IEEE History Center

ISSUE 126, November 2024

The IEEE Global Museum exhibit prepared for the 75th anniversary of the IEEE Vehicular Technology Society at the 100th IEEE Vehicular Technology Conference in Washington, DC. Look for full story in our March 2025 newsletter.

100% HUMAN CREATED CONTENT

No content in this issue was generated by AI.

IEEE History Center

The newsletter reports on the activities of the IEEE History Center and on new resources and projects in electrical and computer history. It is published three times each year—once in hard copy (July) and twice electronically (March and November) by the IEEE History Center.

IEEE History Center
445 Hoes Lane
Piscataway, NJ 08854

Telephone +1 732 562 5450
E-mail: **ieee-history@ieee.org**
www.ieee.org/about/history-center/index.html

SIGNALS FROM THE DIRECTOR

Michael N. Geselowitz
Senior Director, IEEE History Center

As I write these lines, the first ever IEEEE History Week is in full swing. On Tuesday 7 October 1884, IEEE's predecessor organization, the American Institute of Electrical Engineers (AIEE), began its first technical meeting. Held at the Franklin Institute in Philadelphia, it launched AIEE as the leading forum for sharing the latest developments in electric power and electrical communications. In 1963, AIEE merged with the Institute of Radio Engineers to form IEEE. In 2009, IEEE decreed that the first Tuesday in October shall be celebrated as IEEE Day and used to commemorate this first meeting and to build awareness of the IEEE community. 2024 is therefore the 140th anniversary of IEEE, and the IEEE History Committee decided to declare IEEE History Week (30 Sep – 4 Oct 2024) as an IEEE Day activity designed to increase awareness of history activities across IEEE. Organized by the IEEE History Committee in partnership with the IEEE History Center, IEEE History Week represents

HOW CAN THE HISTORY CENTER HELP YOU?

A Handy Guide to Some of Our Programs and Contacts

Engineering & Technology History Wiki: **https://ethw.org/Main_Page**

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

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

Milestone proposals in process: **http://ieeemilestones.ethw.org/Milestones_Status_Report**

Oral History Collection: **https://ethw.org/Oral-History:List_of_all_Oral_Histories**

REACH Program (free online materials for teaching the history of technology): **https://reach.ieee.org/**

History Events Calendar: **https://www.ieee.org/about/history-center/events.html**

Support for scholars:

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

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

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

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/create**

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: 500–1210 words. Submit to **ieee-history@ieee.org**. Articles and letters to the editor may be edited for style or length.

This is the time of year when I like to thank you, our loyal supporters, whose generosity with your treasure enables many of these programs to achieve their full potential.

an opportunity for members and their organizational units to learn more about the history of IEEE and its fields of interest, and the wide range of IEEE history programs to which they can contribute their time and talent.

The regular readers of this newsletter already know about these programs, many of which are highlighted again in this issue. And this is time of year when I like to thank you, our loyal supporters, whose generosity with your treasure enables many of these programs to achieve their full potential. We cannot do it without you, and we hope that we will continue to earn your support.

Best wishes for a happy holiday season and a safe, healthy, and productive new year.

HISTORY COMMITTEE ACTIVITIES

CHIP WAR: THE FIGHT FOR THE WORLD'S MOST CRITICAL TECHNOLOGY BY CHRIS MILLER WINS 2024 MIDDLETON PRIZE

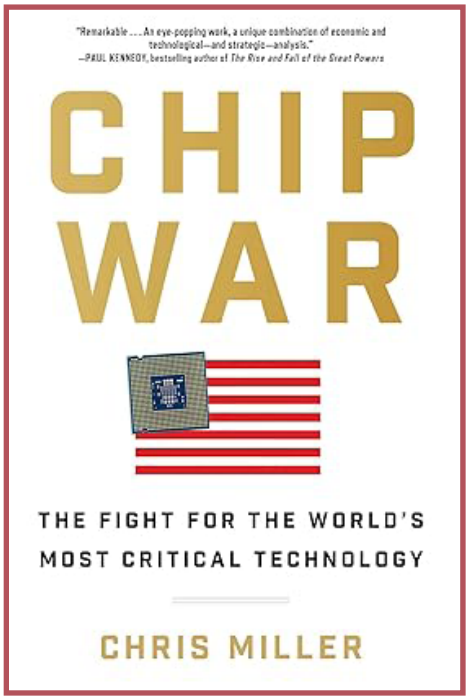
The IEEE History Committee has chosen *Chip War: The Fight for the World's Most Critical Technology* (2022, Simon & Schuster, New York) as the winner of the 2024 William and Joyce Middleton Electrical Engineering History Award.

Miller tells the history of the rise of semiconductors and their manufacturing, the importance of being able to use computing power efficiently, and the competition among the United States, China, Taiwan, Europe, and Korea to manufacture high-speed, reliable microchips.

https://www.simonandschuster.com/books/Chip-War/Chris-Miller/9781982172008

The William and Joyce Middleton Electrical Engineering History Award, established in 2014 by a gift from the estates of long-time IEEE leader William W. Middleton and his wife Joyce F. Middleton, 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.

https://www.ieee.org/about/history-center/middleton-award.html#about-the-award



BOARD OF DIRECTORS APPROVES NEW MILESTONES

At its teleconference of 27 September, the Board of Directors gave final approval to six new milestones proposals. They are: Commercialization of the Fish Finder, 1949; Anderson Bridge, 1891; Heavy Ion Accelerator Facility, 1973; Integrated Circuits for Satellite Digital Radio, 1996-1997; Elekiteru: First Electrostatic Generator in Japan, 1776; and Cobalt-60 Radiation Cancer Treatment Machines, 1951.

These milestones, which the History Committee reviews prior to recommending action by the Board, represent achievements in many fields of IEEE interest, as well as the second-oldest achievement (Elekiteru: First Electrostatic Generator in Japan, 1776) recognized by IEEE. The oldest is for the Book "Experiments and Observations on Electricity" by Benjamin Franklin, 1751. When these milestones are dedicated at some later date, they will join the more than two hundred and fifty achievements already dedicated.

CHRISTOPHER PENEV IS VISTING RESEARCHER FROM RUTGERS UNIVERSITY

The History Center is pleased to welcome Christopher Penev as a visiting researcher. Christopher will primarily be assisting Senior Historian Daniel Mitchell with exhibits for the Global Museum project, researching artifacts and preparing explanatory cards in the displays. However, he will also be shadowing other members of the History Center staff to learn the many aspects of how a public history organization works to bring its story to its constituents.

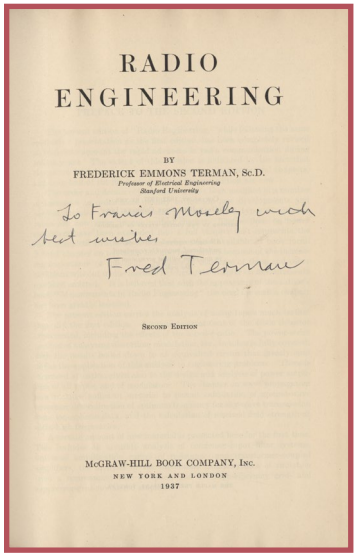
Christopher Penev is currently a senior at Rutgers University-New Brunswick, majoring in History with a minor in Political Science. "My family has always been a huge inspiration to me—my brother, mother, and father have played pivotal roles in shaping who I am today. My father's work as a diplomat at the United Nations also sparked my interest in political science. My passion for history began in 5th grade during museum visits and was nurtured through discussions with my brother, Alex. My father's work as a diplomat at the United Nations also sparked my interest in political science. I'm excited to contribute to the IEEE History Center as a visiting researcher and look forward to sharing my love for history with the community. I cannot wait to make connections, learn new things, and garner a deeper sense of gauging the past for what it is. I believe history is not just something to be studied—it's something to be felt and understood. By connecting with the past, we gain a deeper sense of who we are today, and I'm passionate about helping others discover the stories that still resonate in our everyday lives."

ARCHIVES UPDATE

Recently, the Estate of Francis L. Moseley, (IRE Fellow) for "contributions to the development of aircraft navigation systems and electronic instruments", donated twenty two key texts of the early electrical industry. Of particular note are textbooks written by prominent figures.

The IEEE History Center maintains a physical archive and library which captures and preserves documents and texts related to IEEE and its technologies. One of the major components of the IEEE History Center's library is a collection of key textbooks related to electrical engineering topics. These texts allow for a unique insight into not only the engineering profession and its use of technologies, but how this information was conveyed to students and young practitioners.

Recently the Estate of Francis L. Moseley, who was made an IRE Fellow in 1957, for "contributions to the development of aircraft navigation systems and electronic instruments", donated twenty two key texts of the early electrical industry. Of particular note are textbooks written by prominent figures, including Edwin J. Houston (AIEE President, 1889-1890), Francis B. Crocker (AIEE President, 1897-1898), Arthur E. Kennelly (AIEE President, 1898-1900, IRE President, 1916), Harris J. Ryan (AIEE President, 1923-1924), Cyril Jansky (IRE President, 1934), a signed copy of Frederick Terman's (IRE President, 1941) classic text *Radio Engineering*, and Benjamin Lamme's *Electrical Engineering Papers*.


RADIO
ENGINEERING

BY
FREDERICK EMMONS TERMAN, Sc.D.
Professor of Electrical Engineering
Stanford University

To Francis Moseley with best wishes
Fred Terman

SECOND EDITION

McGRAW-HILL BOOK COMPANY, INC.
NEW YORK AND LONDON
1937

In addition to classic textbooks, the IEEE Archives and Library accept donations of other relevant material, including, but not limited to: primary papers, photographs and ephemera directly related to IEEE or IEEE Organizational Unit activity; copies of primary or secondary literature in the form of published monographs or dissertations related to the history of technology.

If you have any archival or library material you would be interesting in donating, please email **ieee-history@ieee.org**

MUSEUMS AROUND THE WORLD: ETHW LAUNCHES NEW PLATFORM

The IEEE History Center has launched a platform that aims to make technology museums around the world viewable and sortable for visitors and travelers.

The Global Engineering and Technology Museum Database **https://ethw.org/ETHW:Museums** displays technology museums around the world on a map and on a sortable table. Using the Semantic MediaWiki extension suite, it is possible to browse museums by their properties and to form advanced queries.

The Engineering and Technology History Wiki (ETHW) is a collaboration between IEEE and eight of the major engineering societies. While most of the ETHW's content is a large encyclopedia modelled after Wikipedia, it also houses some of primary sources the History Center publishes, including oral histories and scanned archival documents. The IEEE History Center is pleased to announce another major addition to the ETHW's infrastructure. Using a suite of MediaWiki extensions called Semantic MediaWiki, an extension suite used on more than 1,600 public wikis. The Semantic MediaWiki extension suite allows the creation and definition of custom fields that can be queried and displayed like a database.

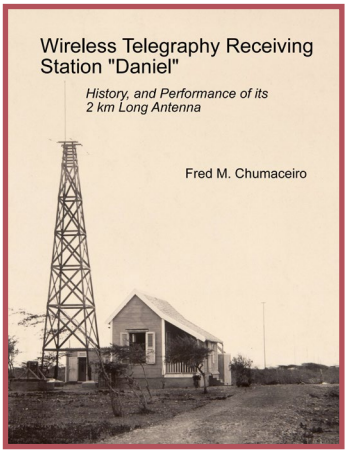
SOUTHEAST MICHIGAN SECTION CELEBRATES IEEE'S 140TH

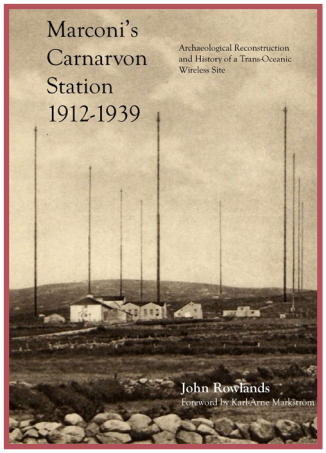
In September, the dynamic IEEE Southeast Michigan Section hosted a celebration of IEEE's 140th anniversary, dating from the founding of the American Institute of Electrical Engineers in 1884. Section chair Sharan Kalwani invited the IEEE History Center's Outreach Historian, Alex Magoun, Ph.D., to give a keynote talk, alongside IEEE-USA president (and IEEE History Committee member) Keith Moore. In less than an hour, Magoun highlighted events every twenty years, from James Clerk Maxwell's inaugural lecture on his new theory of electromagnetic waves in 1864, to Motorola's introduction of its Dynatac cell phones in 1984. The fifty IEEE members attending, including students from three branches, applauded vigorously at the conclusion and you can see and hear why on vice chair Aneesh Mathai's recording: **www.youtube.com/watch?v=WfY6xdz1O7s.**

REACH REPORT NOVEMBER 2024

On Tuesday 17 September, as part of the IEEE Society for the Social Impact of Technology (SSIT)'s annual conference, the International Symposium on Technology and Society (ISTAS 2024), IEEE REACH Senior Program Manager Kelly McKenna worked with about twenty local Young Professionals in Puebla, Mexico, to present a STEM workshop. 2500 students and their teachers participated. Then, on Friday 20 September, McKenna participated in a panel, sponsored by the IEEE Women in Engineering Committee and chaired by IEEE History Committee member Bozenna Pasik-Duncan, on "Diversity, Equity and Inclusion in Engineering."

NEW CONTRIBUTIONS TO RADIO ARCHAEOLOGY





By Alexander B. Magoun, Ph.D., Outreach Historian

CHUMACEIRO, FRED M., *Wireless Telegraphy Receiving Station "Daniel": History, and Performance of its 2 km Long Antenna* (Curaçao: n.p., 2022). 102 pp. Copyright © 2022 Fred M. Chumaceiro. Available for free download on the Dutch Caribbean Digital Platform: **https://dcdp.uoc.cw/AA00008154/00001/pdf**.

ROWLANDS, JOHN, *Marconi's Carnarvon Station 1912-1939: Archaeological Reconstruction and History of a Trans-Oceanic Wireless Site*, 5th ed. (n.p., 2024). 233 pp. Copyright © 2024 John Rowlands. Available for purchased download (£9. 99) from the author: **https://www.paypal.com/paypalme/marconivlf**.

Around the world, from the Yosami Radio Transmitting Station in Japan to the Grimeton Radio Station SAQ in Sweden, to KPH in California, U.S.A., small groups of radio engineers and local historians have been documenting, preserving, and promoting the first generation of radio communications. Their methods include the simplest archaeological documentation of concrete footings and ceramic insulators, parkland mapped for the public, museums, restored and functioning equipment, documentary files, and IEEE Milestones **https://ethw.org/Milestones:List_of_Milestones**.

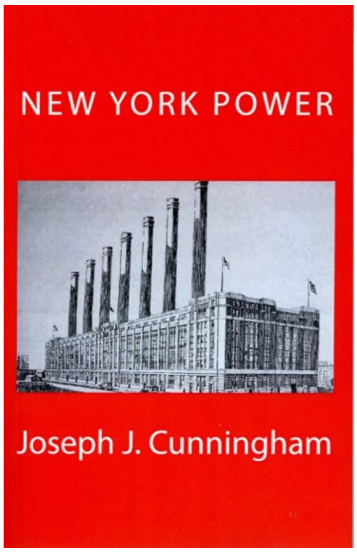
The point is to remember that, from Marconi to the beginnings of broadcasting in the 1920s, intercontinental wireless telegraphy relied on arc and spark transmitters requiring hundreds of kilowatts of power to send Morse code messages from antennas more than 100m tall; and receiving antennas spanning kilometers of countryside. The massive investments required by investors and governments were justified by financial, imperial, political, and military returns in peace and war. With adaptations, the system was only fully superseded by combinations of microwave satellites and fiber-optic networks some fifty years later.

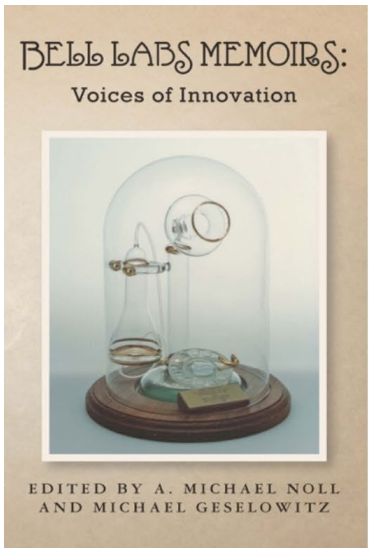
Digital wireless communications have permeated our lives since then, and one response has been in search of our material pasts, and sometimes of the electromagnetic phenomena that made longwave possible. These two self-published books reflect some of the best work in "radio archaeology," the fusion of research in the surviving material culture of the stations and the documentary evidence of the time. Authors Fred Chumaceiro PJ2FM and John Rowlands MW1CFN are radio engineers and ham radio operators who have spent years with like-minded volunteers surveying their respective sites in Curaçao and Caernarfon in Wales, and using their technical training and expertise to interpret the remnants of a radio world we have lost. As importantly for traditional historians, they complement their discoveries on the ground with research in primary sources and at local and national archives, and informational exchanges with preservationists at sites once in wireless contact with theirs.

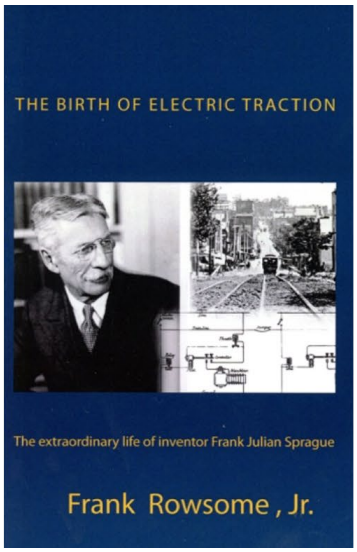
These two self-published books reflect some of the best work in "radio archaeology," the fusion of research in the surviving material culture of the stations and the documentary evidence of the time.

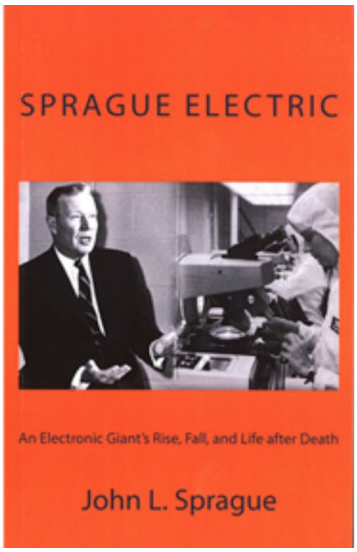
The results are spectacular: these are well illustrated examples of what is possible in establishing the nature and explaining the operation of the physical structures. In IEEE Life Senior Member Chumaceiro's case, there is also some insightful and colorful modeling of the electromagnetic radiation patterns of the long-lost antennas. One hopes that like-minded preservationists elsewhere—New Jersey, New York, Massachusetts, Nova Scotia, Sweden, Portugal, France, Italy, Germany, Poland, China, Japan, Hawai'i, California, Mexico, Brazil, or Argentina—will take notice of these explorations and revelations, and contribute their own results.

BOOKS FROM THE IEEE HISTORY CENTER PRESS









NEW YORK POWER

by Joseph J. Cunningham
tells the story of the electrification of one of the densest electrical load areas in the world. Electrification began during the 1880s, but many innovations were required to supply urban service at a cost that would make possible large-scale consumption.
https://www.amazon.com/New-York-Power-Joseph-Cunningham/dp/1484826515

BELL LABS MEMOIRS: VOICES OF INNOVATION

The innovative spirit and creative energy of Bell Labs during the directorship of William Baker are described by twelve people who worked there. Through their eyes and words, the culture of Bell Labs comes alive.
https://www.amazon.com/Bell-Labs-Memoirs-Voices-Innovation/dp/1463677979

THE BIRTH OF ELECTRIC TRACTION: THE EXTRAORDINARY LIFE OF INVENTOR FRANK J. SPRAGUE

Sprague made enormous contributions in the areas of electric traction, control and safety, especially automatic signaling and brake control for railroads. He was active in the planning and construction of New York City's subway system, and in the electrification of Grand Central Terminal.
https://www.amazon.com/Birth-Electric-Traction-extraordinary-inventor/dp/1490955348

SPRAGUE ELECTRIC

Sprague Electric Company's rise from a high-tech kitchen-table startup is representative of much of the U.S. electronics industry. Begun in 1926, it became a thriving manufacturer of components. More than 50,000 Sprague components rode aboard every *Apollo* mission, and more than 25,000 aboard every Space Shuttle. *Sprague Electric* provides a valuable business and technological history, a story of corporate success… and a cautionary tale of what to avoid.
https://www.amazon.com/Sprague-Electric-Electronics-Giants-after/dp/150338781X

IEEE History Center Press books are available from Amazon.com in hard copy and on Kindle

GIVING AND SUPPORT FOR IEEE HISTORY CENTER PROGRAMS

NEW IEEE MEDAL IN WIRELESS COMMUNICATIONS COMMEMORATES JAGADISH CHANDRA BOSE

by Tanya Steinhauser, IEEE Awards

In the realm of wireless communications, innovation and excellence are paramount. The IEEE Jagadish Chandra Bose Medal in Wireless Communications, the newest of IEEE's highest level award portfolio, will stand as a shining testament to those who have made remarkable contributions to this field. And behind this esteemed award lies a remarkable individual whose generosity and vision have paved the way for honoring the brightest minds in the wireless communications industry – IEEE Life Fellow, Dr. Mani Bhaumik.

"Wireless Communications holds a very special meaning not just for me but for all of humanity," said Bhaumik. "Today, it is hard to imagine the functioning of our global technological society without this very essential element. From ubiquitous GPS guidance to billions of personal cell phones and the impending wireless internet soon to be available everywhere on our planet, the functioning of human life is unimaginable without wireless communication."

Dr. Mani L. Bhaumik (left) received his IEEE Heritage Circle, Alessandro Volta Level, Honored Philanthropist, certificate from IEEE Past President Saifur Rahman (right).

A renowned physicist and philanthropist, Dr. Mani Bhaumik has long been a trailblazer in the world of science and technology. Born in a remote village in India, Bhaumik overcame immense odds to pursue his passion for knowledge. His journey took him from the fields of rural Bengal to the hallowed halls of academia in the United States, where he made groundbreaking discoveries in laser technology that revolutionized the field. Bhaumik became an IEEE Life Fellow in 1982 for contributions to the research and development of high-energy lasers and new laser systems.

Dr. Mani L. Bhaumik made a generous donation to the IEEE Foundation to establish the IEEE Jagadish Chandra Bose Medal in Wireless Communications. Named after the legendary Indian scientist who pioneered wireless communication, this medal, presented by the IEEE Board of Directors, aims to honor individuals who have made significant advancements in the field, pushing the boundaries of what is possible, and inspiring future generations to innovate.

"J.C. Bose was the indisputable pioneer of millimeter wavelength technology almost a century ago, with a US patent to boot," explains Bhaumik. "However, the pioneering work of this unsung hero has not received appropriate recognition. My humble effort in establishing the foundation to fund the IEEE Jagadish Chandra Bose Medal in Wireless Communications is a sincere attempt to epitomize his invaluable contribution."

Dr. Bhaumik says that another motivation was that his own professor and mentor, S.N. Bose (known for developing the theory of Bose-Einstein statistics) happened to be one of J.C. Bose's students.

Named after the legendary Indian scientist who pioneered wireless communication, this medal, presented by the IEEE Board of Directors, aims to honor individuals who have made significant advancements in the field, pushing the boundaries of what is possible, and inspiring future generations to innovate.

The IEEE Jagadish Chandra Bose Medal in Wireless Communications serves as a beacon of excellence, recognizing those who have dedicated their careers to advancing the field. From groundbreaking research to innovative technologies, recipients of this prestigious award will embody the spirit of innovation and discovery that defines the world of wireless communications.

The first recipient of the award will be announced this December and the medal will be presented for the first time during the 2025 IEEE Honors Ceremony in Tokyo, Japan.

Visit the IEEE Awards website to learn more. Or, if you are interested in following in Bhaumik's footsteps, you too can donate to the IEEE Awards program.

FELLOWSHIP AND VISITING SCHOLAR 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 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 $25,000 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 of each year. 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, 445 Hoes Lane, Piscataway NJ 08854. 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.

Elizabeth & Emerson Pugh Young Scholar in Residence

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 the Elizabeth and Emerson Pugh Young Scholar in Residence at the Center's offices at the IEEE Operations Center, Piscataway, New Jersey, USA.

The residency seeks to provide research experience for graduate students in the history of electrical and computer technologies, while enlisting the help of promising young scholars for the Center's projects. The Young Scholar 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. Pugh Scholars are also encouraged to consult with the Center's staff and its associates, and guided to research resources in the area. The residency 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 is US$5,000.

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 of each year.

The Pugh Visiting Scholarship is funded by an endowment from Emerson & Elizabeth Pugh.

IEEE is an AA/EO employer. 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. 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, 445 Hoes Lane, Piscataway, NJ 08854, +1 732 562 5450, ieee-history@ieee.org, **http://www.ieee.org/about/history_center/index.html**.

IEEE Foundation

IEEE

Where technology and philanthropy intersect

Together, we deliver opportunity, innovation and impact across the globe.

As the philanthropic partner of IEEE, we translate the values of our members and donors into social impact. In collaboration with IEEE, we connect more than 200 member-led initiatives with financing, expertise and philanthropic guidance. Help advance the IEEE mission with a donation.

Funds and Programs:

- IEEE PES Scholarship Plus Initiative
- IEEE History Center and REACH
- EPICS in IEEE
- IEEE Smart Village
- And many more!

Join Us!

To find your program, visit
ieeefoundation.org/what-to-support

To make a donation, visit
ieeefoundation.org/donate

ieeefoundation.org

IEEE History Center
445 Hoes Lane
Piscataway, NJ 08854

The History Center thrives with YOUR support.
Making a *safe* and *secure*
online gift to the IEEE Foundation —
History Center Fund has never been easier!

You can support IEEE's historical
activities by clicking on
http://ieeefoundation.org/donate_history
and choosing **"IEEE History Center Fund"**
at the **"Designation"** box.