

IEEE History Center

ISSUE 105, November 2017



President Karen Bartelson inaugurating the Wall of Honor at the IEEE Operations Center in Piscataway, NJ, U.S.A.

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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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TWENTY YEARS OF PROGRESS

By Michael Geselowitz, Ph.D.

Many people associate the North American summer with leisure, and view the return of autumn as the time of the hustle and bustle of activity. Indeed, there is much going on at the IEEE History Center right now. We are teaching a new course at our partner, the Stevens Institute of Technology (see page 4). We participated in the opening of a new IEEE Medal of Honor Wall at the IEEE Operations Center in Piscataway (see page 3). We are wrapping up work on a new timeline for the

Engineering & Technology History Wiki funded by the IEEE New Initiatives Committee, and on the institutional history project funded by donations from IEEE Societies (expect full reports on these in the March 2018 issue). As usual, the History Center staff and the IEEE History Committee are participating in the annual meeting of the Society for the History of Technology. We are also busy working with our Stevens colleagues to plan a conference around the bicentennial of the publication of the novel *Frankenstein* in March 2018 (<http://frankenstein2018.org/>).

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 iee-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

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 iee-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 iee-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.

Nor was the History Center idle over the summer. We installed a new exhibit at Stevens (see page 5). We posted another inquiry unit to the REACH website and held a professional development workshop for teachers around the content (see page 5). I could go on. Personally, however, the most exciting (and tiring) activity over the summer was my whirlwind tour of Region 10, accompanied by a History Committee delegation of Chair Allison Marsh, past chair David Burger, and Jason Hui. First, we went to Kobe, Japan, where we participated for three days in IEEE HISTELCON 2017. HISTELCON, a Region 8 history conference held about every other year, was this year co-sponsored and hosted by the IEEE Japan Council. Allison and I each presented on History Center programs and their relationship to issues of women in engineering. Jason presented on the work of pioneering video game inventor Ralph Baer, in conjunction with Ralph's son Mark Baer. We also chaired sessions and participated in the various intellectual discussions, excursions, and social activities (Allison got to open a cask of sake with a mallet!).

We then went north to Tokyo for two days, where we spoke twice on IEEE's historical activities, first to the IEEE Tokyo Section and then to the History Committee of the IEEJ, Japan's largest engineering society. The second gathering was part of the series of so-called "Maui Meetings" designed to keep communication open between IEEE's history committee and those of sister engineering societies. Both presentations were well received and engendered interesting discussions about possible collaborations.

Then it was quickly on to Sydney, Australia on "red-eye

flights," to participate in IEEE Sections Congress 2017. Allison gave two presentations, one on general historical activities for IEEE Sections, the other specifically about IEEE Milestones. At Sections Congress other members of the History Committee, who were there on behalf of other IEEE organizational units, joined us.

The most interesting aspect of SC2017 was that in the exhibit area the History Center joined nine other IEEE Programs in a "Humanitarian & Philanthropic Pavilion." A brainchild of the IEEE Humanitarian Committee and the IEEE Foundation, this pavilion represented the first attempt to bring coordination and synergy to programs at IEEE that are part of its public imperative, whether funded by IEEE itself or the IEEE Foundation (the History center is, of course, funded by both). The pavilion was minded by both IEEE staff and IEEE volunteers, and was a huge success. Traffic was constant, and we exceeded our goal of getting 250 IEEE members to pledge "time, talent, or treasure" on behalf of IEEE's public imperatives. Look for more activity from this consortium in the future.

The mention of public imperative and philanthropic support affords me an end-of-year opportunity to remind you, our loyal readers, that your donations make these and many other activities (e.g., Milestones, oral histories, publications) possible. We are grateful for your past support, and we hope we continue to earn your confidence in our programs to preserve, explore, and make known the proud heritage of IEEE

Let me also take this opportunity to wish you and yours a healthy, happy, and productive holiday season and new year.

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

IEEE HISTORY CENTER COLLABORATES WITH IEEE AWARDS ON MEDAL OF HONOR WALL

IEEE commemorated the 100th anniversary of its highest award, the Medal of Honor, with the dedication of a permanent Wall of Honor at the Operations Center in Piscataway, NJ. IEEE President, Karen Bartleson, led the unveiling and ribbon-cutting ceremony on 7 September 2017. The Wall of Honor includes an interactive monitor highlighting details and videos of past Medal of Honor recipients and their achievements. To accompany the Wall of Honor, the IEEE History Center researched and mounted a new



Alex Magoun, Nathan Brewer, Mary Ann Hellrigel, and Michael Geselowitz of the IEEE History Center in front of the Center's exhibit on the Medal of Honor

exhibit on the Medal of Honor and the Edison Medal. Mary Ann Hellrigel, Institutional Historian and Archivist, gave a short talk about the Medal of Honor and led the attendees to the new exhibit. Then Nathan Brewer, Archival and Digital Content Specialist, directed tours of the IEEE Archives. The Wall is located on the lower

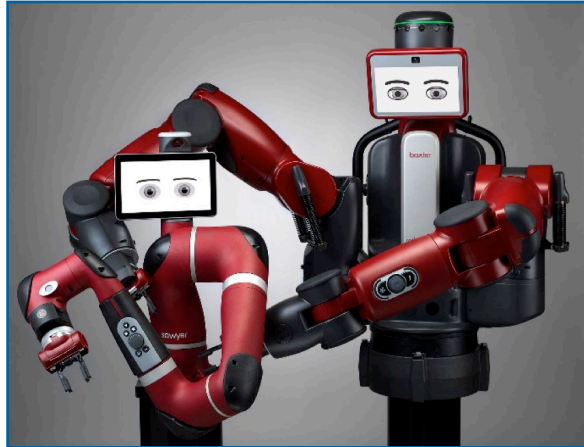
conference level of the IEEE Operations Center at 445 Hoes Lane. The dedication ceremony can be viewed on the IEEE.tv network.

IEEE HISTORIAN BRINGS POPULAR HISTORY COURSE TO STEVENS INSTITUTE

Each academic semester, one of the historians from the IEEE History Center has contributed to the activities of its host institution -- now Stevens Institute of Technology, Hoboken, NJ -- by teaching an upper-level elective course in the history of technology. During the fall 2017 semester, Dr. Lisa Nocks, historian of science, technology, and media culture is running a fully-enrolled senior seminar, *The Science and Fiction of Robots: A Technical and Cultural History* for the College of Arts and Letters (CAL). She created and then taught the course

under different titles at other institutions for almost a decade, during which time she was awarded a National Endowment for the Humanities grant to further develop the course.

Nocks has been writing about the history of robots since her early graduate research on the history of artificially created people in literature led her to news articles about the nascent field of humanoid robotics. Reading reports from research labs at Waseda University, MIT, and elsewhere took her research in a far different direction than the one suggested by literary critics who characterized the robots of science fiction as metaphors for the human condition. Furthermore, the conflicts in mid-twentieth century science fiction stories about robots -- many of them authored by engineers and scientists -- often pointed to the practical challenges that twenty-first century robotics researchers are addressing: sensor technology, battery power, dexterity, dynamic balance, machine cognition, and human-robot interaction. Nocks brings her own fascination with the overlapping themes to her teaching in the history of technology.



SAWYER and BAXTER from ReThink Robotics

The relevance of the course material to students training for a variety of technical and careers has lent to its popularity. Robots are now in use not only in manufacturing, but also in underwater and space exploration, agriculture, on the battlefield, in hospitals, homes, and warehouses. They perform major roles in infrastructure inspection, construction, search and rescue operations, and disaster clean-up. In Asia, humanoid robots are being field tested at hotel reception stations, in news broadcasting, and as greeters at trade shows. This semester,

students are developing conceptual designs for a robot or AI that serves the common good, underscoring the mission of IEEE members: "Advancing Technology for Humanity." To support the projects, Nocks lectures on different aspects of the history of robots covered in her book, *The Robot: The Life Story of a Technology*, and leads discussions on other texts on robotics and AI. This semester, students are reading David A. Mindell, *Our Robots/Ourselves: Robotics and the Myths of Autonomy*, which describes the goals and challenges to machine autonomy, essays from key contributors and critics in robotics and AI, tech news articles, project reports from labs and companies around the world, and an assortment of robot science fiction, including Isaac Asimov's first robot novel, *The Caves of Steel*. The idea is to consider the variety of reciprocal influences on imagination and invention, and also to improve student critical analysis and problem-solving skills. Student projects will be presented to the Stevens community at the end of the semester.

ENGINEERING AND TECHNOLOGY HISTORY WIKI UPDATE

The Engineering and Technology History Wiki (ETHW) is a platform where engineers can submit First-Hand Histories, detailing their experiences and recollections. Three First-Hand Histories have been submitted to the ETHW recently, and can be read online.

"Reminiscences on My Career in Control," by Elmer Gilbert, is a transcription of a talk given by Gilbert on March 24, 2017. Gilbert, founder of Applied Dynamics and recipient of the 1994 IEEE Control Systems Award and the 1996 Richard E. Bellman Control Heritage Award, recalls his career in control engineering spanning 70 years. The video and slideshow of the original talk are available for viewing along with the transcript.

"My Life with IEEE," by Jacob Baal-Schem, highlights many of Baal-Schem's IEEE-related activities, including chairing the IEEE Israel Section, organizing the MELECON, EUROCON, AFRICON and HISTELCON conferences, and his work on the Region 8 committee.

"Origins of the Winter Simulation Conference," by Julian Reitman, details the origins of the long-running IEEE conference in November of 1967.

To view these First-Hand Histories, previously posted First-Hand Histories, or to submit your own First-Hand History, we invite you to visit the ETHW First-Hand History page at: http://ethw.org/First-Hand:List_of_First_Hand_Histories

“RADIO DAYS, RADIO CRAZE” EXHIBIT AT STEVENS



Did you ever collect stamps from websites that you visited? Or brew “World Wide Web” coffee? Read inspiring books about boys and girls having adventures on the Internet? We thought not, which is why outreach historian Alex Magoun’s latest exhibit “Radio Days, Radio Craze” at the Samuel C. Williams

Library at Stevens provided a window onto a unique popular response to a major electronic technology: radio. Between the 1910s and 1940s, people in the U.S. and Europe embraced and promoted radio broadcasting and wireless communications in all sorts of distinctly non-technical ways. They bought radio shoelaces and perfume, smoked radio cigars, played radio board games, and sent greeting and post cards with radio themes. Thanks to New Jersey Antique Radio Club co-founder Marsha Simkin, who—with her late husband Jerry—collected this memorabilia over thirty years, Alex was able to borrow and display a broad sampling of what makes the historic popular response to wireless communications so different from the reaction to either the telegraph or the internet. The exhibit has reopened at the IEEE Operations Center in Piscataway. Followers of @IEEEHistory on Twitter have seen many of the books and artifacts—radio laxative, anyone?—online.

IEEE REACH RESOURCES FEATURED AT INTREPID MUSEUM’S TEACHERS’ PROFESSIONAL DEVELOPMENT WORKSHOP

by Kelly McKenna, IEEE REACH Program Manager

On 22 August 2017, during a full-day workshop at the Intrepid Sea, Air, and Space Museum located in New York City, twenty-five, New York state, K-12, teachers explored the compelling question, “To what extent have Unmanned Aerial Vehicles (UAVs), popularly referred to as drones, been used to benefit humanity?” The question is the overarching query of the REACH inquiry unit on UAVs. The day’s workshop, facilitated by a team from the IEEE History Center, was part of a weeklong professional development course, “Drones! A Catalyst for Integrating Engineering, Science and History,” organized by the *Intrepid* Museum and supported by a grant from the IEEE Foundation. The course provided professional credit to teachers within New York’s Department of Education.

REACH (Raising Engineering Awareness through the Conduit of History), an IEEE History Center program, provides pre-university teachers with free educational resources that explore technological history’s relationship with society, politics, economics, and culture. The course at the *Intrepid* featured drones as a case study of interdisciplinary education, and provided teachers with an opportunity to examine drone history as well as the STEM aspects of drones. Teachers explored the evolution and uses of drones, combining the REACH social studies approach with science and math perspectives provided during other days of the workshop. The course was designed to provide educators with a way to incorporate STEM discussions, resources, history, and skills into their classrooms, and to engage students in new and unexpected ways.

To answer the compelling question, teachers were divided

into groups and then asked to interpret evidence from primary and secondary source documents, which were provided directly from REACH’s UAV inquiry unit. The teachers then reported what they learned to the larger group for further discussion.

In addition, the teachers shared how they would incorporate the materials into their classrooms. On the last day of the course, History Center staff returned to the Intrepid to help Intrepid staff members evaluate the teachers’ final projects. The final assignment was for each teacher to create both a lesson plan and a hands-on activity that would integrate engineering and the history of drones into their classrooms.

The REACH program was enthusiastically received by the teachers. Denise Seant-Bertrand, a 2nd grade teacher, said, “I will definitely use the (REACH) site to design lessons because these are important sources that I can use with my students.” Hannah Cavallo O’Leary, a 9th-12th grade science teacher, expressed that she would “use the REACH resources to incorporate history into her science class.” Claudio Leon, a Librarian at Passages Academy, highlighted the REACH resources and website by stating, “It can help students think about real-world applications for designing new technologies, and the impact of such tech on humanity.”

The REACH team will be evaluating the final projects to determine if one or more may be adapted directly into the REACH UAV inquiry unit. An inquiry unit is a question-based lesson plan which, along with REACH’s other resources—primary source documents, background information, hands-on activities, and short videos—enables pre-university educators to incorporate the history of technology and engineering in their classrooms.

The videos, designed to provide background information, while grabbing the students' attention, may be shown either in the classroom or as part of a "flipped classroom" and focus on the subject matter of one of the REACH Inquiry Units. A REACH video on drones, shown during the workshop, may be viewed here, <https://vimeo.com/231765929/a22dc4cc12>

You may learn more about the REACH resources from the award-winning REACH website, reach.ieee.org. Be sure to create a free account to see all that REACH has to offer. To donate to the program, visit the IEEE Foundation's webpage for REACH at https://ieeefoundation.org/support_REACH

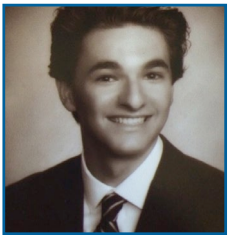
IEEE HISTORY CENTER PARTICIPATES IN IEEE DAY AT STEVENS INSTITUTE

IEEE History Center Historian Dr. Lisa Nocks and Research Coordinator Robert Colburn participated in the IEEE Day events at Stevens Institute of Technology, collaborating with the IEEE Stevens Student Branch to raise the visibility of IEEE and to celebrate the fascinating engineering projects that IEEE Student members are working on. Together with the food and drink, there were presentations by students on projects on robotics in eldercare, and on developments in robot vision. History Center staff in turn talked about the History Center at

Stevens, courses staff are teaching, the value of historical perspectives informing current research and development, and ways that it can assist students in their research. The students were fascinated by the historical artifacts brought by staff such as a 14.4 modem and a glass telegraph wire insulator, which in turn spurred an active discussion on the relations among mechanical, biomedical, and materials disciplines, and the roles each play in developing technologies.

HISTORY CENTER STAFF NOTES

DANTE MONTELEONE IS 2017-2018 HISTORY CENTER RESEARCH ASSISTANT



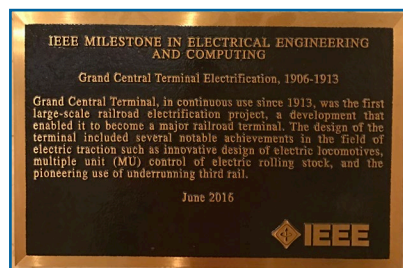
Dante Monteleone is a Sophomore Finance Major at Stevens Institute of Technology from Ocean City, New Jersey. He attended Ocean City High School from 2012 to 2016 where he was treasurer of the Ocean City Chapter of the National Honors Society and Vice President of the

Jazz Band. One of his most rewarding experiences was being a delegate at American Legion Jersey Boys State in 2015. At Stevens, Dante is a member of the WCPR Radio Club, Phi Beta Lambda Business Honors Society, and brother of the Kappa Sigma Fraternity. Always having had a passion for history, Dante is excited to be interning for the IEEE and is grateful for this opportunity.

THINGS TO SEE AND DO

DO YOU LIVE OR WORK NEAR AN IEEE MILESTONE?

IEEE has dedicated more than 180 achievements around the world as Milestones. These achievements have been commemorated by bronze plaques in publicly-accessible places as a way of making the public aware of the contributions that IEEE's fields of interest make to humanity. You can find the locations of Milestone plaques using the Innovation map <http://ethw.org/Map> or on the list of Milestones by region http://ethw.org/Milestones:List_of_Milestones. Each Milestone page also has GPS coordinates to help you find them.



This IEEE Milestone plaque can be seen next to the entrance to track 32 in Grand Central Station, New York City, U.S.A.

There are reasons why plaques sometimes have to be moved (a building changes owners, or is torn down, for example). If a Milestone plaque is not where the map says it ought to be, or if the street address has changed, we welcome hearing from you. You can email us at ieee-history@ieee.org

TECH HISTORY ON THE WEB – RECENT STAFF FAVOURITES

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.

Helsingborg's **Museum of Failure**.
www.museumoffailure.se Examples and cautionary tales of when and why things don't work. It has often been said that

one learns more from mistakes than from success. If so, this site offers some of the learning experiences.

Nokia Bell Labs video on portable telecommunications history https://www.youtube.com/watch?v=KVm3ZiL-HKk&list=PLZ4JIAKv386SGkj6eco_GqCmVn-v1Hb5&index=1

PROGRAMS OF SUPPORT FOR SCHOLARS

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 \$1,000 must be approved in advance by IEEE History Center Staff. Examples of non-reimbursable expenses include, but are not limited to: licensing fees for images for book version of thesis (book publisher should pay for those), computers or computer peripherals, digital cameras, clothing, and office supplies (paper, pens, printer cartridges, CDs, memory sticks, etc.).

Recipients are normally expected to take up the Fellowship in the July of the year that it is awarded. Fellowship checks are normally mailed to the Fellow quarterly in July, October, January, and April. For Fellows in the southern hemisphere who follow the southern hemisphere academic year,

arrangements can be made to mail the checks in December (two quarters worth), March, and June.

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

The Fellow is selected on the basis of the candidate's potential for pursuing research in, and contributing to, electrical history. Application forms are available on-line at http://www.ieee.org/about/history_center/fellowship.html. The deadline for completed applications is 1 February. This completed application packet should be emailed to 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, Samuel c. Williams Library, 3rd Floor, 1 Castle Point on Hudson, Hoboken, NJ 07030-5991 Applicants will be notified of the results by 1 June.

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

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 schol-

ars 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\$5,000, 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, and the stipend was recently increased thanks to a generous gift from Emerson Pugh.

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

IEEE and Stevens are AA/EQ 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, http://www.ieee.org/about/history_center/index.html.

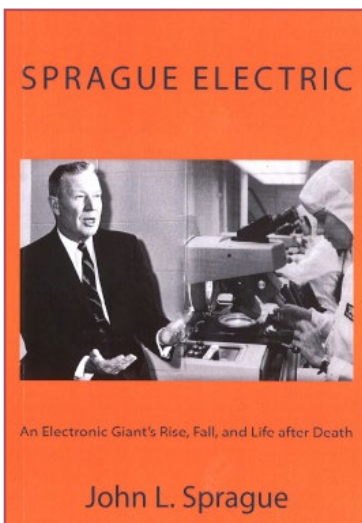
Your contributions to the **IEEE History Center Fund** preserve the heritage of the profession and its contributions to humanity. We invite you to find out more about the Center and its programs at http://www.ieee.org/web/about/history_center and more about the Engineering & Technology Wiki at ethw.org

BIBLIOGRAPHY

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.

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

From the editor of Sylvia Nasar's *A Beautiful Mind* and Walter Isaacson's *Steve Jobs* and *Einstein*

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A MIND AT PLAY

HOW CLAUDE SHANNON INVENTED THE INFORMATION AGE

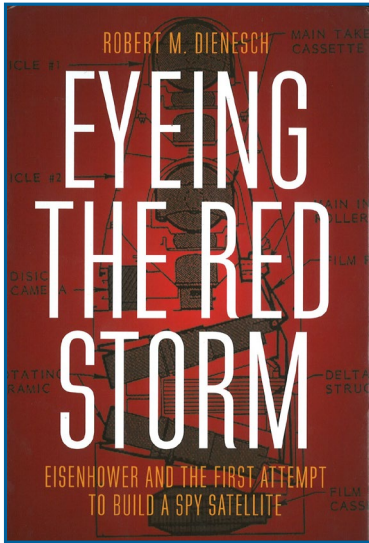
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DIENESCH, ROBERT M.,
Eyeing the Red Storm: Eisenhower and the First Attempt to Build a Spy Satellite, University of Nebraska Press, Lincoln, 2016



Dienesch's *Eyeing the Red Storm* is both a story about the technologies that led to the reliable monitoring of weapons treaties as well as a story of interservice rivalries, bickering over funding, and rigid adherence to personal points of view preventing openness to progress or to new ideas. Technologies are often driven (or derailed) by such internecine conflicts, thus *Eyeing the Red Storm* serves as a representative case study, as well as an intriguing story.

Eyeing the Red Storm chronicles the U.S. Air Force's WS-117L program (1954-1957) to develop the world's first reconnaissance satellite, and how that project eventually became the CIA's Corona. The lack of intelligence on the Soviet Union, especially the size of its bomber fleet, subjected President Eisenhower to enormous pressure from the U.S. military, pressure that Eisenhower feared could in turn threaten the U.S.

economy. Ever since Pearl Harbor, U.S. military thinking assumed that future wars would begin with a surprise attack. Reconnaissance satellites would provide intelligence to forestall such an event. "Irrefutable facts...would allow instead for cool and rational decision making." WS-117L proceeded slowly, however, and it was undefunded. The U.S. Air Force did not especially want a reconnaissance satellite that might show that the Soviet Union had fewer bombers than studies projected (as in fact it did) and which would threaten funding for its own bomber fleet. When *Sputnik* launched in 1957, the U.S. reconnaissance satellite project was nowhere near ready. In many ways, it had become a victim of its own complexity.

Sputnik's launch injected a new intensity into the U.S. reconnaissance program. By the end of 1959, WS-117L became three satellite programs, *Sentry*, *Samos*, and *Discoverer*, of which *Discoverer* was the cover name for the CIA's *Corona* satellite project. Dienesch credits *Corona's* simpler development process with its later dramatic success. "Although not successful in and of itself, the WS-117L program played a pivotal role, and its descendants still orbit the earth today," Dienesch writes. "*Corona* was the product of the failure...of WS-117L."

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GERARDO CON DIAZ WINS BERNARD FINN IEEE HISTORY PRIZE

Con Diaz, who was the 2015-2016 winner of the IEEE Life Members' Fellowship in the History of Electrical and Computing Technology, has won the 2017 Bernard S. Finn IEEE History Prize for his paper, "Contested Ontologies of Software: The Story of Gottschalk v. Benson 1963-1972" in the *IEEE Annals of the History of Computing*. The U.S. Supreme Court case concerned the patent eligibility of the private branch exchange (PBX) system.

The Bernard S. Finn IEEE History Prize (formerly the IEEE Life Members' Prize in Electrical History) was established by the IEEE Life Members (who fund the prize) and is adminis-

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