

**the Life Mem bers**  
**newsletter**

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<b>2nd-3rd quarters</b>	<b>2000</b>

Volunteer participation in the IEEE provides opportunities to all. I am now the Life Members Committee Chair succeeding Dick Jaeger who for three years ably led the Life Members Committee (LMC). He worked diligently for Life members promoting, for instance, Section Life Member Chapters.

A project I have strongly supported on the LMC is RE-SEED. The acronym stands for Retirees Enhancing Science Education through Experiments and Demonstrations. The IEEE Life Member Fund is one of its major contributors and strategic partners. Life members have been an important source of volunteer support. I would encourage anyone—with the time and willingness to make at least a one-year commitment—to get involved. RE-SEED contact information is on page 2.

Over the years, we have tried to keep you informed and gain your advice through this newsletter. Whenever we have published a survey the response has been strong and declarative. For instance, through this newsletter we discovered what projects you wanted the Life Member Fund to aid. We continue to welcome your input and suggestions for this newsletter and the LMC.

Two housekeeping chores that need taking care of are:

- ◆ This newsletter is also sent to those who are 65+ as well as retired IEEE members aged 62-64. Thus, FYI, the criteria for becoming a Life member is on page 8 under "Qualifying for LM Status." Basically, you must be 65 or older and the sum of your age and years of IEEE membership must equal 100 or more.

- ◆ The 2001 IEEE Life Membership Profile should be on its way to you soon. By 2 October 2000, all renewals will be in the mail. Ensure that you continue to get your *IEEE Spectrum* and *The Institute* in a timely fashion. Simply make any address changes and return the annual profile letter. If you are a Life Member in one or more IEEE Societies, you must respond to continue receiving each Society's core publication.

Finally, I am representing Life members by example as well as being a voice on your behalf. I am a petition candidate for IEEE President-Elect. Along with Raymond D. Findlay and Lloyd A. "Pete" Morley, we represent decades of volunteer IEEE service. We also present choices for the path you want IEEE to take in these fast-changing times. (For more information regarding our differing views, I suggest you log on to [www.ieee.org/organizations/corporate/ieeepreselect2000.htm](http://www.ieee.org/organizations/corporate/ieeepreselect2000.htm).) And be sure to exercise this important IEEE member privilege—vote!

**Arthur Winston, Chair  
Life Members Committee**



## LMF project facts

The Life Member Fund (LMF) supports projects for: 1) young electrical engineers and potential electrical engineers; 2) IEEE Life members and other similarly mature members who lack Life membership tenure, and 3) history of electrical engineering. This year the LMC approved funding for ongoing as well as new projects to the tune of \$367,700 (US). A partial listing includes:

**Student prize paper contest**—Now in its 35<sup>th</sup> year, this program allows student authors of top papers in each Region to be recognized.

**Student Branch Centers of Excellence**— In universities throughout the world, these Centers provide a focus for IEEE activities on campus with due regard for local interests and needs.

**IEEE Virtual Museum**—Tentatively scheduled to open in the fall of 2001, this museum will be a guide to the Internet. The eventual goal is for it to become THE portal for information about the history of electrical computing technologies.

Also, the LMF sponsors fellowships, WISE internships, RE-SEED, LM Chapters and much more. For a complete listing visit the Life member web site at <[www.ieee.org/lmc](http://www.ieee.org/lmc)>. All donations are greatly

### Passing on a legacy

Bob Lawrence, the Life Members Committee Chair from 1991-93, died on 16 March 2000. He was 78 years old. Active in the IEEE, he served on the IEEE Board of Directors, the Technical Activities Board and the Fellow Committee among others. He worked at Westinghouse Electric for 42 years.

Bob was a big proponent for serving the membership by getting the membership involved. For instance, he initiated the book, *Legacies* (which has since sold out). It was a collection of memoirs by Life members who responded (over 200) to a LM Newsletter survey. In the Foreword, Bob mentions a talk he gave as a Director on the IEEE Board.

"The subject was 'The ABC's of EE.' I talked about an engineer's ability to wonder, be adaptable, look for ways to make products better, and our commitment to work. Once you get an engineer going on a project, it's pretty damn hard to get him or her off it."

Bob embodied those engineering traits. His ability to wonder how IEEE could better serve its members was a commitment he honored to the end. He will be missed.

#### Resolution for Robert F. Lawrence, Sr. (LF)

By acclamation, the IEEE Life Members Committee approved the following resolution. "The IEEE Life Members Committee extends our most heartfelt sympathy to the Lawrence family on the passing of Robert F. Lawrence, Sr. During his career he made many noteworthy contributions to IEEE. His 57 years of continued support of the Engineering Profession and the IEEE is an enviable accomplishment. We are especially grateful for his dedicated service and leadership to the IEEE Life Members Committee (1987-1994). His absence will be deeply felt by his many IEEE colleagues."

appreciated. If you wish to contribute, please make your check payable to the "IEEE Life Member Fund." Please send it to the address listed in "Where to write" on page 8. Thank you.

**WISE.** The Washington Internship for Students of Engineering program allows engineering students to learn how government officials make decisions on complex technological issues.

**RE-SEED.** Life members are essential to this program (Retires Enhancing Science Education through Experiments and Demonstrations) which prepares engineers, scientists and others with a science background to assist middle school science teachers with educating students about science.

Web site: <http://www.reseed.org/>  
Toll free phone: +1 888 742 2424;  
Phone: +1 617 373 8388  
E-mail: [reseed@lynx.neu.edu](mailto:reseed@lynx.neu.edu)  
Write: RE-SEED, Northeastern University,  
Suite 378 CP, 716 Columbus Ave.,  
Boston, MA 02120

**LM Chapters.** A Life Member Chapter can help Life members and other IEEE members remain active and involved. The LMC makes funding available as seed money. Dan Jackson oversees this program for the LMC as the Regional LM Chapter Liaison. For more information about creating a Life Member Chapter contact him, or your Regional LM Chapter Coordinator or Life Members Committee Staff Support.

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1	Ted Saad	<a href="mailto:t.saad@ieee.org">t.saad@ieee.org</a>
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10	TBA	<a href="mailto:lm-chapters@ieee.org">lm-chapters@ieee.org</a>

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**LM Web site:** Lists LM relevant IEEE Bylaws, the LMC activities and funded programs and projects as well as reports on recent LMC meetings and more. Check it out. <[www.ieee.org/lmc](http://www.ieee.org/lmc)>.

## Help shape history @ [www.ieee.org/going\\_digital](http://www.ieee.org/going_digital)

The IEEE History Center is compiling recollections, images, publications and photographs on Automatic Speech Synthesis & Recognition and Digital Audio Recording. Click on to the above address and see if you have anything to add to the saga. They are looking for stories about what it took, mistakes made as well as the successes that occurred in the process. The History Center also needs significant records and reports that demonstrate how these specific areas evolved.

At the 1939 New York and 1940 San Francisco World's Fairs, a machine called a Voder was demonstrated. "A girl [woman] stroked its keys and it emitted recognisable speech. No human vocal cords entered into the procedure at any point; the keys simply combined some electronically produced vibrations and passed these on to a loud-speaker," *As We May Think* by Vannevar Bush, 1945.

In 1936, Homer W. Dudley, a research physicist at Bell Laboratories invented this electronic speech synthesizer along with Riesz and Watkins. The machine was intended as a research machine for compression schemes to transmit voice over copper phone lines. Dudley originally called this device the "Vocoder" (Voice Operated reCoRDER). It required an operator with a keyboard, and foot pedals, to supply "prosody"—the pitch, timing and intensity of speech. Training took a year or more to be able to "play the machines."



Courtesy of AT&T

## Medigap coverage for spouses

Retired LMs and their spouses on Medicare A and B in the USA can purchase Medigap insurance from IEEE's Financial Advantage Program (FAP) if both are 65 or older. If the spouse is younger, s/he still needs full medical insurance. Previously this spouse was not eligible for IEEE's insurance without the member spouse purchasing the same coverage—which, of course, the 65+ member didn't need. The LMC requested the IEEE Individual Benefits & Services Committee (IB&SC) to research possible group medical care coverage for these spouses.

Good news, the spouse of a Medicare IEEE member now can be covered under the IEEE plan. However, the following criteria must be met:

- 1) Coverage must be purchased within 31 days of loss of previous coverage;
- 2) Proof of previous coverage by the IEEE member must be provided;
- 3) The IEEE member must meet a two-year membership requirement. (Note: This should not be a problem for most Life members.)

The premium will be based on the spouse's age not the member's age. Also, this coverage is not available in the following United States: Hawaii, Iowa, Indiana, Massachusetts, Maine, North Carolina, New Hampshire, New Jersey and New York. Check out <<http://www.ieee.org/services/financial/fap>> for information on the Financial Advantage program or call 1-800-493-4333 for more information on the IEEE group insurance plans.



## War stories

### Needing each other to get by

In the last issue of the LM Newsletter I found the contribution by Wilbur J. Lindsay, "Made in the USA," particularly interesting. The piece concerned the clandestine international trade of essential goods and materials during World War II. However, I thought the final sentence, "There are always a few who will do anything for a buck," was unnecessarily negative. It implied a sort of treason.

We all know how much pressure a project engineer might feel to meet a deadline, or to complete a project successfully, especially in time of war. And that, I am sure, was the ultimate driving force that pushed the indirect trading between the belligerents.

Immediately following the war, as a teenager in Germany, I worked for the firm, MAN, a short distance west of Frankfurt. I was repairing the severely damaged telephone system until school resumed. During a chance conversation with one of the engineers, I found out that—throughout the war—they were able to get platinum wire. This very much surprised me. It turns out that this material (for thermocouples?) came through Switzerland. But, I asked, who would sell platinum for German currency, which was largely worthless or at least not convertible? "Oh, that was by way of barter," was the response. German optical equipment and other precision products were needed "on the other side." Neither side, of course, wanted to acknowledge the existence of this kind of trading. But I can well imagine a project engineer under pressure saying, "I don't care how you do it, but let's get this thing done!" And the rest is "Econ 101."

Concerning the "universal tube" used in German military equipment: This was a tiny pentode with a type number something like P2000. After the war, it became the basis for a cottage industry building radios. I have seen radios that used that one tube type for all functions including rectifier and power amplifier. They all resided in a plain, unstained, unpainted, little wooden box—but were much in demand!

**Hans Schroeder, Life Senior  
(Milwaukee, WI)**

### Homing in on its true meaning...

In the last newsletter, I was interested to note yet another contribution on the meaning of H<sub>2</sub>S, as, applied to the wartime radar system used by bombers as a "mapping" tool. The book, 'Bomber' Harris, by Dudley Saward (Sphere Books Ltd), on page 178, states:

"In that moment (the 26th October 1941), an instrument christened 'Home Sweet Home,' or H<sub>2</sub>S for short, by Lord Cherwell, was born. The first working models, which were crude in the extreme, were demonstrated to Wing Commander Saward, head of the Bomber Command RDF Department, and Flight Lieutenant EJ Dickie, one of his staff, early in January 1942."

The fact that the book's author was one of those to whom H<sub>2</sub>S was first demonstrated might be taken as authentication of the meaning "Home Sweet Home."

**DH Pearse,  
Life Senior  
(Townsville, Queensland AUSTRALIA)**



### Doing grad work on the "other" side

We read much about the technological effort in the US and Great Britain during WWII. It might be interesting to also hear about the work on the German side. I happened to be a student in Germany when the so-called "Third Reich" began.

I graduated as a Diplom-Ingenieur in App. Physics from the Tech. University in Aachen. I was working on my doctoral dissertation when war preparations including eventual evacuation of this border town started. This would have interrupted my work. Thus, I applied for a position with the research laboratories of the well-known, communications company, Telefunken, in Berlin. At that time, Telefunken had developed radar equipment working at around 50cm wavelength for ground based anti-aircraft batteries. (A few months before WWII started, Sir Watson-Watt from England had even visited the lab to discuss methods since he was doing similar work.)

I arrived at Telefunken in the fall of 1939 to work with the radar group. Dr. H. Rothe, a director in the tube research lab and my boss, told me that the lab was supposed to do advanced work at higher frequencies. The available magnetrons in the cm-wave region were not very efficient so receiver sensitivity was paramount. This made noise or signal to noise measurements essential.

I started to build resonator cavities and hollow tube circuitry for the 10cm wavelength. I also made extended noise measurements on new mixer diodes produced by the tube laboratory of Professor W. Kleen.

I used extensively all available literature including the publications by S. A. Schelkunoff and J. Schwinger in the USA. I remember that we had access to newer publications through the Swiss libraries. Also, the *IRE Proceedings* published reviews of German publications. The tube lab kept making smaller and smaller mixer diodes with cathodes as small as the head of a needle. As a result, it became obvious that the miniaturization of vacuum tubes had met a final technical limit. The tube lab had difficulties with the power of the 10cm magnetrons and, later, klystrons.

At this stage, Professor H. Rukop, a vacuum-tube specialist, proposed that I try point contact semiconductor diodes as mixers. In my dissertation (Tech. University, 1942), I included results of the noise measurements on semiconductor rectifiers made from various crystal materials. We started off with compounds like PbS and SiC. But we got better reproducible results with the elemental semiconductors—germanium and silicon—that had been developed in the universities at Breslau and Munich.

After 1943, our work was hampered by the increasing air raids over Germany and especially Berlin. Therefore, the laboratory was partially moved to Silesia. Working in such a remote area, I constantly lost research time commuting to Berlin where the important workshops remained. Those shops still made our often gold-plated cavities and precision couplers and such. Much time was also lost waiting in a Berlin bunker or at a railway station for an air raid to end.

But in this remote laboratory, I first studied how to apply oscillator noise compensation with duo-diodes made from crystal detectors. Here I also first found that a second whisker could influence the first barrier layer in certain crystals.

(We were aware of the importance of the possible use of crystal amplifiers as proposed in the patents by Lilienfeld and Heil and others.) With the downing of an US plane over Rotterdam, we found out that we were behind in the production of the technical detail for cm-wave radar small enough to be used in an airplane. A crash program was started. Professor Knoll directed it. (He became a professor at Princeton University (NJ) after the war.) But our work ended abruptly when the Russian Army approached Silesia in 1944. The whole laboratory had to be destroyed.

All advanced work stopped as we built a new place in Thuringia. Any travel to and from Berlin was impossible. What's more, the coordination of the different work groups became unfeasible. Our new lab was just beginning operations when the US army started occupying Thuringia in April of 1945. (I note with satisfaction that the research was not usable before the war ended, despite the quality of our work.)

I was lucky to have good contacts (having been denounced and interrogated as an enemy of the Third Reich). Speaking English, I was appointed to teach physics and mathematics at the US military schools in Wabern and at the Friscan Tech School in Eschwege (Germany). When these schools closed a year later, I went back to my alma mater in Aachen and taught Physics and Electronics.

After being interviewed, I was invited to join the Paris laboratory of Westinghouse to build a semiconductor plant. The wartime work on semiconductors started to show practical results. The improved Ge-monocrystals made in Paris led to my testing of duo-diodes and to the injection-transistor around the beginning of 1948. This was somewhat later than the first demonstration in Murray Hill but before the Press release. In Paris, I got my second doctorate in semiconductor physics to round out my credentials. It was here that I was asked by an American company to start a semiconductor plant in Germany (Intermetall Inc.). This started my career in industry that brought me in 1953 to the United States. (See "Legacies of IEEE Life Fellows" and IEEE societies biographies and *IEEE Spectrum*, October 1998, p.8.)

**H.F. Mataré, Life Fellow  
(Malibu, CA)**



Some backup

During WWII, I was a radar officer in charge of an SCR-270 Early Warning Radar Set, complete with a large house trailer for maintenance. I took the set to Finschafen, New Guinea, where my platoon operated, maintained and even rebuilt it.

While there, the Army decided to give each radar platoon one "backup" radar set in the form of an Australian LW/AW. This unusual set was housed in a tent that together with the operators rotated on a turntable for azimuth settings. It was also designed to operate on 50 hertz (per Australian standards) while the PE95 engine-generator that came with it delivered 60 hertz.

I first tried slowing down the engine so that the unit would deliver 50 hertz and then boost the voltage with a large variac connected in reverse. This worked insofar as voltage but the PE95's engine would not tolerate operating at the lower speeds. Then I checked the LW/AW's circuit diagram. I found that by changing one or two parts I could get it to operate on 60 hertz. This was unauthorized modification No. 1.

The LW/AW came with the required IFF (Identification Friend or Foe) in the form of a US Navy Model BN IFF set. However the BN would not synchronize with the LW/AW. I then requested a maintenance manual on the BN; but was told that the manual was classified as "CONFIDENTIAL." I could not get one even though I had the set!

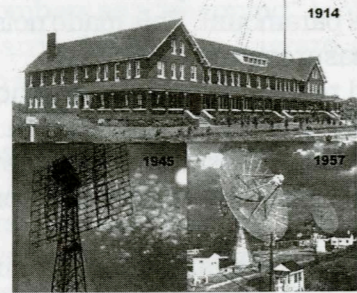
So I went down to the Finschafen Navy Base and went aboard a ship that I knew from the antenna had a BN. Upon looking over their BN manual, I discovered that the BN required a pulse input for synchronizing while the LW/AW put out a square wave. I changed a few more parts on the LW/AW and voila, it worked. This was unauthorized modification No. 2.

My unauthorized modifications were soon made available to the rest of the battalion. Our backup sets were then actually ready for use. In retrospect, I wonder if the Army ever tried out their lashup backup before they gave it to us?

Vernon H. Waight, Life Member  
(San Francisco, CA)

The Information Age Learning Center & IEEE Life members

Marconi, Armstrong, Sarnoff, Alexanderson, Dewitt, Zahl... these are well known names in radio, radar and the opening of space exploration. All were involved with the former 1912 Marconi



Belmar station, Camp Evans, in Wall (NJ). This historic engineering site is now the future home of a unique education center. The mission of the center is

two-fold: 1) to preserve computer, communications, radio and radar engineering history and 2) present the information in a way that inspires students to select engineering and science as a career.

Dr. Geselowitz and the staff of The IEEE History Center have provided excellent guidance in the conceptual development of the center. Also, as a result, the center will be the home of a comprehensive collection of computer packaging components assembled over 50 years by IEEE Life Fellow Dimitry Grabbe. The collection represents a cross section of computer development in over 45,000 slides and 7,000 components. Nearly every major component and systems manufacture is represented.

The center will also be the home of the NJ Science Teachers Association, amateur radio, radio preservation, and related groups. It also will have the potential to touch every science classroom in the state as well. The center would like IEEE Life members to help preserve engineering history and assist the education process at the same time. Members are invited to visit our web site <<http://www.infoage.org>> to view historic photos of the Marconi station and WWII radar development site. Life members are also invited to e-mail recollections of important advances in computer technology they were involved in for our technology memories' collection. Please specify the manufacturer, the system's name, the advancement made and the timeframe.

Fred Carl <[fred-carl@infoage.org](mailto:fred-carl@infoage.org)>  
Information Age Learning Center

Should adopting B2B methods include B2C cookies?

In my last column, I suggested that allowing the setting of "cookies" in one's computer from selected Internet service providers might not be such a bad thing. Right after publication of my column, a wave of articles appeared in the popular press about what a terrible invasion of personal privacy such cookies can be. I braced myself for an onslaught of messages saying, "But Fred, how could you suggest anything so fraught with peril?" Much to my relief, the onslaught never came.

(For new readers, in the December 1997 issue of *IEEE Internet Computing* Brian Thomas described a cookie as a text file of about 4K stored in your browser by a Web server. It would contain information about you that only that server can retrieve.)

Now, let's briefly switch tracks. Let's consider the insight I gained from watching an interview with Mark Walsh, CEO of VerticalNet, on CSPAN this past April 10. His enterprise is organizing business to business (B2B) Internet sites for vertical slices corresponding to various industries. His business plan is based upon developing communities of users, both buyers and sellers, within a particular industry. The emphasis is on building complete relationships, not just on finding the lowest bidders to supply the widgets. The plan seems to be working.

What does that have to do with those of us concerned primarily with B2C interactions? (You guessed it, business to consumer.) If we as consumers simply surf the net for the lowest-cost providers, all others will be slowly driven out of business. There is no real future in that. For a number of good reasons that probably won't happen. Just as in B2B, Web sites can differentiate the service provided in ways other than price. Let me illustrate.

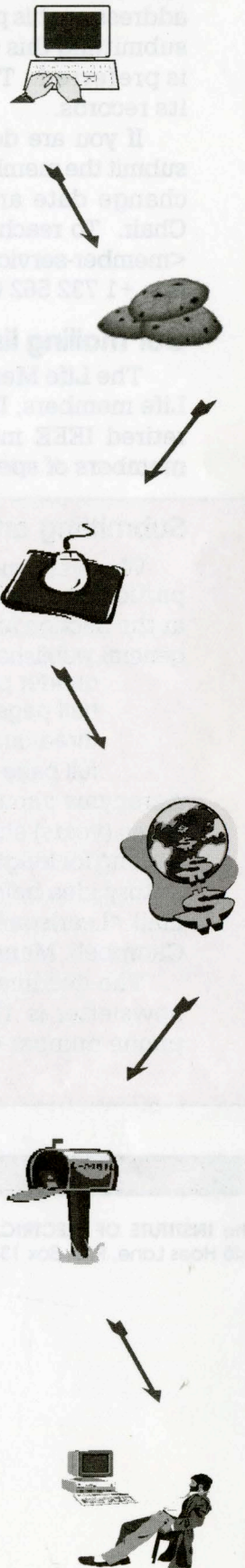
Some months ago I surfed the net for the lowest cost provider of the rather obscure but excellent book, *Buildings for the performing Arts*, by Ian Appleton. Bingo! I found what I wanted at two sites. Barnes and Noble (B&N) showcased the lowest price by a narrow margin. So I completed my first ever transaction with B&N. I learned later that, since B&N has a warehouse in my state of NJ, I was hit with the NJ sales tax, wiping out all of my savings. So much for a tax-free Internet, but that's a subject for another column.

B&N has been very aggressive in following-up on that first transaction, and most of their subsequent e-mail messages were quickly deleted. Then they hit pay dirt. At the top of the list of their special offerings was *Harry Potter #4* by R. K. Rowling in advance of the actual publication date. I don't know how they knew that my grandkids are all nuts about Harry Potter, but they sold me two copies with a few clicks of my mouse.

No, it couldn't be with one click. Jeff Bezos at Amazon.Com has patented that operation. But it was really very easy to complete the order because they already knew my identity, my delivery address, and my credit card number. (They just displayed the last four digits for confirmation.) I was even able to edit my address for probable summer delivery.

Whether it is done with cookies or some other means, this is the kind of B2C relationship that will make me a regular Internet consumer. By the way, I read recently that <[www.adsubtract.com](http://www.adsubtract.com)> offers a program that eliminates the nuisance of rejecting the growing number of unwanted cookies. What do you think about this whole cookie business?

Fred Andrews, Life Fellow  
[f.andrews@ieee.org](mailto:f.andrews@ieee.org)





## Stopping IEEE services

Those who wish to have all services stopped should contact IEEE Member Services (use the NJ address on this page). Phone calls are accepted but submitting this request by fax, e-mail or snail mail is preferred. This way IEEE has something for its records.

If you are doing it on behalf of someone else, submit the member's name, number, grade, address, change date and your connection, e.g., Section Chair. To reach IEEE Member Services via e-mail <member-services@ieee.org> or fax: +1 732 562 6380.

## Our mailing list

The Life Members Newsletter is distributed to Life members, IEEE members 65 years and older, retired IEEE members aged 62 through 64 and members of special boards and committees.

## Submitting articles

We welcome articles for this newsletter. In particular, we seek articles about projects initiated at the Section and Region level by Life members. In general, published story lengths are:

- quarter page—175 words
- half page—350 words
- three-quarters page—525 words
- full page—700 words

Acronyms should be spelled out once. Reference dates (years) should also be included. Editing, including for length, may occur. If you wish to discuss a story idea beforehand, you may contact me by e-mail <l.carlson@ieee.org>. Or, you may call Mary Campbell, Managing Editor, at +1 732 562 5526.

The deadline for possible inclusion in the next newsletter is 13 October 2000. Please include a phone number or an e-mail address.

**Len Carlson, Editorial Liaison**

## 2000 Life Members Committee

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## Qualifying for LM status

To qualify as a Life member, an IEEE member must be at least 65 years old, and the sum of the member's age and the number of years of paid membership must equal or exceed 100 years.

Under a 1994 Bylaw, now repealed, Life member status was granted to a member with 40 years of paid membership with no age requirement. Members who achieved Life membership status under the 1994 Bylaw will remain Life members.

## Where to write

Have questions, opinions or problems? Contact the Life Members Committee or its Staff by writing to: IEEE Regional Activities, 445 Hoes Lane, P.O. Box 1331, Piscataway, NJ 08855-1331, Fax: +1 732 463 3657 or E-mail to: <life-members@ieee.org>.

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