

IEEE History Center

ISSUE 103, March 2017

2017: A YEAR TO CELEBRATE WOMEN'S CONTRIBUTIONS TO TECHNOLOGY



A NACA (now NASA) employee working on the X-4 project, a 1950s semi-tailless transonic flying wing. (Image courtesy of NASA)

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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.

By the time you read this, the 2017 “Oscars” will have been announced by the Academy of Motion Picture Arts and Sciences. As I write this column, a few weeks before the event, “buzz” is building for *Hidden Figures*, a fictionalized film about African-American women engineers and mathematicians who were crucial to the U.S. Apollo space program. The film is based on a non-fiction book of the same name by a writer who in turn relied heavily on the work of NASA historians and other historians of technology.

Although not involved in that project, I am proud that the preservation and re-

search activities of the IEEE History Center often inform the work of authors for the general public (see, for example, the Middleton Prize book announced on pg 3). As evidenced by *Hidden Figures*, historical preservation and research, besides disseminating broadly the proud legacy of engineering, have an important role to play in celebrating and encouraging of the participation of traditionally underrepresented groups in the engineering endeavor. In the past, the History Center consulted on two documentaries about technology workers in World War II, one on women (“Top Secret Rosies,” <http://www.topsecretrosies.com/>; partially funded by the IEEE Foundation),

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

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 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 specifically 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.

and one on African Americans (“No Short Climb,” <https://www.youtube.com/watch?v=0KCKySfnRxQ>).

As IEEE History Center Chair Allison Marsh points out in this issue (pg 3), the IEEE History Center’s many programs—Milestones, oral histories, Engineering & Technology History Wiki, publications, archives—are ideally suited to play a role in celebrating diversity in engineering history. My staff and I look forward to working with Dr. Marsh and the History Committee to continue to carry out all of these programs with our usual

enthusiasm and rigor, but this year with a focus on the issue that she has raised.

Finally, I would be remiss if I did not point out that the March issue of our newsletter is where we annually acknowledge, in print, the generous support of our wonderful donors, (see pg 9) without whom NONE of these valuable programs would be possible. Let me once again extend my personal thanks to each and every one of you.

HISTORY COMMITTEE ACTIVITIES: WOMEN IN TECHNOLOGY

AN IEEE FOCUS ON WOMEN’S HISTORY

By Allison Marsh

I am excited to announce that in 2017 the History Committee will have a special focus on the history of women in engineering. Too often, gender discrimination is a result of silent elisions that overlook the achievements of women. This year the History Center and the History Committee will shine a bright light on the stories of women engineers and make sure they are faithfully recorded. The vision for this began during the nomination process for the committee, and I am happy to welcome four new women as members of the committee. Although not yet parity, this is a significant improvement in representation that I hope will carry forward in future years.

The committee will continue to support normal operations and duties, including approving Milestones, collecting oral histories, and contributing to the ETHW and REACH initiatives, but where possible and relevant we will concentrate our ongoing efforts on women’s history. For example, both History Center Senior Director Mike Geselowitz and I submitted paper proposals to the 2017 HISTELCON that focus on gender; Mike’s proposal focused on oral histories with women engineers, and my proposal looked at Milestones that reflected the contributions of women.

The Milestones program is a good example of how we can potentially increase the public recognition of women in the field. There are now 172 approved and dedicated milestones with approximately fifteen currently in process. The Milestones program honors significant technical achievements, rather than honoring the accomplishments of individuals, yet the names of contributors often are included in the citations. Of the approximately seventy-five persons named on Milestone plaques, all are men. The History Committee respects the grassroots nature of the Milestones program, yet would like to encourage sections to consider the achievements of women engineers. This year the committee will compile a list of Milestone-worthy technical achievements with an eye to the accomplishments of women and contact sections to consider proposing such plaques. We have already started this process by asking the Philadelphia section to consider honoring the work of Grace Hopper on the development of the Compiler.

I am looking forward to working with other units across IEEE on these initiatives. If you have any ideas, please don’t hesitate to contact me. a.marsh@ieee.org

THE INNOVATORS WINS 2016 MIDDLETON BOOK AWARD

For the winner of the 2016 William and Joyce Middleton Electrical Engineering History Award, the IEEE History Committee chose the book *The Innovators: How a Group of Hackers, Geniuses and Geeks Created the Digital Revolution* by Walter Isaacson (Simon & Schuster, 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.

In making its 2016 decision, the IEEE History Committee believed that *The Innovators*, in telling the story of the development of computing technology from its origins in the nineteenth century through the emergence of the World Wide Web, has magnificently fulfilled the goals of the Middleton Award across a wide range of IEEE technologies. The author discusses the individual people whose work was essential, while at the same time showing the reading public how the ideas, technologies, and organizations that gave birth to the digital era emerged through teamwork and collaboration.

Walter Isaacson, the CEO of the Aspen Institute, has been chairman of CNN and the managing editor of *Time* magazine. In addition to *The Innovators*, he is the author of *Benjamin Franklin: An American Life*, *Kissinger: A Biography*, *Einstein: His Life and Universe*, and *Steve Jobs*, and the coauthor of *The Wise Men: Six Friends and the World They Made*. The award was presented to Mr. Isaacson in December 2016 at his Aspen Institute office by IEEE Foundation Vice President and former Chair of the IEEE His-

tory Committee Lyle Feisel, accompanied by History Center Senior Director Michael Geselowitz and other IEEE staff. In accepting, Mr. Isaacson, who used IEEE History Center oral histories and other IEEE publications in his research, remarked on the importance of IEEE, to which both his father and uncle belonged.

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

SERVING THE MEMBERS; SERVING THE PROFESSION

REACH BETA WEBSITE GOES LIVE AT THE NCSS ANNUAL CONFERENCE

By Kelly McKenna, REACH Program Manager

The first week of December 2016 was an exhilarating time for the IEEE History Center and for its REACH Program. The beta website is live <http://reach.ieee.org>, and REACH was presented to enthusiastic social studies teachers at the National Council for Social Studies (NCSS) annual conference, in a session called “Enhancing the History Classroom with History of Technology.” New Jersey educators, Adam Angelozzi (Principal, Manalapan High School), James Somma (World History Teacher, Manalapan High School) and Laurie Bisconti (Social Studies Teacher, Heritage Middle School), participated in the presentation as REACH teacher-champions.

After three successful classroom pilots (as reported in *The Institute* in September 2016, <http://theinstitute.ieee.org/career-and-education/education/a-first-look-at-reach-ieee-interactive-tech-history-education-program>), the REACH team worked diligently on finalizing content, and in early December, Michael Geselowitz, Senior Director, IEEE History Center, and I presented the REACH Program, and unveiled the new REACH beta website.

Our presentation began with information about the IEEE and about the IEEE History Center—its history, resources, and its commitment to advancing technology for the benefit of humanity. The presentation continued by emphasizing that technology and history are not mutually exclusive subjects, and that understanding the role of technology in history is important for all students. Then came the exciting part as we shared the new REACH website and the extensive educational resources that are available for free! The REACH resources situate science, technology, and engineering in their social and humanistic contexts. Resources on the website include: extensive inquiry units or lesson plans, primary sources, (raw materials of history — original documents and images of objects that were created at the time under study), multimedia comprised of short videos for the classroom, and hands-on activities. The presentation concluded with the New Jersey educators who shared their experience of implementing the REACH program in their re-

spective classrooms and an explanation of the value of REACH from a school administrator’s perspective. The response from the audience was overwhelmingly positive and full of inquiry. It was wonderful for everyone involved to experience the enthusiasm, which filled the room.

The IEEE History Center also had a REACH exhibit booth at the event, which was continuously busy as hundreds of teachers came by to see the website and learn more about the program. Scott Henstand, a master teacher of “Big History” and a World History teacher at Brooklyn School for Collaborative Studies, New York, exclaimed, “A friend attended the NCSS IEEE REACH presentation and said I must visit the table! I knew immediately that this was important for the students and exciting to teach.” Tom Daugherty, a K-12 Social Studies Curriculum Coordinator based in Greensboro, North Carolina affirmed, “IEEE REACH looks like it would fit very well into our World History curriculum. It aligns with the drive towards STEM education and gives Social Studies a stake in that. I also think it will be exciting for students to study World History from new perspectives. I’m very interested and can’t wait to share it with teachers.”

In addition, to our presentation at NCSS, we were also invited to present at the Council for State Social Studies Specialists’ (CS4) annual meeting, a satellite conference to NCSS. Its members include specialists, consultants, and supervisors who have responsibilities for social studies education in the various state departments of education/public instruction. This was a phenomenal opportunity as it provided the IEEE History Center with a way to share REACH directly with state education organizations via their key social studies education decision-makers all at one time. Once again, the REACH Program was favorably received. “IEEE REACH was GREAT! Love the resources.... already checking them out and will share!” exclaimed a State Department Social Studies Supervisor. Another invited us to provide an article that highlights the REACH Program and resources in an upcoming state education newsletter. This fantastic response at this level, means that there is huge potential for the REACH program to “reach” a plethora of students and have tremendous impact.

As the REACH Program Manager, it fills me with gratitude and joy to know that the resources we've created are resonating with teachers and administrators and hold value with them. The REACH resources provide all students, not just those in STEM programs, with an opportunity to develop the critical thinking skills that will enable them to solve complex problems. They can engage personally in the socially relevant ways in which technology, innovation, and engineering can transform society. REACH offers them a new lens from which they may view engineering and technology as relevant to their lives and their future. The response to the REACH program at these two events while exhilarating to experience, was also humbling, as it brought home the fact that what we are creating and implementing at the IEEE History Center has the capacity, in a small but significant way, to benefit humanity by advancing the understanding of how engineering and technology affects social and humanistic circumstances. It's an honor to have an opportunity to give back in such a meaningful way to the next generation of students.

The REACH website may be found here: reach.ieee.org. Sign-on is required for access to all the resources offered on the site. IEEE will not share the information with any third parties, but having a sign-in offers a way for the History Center to track usage to serve the teachers better, and also to show potential donors the value and impact of the program. All of the History Center's programs are partly funded by philanthropic dollars via the IEEE Foundation, but REACH, a Signature Program of the IEEE Foundation, is completely reliant on external dollars. The REACH website includes information on how to support the program.

The REACH website is considered "beta" at this time because currently, there are only three inquiry units or lesson plans available: two in transportation and one in communication. More inquiry units will be populating the site throughout the year. In addition, the REACH team is looking to teachers for feedback so that the website may be tweaked to ensure it continues to meet the needs of teachers. Ultimately, the program will include dozens of units and reach thousands of educators and vast numbers of their students.

THE BING CROSBY SHOW, TECHNICAL ACTIVITIES, AND CRYPTOLOGIC SYSTEMS—NEW FIRST HAND HISTORIES ON THE ENGINEERING AND TECHNOLOGY HISTORY WIKI

The Engineering and Technology History Wiki (ETHW), a collaborative site composed of seven major engineering societies, acts as a repository for first-hand accounts and memoirs. Recently, three First Hand Histories have been submitted to the ETHW.

"The Evolution of the Bing Crosby Radio Show," by Robert W. Phillips, details the history of the landmark radio program which was one of the driving forces behind the development of Ampex tape recorders. These machines revolutionized the radio industry which allowed for the greater ease of post-production editing techniques. http://ethw.org/First-Hand:The_Evolution_of_the_Bing_Crosby_Radio_Show

"How I Became VP of IEEE Technical Activities," by 2009 IEEE President John Vig, gives an anecdote of his decision to run as a petition candidate for Vice President of Technical Activities

in 2003, and how this event led to his IEEE presidency. http://ethw.org/First-Hand:How_I_Became_VP_of_IEEE_Technical_Activities

"Applying Advanced Technology to Cryptologic Systems: Some Special Management Challenges," by James V. Boone, is an adaptation of a talk first given at the 2013 Symposium of the Center for Cryptologic History. Some of the unique management challenges discussed are security, secrecy, ethics and legal matters. http://ethw.org/First-Hand:Applying_Advanced_Technology_to_Cryptologic_Systems:_Some_Special_Management_Challenges

To read these First Hand Histories and to submit your own, we invite you to visit the ETHW at <http://ethw.org>

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

MAGOUN'S ARTICLE ON CLAUDE SHANNON'S COMPUTER IS THE INSTITUTE'S MOST-READ ARTICLE IN 2016

IEEE History Center Outreach Historian Alex Magoun's article on Claude Shannon's computer topped *The Institute's* most-read articles of 2016 <http://theinstitute.ieee.org/ieee-roundup/blogs/blog/the-institutes-10-most-popular-articles-of-2016>.

The IEEE History Staff are frequent contributors to IEEE Publications such as *The Institute*, *IEEE-USA's Insight*, and *Proceedings of the IEEE*. Here are links to some of our recent publications you might find interesting:

"The Hidden Legacies of RCA Laboratories," by Alexander Magoun, *IEEE Insight*, January 2017

<http://insight.ieeeusa.org/insight/content/views/596170>

"The Masterpiece behind the Music in 'A Clockwork Orange': the first film to use Dolby A," by Michael Geselowitz, *The Institute*, December 2016

<http://theinstitute.ieee.org/tech-history/technology-history/the-masterpiece-behind-the-music-in-a-clockwork-orange>

"Many Engineering Terms Are Older than You Might Think," by Robert Colburn, *IEEE Insight*, December 2016

<http://insight.ieeeusa.org/insight/content/views/558630>

"The IEEE History Center's REACH Program Pilots in New Jersey High School," by Kelly McKenna, *IEEE Insight*, November 2016

<http://insight.ieeeusa.org/insight/content/views/543295>

"Engineering Hall of Fame: Reginald Fessenden," by Michael Geselowitz, *IEEE Insight*, October 2016

<http://insight.ieeeusa.org/insight/content/views/492078>

The many articles and books written by IEEE History Center Staff are highlighted on the ETHW:

http://ethw.org/Archives:Books_and_Archival_Publications.

The page provides links to some of our "greatest hits" measured by readership statistics and publication reach. We invite you to browse; we hope to surprise you with the breadth of interesting topics we've explored.

Outreach Historian Dr. Alex Magoun also helps edit the monthly Scanning Our Past articles in *Proceedings of the IEEE*

https://www.ieee.org/publications_standards/publications/proceedings/proceedings_of_the_ieee.html

HISTORY CENTER STAFF NOTES

LISA NOCKS JOINS THE STAFF OF THE HISTORY CENTER

We are very pleased to welcome Dr. Lisa Nocks to the IEEE History Center as Historian. She is replacing John Vardalas, who retired in July. Lisa has a B.A. in Fine Arts from Montclair State University, an M.A. in Media Studies from The New School, and a Ph.D. in Modern History and Literature from Drew University. Lisa is an authority on the history of robotics, and has long experience in teaching, researching, and disseminating the history of technology to a wide range of audiences. Most recently, she

has been serving as a Senior University Lecturer in the Federated Department of History at the New Jersey Institute of Technology.

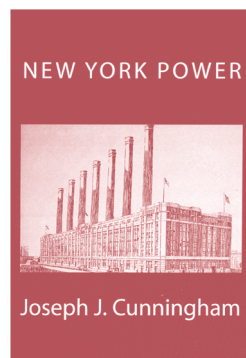
She has won grants and awards for her research and teaching. Her popular book *The Robot: The Life Story of a Technology* (Johns Hopkins University Press, 2008), was named top academic title of the year by the American Library Association's *Choice* magazine.

RELIC HUNTING

EXCELSIOR POWER PLANT GIVEN LANDMARK STATUS

The New York City Landmark Preservation Commission has unanimously approved the granting of Landmark status to the Excelsior power plant on Gold Street in lower Manhattan. The IEEE History Center played a role in this because a book published by the IEEE History Center Press—*New York Power*, by Joseph Cunningham—was the major scholarly work most cited by the nomination. The NYC Landmark Preservation Commission contacted the History Center for further information, and Joseph Cunningham provided additional expertise to the Commission.

The Excelsior Steam Power Company Building (1882) is the oldest-known purpose-built commercial generating station standing in Manhattan. It is one of the few major structures remaining from Manhattan's pioneering era for electric lighting



and power, which began with the illumination of a portion of Broadway with arc lamps in 1880. It was the location of important experiments with dynamotors and early mercury arc rectifiers when the building was a NY Edison dc substation.

The IEEE History Center is proud of the influence and impact it helped to wield by publishing an important book of technological history, which in turn, contributed to the concrete preservation of the heritage of IEEE's fields of interest.

New York Power is available from Amazon at https://www.amazon.com/New-York-Power-Joseph-Cunningham/dp/1484826515/ref=sr_1_1?ie=UTF8&qid=1483713320&sr=8-1&keywords=cunningham+new+york+power

ASIA-PACIFIC HISTORY CONFERENCES

Those attending IEEE Sections Congress 2017 (and even those who are not), being held on 11 – 13 August in Sydney, Australia, can consider two interesting conferences that they might be able to work into their travels. IEEE Sections Congress is the triennial gathering of IEEE grassroots leadership that enables them to network with other Section leaders, attend training programs, and develop recommendations to guide the future of IEEE (https://www.ieee.org/societies_communities/geo_activities/sections_congress/2017/sc2017.html)

Prior to Sections Congress, IEEE HISTELCON 2017 is being held on 7 – 8 August in Kobe, Japan: <http://www.ieee-jp.org/section/kansai/histelcon2017/>. IEEE HISTELCON (HISTORY of Electrotechnology CONference) is a flagship biennial-conference of IEEE Region 8 begun in Paris in 2008. Now it is be-

ing expanded to be co-sponsored by the IEEE Japan Council. HISTELCON is a unique opportunity for IEEE members interested in history to interact with historians of technology and science.

Between HISTELCON and Sections Congress, the IEEE Society on the Social Implications of Technology is holding its annual International Symposium on Technology & Society (ISTAS 2017) on 9 – 11 August, also in Sydney. The theme is “From Good Ideas to Practical Solutions,” and is designed to focus on how we can identify a good technological idea and transition it into a practical solution that delivers real benefits to society. Although the focus is on ethics and societal impact, ISTAS is an interdisciplinary conference, and SSIT welcomes participation by historians and those interested in history.

HISTORY OF TECH ON THE WEB

Because March is Women’s History Month in the U.S., and given the IEEE History Committee Chair’s remarks in this issue, this is a good time to remind readers that the Engineering & Technology History Wiki www.ethw.org contains more than just material on IEEE’s history. It is managed by the IEEE History Center on behalf of a consortium of major engineering societies, including the Society of Women Engineers. On the site, SWE has

an important collection of oral histories of pioneering women engineers (http://ethw.org/Oral-History:Society_of_Women_Engineers_Oral_Histories) that nicely complements the IEEE’s own oral history archive (which also has a strong representation of women, especially in the Women in Computing Collection, http://ethw.org/Oral-History:Women_in_Computing).

PROGRAMS OF SUPPORT FOR SCHOLARS

SHOT FELLOWSHIPS, AWARDS, AND PRIZES IN THE HISTORY OF TECHNOLOGY

The Society for the History of Technology (SHOT) each year awards a number of fellowships and prizes in the history of technology. The deadlines for applications/nominations for the 2017 recognitions are generally 15 April 2017. Most notable is the Bernard S. Finn IEEE History Prize, co-sponsored

by the IEEE Life Members Fund, which annually recognizes the best academic article in the history of one of IEEE’s fields of interest. The information on the Finn Prize and all SHOT prizes can be found at

http://www.historyoftechnology.org/about_us/awards/.

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

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DONOR PROFILE: MILTON LOWENSTEIN

Year Joined: 1948

"I will continue to contribute to IEEE as long as I can."



Milton Lowenstein can claim he is an IEEE member who never joined IEEE. "I did join The American Institute of Electrical Engineers (AIEE) in my senior year in 1948 so that I could establish a connection to my new profession. Eventually, IEEE caught up with me." In 1963 AIEE merged with The Institute of Radio Engineers to form IEEE. Milton went on to build a career he enjoyed for more than forty years. He contributed to multiple disciplines throughout his career including control system (analog) development engi-

neering, technical/computer editing for a trade magazine and managing computer system design and operation (digital) for many years.

Over the past twenty years, Milton has donated generously and consistently to multiple IEEE funds, including the Foundation Fund and the History Center Fund. "I donate to the Foundation because I want to make a general contribution, and to the History Center because I want the advancements of electrical engineering to be recognized and archived." The IEEE History Center is a not-for-profit organization which relies on donor support to preserve, research and promote the legacy of electrical engineering and computing.

"Obviously, I think that all electrical engineers should feel the way that I do. I have been making contributions to IEEE since before my retirement in 1990 and I will continue to do so as long as I can."

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 and more about the Engineering & Technology Wiki at ethw.org

2016 DONOR LIST

IEEE HISTORY CENTER PRESERVATIONISTS CIRCLE

The Preservationists Circle acknowledges the philanthropic spirit of individuals who have supported the IEEE History Center throughout their career and lifetime. Members of the Circle have made significant contributions to the History Center at crucial stages in its founding and development. These Philanthropists' donations to the IEEE History Center Endowment total \$10,000 or more since 1 January 1995.

Anonymous

IEEE Antennas and Propagation Society

IEEE Circuits and Systems Society

IEEE Communications Society

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IEEE Electromagnetic Compatibility Society

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The IEEE History Center gratefully recognizes the generosity and support of the individuals, corporations, and organizations listed here. Your support enables us to fulfill our mission to further the preservation, research, and dissemination of information about the history of electrical science and technology. All listings acknowledge gifts made to IEEE Foundation funds dedicated to the support of the IEEE History Center during the calendar year 2016.

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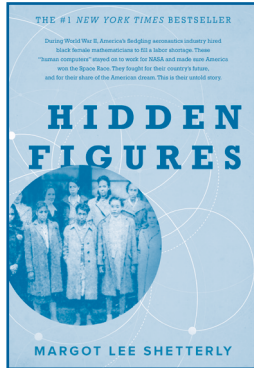
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SHETTERLY, MARGOT LEE,
Hidden Figures: The American Dream and the Untold Story of the Black Women Mathematicians Who Helped Win the Space Race, William Morrow (Harper Collins), 2016



The film *Hidden Figures* is a fictionalized account of the lives of real African American women “computers” brought in to serve the U.S. military during World War II, who stayed on to play a critical role in the NASA space program. It is justly receiving popular and critical acclaim, and we recommend it as viewing for the readers of this newsletter. Our readers, however, with their keen interest in the history of engineering and technology, are strongly

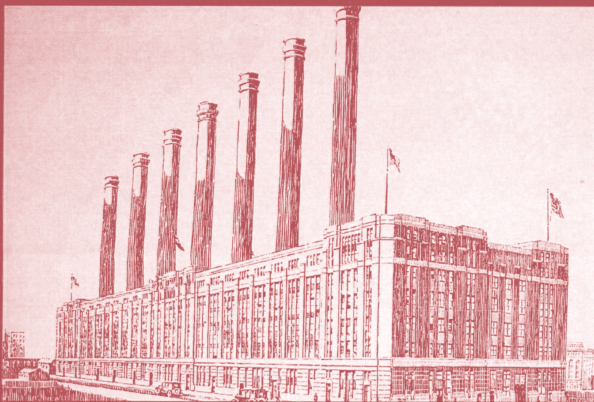
urged to read the original nonfiction book of the same title. The author, Margot Lee Shetterly, deftly weaves together the story of the developing role of computing in aeronautical and astronautical engineering during the World War II and in the postwar period with issues of race and gender emerging in the United States at that time. She makes excellent use of the work of historians of computing and the NASA History Office, while also undertaking archival research and conducting oral histories. The story is at once a page-turner (hence the interest of Hollywood in adapting it), and also an important commentary on the interplay of technology with politics, race, gender, and all other aspects of society.

Available from Harper Collins, New York, NY, www.harpercollins.com, \$27.99, hardcover, ISBN 006236359X (a paperback edition is also available), xviii + 346 pages, notes, index, bibliography.

NEW YORK POWER

by Joseph J. Cunningham
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NEW YORK POWER



Joseph J. Cunningham

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

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

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

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