IEEE

the Life Members newsletter

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1st-2nd quarters 2002

Greetings! As your Life Members Committee Chair for 2002, welcome to all receiving this newsletter for the first time: new Life members, members now 65 years old, and members between 62-64 and retired. As of 31 December 2001, there were 29,528 IEEE members who had achieved Life member status. This is a slight increase (188) over 31 December 2000 numbers. The designation "Life member" only applies to a member who is at least 65 years old, and whose age and years of paid membership equals or exceeds 100 years. All members having the designation "Life member" or "Member for-Life" in a predecessor society (AIEE and/or IRE) automatically became "Life members" in the IEEE.

What are the privileges accorded an IEEE Life member? In accordance with IEEE Bylaws I-104 and I-108.8, Life members have those privileges associated with their grade immediately before becoming a Life Member or with such higher grade to which they may be advanced. In addition, Life members may attend IEEE sponsored and co-sponsored conferences and pay only what Student members are charged for registration (IEEE Policy 10.1.5). For more details, check out <www.ieee.org/lmc>.

The Life Members Committee (LMC) is a standing committee of the IEEE Board of Directors and the IEEE Foundation Board. The LMC represents all IEEE Life members. This year we have six new Committee members (see roster on pg. 8).

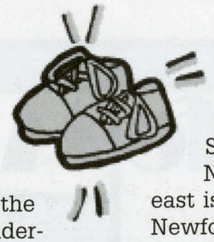
So what does the LMC do for you the Life member? The LMC provides leadership in identifying and supporting the interests of the Life members (including future Life members) in IEEE activities. The LMC also administers the IEEE Life Members Fund which provides support for activities of professional interest and concern to Life members.

To this end, during the 15 April 2002 meeting the LMC considered six new proposals requesting funding for projects involving, 1) Awards, 2) Accreditation Workshops, 3) Student Awareness Projects and 4) Recording of Historical Technical Achievements. Not all requests were granted, even though the LMC found them all worthwhile. It became a matter of available funds and, in some cases, organizational fiscal responsibility within the IEEE.

The Life Members Committee encourages Life members to send in their comments concerning what they consider worthwhile projects for the LMC to pursue. Also, the Life Members Committee is considering a professional survey of its members to find out how the LMC can improve its role as intermediary to the IEEE Board of Directors and the IEEE Foundation Board. If you receive a random survey form, please fill it out and send it back as directed. In the mean time, please send in those questions and comments and enjoy the "War stories" in this issue.

B. Leonard Carlson, Chair
IEEE Life Members Committee

R7's first baby steps



Good news. Ron Potts, Chair of the IEEE-Canada Life Members Committee, reports that the LM Chapter formations in the IEEE Central Canada Council are well underway. With new Life Member Chapters for Central Canada, we can look forward to a greater use of Life members as a resource for Section activities. For those of you who are not aware of IEEE-Canada's structure, we have three regional Councils: Western, Central and Eastern. Central has by far the largest Section membership and is geographically more concentrated. Thus, it was the obvious choice for our first "baby steps" in LM Chapter formations.

Chair Potts visited with each of the six Sections in Central Council. He was successful in recruiting a Life member in each to approach and work with the local Section executive. In particular, Potts outlined areas of participation in which active LMs can assist. They are:

- undertake a local inventory analysis of LMs, updating contact addresses;
- host meetings and social events of interest;
- submit newsletter articles to Region and Section newsletters;
- promote recognition of the history of our technologies within IEEE-Canada;
- interface with the Engineering Institute of Canada's LMs;
- promote historical articles in the "Canadian Review," and
- recommend award nominees to the IEEE Awards and Recognitions Committee.

The Life members recruited in each of the Central Council Sections are:

Hamilton	Bert de Kat
Kingston	V. John
Kitchener-Waterloo	Thomas East
London	John Watson
Peterborough	R. Rehder
Toronto	Neil Magrath

Their contact addresses can be obtained from IEEE-Canada <c.lowell@ieee.org> or by contacting one of the officers of IEEE-Canada Life Members Committee.

We are taking similar "baby steps" in the IEEE-Canada Western and Eastern Councils. Leading the organizational activity in the west is Mohindar Sachdev <sachdev@young.USask.Ca> of the North Saskatchewan Section, and in the east is Wally Read <w.read@ieee.org> of the Newfoundland and Labrador Section. Already two LMs are busy getting things started: William Moore of the Ottawa Section (East) and Ron Blicq of the Winnipeg Section (West).

Let's hear from more of you in the east and west. This way we can graduate from "baby steps" to walking and, yes, even running with full scale LM activity.

Wally Read, Life Fellow
Newfoundland, Canada

LMF contributions to education

In 2001, the Life Members Fund (LMF) helped raise the technological literacy of hundreds of teachers and through them thousands of students. A $15K grant underwrote international participation in the "IEEE Taking the Lead—a Deans Summit on Education for a Technological World" held on 1-2 October 2001. The Summit brought together nearly 50 pairs of Deans of Education and Deans of Engineering to begin cross-campus collaborations. They teamed up to devise plans that would improve how student teachers are taught about science, mathematics and technology. In addition, the grant made possible the international dissemination of the proceedings in a CD-ROM format.

The LMF gave $12.5K for 2001 and another $12.5K for 2002 to sustain the success of the In-service Teachers Project: IEEE Sections design, implement and teach special programs to area teachers who then bring what they learn to their students. The In-Service Teachers Project has the dual goals of satisfying local school district requirements while imparting valuable engineering information. Some of the topics taught are: *What is Engineering?*, *How the Lights Stay On* and *Rocket Cars and Newton's Laws*.

The Florida West Coast Section (FWCS) did the pilot in February 2001. Since then, the FWCS has taught 84 teachers, impacting over 10,000 students. The Miami Section held its first in-service presentation for 28 teachers. Those 28 teachers will impact about 3500 students. By the end of 2001, there had been 14 Sections involved in this Project, including Sections from Region 7.

For more info on either program, visit <www.ieee.org/eab/> or contact Douglas Gorham, Pre-college Manager, at <d.g.gorham@ieee.org>.

IEEE Life Members Committee
(15 April 2002)

Standing (L-R): Daniel J. Senese - IEEE Executive Director, Mary Campbell (RAD Staff), Arthur P. Stern, B. Leonard Carlson - Chair, Richard S. Nichols, James E. O'Neil, Michael Geselowitz - History Center Staff, Peter W. Staecker, Daniel C. Toland - RAD Staff

Sitting (L-R): Warren A. Kesselman, Eduardo Bonzi Correa, Theodore S. Saad -IEEE Foundation, Om P. Malik

Not Pictured: Edward E. Altshuler, Julian J. Bussgang, Karsten E. Drangeid, Daniel W. Jackson, Arthur W. Winston, Cecelia Jankowski - Secretary (Staff)

The LMF

At year-end 2001, the Life Members Fund (LMF) had received $212,360 (USD) in contributions, $59,653 in interest and dividends and lost $140,955 in investments. The Life Members Fund supported nine special projects in 2001. They included RE-SEED (on this page); the IEEE Virtual Museum (pg. 6); the conference *IEEE Taking the Lead—a Deans Summit on Education for a Technological World* and the *In-Service Teachers Project* (both on page 2); and the Student Branch Centers of Excellence Project to a sum of $155,933 (USD).

At the 15 April 2002 LMC meeting, several new projects were added to the list. The Life Members Fund (LMF) will support the 2003 IEEE James H. Mulligan Jr. Education Medal while the IEEE Awards Board looks for a new sponsor. The LMF will help support the international participation of the *Colleges of Education and Engineering: Fostering Campus Collaborations* in January 2003. The conference is a follow up to *Taking the Lead: A Deans Summit.....* The approximately 250 attendees will represent faculty from both engineering and education colleges as well as deans, provosts or presidents. The Life Members Fund will also help support a program in India where final year engineering students give talks to upper level high school students.

All donations are greatly appreciated. Please make your check payable to the "IEEE Life Members Fund" and use the address listed in *Where to write* on page 8. To learn more about the programs and projects the LMF supports, visit <www.ieee.org/lmc>.

RE-SEED (Retirees Enhancing Science Education through Experiments and Demonstrations)

Director of RE-SEED, Dr. Christos Zahopoulos states that with the IEEE LMF's generous support, RE-SEED has been able to establish 10 Regional RE-SEED Centers outside of New England (its home base). Besides funding, 76 IEEE Life members are or have participated as RE-SEED volunteers (or 17% of the total). Overall, more than 400 trained RE-SEED volunteers have have given close to 400,000 hours in helping more than 100,000 students.

Interested? Learn more by contacting them at: Web site: <www.reseed.neu.edu>, e-mail: <reseed@lynx.neu.edu> or phone: 888-742-2424.

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 LM Chapter contact him or your Regional LM Chapter Coordinator.

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7	Ron Potts	potts@mail.caninet.com
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9	Eduardo Bonzi Correa	e.bonzi@ieee.org
10	Matt Darveniza	matt@csee.ug.edu.au

Dan Jackson, Regional LM Chapter Liaison, E-mail: <d.jackson@ieee.org> or <lm-chapters@ieee.org>

LM web site: <www.ieee.org/lmc>

War stories

Amping up the hi-fi

In the 1950s, the extracurricular tech interests of EE students tended toward amateur radio or high fidelity. The vacuum tube was the key technology in both cases. My roommate was a "HAM" and spent endless hours trying to talk to Australia in the wee hours of the morning. My interests were in high fidelity sound systems—a much better match to my waking hours. However, we both wanted to know the maximum power a vacuum tube amplifier could produce while staying in one piece.

Several of my audio friends decided to build that ultimate Hi-Fi amplifier. The design requirements were straightforward: the amplifier was to have a low frequency response down to DC with maximum power delivered to 4 to 8 ohm impedance speakers. The standard Hi-Fi amplifier of that era used the "Williamson" configuration with a push-pull output stage and a center-tapped output transformer to couple the speaker to the amplifier. But the output transformer was a significant contributor to distortion and limited the low frequency response. This led to the decision that the amplifier should be DC coupled to drive the speaker directly. The idea of a DC coupled vacuum tube amplifier was outrageous; but, it didn't deter my friends.

The amplifier would use a cascade output stage with a balanced power supply. The output stage was actually a cathode follower/anode follower with the speaker load directly connected to the connection between the cathode of one tube and the anode of the second tube. If the power supply was balanced, this point was a virtual ground. To transfer power to the low impedance speaker, the source impedance of the amplifier stage had to be reduced to be comparable to that of the speaker.

After some searching, a triode was found with an effective source impedance of about 300 ohms. In the cascade connection, the effective impedance of one stage was about 150 ohms. Thus, four stages in parallel would reduce the source impedance to about 8 ohms. A mere eight tubes would do the trick!

Construction on the ultimate amplifier began despite pressures to attend classes and do homework. When the amplifier was complete, a resistive load was used in place of the speaker (just in case) and the power was turned on. Nothing blew up but a number of electrolytic capacitors had 400 volts on the cases. The tried and true method of touching the tube grids to see if a signal was present was done with great caution. After verifying the power supply balance was proper and the output was a virtual ground, the speaker was connected. We held our collective breath as the first record was played.

The ultimate amplifier exceeded all expectations. The frequency response not only went to DC it also went to the AM radio band. A fact that did not go unnoticed by my roommate. The standard audio power test used the beer bottle pressure gauge. Sitting around drinking beer from long neck bottles, the level of a full beer in the bottleneck would rise and fall in response to the music. This not only impressed us but all of the neighbors on the block as well.

At that time, the standard of excellence for recordings was a 33 rpm sampler record from a studio I can no longer remember. I do remember the test song, *Petrousca*, which had an incredible bass segment followed by an abrupt transition to a horn segment. Very few 33 rpm turntables had sufficiently compliant needles to actually follow the record groves during the bass segment. After some experimentation, we did find a suitable turntable and needle combination that was up to the test. The ultimate amplifier was a sensation with unbelievable low frequency response limited only by the speakers and a crisp transient response.

While the amplifier was a truly remarkable technical achievement, it was also a terrifying thing to be around. We usually found a power engineering student to move it. The last time I saw the amplifier, my roommate was using it as the final output stage for a renegade campus AM radio station.

Bill Waggener, Life Senior
Sarasota, FL

Climbing great heights

Donald J. Levine brought back memories in his article, "Buck Rogers Radio." I was drafted in 1951 and assigned to the Signal Corps 16th Signal Radio Relay Company. I was designated a MOS of 1419 (Microwave Radio Repairman). For schooling, we were sent to Fort Monmouth, NJ. At night, I learned about the AN/TRC6 Microwave Radio Relay System. Class for the two dozen or so attendees was from 5 PM until 4 AM from September 1951 until early December 1951. I recall the system at Fort Monmouth was about two to three blocks long with a repeater station in the middle. No one in our class was thrilled about climbing this structure on cold fall nights.

My most vivid memory revolves around the cavity-tuned Klystrons used as high frequency oscillators. There were four distinct osscillating bands. No matter how hard we tried, we rarely could get them to work. Standard practice was to return yours to the storeroom where you were issued one someone else had just returned.

Our class included one "radio aficionado"—the rest of us were there because we lucked out on the job assignment. One night our radio buff was manning the order wire at the repeater station when communication was established. Realizing who was at the repeater station, we conned him into thinking he was communicating with another microwave system the army had in the New York area. He was ecstatic, especially since this was nowhere near the necessary line-of-sight. We never told him otherwise.

Henry Markel, Life Senior
Mandeville, LA

The Army/Navy race to space

The US Army planned to launch the world's first artificial satellite. The launch was to be done by means of a contrived "malfunction" but word leaked out and the attempt was stopped. At least that was what I was told.

I graduated from the University of Michigan with a BSEE in February 1957 and went to work for Chrysler's Missile Division at Warren, Michigan. At that time, Chrysler was manufacturing two types of rocket propelled vehicles: the Redstone, short range, guided ballistic missile and the Jupiter-C test vehicle. The main difference between them was in the upper assemblies. The upper assembly of the Redstone carried a nuclear warhead whereas the Jupiter-C carried clusters of solid propulsion rockets spun by an electric motor.

The Army was developing the Jupiter medium range missile and was using the Jupiter-C for reentry tests. For these tests, the Jupiter-C would fire the three stages of solid-propelled rockets into the earth's atmosphere at the angle and the speed expected for the Jupiter's warhead.

These and other Army missiles were being developed at the Army's Redstone Arsenal at Huntsville, Alabama. Wernher Von Braun headed the group responsible for the Redstone and the Jupiter missiles. Chrysler had a small group of engineers there that I joined in the summer of 1957.

When I arrived at the Arsenal, my supervisor, David Salonimer, took me on a tour of the grounds. David pointed out a Jupiter-C standing in a corner of one hanger. He explained that Wernher Von Braun had wanted to use this Jupiter-C to launch an earth satellite by firing the upper stages at an angle that would inject in the final stage—the reentry test vehicle—into a stable orbit.

Launching a satellite was not within the Army's mission, and, presumably, never would be because the Navy had the mission. (The Navy was developing the Vanguard launch vehicle for that purpose.) So the Army's plan was to launch the satellite and claim that the launch was due to a malfunction of the guidance and control system. Unfortunately, word of the scheme leaked out and government auditors stopped the effort. Now, the Jupiter-C painted "UE" for the number 29 (the code for Jupiter-C numbering was taken from "HUNTSVILE," (okay, somebody either couldn't count or couldn't spell - your choice), was being cannibalized for parts.

Then, in October 1957, the USSR put Sputnik in orbit. The United States was now noticeably behind in the space race. Following a few more failed Vanguard launch attempts, a thoroughly embarrassed federal administration ordered the Army to move "29" to Cape Canaveral and stand by to launch a satellite if the next Vanguard launch should fail.

This order caused great jubilation and excitement at the Redstone Arsenal. Although *29* had been cannibalized, Wernher Von Braun's people were not about to let this opportunity pass. Everyone started scurrying hither and yon to fill in the missing pieces. I was assigned to the Guidance and Control. We pulled a control computer from the Redstone Missile line, modified it to handle the spinning rocket clusters, and installed it on *29*.

Upon making it functionally whole again, *29* was shipped to Cape Canaveral. The Vanguard launch failed, and, on 31 January 1958, *29* put the first US satellite, Explorer I, in orbit. Too late to be the world's first, but still it got there. To commemorate the accomplishment, the Smithsonian Air and Space Museum has a Jupiter-C painted "UE" on display. When I last saw the rocket, it was standing on a Redstone launch pad.

Howard Jones, Life Member
Westcliffe, CO

IEEE Virtual Museum

Thomas Edison didn't invent the light bulb, so why does everyone think he did? How did the patterns in a Utah cornfield lead to the development of TV? Why are Alvin and the Chipmunks part of a museum about technology?

Find the answers touring the IEEE Virtual Museum at <www.ieee.org/museum> launched on 20 February during National Engineers' Week 2002. Developed by the IEEE History Center, the IEEE Virtual Museum was designed for educators, pre-college students and the general public. The IEEE Virtual Museum is premised on the belief that examining what *was* increases our understanding of what *is*. The IEEE Virtual Museum was made possible by the ongoing generous support of the IEEE Life Members Fund among others.

The goal of the IEEE Virtual Museum is to enhance public understanding of the scientific, mathematical, engineering, and technological principles of electrical and information sciences and technologies within their social and historical context.

The Virtual Museum features audio and video clips and interactive features. Multilingual capability is also built into the IEEE Virtual Museum. The IEEE History Center is seeking partners to develop standards-based instructional material to accompany the exhibits, and partners and sponsors for content expansion.

Michael Geselowitz, Director
IEEE History Center

Cruisin' hams

IEEE Life members who are radio amateurs might be interested that over a dozen of us were aboard the M/S Westerdam 27 October through 3 November 2001 for the 2001 Cruise Convention of the Quarter Century Wireless Association. Nearly 200 radio amateurs were aboard for the cruise of the Eastern Caribbean and the Bahamas. We enjoyed several forums while aboard and visited the Radio Observatory at Arecibo, Puerto Rico during a port of call at San Juan.

The following LMs are known to have been with us: Bill Dixon; Charles Greenlees—K4BHW; John Hartmann—W2PGI; Jerome Havel—W2RRX; Murry Hunter—VE3UR; James Jolly—W6RWI; Allan Kaplan—W1AEL; Derwin King—W5LUU; Art Kunst—W3WM; Walter Maxwell—W2DU; Willard Minton—AA5HI; Richard K. Reeder—NC5V; John Zack—K9IAC.

Willard C. Minton, Life Associate
San Antonio, TX

Raising name recognition

As an IEEE Life Member, I saw the opportunity to make the presence of IEEE more prevalent in Tennessee for future young engineers by participating in the new Tennessee Engineering Center. I serve on the steering committee for this building project. Other societies participating include the American Society of Civil Engineers, Society of American Military Engineers, and the American Society of Heating, Refrigeration, and Air Conditioning Engineers. To date, over $60,000 has been raised and dedicated on IEEE's behalf.

The Tennessee Engineering Center will be an addition to the Cumberland Science Museum. The Engineering Center will provide hands-on engineering exhibits for students across Tennessee and serve as a hub for continuing education for engineers in the state as well. Over 210,000 people visited the Cumberland Science Museum last year.

Construction on the center began in October 2001, we anticipate its completion sometime this June. The dedication ceremony at the Cumberland Science Museum is scheduled for 30 July 2002 (5-7 pm). Ms. LeEarl Bryant, IEEE-USA President, will attend the dedication.

W. A. Sims, Life Member
Brentwood, TN

Re: LM Newsletter 2/3 Qtr 2001 War Stories - H2S

I infer from E.H. Cooke-Yarborough's letter that there is still some controversy regarding the source of the name "H2S." I have not read Bernard Lovell's book. There was some correspondence on this in *Spectrum* during the early 1980s without (as I recall) any outcome. I wrote to the Editor at the time but my opinion was not published. I will repeat it now.

During my National Service training (cf draft, 1952/53) in the RAAF at No 10 (MR) Squadron in Townsville, Australia, I worked on the electronic systems of the maritime reconnaissance version of the Lincoln Bomber. This included ASV (Air to Surface Vessel) the MR version of H2S. All the manuals provided were for H2S with an ASV supplement for "Fishbowl" the modified antenna pattern etc. All had red covers marked "Top Secret" even though by then the system was declassified.

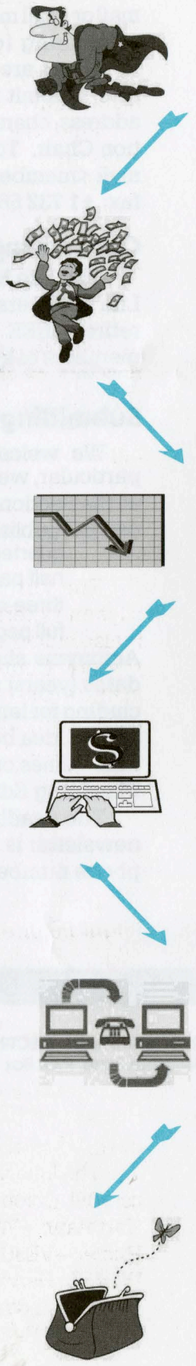
In the introduction, the name was explained as H2 describing the wave guide mode and S specifying the frequency band. At that time, the Brits specified Wave guide mode based on the Magnetic Vector while the US used the electric vector basis, hence TE01 etc. The S band is probably the K band today.

As a matter of interest the transponder subsystem of ASV was named "Lucero" after a notorious Grand Inquisitor. This was probably also named by Cherwell.

James P. Baker, Member
San Diego, CA

Internet for the chronologically challenged

Broadband access slows —The Consumer to the Rescue!



The consumer has been cheered as the hero of the recession that experts say has been going on for the last two years. Economists observe that if it weren't for consumer-spending habits things would have been so much worse. In fact, some even argue that, thanks to us, there hasn't really been a recession by the classical definition. So we all owe a great debt of gratitude to ourselves for our materialism or optimism, depending on how you look at it.

But now we're being called to a battle that may be the mother of them all. It appears that there really has been a technology recession, particularly in the communications field. Everyone with shares of AT&T, Lucent, Worldcom, Nortel, and the like can certainly vouch for that. Spurred on by new competitive challenges and easy money, the world's service providers built more communications capacity than you and I could possibly use. Then the house of cards fell. Shame on us for not living up to their expectations.

It seems that in addition to continuing our conventional spending habits, we should have developed an insatiable appetite for exotic new Internet stuff beyond e-mail and chat rooms and ordinary web surfing. Things that have been mentioned as possible killer applications of interest to us consumers are electronic health care, real-time participation in meetings and more interconnected devices in the home. Lastly, of course, entertainment applications such as music and movies are considered to be hot.

Believe me, like most seniors, I'm into healthcare. But I don't see much market pull for substituting the Internet for hands-on consultation (with one possible exception). I don't want to go to meetings, electronic or otherwise, and I certainly don't want my refrigerator talking to my microwave. That leaves entertainment.

It seems that there is a problem that prevents aggressive marketing of music and video material by those who own the copyrights. Thanks to us engineers, the whole world has become so digital that it is possible to replicate valuable material perfectly and to redistribute it free to anyone who wants it. That led to the rise and fall of Napster. There still isn't a model for this form of e-commerce that is perceived as fair to everyone. The prospect of content delivery drove the merger of AOL and Time Warner, and I am sure that the copyright issue will ultimately be wrestled to the ground. Mike Kelly, AOL's chief financial officer, is quoted in *The Wall Street Journal* on 29 October 2001 as saying, "For us and for everybody over time, broadband will encourage consumer usage and will drive more revenue streams."

So we're not the problem—it's copyrights and the availability of broadband access. On the latter, The Yankee Group expected there to be 7.0 million cable modem and 3.3 million DSL broadband subscribers by year-end 2001, growing by roughly 40% by year-end 2002. The puzzling thing is that this market penetration is only about 10% of those to whom the service is available, and is slowing. For every person saying, "I've got to have it." There are nine saying, "who needs it." Or who needs it for the price they would have to pay—roughly $50 vs. $30 (USD) per month for dial-up access.

Dial-up access still dominates and keeps getting better and better. John Dvorak reports in the 29 January 2002 *PC Magazine* that the new V.92/V.44 modems offer compressed throughput at speeds greater the 300 Kbps. This is absolutely amazing. After killing-off ISDN as an Internet access technology, dial-up modems are out to get DSL and cable modems as well.

As for me, I'm still in a wait and see mode. A 56 Kbps dial-up modem serves me well at home, at my vacation cabin and on the road. Why change? Perhaps the evolution to web pages that cater to the technically sophisticated will eventually do me in. Sharon Cleary in the 10 December 2001 *The Wall Street Journal* traced the evolution of the C/NET web page from 1996 to 2001. Based on this and on my own direct observations, I have a gnawing feeling that without broadband access I will soon be missing a lot. Once again the Internet will hit me in the pocketbook.

Fred Andrews, Life Fellow
f.andrews@ieee.org

Stopping IEEE services

Those Life members 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 at the request 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 <james.oneil@ieee.org>, or call Mary Campbell, Managing Editor, at +1 732 562 5526.

The deadline for possible inclusion in the next newsletter is 12 September 2002. Please include a phone number or an e-mail address.

James O'Neil, Editorial Liaison

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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.

How to reach them

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, USA, Phone: +1 732 562 5517, Fax: +1 732 463 3657 or E-mail to: <life-members@ieee.org>.

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