

IEEE life members newsletter



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Membership and Commitment

Aleksandar Szabo, Chair, IEEE Life Members Committee

Welcome to the nearly 3,000 new IEEE Members, including Fellows and Senior Members, who reached these member grades on 1 January 2017. Congratulations to all of you! We are encouraging you to continue your engagement in the IEEE within your local Sections, Chapters, and Affinity Groups. The IEEE recognizes your many years of professional work as well as your membership and commitment to the organization.

If you are a member of a Life Member Affinity Group (LMAG) in your Section, take into account that other higher-grade members can also belong to the group and help with its activities. Great results can be achieved by organizing activities in cooperation with IEEE Young Professionals Affinity Groups and Student Branches.

If your Section currently lacks an LMAG, try to establish one and create some activities. You can visit www.ieee.org/societies_communities/geo_activities/life_members/groups.html for some ideas or ask your Section and regional LM coordinator for help. For the list of existing LMAGs, visit www.ieee.org/lmag.

The IEEE Life Members Committee (LMC) provides leadership in indentifying and supporting the interests of current and future LMs, as well as retired members, in IEEE activities. The LMC is responsible to the IEEE Foundation for the management of the IEEE Life Members Fund (LMF) including stimulating and monitoring financial contributions and authorizing the disbursement of funds. LMs are encouraged to contrib-



**IEEE Life Members
Committee Chair
Aleksandar Szabo**

ute to the LMF (www.ieeefoundation.org/donate). This newsletter and the IEEE Foundation website contain information about many supported projects across the world. So take a look and gain some insight on the projects and activities on which these funds are spent. One thing to keep an eye on is that while the technical tours organized by the LMC have been discontinued, some tours

organized on the Section level can be expected soon.

I would like to once again encourage our LMs and Members approaching LM status to apply for the Senior Member grade. LMs and elder members should have at least five years of significant performance as required for the Senior Member grade. Contact your Section for information on Senior Member grade nominations. You need only two references. For more information, visit www.ieee.org/seniormember.

The *IEEE Life Members Newsletter* also goes out to IEEE Members whose interests are often similar to those of LMs, such as retirees or Members approaching retirement. We hope that the articles in the newsletter inspire you to interact with others. The newsletter is looking for your contributions. Please tell us about LM activities in your local Sections and LM groups.

Besides our very popular "Tales from the Vault" articles, we are publishing a new section dedicated to ethical dilemmas. These articles are a result of the cooperation between the IEEE Society on Social Implications of Technology and the LMC. They will be published

simultaneously in the *IEEE Society on Social Implications of Technology Newsletter* and the *IEEE Life Members Newsletter*. Please feel free to submit ethical

dilemma stories to lm-newsletter@ieee.org. I expect that these stories will be as popular as our “Tales from the Vault” articles.

A Glimpse at LMC-Funded Grants

The IEEE Life Members Committee (LMC), a joint committee of the IEEE and the IEEE Foundation, is responsible for the administration of the IEEE Life Members (LMs) Fund (LMF). Thanks to the generosity of IEEE Members, the LMF—in collaboration with the IEEE Foundation—supports activities of IEEE organizational units that are of interest to LMs and potential and current engineering students. The fund is supported by the generosity of IEEE Members. The LMF is pleased to announce its monetary support for the following programs:

1) **Drones: A Limitless Future** (US\$62,050—IEEE New York Section, Region 1). The Intrepid Museum is partnering with the IEEE for a major new exhibition with programs in 2017. It is an opportunity for the IEEE New York Section to carry out IEEE’s public imperative to raise awareness and understanding of technology and its impact on society, both locally and globally. It is also a chance for IEEE Members to more broadly engage in these activities. Joined by the museum, the IEEE History Center, and IEEE–USA, the IEEE New York Section requested support for:

- Teacher professional development: A 36-h teacher professional development program for 25 teachers will explore the technoscience behind unmanned aerial vehicles. Secondary history and science, technology, engineering, and math (STEM) teachers from the New York City area will participate in a program with three approaches. For teachers as learners, experts in collaboration with the Section will cover the technology, staff from the History Center will talk about history, and current uses and debates around regulation will be covered. Teachers as researchers will interact with the artifacts and information in the exhibition. Teachers as creators will work across disciplines to create lesson plans. Through a voluntary submission process, participants will be selected to publish materials for the IEEE History Center’s REACH (Raising Engineering Awareness through the Conduit of History) initiative. Up to five lessons will be published on the IEEE History Center and Intrepid websites, for which there will be a US\$250 honorarium for the teachers chosen. Depending on the school district, teachers may receive continuing education credits.
- IEEE Conference and Forum and technical meeting: IEEE–USA and the IEEE New York Section will design a conference on the technology of drones that will be of interest to IEEE Members and other technical and scientific professionals in the area. The conference will be followed by a public lecture. The 2017 IEEE Drone Conference at the Intrepid will be scheduled for the morning and afternoon, with a public forum, presentations, and/or panel discussions with the IEEE and other presenters in the early evening. IEEE–USA has agreed to serve as a cospon-

sor. The New York Section will also reach out to other IEEE Sections in the tristate area to see if they wish to participate. Continuing education units and/or professional development hour credit certificates may be available.

- Membership offerings: During the duration of the exhibition, IEEE Members who live outside of New York are extended a 20% admission discount to the museum with proof of membership at the box office. IEEE Members who live in New York City are welcome to come to the museum at the resident price, which is up to 40% off the regular admission. In addition, the local Sections and Chapters will design one or more technical Chapter meetings on the technology of drones of interest to IEEE Members and other technical and scientific professionals in the area and will be held at the museum. These meetings, typically scheduled for the early evening, will also be open to the public.
- 2) **Celebration of the History of Television** (US\$9,000—United Kingdom and Ireland Section Life Member Affinity Group, Region 8). Many of the dramatic advances that have been achieved in television technology are largely taken for granted by today’s young people. This is partly because they have not had the opportunity to delve into the details of the science and engineering behind the devices that are in everyday use. The “plug-and-play generation” has been encouraged to adopt a rather superficial approach to understanding the scientific basis of the technology that drives, for example, flat-panel displays or handheld wireless communications devices. The project aims to inform and educate a broad cross-section of students, and others, about how the evolution of modern consumer electronics has enabled billions of people across the world to enjoy access to highly sophisticated technology at an affordable cost. The project will use lectures, demonstrations, and exhibits to show how the advances were achieved and what the future is likely to bring in the form of ever-more complex devices.
- 3) **Graceful Aging with Technology** (US\$17,000—IEEE Buenaventura Section, Region 6). The intent of this project is to raise the public awareness of the positive impact that emerging technology can have on senior citizens in their ability to age gracefully as their mobility and cognitive functions diminish. The scope of the project includes the following:
 - Public talks about aging gracefully with technology at local senior citizen centers as well as with organizations and groups representing the rights of senior citizens organizations scheduling talks promoting STEM with students, schools, and at local IEEE events.

- The involvement of 100 or more students from at least two middle schools, three high schools, and one university. The students will participate in the development of new digital solutions using recent sensing and Internet of Things products, create 3-D-printed concepts, or brainstorm sensing technology system ideas that ease the life of a senior citizen in his or her home by helping the person remain connected, be more mobile, be more engaged socially, and able to compensate for a progressive reduction in cognitive abilities.
- The involvement of the current Buenaventura Life Member Affiliate Group, which has a vibrant entrepreneurship education program, to teach entrepreneurship to the young and more mature alike on how to launch some of the most promising ideas.
- A hands-on educational program to show middle school and high school teachers how the next-generation science standards can be applied to these projects.
- A set of online documentation and videos posted on the IEEE Buenaventura Section website to explain the detailed approach that will enable other groups to duplicate or approach this project.

4) **Virtual Histories of Disability and Technology** (US\$30,000—IEEE Engineering in Medicine and Biology Society (EMBS) Ottawa Section/IEEE Society on Social Implications of Technology Ottawa Section, Region 7). The project seeks to explore the historic impact of technology within our broader world as it relates to disability through creating a series of accessible and publically available virtual exhibits that have the potential to reach a wide and varied audience. The previous work of CUDRG has uncovered histories of inventions that have not been written about before—histories that can offer invaluable insights into how conceptions of accessibility and inclusive design have emerged, while providing important lessons from the past to present-day engineers developing assistive technology. Within the current exhibits, we underline the important role of scientists and engineers with disabilities, the growing importance of rights activists, the uneven impact of technologies on the lives of users, and the high influence of Canadians in the international histories of such technologies. The grant will support the following tasks:

- Educational workshop: Create an educational workshop involving the CUDRG, CU@EMBS, and CNIB that includes interacting with the virtual exhibits and a mini technical project led by IEEE Student Members that would help students consider the ethical and practical elements in designing assistive technologies. It's use will be piloted with high school students through Carleton's Enrichment Mini-Course Program, Virtual Ventures summer camps, and the summer program SHAD. All of the materials that are generated by the workshops will be freely available to members of the IEEE Teacher In-Service Program and other interested IEEE groups.
- Oral Histories: Build upon IEEE's international collection of oral histories located on the Engineering and Technology History Wiki by contributing oral histories conducted by the CUDRG of individuals who have

played key roles in the use and development of assistive or adaptive technologies.

- Exhibition development: Goals include:
 - further develop of A Wheelchair History of Disability (mobilityhistories.ca) into a more comprehensive and accessible exhibit that will attract a wider audience
 - expand envisioning technologies to include a consideration of the blind/deaf community and innovations in accessibility
 - reformat current exhibits into effective post-secondary pedagogical tools to ensure integration within Carleton University courses dedicated to biomedical engineering, technology, society and environmental studies, design, and disability studies
 - design and convert a physical exhibition of Envisioning Technologies into a traveling exhibit
 - begin work on a third exhibition dedicated to the history of disability and technology as it relates to the deaf community
 - expand and build relationships and future workshop and symposium opportunities with other organizations and universities to create a set of best practices for the design of accessible virtual and physical exhibitions on the history of disability and technology.

5) **IEEE TechEthics Program** (US\$25,000—IEEE Technical Activities, Region 1). “Advancing technology for the benefit of humanity” is the IEEE tagline. For technology to benefit humanity, it needs to be universally available and accepted. Part of moving technology into widespread use includes addressing any ethical concerns that might arise, be they professional or technology ethics. By introducing frameworks that explicitly consider critical, non-technical dimensions of technology, such as ethics, the IEEE can serve the technology community and the general public.

In response, the IEEE has ramped up its investigation of ethics in a variety of technology areas. The IEEE TechEthics program was created to consider tech ethics in its various dimensions (e.g., professional decisions such as the ones that Volkswagen designers recently made with respect to emissions, the advent of autonomous cars and autonomous weapons, advancements in brain machine interfaces, augmented humans, service robotics, and others). In addition, the program seeks to empower the technical community to implement methodologies and products resulting from our consensus-building efforts to deliver value-driven, ethical innovation defining the modern marketplace.

The goals of the IEEE TechEthics program are to establish the IEEE as a thought leader in conversations about ethics and the societal implications of technology and to be a trusted source of information for the general public and other audiences by

- providing a platform for the open debate and discussion of ethics-related topics across all fields of technology
- driving robust dialogue so that consensus building can eventually begin
- building consensus and developing standards (when applicable)

- considering differences (cultural, philosophical, regional, etc.) in these conversations
- partnering across the IEEE and with outside parties to ensure full coverage of all possible voices and document all possible opinions and trends
- developing and curating content (videos, papers, educational material, etc.) in support of the ongoing conversation around the societal impact of technology.

The initial focus area of the program is artificial intelligence (AI) and autonomous systems. However, it will grow

to include additional topics, such as the future of the work/autonomous workforce, the augmentation of humans, eHealth and medical devices, ethics across the product development cycle (professional behaviors to design considerations to end-user impacts and more), social service devices, and more.

IEEE TechEthics will produce a one-day event on technology ethics, most likely on the various ethical aspects and social implications of AI and autonomous systems (date and location to be decided).

Does Your IEEE Group Need Money for a Project?

If your IEEE organizational unit (OU) has an idea for a project that will increase the public's understanding or appreciation of technology but needs funds to implement it, the IEEE Foundation can help. The IEEE Foundation and the IEEE Life Members Committee are seeking proposals from IEEE OUs (Societies, Regions, Sections, Chapters, Affinity Groups, and Student Branches) for projects that promote the public's understanding of how science and technology are being used—or could be used—to address global challenges. These projects may help solve issues in a number of areas, including energy, cybersecurity, health care, and sustainability. Applicants should facilitate the understanding of the technology without advocating for specific

solutions. They should also come up with ways to measure a project's success, promote the project, and report on its results.

IEEE OUs are expected to submit photos and a short video conveying the essence of the project once it is complete. It can be helpful to involve members who have social media experience. Grant recipients may partner with other groups, but the chief organizers and financial controllers must be IEEE Members.

Applications are due by 15 July 2017 for projects that will be executed in 2018. Recipients will be notified by 8 December 2017. Additional information as well as the proposal submission portal may be found on the IEEE Foundation's website (www.ieeefoundation.org/).

Changes in the IEEE Milestones Program

In February 2017, the IEEE Board of Directors approved changes in the name and the definition of the IEEE Milestone Program. The changes were recommended by the IEEE History Committee in December 2016 and are intended to encourage achievements in all of IEEE's fields of interest to be proposed, thus expanding the recognition of our heritage. The title, which will appear on milestone plaques, was shortened from "IEEE Milestone in Electrical Engineering and Computing" to "IEEE Milestone" to emphasize the breadth of the achievements that may be proposed. Currently, there are 177 dedicated IEEE Milestones in all ten Regions, with more in the works (http://ieeemilestones.ethw.org/Milestones_Status_Report).

The IEEE History Committee encourages any IEEE Member to propose achievements worthy of recognition as an IEEE Milestone. IEEE History Center staff have already prepared a list of possible candidates (http://ieeemilestones.ethw.org/List_of_Achievements_Suitable_for_Milestones), but this list is by no means all of them, and Members are welcome to propose achievements that do not currently appear on the list.

The program is now defined as:

- The IEEE Milestones program honors significant technical achievements in all areas associated with the IEEE. The designated fields (per IEEE Bylaw I-104.11) are: Engineering,

Computer Sciences and Information Technology, Physical Sciences, Biological and Medical Sciences, Mathematics, Technical Communications, Education, Management, and Law and Policy. It is a program of the IEEE History Committee, administered through the IEEE History Center. IEEE Milestones recognize the technological innovation and excellence for the benefit of humanity found in unique products, services, seminal papers, and patents. Milestones honor the achievement rather than a place or a person. Milestones are proposed by any IEEE Member and are sponsored by any one or more IEEE organizational unit(s) such as IEEE Section(s), Society(ies), Chapter(s), or Student Branch(es). To be proposed as an IEEE Milestone, an achievement must be at least 25 years old, have benefited humanity, and must have had at least regional importance. (Regional importance is defined as an area of more than 500 km².) The achievement must not be the subject of current litigation. There is no maximum or minimum number of achievements that may be proposed or dedicated as milestones in any calendar year. There is no maximum or minimum number of achievements that may be proposed or dedicated as milestones by any organizational unit or units or within any geographical or technical area.

Milestone Events Can Energize the LMs in your Section

Using recent examples from the United Kingdom (UK) and Ireland Life Members Affinity Group (LMAG), we encourage all LMAGs to consider proposing IEEE Milestones as a way of raising the profile of their Life Member (LM) activities. As a general proposition, virtually all Sections can find items of historical significance that fall within IEEE's fields of interest. Some of these might be worthy of consideration for a Milestone plaque award. The IEEE History Center website states, "IEEE Milestones recognize the technological innovation and excellence for the benefit of humanity found in unique products, services, seminal papers and patents. Milestones honor the achievement, rather than a place or a person."

The process of applying for a Milestone award comprises a number of steps. The first task is to identify, within the geographic boundaries of the Section, a historic contribution to the field of electrotechnology made by a group or an individual at least 25 years ago. Many achievements in electrotechnology have complex origins. Some generate competing and controversial claims that need to be resolved by the History Committee. The receipt of a proposal for the award of a Milestone plaque starts the approval process. This requires meticulous research into the background history behind the claim. The examination of the evidence submitted by the proposer in support of the award, such as references from learned society journals, patents, and published books, is conducted with the help of an advocate appointed by the committee. The case for support must demonstrate unequivocally that the achievement being recognized represents a unique contribution to the field of electrotechnology. This requirement might be interpreted in the light of local circumstances. For example, a Milestone plaque proposal to commemorate the commissioning of the first communications link/power supply system/etc. in a remote or difficult location, such as the moon, might receive approval, even though the technology used may have been previously demonstrated elsewhere. The emphasis in such cases would not be on the science per se being applied but more on the context in which the achievement was made.

Second, the site where the original work was carried out, such as industrial premises, university laboratories, etc., and the building or facility where the proposed plaque would be erected, must be identified. Unfortunately, many engineering facilities established in the middle of the last century have now been demolished. This can make the task of identifying suitable locations more difficult, although there often is a suitable alternative site available. The owner of the site must give permission for the erection of a plaque, and the host Section must support the proposal and agree to pay the production costs of approximately US\$750.

The UK and Ireland Section has installed several plaques in the last decade, honoring, for example, the inventions of holography at Imperial College London, public key cryptography at GCHQ, and stereophonic sound reproduction at Abbey



EMI's Stereophonic Sound Reproduction Unit (circa 1930).



Iain Logie Baird and IEEE President Karen Bartleson unveil the Milestone plaque (the First Public Demonstration of Television, 1926) at 22 Frith Street, London.

Road Studios. The most recent Milestone was proposed to recognize the world's first demonstration of live television that took place in London in 1926. This celebration and the

unveiling ceremony were sponsored in part by donations to the IEEE Foundation (See “A Glimpse at LMC-Funded Grants” on page 2). The presentations by IEEE President Karen Bartleson and Iain Logie Baird (grandson of the famous television pioneer John Logie Baird) were followed by a symposium of talks on current and future trends in television and were attended by approximately 150 IEEE Members and representatives from the television and broadcast industries. A local college group recorded the event: full details are posted on the UK and Ireland Section website at iee-ukandireland.org/press-release-jl-baird-event-27th-january.

Events of this nature provide a unique opportunity for the Section, and for Chapters and Affinity Groups, to gain high-profile publicity in the print news media, television, and social networks. They also create an opportunity to showcase networking aspects of the IEEE and invite vol-

unteers to enjoy the social dimension of IEEE membership, an aspect of particular relevance to LMs. There are many more opportunities for LMAGs across all ten Regions to propose Milestone projects. The work involved requires a team effort from LM volunteers, over at least a year, to prepare the application and plan the unveiling event. In the UK and Ireland, we fully believe that this can be an effective way to energize your LMs.

A complete list of Milestones currently installed, together with proposals under consideration, can be found on the main page of the Engineering and Technology History Wiki website at http://ieeemilestones.ethw.org/Main_Page.

—Charles W. Turner, LF
Chair of the UK and Ireland Section LMAG,
Region 8 Life Member Coordinator

Your Selfie Can Be a Part of History

How many IEEE Milestones have you seen in your travels? There are more than 170 IEEE Milestone plaques mounted at historic locations on six continents, and each represents a technical accomplishment of regional, national, or global importance. They are proposed by IEEE Members, sponsored by IEEE organizational units, reviewed by the IEEE History Committee, approved by the IEEE Board of Directors, and funded through donations to the IEEE Foundation.

If you see an IEEE Milestone in your travels, snap a selfie with it and send it to iee-history@iee.org with the

subject line, “Milestone selfie for posting.” The IEEE History Center, which administers this popular grassroots IEEE program, will post them in the Engineering and Technology History Wiki’s (ETHW’s) Milestone Selfie Gallery (http://ethw.org/Milestones:Milestones_selfies) and share them on Twitter @IEEEHistory (<http://twitter.com/ieeehistory>) and the IEEE History Center’s Tumblr account (<http://engineeringhistory.tumblr.com>). For a map of IEEE dedicated Milestones, visit the ETHW’s Innovation Map at <http://ethw.org/Map>.

IEEE LMs Fund 2016 Honor Roll of Donors

The IEEE Life Members Committee (LMC) gratefully recognizes the IEEE Members and other friends who have directed their donation to the IEEE Life Members Fund of the IEEE Foundation. Those names are listed here. Your support enables the IEEE LMC to support philanthropic activities that encourage students and young electrical engineers to pursue careers in engineering, investigate the history of electrical engineering, and represent the interests of IEEE Life Members or similarly mature Members. All listings acknowledge gifts of US\$100 or more made during the *calendar year 2016 specifically to the IEEE LMs Fund of the IEEE Foundation*.

The IEEE Development Office makes every effort to ensure the accuracy of the listing, including proper acknowledgment of gifts and correct spelling. Please notify us of omissions or errors by sending an e-mail to donate@iee.org or calling +1 732 562 5446.

The IEEE LMC extends a special thank you to those donors who are not included here.

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LM: Life Member, SM: Senior Member, LSM: Life Senior Member, LF: Life Fellow, M: Member, I: Individual, ORG: Organization

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Maurice Bruno, LM
Robert B. Bruns, LM
Barry C. Brusso, LF
J.K. Bryan, LSM
William L. Bryan, LM
W.D. Buckley, LM
Gabe R. Buis, LM
Larry L. Bumgarner, LM
A.G. Burgess, LM
James H. Burghart, LSM
Bruce C. Burkey, LSM
Arthur E. Burns III, LM
Kent A. Burns, LM
Dennis W. Burr, LSM
Julian J. Bussgang, LF
John M. Butt, III, LM
V. Caggiano, LSM
Malcolm D. Calhoun, LSM
Clyde R. Camp, LSM
Ronald D. Candrea, LM
V.R. Canino, PE, LM
Joseph J. Capezza, LM
Earl K. Carinio, LM
Aydano B. Carleial, LM
Gordon L. Carpenter, LSM
Kenneth L. Carr, LF
Bill D. Carroll, LF
John J. Carroll, LSM
Louis J. Carter, Jr., LM
Joseph Caschera, LM
Noel F. Castiglia, LM
Clive E. Catchpole, LM
Robert D. Catenaro, LM
Robert L. Cattoi, LSM
Stephen T. Cavit, LSM
George M. Chambers, LM
Robert E. Chapman, LM
Prof. Chi-Hau Chen, LF
Mark T. Chen, LSM
Tze-Chiang Chen, LF
Wee-Ling Chern, LM
Joseph F. Cherney, LM
Charles V. Childers, LM
Charles R. Childress, LM
Lendyl J. Chisholm, LM
Junho Choi, LSM
Alan S.H. Chong, LM
Ernst Christen, LM
Arunsi U. Chuku, LM

San C. Chung, LM
Alan G. Chynoweth, LF
Ken M. Claiborne, LM
Edward N. Clarke, LSM
Trond Clausen, LSM
Judd W. Clayton, LM
Lawrence G. Clemens, LM
Brian J. Clifton, LSM
Richard T. Close, LM
David J. Comer, LF
Thomas E. Connor, Jr., LSM
Doyle Cook, LM
James M. Cook, LM
R.F. Cook, LSM
K.F. Cooper, LSM
Robert E. Cooper, Jr., LSM
George Corliss, LM
Albert E. Cosand, LM
Leonard W. Cotten, LSM
Whitworth W. Cotten, Jr., LSM
Coral Jean Cotterell, LSM
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Milton E. Cox, LM
Edwin L. Craig, LM
Herb Craig, LSM
George W. Crawford, LM
John A. Cribbs, LM
Kenneth H. Crompton, LM
Jerome L. Cross, LM
Joseph A. Crossett, LSM
Charles P. Crossno, LSM
James B. Cummins, LSM
P. Dean Curtis, LM
John R. Dahl, LM
James M. Daley, PE, LSM
David L. Davenport, LM
David H. Davies, LSM
Charles F. Davis, Jr., LSM
William M. Davis, LM
Douglas C. Dawson, LM
Ray and Albe Larsen, LSM
Robert J. Dawson, LSM
Paul E. Deckett, LM
Vaughn F. DeCrausaz, LM
Julian W. Dees, LF
Emiliano Delgado, LM
Donald P. Desfosse, LM
Thomas M. Devanney, LM
Erik H. D'Hollander, LM
R.L. Dial, LM
Bliss L. Diamond, LM
Robert T. Dicke, LM
Walter Dietiker, LM
Donald L. Dietmeyer, LF
Robin and George
Dillard, LSM
Robin and George
Dillard, LM
Jay J. Dillenkoffer, III, LM

David L. Divine, LM
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John H. Doles, LM
Robert J. Dompe, LM
Thomas E. Donoho, LM
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Duke Energy, ORG
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Joseph A. Durusau, LM
Terrence E. Dwan, LM
Roger Dworak, LM
Chester A. Dyrud, LM
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Antony C. Eaton, LM
James S. Edmonds, LF
Leonard Ehrman, LF
Stan H. Eisenmesser, LM
Paul D. Eland, LM
Crockett Ellis, Jr., LM
Linda R. Emery, LM
Warren M. Emlen, LSM
Lawrence D. Emmons, LM
Benjamin Eng, Jr., LM
A.M. Engebretson, LSM
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T.M. Eppinger, LM
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C. James Erickson, LF
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Robert R. Everett, LF
Thomas E. Everhart, LF
J.E. Fagan, LM
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Ghaffar Farman-Farmaian, LM
R. Farr, LM
Luciano Fazzolari, LM
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Bruce L. Freeman, LSM
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Robert Frias, LM
Bernard Friedland, LF
Ralph J. Fritsch, LM
Charles H. Fritz, LM
Brian S. Fukumoto, LM
Govind R. Gadwal, LM
Richard L. Gallagher, LM
James H. Galloway, LSM
Jeffrey M. Gallup, LM
Luis Gandia, LSM
Thomas V. Garceau, LSM
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Maurice Glicksman, LF
Aaron J. Goldberg, LM
August Golden, LM
David S. Goldman, LSM
Donald Goldman, LM
Jack Golin, LM
Keith W. Golke, LM
Jeffrey H. Goll, LM
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Werner Graf, LM
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Allan E. Greenberg, LM
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Denver W. Herr, LM
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J.F. Holmes, LM
Jerald Holt, LM
William G. Holt, LM
Kiyoun Hooshiar, LSM
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R.W. Houskamp, LM
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Lincoln B. Hubbard, LM
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Daniel Hunt, LM
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Robert L. Hutchins, LSM
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John P. Ihnat, LM
Yukio Iida, LM
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Kenji Ikeda, LM
Masaaki Imamura, LSM
Koichi Inada, LF
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J. David Irwin, LF
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Kokichi Ishibitsu, LM
Tatsuo Ishihara, LM
Tatsuo Itoh, LF
Ferdo Ivanek, LF
Terje Iversen, LM
Mo Iwama, LSM
Shun-Ichi Iwasaki, LF
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Cecelia Jankowski, LSM
Marion Jaroszewski, LM
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Peter A. Johanson, LM
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David J. Kellems, LM
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William Kern, LM
Joel R. Kesler, LSM
Mahmoud M. Khatibi, LM
Dallas L. Kibbe, LSM
Marshall C. Kidd, LSM
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James T. Kindle, LM
David A. King, LM
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Harris H. Kitamura, LM
Marvin Klinger, LSM
John A. Klobuchar, LF
Frank J. Kloht, LSM
D.R. Klose, LM
Ivor N. Knight, LSM
Msao Kobayashi, LF
Cecil W. Koehler, LSM
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Henriecus Koeman, LSM
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Richard A. Kowalski, LSM
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John C. Kroon, LSM
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Arthur Kunst, LM
Tadashi Kurachi, LM
Louis H. Kurkjian, LSM
Joel S. Kvitky, LM
Young D. Kwon, LM
Frank M. Labianca, LSM
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Lawrence L. Lam, LSM
Harry H. Lamb, LSM
David Lamensdorf, LF
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Erik Langfoss, LM
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Ward Lantier, LM
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Bhagawandas P. Lathi, LF
Clifford Lau, LF
Theodore Lavoot, LM
Larry G. Layman, LM
Richard A. Leary, LM
Kwang Y. Lee, LF
Richard C. Lee, LM
Songpai P. Lee, LM
Steven Y. Lee, LM
Evert E. Lehtola, LM
Donald L. Leichtweis, LM
Gordon A. Leiter, LM
W.Z. Lemnios, LSM
Roberto Lenarduzzi, LM
Dan P. Leonida, LM
Harry Letaw, Jr., LSM
Seymour Levine, LSM
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George K. Lewis, LM
Richard E. Lewis, LM
J.F. Libbe, LM
Zvie Liberman, LSM
Arthur H. Light, LSM
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M.S. Lindberg, Jr., LM
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Kenneth C. Lockwood, LM
Jaan A. Loger, LSM
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Albert R. Lubarsky, LSM
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Wolodymyr Luciw, LM
Joseph F. Ludford, LM
Robert A. Ludtke, LM
Edgar J. Luecke, LSM
James R. Lusby, LM
G.J. Luszczek, Jr., LM
Arch C. Luther, Jr., LF
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J.C. Maender, LM
Frank J. Maguire, LM
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William L. Martino, LM
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Matthew S. Mashikian, LF
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Shirley C. McCarty, LM
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Robert H. McCamish, LM
Thomas J. McCarthy, LSM
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Bryan W. Mcghee, LM
Gregory F. McHugh, LM
Grayson E. McNair, LSM
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Dean R. Mehlberg, LM
James W. Mehring, LSM
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H. Paul Meisel, LSM
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Glenwood J. Mitchell, LM
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Paul J. Mooney, LM
James L. Moore, LM
Robert A. Moore, LF
Thomas G. Moore, LM
Sundaram C. Moorthy, LM
Norihiko Morinaga, LF
Frederick G. Moritz, LM
Hayden Morris, LM
Douglas M. Morton, LM
Roger S. Morton, LM
David R. Moss, LM
Steven C. Moss, LSM
Theodore D. Moustakas, LF
Vernon C. Mueller, LM
Rangaswamy Mukundan, LSM
Fred F. Mulholland, Jr., LM
Walter D. Mullins, LM
Kaoru Murakami, LM
Patrick R. Murphy, LSM
James B. Murray, LM
Mehmet V. Musa, LM
Max W. Muterspaugh, LSM
Atsushi Nagano, LM
H. Troy Nagle, LF
William L. Nail, Jr., LM
N.T. Nair*, LSM
Yoshimi Nakano, LM
Seiichi Namba, LF
Grama K. Nandakumar, LM
Venkat C. Narayan, LSM
Fernando Naredo, LM
N.D. Neal, LSM
Steven W. Neckyfarow, LM
Howard N. Nelson, LM
Richard D. Nelson, LSM
Emil C. Neu, LSM
Hans Neukom, LM
Peter G. Neumann, LF
R. Keith Newhouse, LSM
Robert E. Newsome, LM
Won K. Ng, LM
William R. Nicholson, LM
Gene M. Nishimura, LM
Eni G. Njoku, LF
Robert T. Noble, LF
Thomas P. O'Brien Jr., LSM
John T. O'Donnell, LM
John Ohara, LM
Seishi Ohmori, LM
Iwao Ohshima, LM
Carl A. Ohsiek, Jr., LM
Samuel K. Oklu, LM
William A. Olsen, LM
William H. Oost, LM
Joseph R. Oranchak, LM
Joseph Orr, LSM
Pacific Gas & Electric, ORG
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L.C. Palmer, LSM
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John Pasco, LSM
C. Kumar Patel, LF
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John P. Patterson, LM
Joseph Patterson, LSM
Ronald J. Patton, LF
Guenther J. Paulus, LM
Robert K. Payne, LSM
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Jack O. Pearson, LM
Gabriel B. Peaseley, LM
William E. Peck, LM
Nicholas P. Penny, LSM
M.L. Pepper, Jr., LSM
Walter E. Pera, LM
Ron Perla, LM
Wayne H. Perry, LM
Jeffery L. Pesler, LSM
Robert G. Pessler, LM
Elmer M. Petercsak, LM
Jeffrey W. Pferd, LM
Hans K. Pfyffer, LM
James H. Philip, LM
Robert R. Phillips, LM
Darrell Piatt, LSM
James Piersall, LSM
Mir Hamid Pirahesh, LM
Jan Pirrong, LM
Louis A. Pitale, LM
Harold J. Podell, LM
Alfred E. Poitras, LSM
Somkiat Pongkanta, LM
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David Porter, LM
Ronald E. Pratt, LM
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B.J. Procopio, LM
Robert J. Puckett, LM
Robert A. Pugh, LM
Walter C. Pumo, LM
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Alexander M. Rende, LM
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V.T. Rhyne, LF
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John Richards, LF
Robert E. Richards, LM
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Kurt R. Richter*, LF
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Marleigh C. Sheaff, LM
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T.M. Shortal, LM
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Robert A. Stern, LM
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Manfred H. Stiebler, LSM
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Michael V. Stimac, LM
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Kamayasamy Surendran, LSM
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Yasutsughu Takeda, LF
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Hatsukazu Tanaka, LF
Morris Tanenbaum, LF
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The North Jersey Section LMAG Lunches and Learns

The IEEE Life Member Affinity Group of the North Jersey Section held its annual luncheon on 27 October 2016 in conjunction with the IEEE Power & Energy Society and IEEE Industry Applications Society Chapters, at which 37 IEEE Members and one guest attended.

The IEEE Life Members Committee of the Section invited IEEE Life Members to a buffet luncheon reception at the Hanover Manor in East Hanover, NJ.

The event included a presentation on the Weston Metering IEEE Milestone dedication with speaker Dr. Mary Ann



From left: Virginia and Carl Sulzberger join Ken Oexle at the podium. The Sulzbergers were recognized for their many contributions to the IEEE and the engineering profession.



Those who were elected to lead the Section's Life Member Group included (from left) Michael Miller, secretary; Ken Oexle, president; Fred Chichester, vice president; and John Dalton, treasurer.



Mary Ann Hellrigel of the IEEE History Center speaks about how the IEEE has been fostering technical innovation for the benefit of humanity and the Section's Weston Meters IEEE Milestone.

Hellrigel. Hellrigel earned a bachelor's degree in history from Rutgers University, a master's degree in public history from the University of California–Santa Barbara, and a Ph.D. degree in the history of technology and science from Case Western Reserve University. She has served as a research associate at the Thomas A. Edison Papers Project and has taught the history of technology at a number of universities around the country, including at IEEE's current strategic partner, Stevens Institute of Technology in Hoboken, New Jersey.

Hellrigel has widely published and presented papers on Edison and early electric power and consulted on related exhibits and documentaries. She is also active in the Society for the History of Technology, having served on several prize committees.

A Historical View of Remote Sensing

Having pursued a career entwined with numerous aspects of imaging remote sensing, I am fascinated by the historic milestones and the pioneering contributors in the development of this technology. Inspired, I recently gave a presentation to our local IEEE Life Members group, “An Overview and History of Imaging Remote Sensing.”

Imaging remote sensing has experienced a fascinating and long evolution. The earliest known lenses date back to ancient Troy, Nimrud, and Crete. Subsequently, the Greeks made the first strides in geometrical optics. In the Islamic era, engineering, astronomy, mathematics, and medical learning flourished. Persian and Arab scientists made major optics contributions. Among them, the Persian scientist Ibn Sahl was the first to quantify a form of Snell's law. An Arab scientist, Al-Haytham, considered by many to be the world's first true theoretical physicist, wrote the treatise *Book of Optics*, which made optics a true science. Muslims also first invented eyeglasses.

Muslim technology gradually spread to Europe, even before the Crusades occurred. In Sweden, archaeologists unearthed large rock crystal lenses belonging to Vikings, circa 1000 CE. The lenses are of stunning 1950s optical quality and came from the Byzantines in Constantinople, with whom Vikings interacted.

Centuries later, several accomplished Dutch lens makers simultaneously revealed that two spectacle lenses could be placed in a line to make a telescope, thereby resolving details a long distance away, such as ships out at sea. A year later, Galileo began creating his own telescopes. Modern remote sensing was born out of his many astronomical observations.

But images still had to be manually recorded. The best technology of the time for recording imagery was the *cam-*

era obscura (*dark chamber* in Latin). Light entered a darkened enclosure via a small hole, creating an inverted image of the outdoor scene. One could trace the image onto paper hung on the enclosure. Medieval engineers and renaissance artists used this technique.

A breakthrough eventually came in 1826 when the French inventor Nicéphore Niépce successfully captured the world's first “photograph” using a primitive film made of a bitumen layer on a metal plate. It took 8 h to expose, but it was a seminal achievement. Niépce died a few years later but not before teaming with Louis Daguerre to improve the process. Soon photographic exposure times were merely minutes and seconds.

The faster exposures enabled aerial photography. Another French pioneer, known by his pseudonym Nadar, introduced balloon photography and, in 1858, took the world's first aerial photos. These were of Paris, during its famous renewal project directed by Haussmann.

The British used balloon photography for surveillance during the Boer War. World War I integrated aerial photo reconnaissance with fast-response artillery targeting, to devastating effect. World War II (WWII) produced more aerial reconnaissance advances, many inspired by Australian Sidney Cotton. WWII also saw scientific photo interpretation developed by the British photo-analyst, Constance Babington-Smith. Her photo group was tasked with discovering Nazi “advanced weapons.”

A year after WWII, the United States used a German V2 rocket to take the first photo from space. Today, satellite telescopes aimed at the earth collect commercial images with extraordinarily detailed resolution. Multiband imagery from satellites and aircraft helps monitor environmental changes. Synthetic aperture radar (SAR) can see through clouds and even through Antarctica's

ice sheets to image the buried bedrock. SAR interferometry detects minute changes in terrain position for assessing earthquakes, volcanoes, glacier motion, and land subsidence.

Imaging remote sensing has both literally and figuratively changed how we view the world. One can imagine

the fascination of the early optics pioneers if they knew how far their embryonic efforts had evolved.

—Robert Meyer

San Diego Life Member Affinity Group

ethical dilemmas

The “Annihilating People” Problem

In the mid-1960s, I was a young engineer working for a major military research company. My job was to assist in the research and development of directional control missiles and to test navigation lock-on systems for target destruction. In both cases, precision gyro techniques made missiles defy gravity; electronic GPS did not exist then. Although the involvement was a mind-opening experience, I must admit that I was a bit uncomfortable working on these missile systems; in both cases, the purpose was target destruction, which inevitably meant people destruction. However, my ongoing reasoning was simple: If I did not do this work, someone else would. So, I carried on ensuring that missiles would fly straight and they would accurately lock onto their targets.

One afternoon, a company senior officer proposed that I transfer to another division to join a large elite team of mathematicians and scientists to solve an important military problem. Naturally, I became intrigued with the prospect. Innocently, I asked for an explanation of this problem that required so many smart people to solve. The response was “annihilating people.” As you might imagine, even though this company was a military contractor, I was startled by the terse reply. I further requested the meaning of an “annihilating people” problem. The ensuing discussion suggested that this was an alternative to replace the use of the chemical defoliant Agent Orange used in an ensuing war. Specifically, if an attacker could not see targets because of dense jungle foliage, where would an airplane drop ordnance to maximize enemy destruction while minimizing collateral (friendly) damage?

The company gave me a day to consider the offer. As a young engineer, the situation presented a real opportunity to work with a high-powered think tank on a strategic problem. Ignoring human consequences, for me the challenge was just a mathematical, military problem. If I did not accept, the company would just find another person. Hence, I saw no immediate reason to refuse the opportunity.

That night I had difficulty sleeping. The pending probabilistic min-max problem was a door to new professional openings, not to mention the opportunity to work among elite intellectuals. The challenge was to maximize enemy casualties while minimizing friendly losses. Yet, the underlying consequence in solving the problem was the proportional slaughter of people—both friend and foe.

The next day as I drove to work, I was still torn about what to do. The perplexing dilemma kept tearing at my conscience. The dichotomy between “it’s just a math problem that the team will likely solve” coupled with “killing people, friend and foe” became somewhat agonizing. What triggered a decision was the realization that the “enemy” was not an army engaged in jungle warfare; it was families—men, women, and children who lived in small jungle villages—that would suffer the consequences from implementing a problem I would help solve. In the end, I relented to human compassion. Even today, I have no regret for foregoing professional opportunity by doing the right thing.

—John Impagliazzo, LF
Fort Salonga, New York

Call for Articles: Ethical Dilemmas

The IEEE Life Members Committee has partnered with the IEEE Society on Social Implications of Technology (SSIT) to dual publish articles in their respective newsletters carrying the theme of life experience ethical dilemmas. If you have an ethical dilemma article that you wish to share with the *IEEE Life Members Newsletter* and the SSIT, please submit it to lm-newsletters@ieee.org or to Dr. Heather Love at heather.love@usd.edu.

Articles should be brief—between 300 and 500 words—and should not include the names of any individuals and/or companies. The IEEE Legal Department requires that all articles be fully sanitized to protect the privacy of people and organizations.

How *Not* to Install a “Beverage” Antenna

In the mid 1960s, the Naval Ordnance Lab Corona (NOLC) research division had a site located in Johnson Valley (desert), California. One of the projects was a research effort on very low frequency communications antennas called *Beverage* antennas (the inventor’s name). These antennas are typically several hundred feet to several miles in length. Ours were laid directly on the ground and were terminated in a spider-web-type ground plane at the far end. We obtained several giant reels of government surplus large-gauge, multiconductor cable. These cables were covered with a rubber sheath. We needed to remove the sheath from the cable to use the individual wires inside and connect them in series. The cable

was removed from the reels by tying one end of the cable to a truck and dragging the reel across the desert floor (which was very funny). The sheath was removed by stretching the cable between a truck and a sturdy post. One engineer lay across the hood of another truck with a box-cutter razor, another engineer was driving, and I was walking along and pulling the sheath away from the cable wires.

All of this was fine, but we managed to stretch the cable across a dirt road. This road also serviced an abandoned chrome mine up the way. Well, as luck would have it, a small car came from the “abandoned” chrome mine. We were about 100

yards from the road when the car hit the cable. The cable acted just like a string on an archer’s bow, getting really taut and then relaxing. Oh, boy! We ran over, through the huge dust cloud, to pick up the pieces but all that happened was that the car was rotated a perfect 180° and pointing in the opposite direction with the engine stalled. There was no damage to the car and no one was hurt, but the car rider had a rather familiar bad smell about him. To quote the driver, “I knew the government had some secret work going on out here but holy...”

—John Alday, LM
Nuevo, CA

Radar Lovell

I am a retired engineer who initially worked in defense and later in communications, and I became a chief scientist before my retirement from a facility in Somerset, United Kingdom, approximately 26 years ago. My defense activity is still classified, so I will avoid that topic except to say that I was attached to several U.K. teams associated with United States and United Kingdom cooperation. I was able to visit research establishments in New York, New Jersey, California, New Mexico, Florida, and the Washington, D.C., area.

In 1951, the United Kingdom held a “Festival of Britain” to commemorate

the 1851 Great Exhibition held in Victorian times. At the last minute, the company that was going to construct a radar to bounce signals off the moon decided it was pulling out of the festival, which made things sticky since the project was to be the centerpiece of the show. As a result, the government asked the U.K. Radio Astronomy Centre at Jodrell Bank, part of Manchester University, if it could help. Sir Bernard Lovell, who was in charge at the time, said yes. Lovell was one of my lecturers, and he called for volunteers to help build the lunar radar. I volunteered and spent the summer work-

ing at Jodrell Bank designing the transmitter driver stage, which was part of the radar. Unfortunately, it wasn’t completed in time for the festival, but a few years later the Russians launched their first Sputnik and by then Jodrell had built a huge 250-ft dish. NASA used the radar and the big dish to track the rocket as they had no means of doing so in the United States at that time. Later the Russians used the facility to send commands to an interplanetary space probe.

Brian Jackson, LM
Wedmore, Somerset, U.K.

Errata

The December 2016 *IEEE Life Members Newsletter* “Tales from the Vault” article by Edmund Miller began, “I had just joined the Lawrence Livermore Radiation Laboratory (LRL) in March 1972 during the middle of a radiation-induced foci . . .” The original manuscript included the acronym RIF, which, in this instance, corresponds to “reduction in force” not “radiation-induced foci,” as was printed. We apologize for the error.

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The *IEEE Life Members Newsletter* is distributed to Life Members and those who are not Life Members but are 1) IEEE Members 65 years and older, 2) retired IEEE members aged 62–64, and 3) members of special boards and committees.

Submitting Articles

We welcome articles for this newsletter. In particular, we seek articles about projects that are initiated at the Section and Region level by Life Members as well as “Tales from the Vault,” which should focus on novel or interesting technical issues. The suggested length for “Tales from the Vault” submissions is 500 words.

Acronyms should be completely identified once. Reference dates (years) also should be included. Editing, including for length, may occur. If you wish to discuss a story idea before hand, you may contact Craig Causer, managing editor, by e-mail at lm-newsletter@ieee.org. The deadline to submit an article for possible inclusion in the next issue is 2 October 2017. Please include your Life grade, town, state, country, phone number, member number, and/or an e-mail address with your piece.

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Have Questions, Ideas, or Concerns?

Have questions regarding your Life Member status? Reach out to the IEEE Contact Center for assistance. Have something else you need to ask or discuss? E-mail the Life Members Committee or its staff at life-members@ieee.org, call +1 732 562 5501, or fax +1 732 463 3657.

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