activity she has undertaken in just a few short weeks here. We are sure that our readers will look forward learning more about the REACH program as it grows and unfolds.

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## IEEE ARCHIVES EXPANSION AND RENOVATION OPENING CEREMONY



L-R: Mike Geselowitz (IEEE History Center Senior Director), Vaishali Damle (Managing Editor, Proc IEEE), Jim Prendergast (IEEE Executive Director and COO), Karen Galuchie, (IEEE Foundation Executive Director). Photo: Carrie Loh

By Nathan Brewer

The IEEE Archives is one of the IEEE History Center's most important activities in preserving the history and the institutional memory of IEEE. The archives' main function is to act as a permanent repository for institutional records. The oldest documents in the archives date back to the American Civil War. All material in the archives is on a permanent retention schedule, and the IEEE History Center fully intends that the collections be preserved for another 150 years and beyond. The History Center is able to use these documents as an information source for historical questions, and routinely handles reference and research requests. One of the most recent projects involving research in the archives is Andrew Butrica's history of the IEEE Life Members committee and Life Membership, published in early 2015.

The archives were formally established by the IEEE History Center as a way to prepare for IEEE's Centennial in 1984. The

History Center was tasked with assembling an archive, piecing together various documents and collections from various parts of the organization. Since the centennial, the archives have acted as a central repository for all of IEEE's historical records. Over the years, the size of the collections has expanded to approximately fifteen cubic meters by 2015. The initial space allocated for the archives at 445 Hoes Lane was a small room on the conference floor, and the collections eventually outgrew the space. With the help of IEEE Facilities, the archives space has been significantly renovated and expanded.

The room the archives are stored in has been completely redone. The physical area has been expanded, and new shelving has been installed. As a result, the amount of potential space for collections has approximately doubled, which allows the History Center to further expand the collections. For the past several years, the archives were extremely cramped with very little space to integrate new materials, and now the new space allows for easier access, cataloging, and organization.

Additionally, the previous archives space had climate control conditions that were less than optimal. A mobile dehumidifier unit that had to be manually changed every couple of days was the only form of moisture control. IEEE Facilities has installed a state-of-the-art HVAC system providing appropriate climate control conditions to the collections during all hours of

the day, ensuring their long-term survival.

The archives has many unique items of historical interest, including Nikola Tesla's applications to AIEE for admission and transfer to the grade of Fellow, a 1915 canteen from AIEE president Comfort Avery Adams, and Elihu Thomson's Edison Medal certificate. Several collections such as the papers dealing with the merger between AIEE and IRE which formed IEEE have been digitized and posted on the Engineering and Technology History Wiki (<http://ethw.org>)

To commemorate the reopening of the archives, the IEEE History Center, with the IEEE Foundation, held a dedication ceremony for IEEE Staff on 16 September 2015. Attendance was far larger than expected and there was standing room only in the room. IEEE Executive Director Jim Prendergast opened the ceremony, followed by a brief ten-minute presentation from History Center staff. A contest was held to determine who would cut the ribbon of the archives. Vaishali Damle of Publications was the winner of the contest, and a tour of the new space followed.

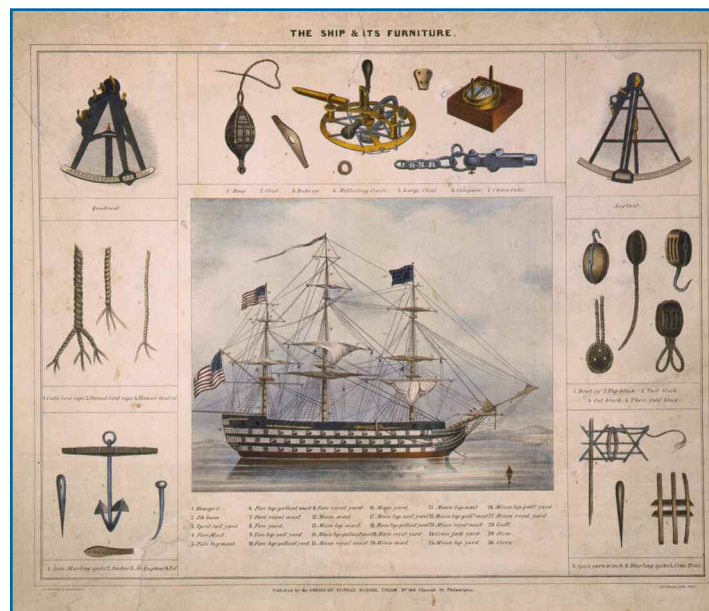
If you would like to make an appointment to see the archives or have a research question the IEEE History Center may be able to help you with, please email Nathan Brewer at [n.w.brewer@ieee.org](mailto:n.w.brewer@ieee.org)

## STEERING A COURSE TOWARD ENGINEERING AWARENESS AND APPRECIATION

By Kelly McKenna,  
REACH Program Manager

Engineering and technology have influenced life over the centuries, and modern life as we know it would be very different without advances in these disciplines. Raising awareness and appreciation of these disciplines, at the high school level, through various multi-media focused themes is the essence of REACH. As shared in the last issue, REACH is a brand-new initiative, chosen by the IEEE Foundation to be one of its Signature Programs. As reported elsewhere in this issue, I have joined the IEEE History Center as the REACH Program Manager to lead the charge (see page 3) and I am thrilled to be a part of the team.

REACH speaks to my heart because my passion is to engage and inspire through multi-media, and to share stories that viscerally connect others for the betterment of humanity. I am honored to have such an opportunity with REACH, because



REACH provides a needed tool for history teachers to advance students' knowledge about the history of engineering and technology, and highlights the impact technology continually has on society.

During my first weeks with the IEEE History Center, I met with key academic personnel from the initial REACH Academic Advisory Panel, and connected with several academic administrators to foster strategic relationships. In November, REACH and the IEEE History Center will have a booth at the National Curriculum Standards

for Social Studies' national conference to cultivate national interest in REACH.

REACH's first enrichment lesson resource will be designed for 9th and 10th grade World History classes and the theme will be Maritime Navigation. Securely anchored by the vast assets of the IEEE's History Center, REACH is now ready to set sail on its collective and collaborative journey. I've begun to

explore resources that will assist with REACH’s development, among these are the History Center’s invaluable staff and historians, IEEE members, the IEEE Foundation’s development department and other internal departments such as Educational Activities and Marketing, as well as outside partners including history teachers and administrators, congruent museums, potential distribution outlets, production teams and animators. It’s an exciting time! These collaborations will help us

achieve our goal: to build a program that will ensure that engineering awareness and appreciation is in reach of us all. I’m delighted to share the progress with you and I invite you all aboard! [k.mckenna@ieee.org](mailto:k.mckenna@ieee.org)

You can support REACH by clicking on <https://www.ieeefoundation.org/donate> and choosing “IEEE REACH Fund” at the “Designation” box.

## QR CODES USE HISTORY TO FOSTER IEEE ENGAGEMENT

QR codes are an excellent way to connect people with additional in-depth information about an artifact, photograph, or an event. The History Center has placed QR codes on or near historic photographs at the IEEE Operations Center in Piscataway. IEEE Staff, as well as visitors to the meeting rooms, can use their mobile devices to learn more about an intriguing photograph of a person or historical event or object. The codes access an appropriate page on the Engineering & Technology History Wiki <http://ethw.org> which provides extensive detail, more than could be provided in a caption.

The QR code program at Piscataway is fostering employee engagement by providing a deeper sense of the history of the IEEE and the important technical contributions to humanity made by its members. The project was the idea of and is the work of Digital Content Administrator Nathan Brewer and Research Coordinator Robert Colburn.

Milestone proposals too are benefiting from QR codes. A code is now included as part of the official notification email sent by History Center staff to the proposers when an IEEE Milestone is approved by the IEEE Board of Directors. These codes access the page on the ETHW corresponding to that milestone, and can be printed in the dedication ceremony programs or shared with media to provide in-depth information on the history of the achievement.

History Center staff will gladly email PDFs of QR codes for previously-dedicated Milestones upon request to Milestones Administrator Robert Colburn [r.colburn@ieee.org](mailto:r.colburn@ieee.org) IEEE Organizational Units who would like QR codes linking to their history pages on the ETHW may also request them.

## THANK YOU TO OUR HISTORY CENTER DONORS!

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

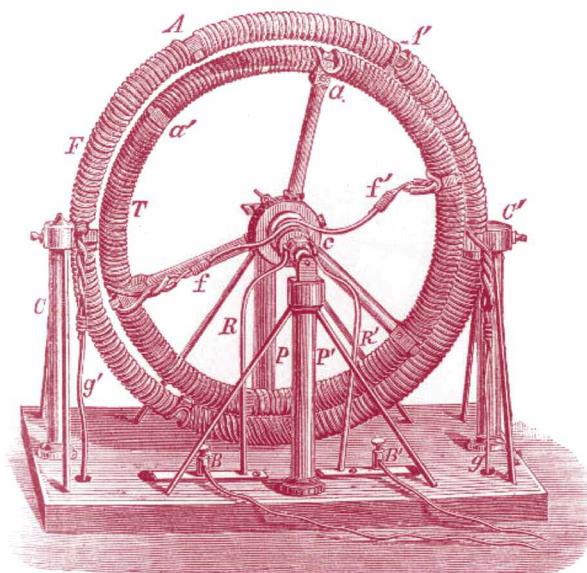


Image courtesy of Smithsonian Institution

## IEEE HISTORY CENTER SOCIAL ON TWITTER AND TUMBLR

The IEEE History Center is bringing history to increasing numbers of people via social networking tools such as Twitter and Tumblr. Follow the activities of the IEEE History Center and others involved in the history of engineering on its Twitter feed at <https://twitter.com/ieeehistory>, which has 1,000 followers.

The IEEE History Center maintains a blog on Tumblr in which interesting images related to the history of technology are posted. Featured in Tumblr’s history and

science categories, the blog has approximately 144,000 followers as of October 2015 and more than 201,000 total social interactions. To date, six of the posted images were featured on Tumblr’s radar, a feature that allows the Tumblr staff to broadcast selected images to all logged-in users. These posts receive significantly more social interactions, the highest reaching 12,000. To follow the blog or to view the images, go to <http://engineeringhistory.tumblr.com/>.

## HISTELCON 2015 AND 60<sup>TH</sup> ANNIVERSARY OF ISRAEL HI-TECH

By Dr. Jacob Baal-Schem – SLM, Member IEEE History Committee

HISTELCON 2015, the HISTory of ELECTrotechnology CONFerence of IEEE Region 8, was held at Tel Aviv University, Israel, on 16-20 August 2015 on the theme was History of high-technologies and their socio-cultural contexts. The IEEE sessions dealt with regional studies – hi-tech weapons of ancient European seas, the first Metro line in Budapest, Siberian electronic progress, the history of innovation in Japan, Soviet radio inventions and broadcasting, the history of Bell Labs, and other facets of the history of electro-technology.

The last day was organized by IEEE Israel Life Members to celebrate sixty years of Israeli High-Tech. After an overview of the roots of Israel Technology by Baal-Schem, Dr. Leviathan described the first Electronic Computer in the Middle East – the WEIZAC, an IEEE Milestone. Professor Nemirovski recalled the first steps in microelectronics, and Dr. Shapira escorted us through the steps towards electro-magnetic compatibility. Elisha Yanay described the setting up of Motorola Israel as an industrial pioneer, and Daniel Rosenne introduced the problems encountered in using modern technologies in designing a military project. Two professors of Tel Aviv University – Yosi Shaham and past IEEE Israel Section Chair Simon Litsyn – introduced some of the more recent Israeli technological achievements in nanotechnology and flash memories.

The third session was a homage to Israel high-tech pioneers Uzia Galil (founder of Elron), Benny Landa (founder of Indigo), Yehuda and Zohar Zisapel (founders of the RAD Group), Dov Moran (inventor of the Disk-on-key), Gil Schwed (inventor of the firewall and founder of Check Point); Orna Berry (Corporate Vice President Growth and Innovation EMC); Yossi Matias (Vice President, Engineering at Google); and Moshe Yanai (Executive Chairman IBM XIV Storage System), who could not be present at the event.

The founders received from Region 8 Director a certificate of appreciation signed by the IEEE President and each of them was invited to present shortly on "his way" to his achievements. All of them mentioned the special spirit of Israeli human capital – a spirit of entrepreneurship and daring.

The conference was organized by IEEE Israel Section in conjunction with the 42th Annual Meeting of ICOHTEC (International Committee on History of Technology) and with the technical cooperation of IEEE History Center, represented by Dr. Michael Geselowitz and Dr. John Vardalas. Region 8 was represented by its Director – Costas Stasopoulos and its Past-Director – Martin Bastiaans. The IEEE organizers were J. Baal-Schem (Chair), Shmuel Auster (Vice Chair), Rafi Hoyda (Secretary), and past IEEE Israel Chair – Prof. Simon Litsyn.

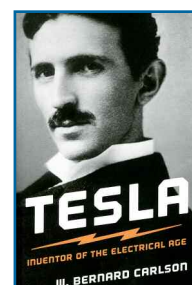
The next HISTELCON is planned to be held in Kobe, Japan in August 2017.

## MIDDLETON BOOK PRIZE AWARDED

### 2015 WILLIAM AND JOYCE MIDDLETON ELECTRICAL ENGINEERING BOOK PRIZE AWARDED TO *TESLA: INVENTOR OF THE ELECTRICAL AGE*

The IEEE History Committee has awarded the 2015 Middleton book prize to Bernard Carlson's biography of Tesla. The award is funded by the bequest of long-time IEEE volunteer William "Bill" Middleton and his wife, Joyce, and is for the author of a book in the history of an IEEE-related technology that exem-

plifies exceptional scholarship and reaches beyond just the IEEE and scholarly historian of technology communities toward a broad audience.



## IEEE WiFi STANDARD TURNS 25

### HISTORY AND IEEE 802.11: WHAT A DIFFERENCE 25 YEARS MAKES!

By Adrian Stephens, Chair,  
IEEE 802.11 Wireless LAN Working Group

The history of the IEEE 802.11™ Standard touches on themes in technology development, as well as the history of science. This year marks the Working Group's 25th anniversary, which offers an opportunity to look at where the standard came from and

where it is heading. Over the past quarter century, the IEEE 802.11 standard has become part of our daily lives, affecting our individual behaviors, and reshaping our collective social activities. Everyone with a laptop, tablet or smart phone has come to expect an environment of low-cost or no-cost, always-on connectivity. That connectivity has empowered us as mobile individuals and enterprises, and enabled on-the-fly social net-



## OUR TECHNICAL HISTORY: THINGS TO SEE WHILE TRAVELLING

By Anthony C. Davies, Emeritus Professor,  
King's College London, England

The IEEE History Milestone plaques are well known, and often members (and others) like to visit their locations, and may have the opportunity to then also see what remains of the invention or innovation which they recognise, and/or to gain a better understanding of the context of the achievement which they document.

With the transfer of the GHN website data into the ETHW [www.ethw.org](http://www.ethw.org), the Historic Landmarks of ASME and ASCE have been brought within the same framework and so information about their locations and details has become easily available to IEEE members.

However, there are still many historical plaque and marker schemes which are outside this framework, initiated and controlled by other organisations, and the purpose of this note is to give some examples of ones which may be found in England.

The Institution of Mechanical Engineers (IMechE) has a scheme of Engineering Heritage Awards (EHA). Their Heritage Committee review and decide on the validity of each application. A total of about 100 awards have been made. This was previously known as the Engineering Heritage Hallmark Scheme (EHHS), the first being awarded in 1984.

Two example plaques are shown.

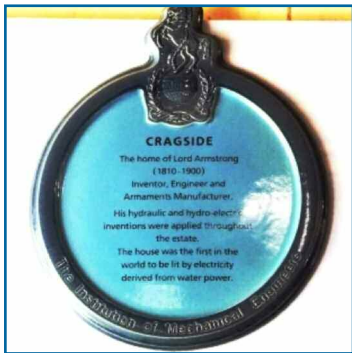


Fig.1 Cragside: first house in the world to be lit by hydroelectricity generation (in Northumberland, North Eastern England)



Fig.2 The Royal Arsenal at Woolwich, London. Many years of innovation in armaments from 1671 onwards.

the Royal Society of Arts (RSA), the London County Council (LCC), then the Greater London Council (GLC), and are now administered by English Heritage.

Because of the widespread recognition of the Blue Plaque scheme, various other organisations have chosen to use similar round plaques to recognise 'local people and events' of historical significance. Fig. 5 shows a plaque commemorating the house where Sir Francis Ronalds lived, a rather-forgotten pioneer of electrical telegraphy, and there are several plaques to well-known and famous professors of King's College London, which are mounted on an outside wall. The IEEE Plaque for James Clerk Maxwell's discovery of the equations named after him is on an internal wall of the same building.



Fig.3 Plaque at entrance to RAF Museum at Cosford.



Fig.4 Blue Plaque at Alexandra Palace, North London



Fig.5 Plaque about to be erected in 2013 on a house in Highbury, London

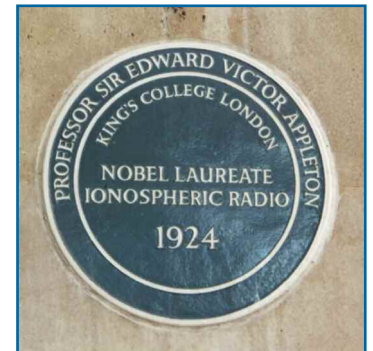


Fig.6 One of a number of plaques on an external wall of King's College London, Strand campus

There is an excellent IMechE booklet which describes all their Heritage Awards (up to 2012), with good photos for each one. All except five are within the United Kingdom. The Royal Aeronautical Society (RAeS) also has historical award plaques, their first one in 2008.

Visitors to London, England are likely to be aware of the Blue Plaque scheme, which places these on buildings associated with notable people and events. These cover all suitable subjects of which some lie within the field of interest of IEEE. Fig. 4 shows the one at Alexandra Palace which recognises the start of regular public TV broadcasting.

The Blue Plaques were, successively, the responsibility of

With so many different organisations involved, it is inevitable that the policies and procedures for the nomination and approval of plaques vary widely, and the motivations of those involved may differ. For example, a member of the Highbury View Tenants Association told me that they liked to have a plaque on the wall of their house because it increased the financial value of their property. A stated policy of the RAeS scheme is to not duplicate achievements for which some other organisation has provided a plaque.





Fig.7 On wall of Savoy Place building

A carved stone inscription, on the wall of the Savoy Place building in London now occupied by the Institution of Engineering and Technology (IET) formerly called the Institution of Electrical Engineers (IEE). Fig. 8 is yet another style: a steam engine restored and labelled, as a war memorial to the contribution of Novosibirsk to victory.



Fig.8 Restored steam engine in Novosibirsk in Recognition of Novosibirsk's contribution to victory in the 1939-1945 great patriotic war

Yet another style of historic recognition is the memorial to pioneering radar work done during World War Two at Worth Matravers, Dorset.



Fig.9 Radar memorial at Worth Matravers

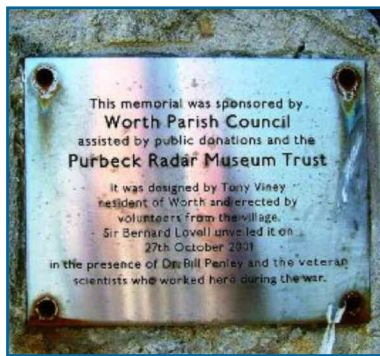


Fig.10 Explanatory Plaque

A blue plaque which records the location at a railway bridge across Grove Road, Mile End, East London, of the first 'flying bomb' of World War Two to land in London.



Fig.11 Railway Bridge in Grove Road, London



Fig.12 Blue Plaque of English Heritage

Combinations of plaques in the same location can sometimes be significant. For example, the IEEE Milestone plaque recently unveiled to commemorate the 1931 stereo sound recording and reproduction inventions of Alan Dower Blumlein takes its place alongside a plaque which commemorates Sir Edward Elgar, at the entrance to Abbey Road Studios. A particular significance of this pairing is that Blumlein made a stereo recording of the London Philharmonic Orchestra in 1934, while it was conducted by Sir Edward Elgar.



Fig.13 Entrance to Abbey Road Studios

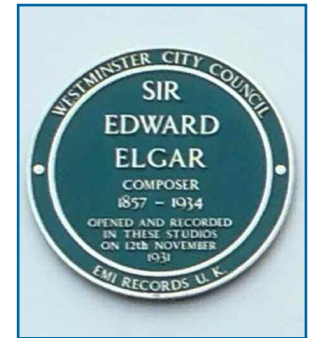


Fig.14 Edward Elgar Plaque at Abbey Road Studios

## Concluding remarks:

An interest in Historical matters is not always widespread amongst engineers and particularly not among young and early-career engineers. However, engineering is often said to be about 'inventing the future' and clearly not knowing enough about past methods and achievements can be a severe handicap in trying to successfully invent and develop new ideas. The various History award plaques are therefore of importance in setting achievements in a proper context, and so their promotion can be strongly recommended.

## Acknowledgements:

With the exception of Fig. 13, all photos were taken by the author. Fig. 13 was taken by Alan Blumlein, grandson of Alan Dower Blumlein, the subject of the Milestone, and is used with his agreement.

## References:

- [1] IMechE Engineering Heritage Awards, 3rd Edition, 2012 available from [http://www.imeche.org/docs/default-source/engineering-heritage-awards/IMechE\\_Heritage\\_Brochure\\_3rd\\_Edition.pdf?sfvrsn=12](http://www.imeche.org/docs/default-source/engineering-heritage-awards/IMechE_Heritage_Brochure_3rd_Edition.pdf?sfvrsn=12)
- [2] Dieter Hölksen *V-missiles of the Third Reich, the V1 and V2*, Monogram Aviation Publications, 1994, Mass. USA (ISBN 10: 0914 144421 and ISBN 13: 9780914144427).
- [3] A.C. Davies, 'Stereo Sound Recording and Reproduction - Remembering the History', *IEEE Signal Processing Magazine*, Sept 2015, Vol 32, no 5, pp 14-16 (DOI: 10.1109/MSP.2015.2440191)

## SURF CITY

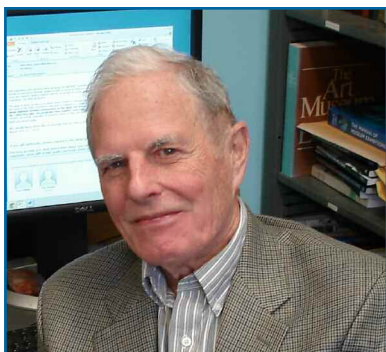
A selection of sites which IEEE History Center staff have come across in the course of their work, and which might be of interest to our readers:

<http://www.thocp.net/> The History of Computing Project. A joint project of several non-U.S. computer history museums. Includes timelines, biographies, hardware histories.

<http://www.historicengland.org.uk/images-books/publications/iha-20thcentury-coal-oil-fired-electric-power-generation/> Historic England has recently published a short introduction to the history and development of buildings associated with 20th century coal- and oil-fired electricity generating power stations, which may interest list members. You can get your free download from the Historic England website.

## DONOR PROFILE

### BERNARD (BARNEY) FINN: KEEPING ENGINEERS EDUCATED ABOUT HISTORY



With a degree in engineering physics, Barney Finn found his first professional job rewarding but somehow lacking a sense of fulfillment. This led him to obtain a PhD in History of Science, which he still feels would have made him a satisfied engineer; but instead he became curator of the Smithsonian Institution's historical electrical collections.

His position brought him in contact with the nascent IEEE History Committee. The consequence of this acquaintance was a career-long association, highlighted by the establishment of the History Center in 1980. "The enthusiasm of the committee members, and ultimately the creation of the center, provided reassurance that history should be considered an important el-

ement in an engineer's long-term education," Barney said, "I feel strongly that engineers should have exposure to the humanities, especially history."

The Bernard S. Finn IEEE History Prize, funded in part by the IEEE Life Members Fund of the IEEE Foundation and administered by the Society for the History of Technology, was recently renamed from the IEEE Life Members Prize in Electrical History. Barney says, "Nothing could have made me feel better about my commitment to these two groups than this great honor." The prize is awarded annually to the author of the best published paper in the history of electrotechnology—power, electronics, telecommunications, and computer science.

"The IEEE Foundation is a significant supporter of the History Center's programs," said Barney. "For this reason my modest financial contributions have given me great satisfaction." For more about Barney, read his oral history on [ethw.org/Oral-History:Bernard\\_Finn](http://ethw.org/Oral-History:Bernard_Finn)

## BERNARD A. FINN IEEE HISTORY PRIZE

### 2015 BERNARD S. FINN IEEE HISTORY PRIZE AWARDED TO WILLIAM RANKIN

The Society for the History of Technology (SHOT) has announced that it has awarded the 2015 Bernard S. Finn IEEE History Prize to Dave William Rankin for his paper, "The Geography of Radionavigation and the Politics of Intangible Artifacts," *Technology and Culture* 55(3) (July 2014): 622–674. Bill Rankin is assistant professor of history of science at Yale University. The article features a detailed analysis of radio-based navigation systems, 1930s–1960s, which the author uses as a window through which to develop novel theoretical discussions on the "thingyness" of intangible artifacts, or stuff that disappears into the background as people get used to it. The committee mem-

bers were deeply impressed by the combination of empirical and theoretical accounts that Rankin deftly weaves to construct a fresh argument.

The Bernard S. Finn IEEE History Prize (formerly the IEEE Life Members' Prize in Electrical History) is supported by the IEEE Life Members' Fund and administered by the Society for the History of Technology. The prize 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 history and its practitioners.

## FELLOWSHIP AND INTERNSHIP SUPPORT FROM THE IEEE HISTORY CENTER

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

### 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 \$17,000, with a research budget of up to \$3,000.

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

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

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

The Fellow is selected on the basis of the candidate's potential for pursuing research in, and contributing to, electrical history. Application forms are available on-line at

[http://www.ieee.org/about/history\\_center/fellowship.html](http://www.ieee.org/about/history_center/fellowship.html).

The deadline for completed applications for the 2016-2017 academic year is 1 February. 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 at Stevens Institute of Technology, 1 Castle Point on Hudson, Hoboken, NJ 07030-5991. Applicants will be notified of the results by 1 June 2016.

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

### IEEE History Center Life Member Internship

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 a paid Internship at the Center's offices on the Stevens Institute of Technology campus in Hoboken, New Jersey, USA.

The intern program 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 Intern 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. Interns are also encouraged to consult with the Center's staff and its associates, and guided to research resources in the area. The internship 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 paid to the intern is US\$3,500, but additional funds may be available to defray travel costs, depending on the intern's circumstances. This internship is supported by the IEEE Life Members Committee.

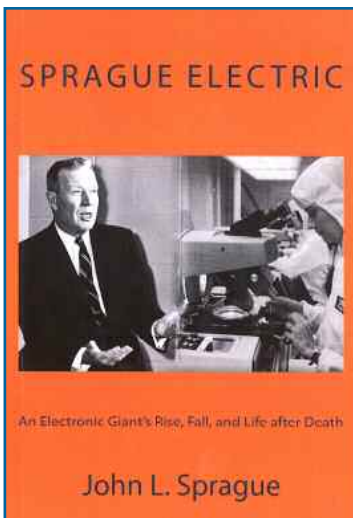
There is no formal application form. To apply, please mail curriculum vitae showing your studies in electrical history along with a cover letter describing the sort of project you would be interested in doing (see contact information below). The deadline for contacting the IEEE History Center for the 2016 internship is 16 March 2016.

IEEE and Stevens are AA/EO employers. 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—and Stevens Institute of Technology. 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, Stevens Institute of Technology, 1 Castle Point on Hudson, Hoboken, NJ 07030-5991, +1 732 562 5450, [ieee-history@ieee.org](mailto:ieee-history@ieee.org), [http://www.ieee.org/about/history\\_center/index.html](http://www.ieee.org/about/history_center/index.html).

## NEW BOOK FROM THE IEEE HISTORY CENTER PRESS

***SPRAGUE ELECTRIC: AN ELECTRONIC GIANT'S RISE, FALL, AND LIFE AFTER DEATH***

by John L. Sprague



The rise of the Sprague Electric Company from a high-tech kitchen-table startup is representative of much of the U.S. electronics industry. Sprague Electric began in 1926 in the Quincy, Massachusetts, kitchen of a young naval officer, Ensign Robert C. Sprague, and became a thriving manufacturer employing thousands of workers. Its broad product line of electronic components achieved international sales and a reputation for the highest quality. There were more than 50,000 Sprague components on every Apollo mission, and more than 25,000 aboard every Space Shuttle. The company later declined, went through a series of acquisitions, and eventually dissolved.

Sprague Electric provides a valuable business and technological history, a story of corporate success, and a cautionary tale of what to avoid. Told by company insider John Sprague, Sprague Electric gives the reader a front-row seat.

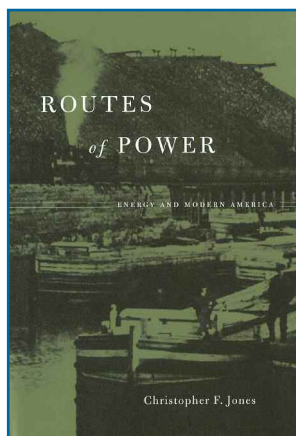
The Sprague Electric story reveals the value of investment in research and development, and also the effects of raw material supply chains on product lines. It is a story of a company's relations with the small New England mill town of North Adams, Massachusetts where its factories were located, and how labor relations—initially cordial—later soured. It is a story of how a vulnerable company weathered the stresses of the Great Depression and triumphed, only to be brought down by the recessions of the 1970s and 1980s.

It is a history of acquisitions, mergers, and spin-offs—some of them botched—and of the strategic and tactical mistakes that eventually caused the company to vanish. Yet Sprague Electric's successor companies continue its legacy in the electronic components industry. Corporations formed from its different business units and operations are now located around the world. The principal manufacturing plant of Sprague Electric is now an acclaimed art museum.

Available from Amazon.com in hard copy and on Kindle.

[www.amazon.com/Sprague-Electric-Electronics-Giants-after/dp/150338781X/ref=sr\\_1\\_2?ie=UTF8&qid=1429202871&sr=8-2&keywords=sprague+electric](http://www.amazon.com/Sprague-Electric-Electronics-Giants-after/dp/150338781X/ref=sr_1_2?ie=UTF8&qid=1429202871&sr=8-2&keywords=sprague+electric)

JONES, CHRISTOPHER,  
*Routes of Power: Energy and Modern America*,  
Harvard University Press, 2014



Christopher Jones' thoughtful and readable book examines an aspect of energy history which has seldom been covered on its own: the routes by which power is transported from its place of origin to the consumer. The coming of canals, railroads, electricity transmission lines, and pipelines were as fundamental to the development and use of coal, oil, and electricity as the technical developments of motors, generators, and appliances. These routes of power determine energy-use decisions. "Higher levels of use are

often correlated with lower levels of awareness," and one of the themes of the book is how the distance between the sources of energy and its place of consumption has lowered these concerns. Local ecosystems are disrupted to serve distant consumers. Rivers are dammed, coal mining areas are polluted, and groundwater contaminated, but the users—who live primarily in distant cities—do not face the effects themselves. Jones gives

many examples where communities only a few miles from dams and power transmission lines were not served by the utilities (or served at much higher rates) while consumers in distant urban areas were given preferential supply and pricing.

Jones begins with the 1800s when navigation improvements to the Schuylkill and Lehigh rivers made it economically feasible to ship anthracite from eastern Pennsylvania to Philadelphia and later New York City. Prior to that, it had been less expensive to ship coal three thousand miles across the Atlantic from Britain than eighty miles overland. He follows it with chapters on Pennsylvania's oil drilling boom and the relation with railroads as the enabling shipping agent. The railroads in turn would be bypassed by pipelines (a discussion relevant to the present times with the return to large petroleum shipments by train). Jones then examines the hydroelectric Conowingo and Holtwood dams along the Susquehanna River and the transmission lines which fed their electricity to Baltimore and Philadelphia.

Jones' book examines one of the crucial aspects in understanding the history of power use in the eastern United States, and—by extension—how power is supplied and used in consumer societies.

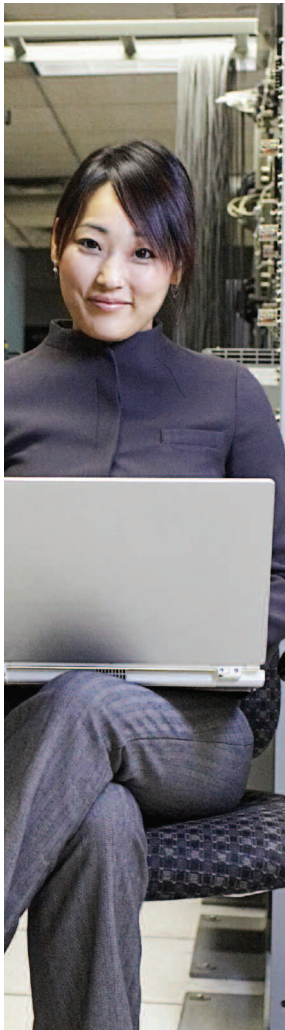
Available from: Harvard University Press, Harvard University Press 79 Garden Street, Cambridge, MA 02138, USA, +1 617 495-2600, <http://www.hup.harvard.edu/results-list.php?search=routes+of+power&submit=Search>, 39.95 USD, hardback, ISBN 9780674728899, 312 pp. illus. index

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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 [http://www.ieee.org/web/aboutus/history\\_center/index.html](http://www.ieee.org/web/aboutus/history_center/index.html)

Donations to the IEEE History Center Fund may be designated for general use to support IEEE history activities, to support collection and posting of Oral History interviews of important innovators, and to build the History Center endowment. You may donate online at <https://www.ieeefoundation.org/donate> or by mail.



at Stevens Institute of Technology  
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