

IEEE History Center

ISSUE 106, March 2018



John Impagliazzo, Ph.D. viewing the new history exhibit he has funded at IEEE Headquarters at 3 Park Avenue, New York City.

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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.

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By Michael Geselowitz, Ph.D.

“Our 800+ oral history collection has again proven its value. The 2018 IEEE Medal of Honor winner is Brad Parkinson...I had the honor of conducting an oral history interview with him in 1999.”

As 2018 IEEE History Committee Chair Robert Dent points out in his Chair’s Message (page 3), this is looking to be an exciting year for the IEEE History Center. IEEE has a new Executive Director (Dr. Steven Welby), and, of

course, the IEEE Presidency rotates each year, with the 2018 President being Jim Jefferies. Both have expressed appreciation for the value of history in telling IEEE’s story. Therefore, it is an ideal time for History Center staff and History Committee volunteers to collaborate in a year-long strategic review to make sure that IEEE’s historical activities align well with IEEE’s long-term goals, for example in the humanitarian and philanthropic space.

In the meanwhile, our traditional programs will continue to be strong, and have already started out the year with a bang. New Milestones continue to be proposed and dedicated almost every month. We have installed a new historical exhibit at the IEEE corporate

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

Contributing a First-Hand History—Written

and oral histories help us chronicle important innovators and innovations http://ethw.org/Oral-History/List_of_all_Oral_Histories

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

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

THE IEEE HISTORY CENTER NEWSLETTER ADVERTISING RATES

The newsletter of the IEEE History Center is published three times per annum; one issue (March) in paper, the other two (July and November) electronically. The circulation of the paper issue is 4,800; the circulation of the electronic issues is 57,000. The newsletter reaches engineers, retired engineers, researchers, historians, archivists, and curators interested in the history of electrical, electronics, and computing engineering, and the history of related technologies.

Cost Per Issue

Quarter Page	\$150
Half Page	\$200
Full Page	\$250

Please submit **camera-ready** copy via mail or email attachment to ieee-history@ieee.org.

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

For more information, contact Robert Colburn at r.colburn@ieee.org.

headquarters in New York City, and will be working with the IEEE global offices to enhance their historical presentation as well (cover story). We will be completing the book that updates IEEE's institutional history since the centennial celebrations in 1984 (page 6). The REACH program has added new units, and draws growing numbers of educators to its site (page 5).

Our 800+ entry oral history collection has again proven its importance and value. The 2018 IEEE Medal of Honor winner is IEEE Life Fellow Brad Parkinson, who will be formally recognized next month for his "fundamental contributions to and leadership in developing the design and driving the early applications of the Global Positioning System." Well, this History Center recognized the historical significance of Parkinson's work some time ago; I had the honor of personally conducting an oral history interview with him in 1999. In the interview I was able to capture—and this is one of the major goals of the oral history program—his memories of behind-the-scenes actions that are not captured in any published documents, but which will be invaluable to future historians who wonder how we became a GPS world. And of course, the oral history transcript is available, along with all the others, on our Engineering & Technology History Wiki (www.ethw.org) which we

developed and which we operate on behalf of a consortium of engineering associations. The ETHW now has an enhanced interactive timeline, and continues to grow in content and use. (See page 6.)

Our relationship with our strategic educational partner, the Stevens Institute of Technology, remains solid. Besides the teaching we have been doing, this month we are co-sponsoring a symposium on the bicentennial of the publication of *Frankenstein*, focusing on the technological issues raised by the novel and its popular reception.

Last, but not least, you may have noticed that this newsletter is expanded in content and enhanced in look and feel. The March issue was traditionally when we listed all of our gracious donors. However, in conjunction with the IEEE Foundation, we are moving away from that model so that we can supply you more complete and up to date information about our programs, such as the ones I delineated above. I would like to assure that we still value your generous support, without which these programs would not be possible. I hope we continue to maintain your trust in our efforts to preserve and make known the proud heritage of IEEE, its members, and their fields of interest.

HISTORY COMMITTEE ACTIVITIES

HISTORY COMMITTEE CHAIR COLUMN

By Robert Dent



For 2018 I have the honor to be appointed the chair of the IEEE History Committee. I want to thank the previous chair, Allison Marsh, for her leadership, service and dedication to the IEEE history effort. I appreciate all her effort for the IEEE History Committee.

The 2018 IEEE History Committee is largely a continuation of previous members from the 2017 Committee. In fact, nine of this year's committee are continuing members, while, there are two new members. I thank those continuing members for their service and willingness to continue their involvement with the IEEE history activities. Both of

the two new members are historians of considerable stature and I welcome them to the IEEE volunteer community. By the way, the committee has members from the USA (Regions 1-6) and Regions 7-10.

We will continue to evaluate milestone proposals for accuracy, importance and relevance to the IEEE fields of interest. IEEE has 185 dedicated milestones throughout the world, with more in the process of being approved. The History Committee looks forward to future significant proposals of meritorious developments of electrical and computer technology. Please consider making a milestone proposal of important technological significance in your local area (anywhere in the world).

I am also supporting Allison Marsh's focus on the history

Continued on Page 4

SUBSCRIPTION INFORMATION

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

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

(if applicable – non-members are encouraged to subscribe as well) to ieee-history@ieee.org

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

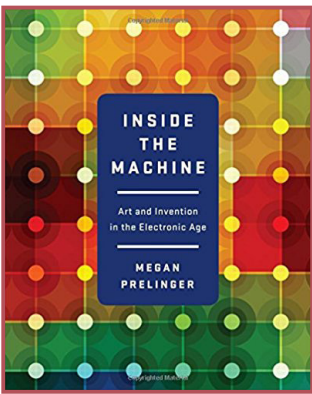
The IEEE History Center is a non-profit organization which relies on your support to preserve, research, and promote the legacy of electrical engineering and computing. To support the Center's projects, such as the Engineering & Technology History Wiki, Milestones, and Oral History Collection, please click on www.ieeefoundation.org/donate_history

of women in engineering. I believe advancements in technology should be gender-neutral and evaluated only on their significance. When I saw the movie, "Hidden Figures," I was humbled by the unheralded accomplishments that these women made in this technology advance.

I encourage milestone proposals that highlight significant technological developments that occurred at least twenty-five years ago. Approved IEEE Milestone plaques (located at an appropriate location) will detail the significant technological de-

velopment that are viewable by the public. The staff of the IEEE History Center maintains a list of significant achievements suitable for proposal as IEEE Milestones. http://ieemilestones.ethw.org/List_of_Achievements_Suitable_for_Milestones This list is only a starting point; there may be other achievements suitable as well. Guidelines on how to submit a Milestone proposal can be found at http://ieemilestones.ethw.org/Milestone_Guidelines_and_How_to_Propose_a_Milestone Stay tuned for future developments.

INSIDE THE MACHINE: ART AND INVENTION IN THE ELECTRONIC AGE WINS 2017 MIDDLETON BOOK AWARD



For the winner of the 2017 William and Joyce Middleton Electrical Engineering History Award, the IEEE History Committee chose the book *Inside the Machine: Art and Innovation in the Electronic Age* by Megan Prelinger (W. W. Norton, 2014)

The William and Joyce Middleton Electrical Engineering History Award was 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\$2,000. The 2015 inaugural winner was the book *Tesla: Inventor of the Electrical Age* by W. Bernard Carlson, followed by *The Innovators* by Walter Isaacson in 2017.

In making its 2017 decision, the IEEE History Committee noted that *Inside the Machine*, made extensive use of IEEE materials. *Inside the Machine* is a history of origins of electronic components, vacuum tubes, cathode-ray tubes, and transistors up to digital computing in the 1960s depicted through the art and images.

More information on the Middleton Prize is available at https://www.ieee.org/about/history_center/middletonaward.html

HISTORY CENTER IN ACTION: SHAPING THE FUTURE BY PRESERVING THE PAST

DONOR GENEROSITY FUNDS THE HISTORY SHOWCASE PROJECT

By Daniel DeLiberato, IEEE Foundation

IEEE Foundation Board Member, and former History Committee Member, John Impagliazzo, Ph.D., recognized that few members were aware of or ever saw, the many IEEE artifacts held in collection by the IEEE History Center. To solve this, Dr. Impagliazzo made a five-year gift to the IEEE Foundation's Campaign to develop and execute "The Historical Showcase Project".

The majority of the History Center's resources and collections are available online through the Engineering & Technology History Wiki (ethw.org). However, without museum space, the History Center faces an obstacle: fulfilling its mission "to promote the history of information and electrical technologies"

"Expanding access to these many historical artifacts is possible through John Impagliazzo's commitment"



L to R: Archivist Mary Ann Hellrigel, Dr. John Impagliazzo, and IEEE Foundation Executive Director Karen Galuchie

is difficult. Expanding access to these many historical artifacts is possible through John Impagliazzo's commitment.

The Historical Showcase Project's first exhibit was unveiled at IEEE Headquarters, in New York, N.Y., USA on Friday, 2 February 2018. The exhibit highlights three programmatic areas of IEEE history, including the Medal of Honor, IEEE Milestones, and IEEE-Eta Kappa Nu. Mary Ann Hellrigel, Ph.D., Archivist and Institutional Historian, hand-selected the artifacts, photographs, and documents, and curated and installed the exhibit.

The History Showcase Project is under way, and planning has begun for additional installations with Bangalore next. Whenever possible, these will include a local IEEE history component in addition to the technical history.

We encourage you, when in your local IEEE office, to make a point to visit and view the Historical Showcase Project, and uncover your IEEE history. Thank you to Dr. Impagalizao for your generous gift. John is an *Honored Philanthropist* in the IEEE Heritage Circle and is *Forever Generous* as a member of the IEEE Goldsmith Legacy League.

GET ON BOARD WITH IEEE REACH

By Kelly McKenna, REACH Program Manager

"By incorporating the history of technology in the classroom, students learn how...science and technology influence society."

How would your life be different without the refrigerated rail car?

We often go about our daily routines without giving much thought to how technology is woven into our lives. Yet if not for technological advancements, our routines, and our lives, would be very different. This compelling question, "How would your life be different without the refrigerated

rail car?" is the inquiry tied to IEEE REACH's newest Inquiry Unit (IU), or lesson plan. Once this question is contemplated and reviewed, through the lens of history, one begins to realize that the refrigerated rail car has had a significant impact on what we eat, how our food is produced, and even where we live.

IEEE REACH resources are designed around such inquiries as mentioned above, and provide teachers with the tools they need to incorporate the history of technology, in a social context, in the classroom. These resources bring to life specific technological histories and the impact such have had on society, culture, politics and economics, and vice versa, how society, culture, politics and economics have impacted specific technologies. By incorporating the history of technology in the classroom, students learn how society influences science and technology, and how science and technology influence society. Understanding such helps students to become competent decision makers in both personal and civic matters, and creates an understanding of not only technological literacy, but also cultural literacy.

A "caller" in railroad terminology is one whose duty it is to summon train or engine crews, or announce trains. The IEEE History Center is the "caller" in the K-12 environment, and is summoning all social studies teachers to bring the history of technology and engineering into their classroom through the IEEE REACH Program. We know, that making these resources available for free online is not enough. During this inaugural

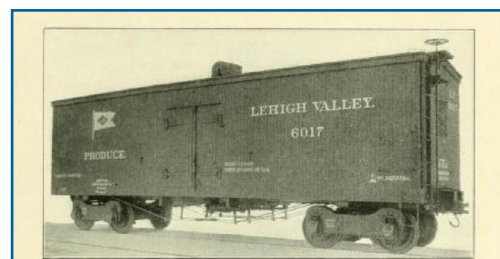


Fig. 9. Produce Car. Capacity, 62,000 lbs. Weight, 38,000 lbs. Length, 34 ft. American Car & Foundry Co., Builders. (Drawings of a similar car are shown in Figs. 26-28.)

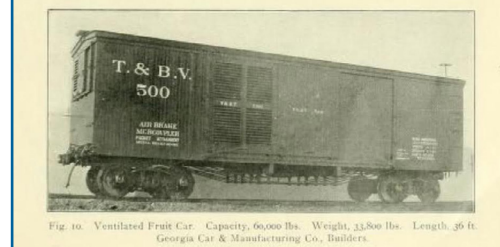


Fig. 10. Ventilated Fruit Car. Capacity, 60,000 lbs. Weight, 33,800 lbs. Length, 36 ft. Georgia Car & Manufacturing Co., Builders.

Refrigerated cars from 1906

year of the program, we have not only been creating content, but we have also shared the IEEE REACH program through numerous presentations and exhibits at Social Studies Conferences throughout the country. We've also been busy creating professional development workshops for Social Studies teachers. In a previous IEEE History Center newsletter, we highlighted a one-day workshop we implemented on the history of drones, which was part of a week-long workshop held by the Intrepid Sea, Air and Space Museum in New York City, NY. In March of this year we will hold another teacher professional development workshop, supported by, and held in conjunction with, the National Council for the Social Studies. This workshop will explore the history of the Greek trireme and its impact on democracy and empire, and will take place at the Stevens Institute of Technology in Hoboken, NJ.

In one year, the IEEE REACH program has acquired 340 subscribers to the program. This includes social studies teachers, education administrators, STEM teachers, and university professors who "teach the teachers". These educators represent teachers from more than 22 countries, and 34 states within the United States, in addition to American Samoa. The potential student reach through these educators is 114,000

students! Imagine the impact and potential reach, as the program continues to expand and grow.

Currently, there are 6 inquiry units, or lesson plans, on the REACH website, Tools of Early Maritime Navigation, The Printing Press, Radio, The Greek Triremes, Unmanned Aerial Vehicles (UAVs or Drones), and the newest one, Refrigerated Rail Cars. In addition to the lesson plans, REACH resources also include primary source documents, hands-on activities, and short, engaging videos for the students that can be used in the classroom or in an “inverted classroom” mode. Inquiry units currently in the pipeline include the Lightbulb and Electrification, Skyscrapers, and Electric Appliances.

It is an exciting time for the IEEE History Center and the IEEE REACH Program, an IEEE public imperative and an IEEE Foundation Priority Initiative, as we continue to advance student understanding of technological history and

its relationship with humanity. Together, we are the “callers”, further enhancing the technological and cultural literacy of the next generation. None of this would be possible without the generosity of our donors as the program is entirely donor funded. To learn more about how to donate and continue to bring these great resources to the next generation, please visit the IEEE Foundation’s page for REACH, found here, https://www.ieeefoundation.org/support_REACH.

I encourage you to “get on board” with the IEEE REACH program, check out the REACH resources, go to reach.ieee.org, sign-up for a free account, and see what all the excitement is about!



IEEE HISTORY SINCE 1984 BOOK PROJECT UPDATE

As readers may recall, IEEE past president John Vig raised the funds for the IEEE History Since 1984 book project, which continues the story begun in two books published by IEEE in 1984 to mark its centennial, including *The Making of a Profession: A Century of Electrical Engineering in America* by A. Michael McMahon, (text available online at http://ethw.org/w/images/e/ee/The_Making_of_a_Profession.pdf) and John D. Ryder and Donald G. Fink’s *Engineers and Electrons* (http://ethw.org/w/images/c/cc/Engineers_%26_Electrons.pdf).

The IEEE History Center engaged, Andrew J. Butrica to research and write a history of IEEE from the mid-1970s to the present. He submitted a manuscript, and work continues. In January 2018, Robert Dent, IEEE History Committee Chair, ap-

pointed John Vardalas to chair the Ad Hoc Committee tasked with reviewing and commenting on the manuscript. Vardalas is assembling this committee and will work closely with Mary Ann Hellrigel, IEEE Archivist and Institutional Historian, as she completes this project.

The IEEE History Center asks anyone who may have collected important IEEE documents, reports, photographs, etc. that may be useful for this project to please contact Mary Ann at the IEEE History Center by either email: m.c.hellrigel@ieee.org or phone (732)562-6834.

The manuscript will be published on the Engineering and Technology History Wiki website <http://ethw.org/>

NEW TIMELINE SOFTWARE INSTALLED

In 2017, the IEEE History Center was awarded a \$40,000 seed grant from the New Initiatives Committee to develop a proof of concept for an improvement of the Engineering and Technology History Wiki (ETHW)’s timeline software. Working with software developers ThinkBRQ and Wikiworks, the History Center is proud to announce that the software has been completed and installed on the website. Offering an interface that is far more user friendly and robust than the previous timeline

software, the tool allows a user to visualize a chronology of the most important milestones in the history of engineering and technology from 28,000 BC to the present. Site visitors can view a purely chronological list of all events, as well as having the ability to view events only from selected disciplines. The interface supports the ability to zoom in and out, as well as easily browse from one event to the next.

To use the timeline, visit: <http://ethw.org/ETHW:Timeline>

MILESTONES UPDATE

“IEEE Milestones, with their plaques in public spaces, are among the most visible ways that IEEE promotes the profession.”

2017 was a highly-visible year for IEEE Milestones, with fourteen milestones dedicated. The Milestones Program is truly international. Milestone plaques were unveiled in the United Kingdom, Japan, Sweden, Ukraine, Norway, Germany, and east, west, and Mid-west United States. The total number of Milestones dedicated stood at one hundred and eighty-five,

and by the time this issue of the newsletter mails, that number will have grown to one hundred and eighty-seven.

The Milestones recognized technical achievements in television, radio, radar, power transmission, distributed computing, radio astronomy, atomic timekeeping, cellular telephony, liquid crystals, and superconducting magnets.

- First Public Demonstration of Television, 1926
- SHAKY: The World’s First Intelligent Mobile Robot, 1972
- Map-Based Automotive Navigation System, 1981
- Temperature-Insensitive Quartz Oscillation Plate, 1933
- Gotland High-Voltage Direct-Current Link, 1954
- Zenit L-Band Radar, 1938
- Nobeyama 45-m Telescope, 1982

- Discovery of Self Complementarity in Antennas, 1948
- First Atomic Clock, 1948
- Object-Oriented Programming, 1961
- First Exploration and Proof of Liquid Crystals, 1889
- Development of CDMA for Cellular Communications, 1989
- Fermilab Tevatron Superconducting Magnets, 1973

For a complete list of dedicated IEEE Milestones, please go to http://ethw.org/Milestones:List_of_Milestones

IEEE Milestones, with their plaques in public places, are among the most visible ways that IEEE promotes the profession. Dedication ceremonies generate enormous publicity –radio, print media, and sometimes television– for IEEE and the organizational units involved in the Milestone.

As successful as the Milestone program is, it relies on your support, both financially as well as in submitting the proposals.

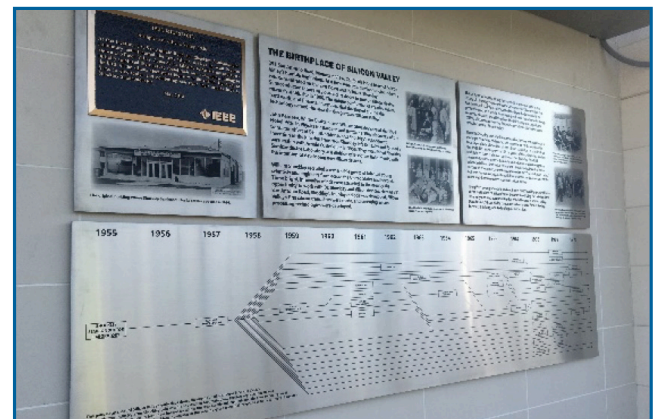
Any IEEE member may submit a proposal for a technical achievement to be considered as an IEEE Milestone, indeed there are many achievements in all Regions of IEEE and from many different years waiting to be proposed. Here is a list, which is by no means the only ones waiting: http://ieemilestones.ethw.org/List_of_Achievements_Suitable_for_Milestones The Guidelines for the proposal process can be found at: http://ieemilestones.ethw.org/Milestone_Guidelines_and_How_to_Propose_a_Milestone

THERE’S A WORLD OF HISTORY GOING ON

THE MILESTONE PROGRAM AT SANTA CLARA VALLEY SECTION (SVS)

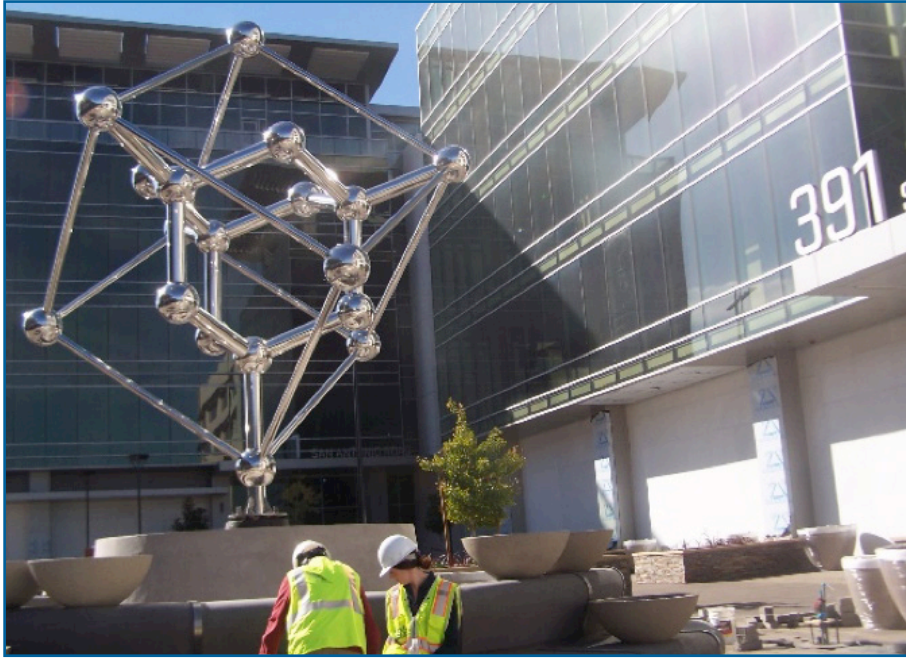
By Richard Ahrons

The IEEE Santa Clara Valley Section has designated ten milestones and one citation to date. SVS has eight more milestones in process. Of these, five have been approved by the IEEE Board of Directors and are expected to be dedicated in 2018. A very interesting pair, which will be unveiled on August 15, is The Birthplace of Silicon Valley (Shockley Labs) and Moore’s Law. These are in process of being installed in a development called the San Antonio Village and will be visible to the extremely large numbers of people who pass through it. The adjacent office building was named 391, in reference to the address of the original Shuckley Laboratory, a master plaque, which includes the IEEE milestone plaque is attached to its wall.



San Antonio Village contains Technology Square and a fountain with a metal sculpture of a silicon molecule. IEEE has helped this effort, and – as a reward – the Moore's Law plaque milestone is now placed in the base of the Fountain.

A couple of miles from the Village is the original Fairchild location. At that location, an IEEE plaque commemorates the invention of The First Planar IC. These are exciting milestones and give IEEE and Region 6 a great deal of visibility.



100th ANNIVERSARY OF PES COMMITTEE ON TRANSFORMERS

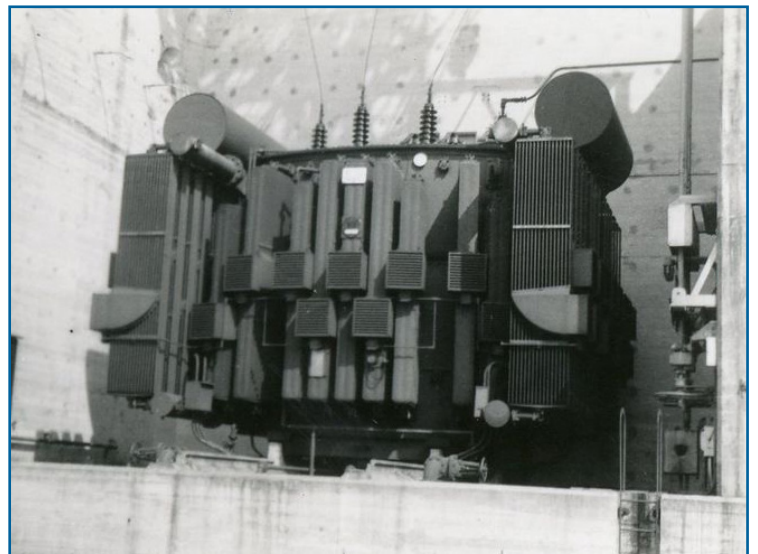
"The History Center staff encourages IEEE members to add to our knowledge... by posting their own first-hand histories and topic articles on the ETHW."

The IEEE Power and Energy Society Committee on Transformers celebrates its 100th anniversary in 2018, and the IEEE History Center staff have been assisting with the historical materials in support. We have revamped the Transformers page on the Engineering & Technology History Wiki and added to it photographs from the History Center's collection. <http://ethw.org/Transformers>

The page has links to Peter Blalock's comprehensive article on the history of transformers and GE's plant at Pittsfield, Massachusetts http://ethw.org/Archives:Transformers_at_Pittsfield_part_1 We encourage readers to visit these pages to get to know the fascinating history of a vital component of the electrical grid, as well as to view some visually striking photographs.

The History Center staff encourages IEEE members to add to our knowledge of the history of transformers by posting their own first-hand histories and topic articles on the ETHW. http://ethw.org/Main_Page

The History Center also seeks your help to capture the history of the PES Committee on Transformers by adding to the stub http://ethw.org/IEEE_PES_Transformers_Committee



Transformer at Conowingo Dam, Pennsylvania, USA on the Susquehanna River. Ellenbeger Collection of the IEEE History Center

TECH HISTORY ON THE WEB – RECENT STAFF FAVORITES

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. This issue, we feature a site on technologies for sharing information.

Christopher F. McDonald is a software engineer. Before that career he received the Ph.D. from Princeton University for a dissertation on the social construction and deconstruction of the “information utility” model for computing in the 1960s and 1970s. He still keeps his hand in history through his blog,

“Creatures of Thought.” About every six weeks he publishes finely written and researched “long read” articles explaining the history of the switch, the fundamental component that enables digital information and communications. He began with the history of electricity and has worked his way forward through telegraphy and telephony, with his latest instalment on the prehistory of the transistor. Start here: <https://technics.history.wordpress.com/2016/11/25/an-expeditious-method-of-conveying-intelligence/>

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 www.ieee.org/about/history_center/index and more about the Engineering & Technology Wiki (ethw.org)

FROM THE IEEE HISTORY CENTER PRESS

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

by John L. Sprague

SPRAGUE ELECTRIC



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

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.

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

IEEE AND IEEE FOUNDATION LAUNCH FIRST MAJOR FUNDRAISING CAMPAIGN

Members from around the globe were in attendance as the IEEE Foundation shared its objective of raising US\$30 million in support of IEEE programs. IEEE and Foundation leadership further announced that in excess of 50.14% of the total has already been committed – that’s \$15.14 million raised to date. Funds generated by the Campaign will help drive new levels of technological access, innovation, and engagement through a variety of far-reaching global initiatives designed to transform lives through the power of technology and education.

“As the philanthropic partner of IEEE, we are seeking financial support from both IEEE members and the public at large to continue and expand the Foundation’s programs, all of which are aimed at advancing technology in direct interest of humanity,” said John Treichler, President of the 2018 IEEE Foundation Board of Directors. “We are committed to the success of this Campaign and enabling programs that positively impact populations worldwide.”

The IEEE Foundation is driving a number of important donor-supported programs, including the IEEE History Center’s **REACH** (Raising Engineering Awareness through the Conduit of History) which offers pre-university social studies teachers free access to educational resources that promote the relationship between engineering, technology, and society, enhances the development of students’ critical thinking/problem-solving skills, and creates more technologically-informed citizens.

“It’s an extraordinary time in the 45-year history of the IEEE Foundation and we’re excited to launch this landmark Campaign to increase public awareness of our important mission and expand support for our critical work,” added IEEE Executive Director and Chief Operating Officer Stephen Welby. “Each donor who participates helps ensure that the future of IEEE holds even greater promise than its historic past. We welcome all to take this opportunity to help build on a legacy that can positively and indelibly impact generations to come.”



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Preserving and promoting the history of technology enables us to better understand today and improve tomorrow. Donate now to the IEEE History Center Fund of the IEEE Foundation and help us to perpetuate and share the heritage of IEEE and technology with people of all ages.

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IEEE Foundation

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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_history or by mail.



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