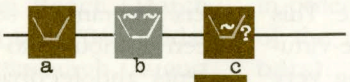
IEEE life members newsletter



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www.ieee.org/lmc

4th & 1st quarters

2004-05

In the last IEEE Life Members Newsletter, I reported on a number of initiatives undertaken by the Life Members Committee at its March 2004 meeting. It is now time to update you regarding the outcomes of at least some of these initiatives.

A Life Members (LM) Chapters Subcommittee was set up to actively encourage the promotion of new LM Chapters, and to review the guidelines and procedures for establishing Chapters. This subcommittee has been working hard and I am happy to report that six new LM Chapters were formed in 2004. We now have LM Chapters established in every Region except one. The latest were set up in France and Bombay, India. Region 7 still leads with a total of seven LM Chapters out of a total of 29 Chapters worldwide. These Chapters are helping the local Sections with various activities particularly the milestone projects.

We also have active LM Chapter Coordinators in most regions. They represent LM Chapter interests at the Region Board level and also help/encourage Sections in their Regions to set up LM Chapters. There are still a number of Sections that have a significant number of LMs but do not have LM Chapter. If your Section does not have a LM Chapter, I invite you to take the initiative to establish a LM Chapter in your Section. You need six LMs to establish a Chapter. Contact your Region LM Chapter Coordinator or Jacob Baal-Schem for more details or help (see page 3 for e-mail addresses & more information).

Starting in 2004, the number of pages of the LM Newsletter was increased to 12 from eight. Besides publishing interesting stories about our field's early days, we hope to publish news about activities undertaken by various LM Chapters. Please send in information about your Chapter's activities to encourage cross-fertilization. Tell us what was successful and what would be done differently next time.

Another subcommittee was set up to review all aspects of the LM status including the criteria to become a LM, and the rights and privileges of a Life member. This subcommittee has been working hard over the past eight months. In the last Newsletter, you were invited to send your thoughts and comments on this topic to Julian Bussgang. Thanks to those who provided input at that time. The subcommittee will be glad to receive further comments even at this stage <Life-members@ieee.org>.

LM Fund provided grants to help support a number of projects this year. Some of these projects were the IEEE Virtual Museum, the RE-SEED program, the Nikola Tesla Museum in Biograd, Serbia (to create a permanent archive of Tesla's works) and the restoration of RAMAC (Random Access Method of Accounting & Control—the first magnetic Disk Drive). The LM Fund exists by virtue of the generous contributions primarily from the Life members, although other IEEE members also contribute. The latest report I received indicates that there has been an upsurge in contributions to the LM Fund this year. I wish to take this opportunity to thank in public everybody who contributed. Your contributions go a long way in supporting worthy projects in the areas of history of electrical engineering and other activities of special interest to Life members.

Well, it is that time of the year. I wish you and yours the best of the season and a very happy, healthy 2005.

Om P. Malik, Chair
IEEE Life Members Committee

de code
a. empty glass
b. full glass
c. half empty or half full?

Life Members Committee's recent doings

The Life Members Committee (LMC), at its 18 October 2004 meeting, based on its new spending plan has $143,894 to spend in 2005 on top of the $101,00 being spent for ongoing programs (such as this newsletter).

Up to $50,000 was approved for the IEEE Virtual Museum. [Note: This Museum's web site <www.ieee-virtual-museum.org>, while getting very good reviews, has struggled to find sources of funding to keep it going. So if anyone out there has ideas or knows possible sources that the History Center should try, please email them your suggestions at <ieee-history@ieee.org>. Also, check out the Virtual Museum if you have not already done so.]

A grant was provided along with an ad hoc committee formed for the 2005 Sections Congress which meets every three years. The goal is to broaden awareness among Section officers/delegates worldwide about LMs' activities, their importance and their usefulness along with the IEEE Life Members Fund.

Lastly, the LM Proposal Review subcommittee has developed evaluation guidelines to assist the LMC in selecting projects/programs to support. They have been distributed to the LMC for comments and feedback. It was noted that the IEEE Foundation is under going a similar review process.

We'd still like to hear from you... Other than not having to pay membership dues and getting discounts at IEEE Conferences, what do you feel are the benefits of IEEE Life Membership? The Life Members Committee would like to know. The LMC would also like to know what contributions you think LMs make to the IEEE. The LMC would appreciate anecdotal feedback as well as more general thoughts/opinions. Please send your thoughts/opinions on this matter to Julian Bussgang at:

Life-members@ieee.org

Life members by Region

IEEE Region	Sept-04	as of Arrears	D1
1	5,143	462	982
2	3,790	321	700
3	3,362	326	756
4	1,889	152	450
5	2,160	199	463
6	5,980	499	1,145
7	803	75	195
8	817	59	162
9	161	20	100
10	557	51	151
Total	24,662	2,164	5,104

Key:
Arrears = did not return 2004 renewal
D1 = did not return 2003 renewal

If you have not already done so, please send in your profile and keep your *IEEE Spectrum* and other IEEE publications and services coming.

checkout

IEEE Life Members Forum...Have you visited this virtual community yet? (See web address below.) And, if so, did you contribute? Or answer a query? This forum needs your continual input to succeed.

Applying to join? Please provide your IEEE member number in the "Optional Message to Community Administrators" box. Thanks!

https://www.ieeecommunities.org/lifemembers

Life members web site lists LM relevant IEEE Bylaws and IEEE Life Members Committee (LMC) activities. It also gives summaries concerning funded projects and programs as well as reports on recent LMC meetings and more (like this newsletter).

www.ieee.org/lmc

preliminary proposal

LMC grants should be regarded as "seed funds." The goal is for them not to be used as ongoing support for a program or for "overhead expenses." The first step is submitting a "proposal abstract." If accepted, a full proposal will be required for final consideration.

The abstract should include:

- the need for the project;
- the objectives/expected outcome;
- how it relates to LM interests;
- who will benefit from the project;
- how the project will be sustained after the initial LMF grant ends; and
- provide confirmation of non-profit status (if applicable)

Submit it to: Life-members@ieee.org

Otherwise, what will happen?

If a Life member does not confirm (annually) that he or she wants to continue to receive services/publication(s) he or she will be placed on inactive status. In this state, the Life member will not receive services/publication(s) or an election ballot. "Active Life Membership shall be reinstated, with no loss of continuity of membership upon notification that the Life Member confirms that the services/publication(s) and/or distribution of an election ballot are still desired, subject to the limitations of IEEE Bylaw-308.10."

Progress in forming Life Members (LM) Chapters is being made. Six joined the ranks in 2004. Congratulations to these new Section LM Chapters: Palm Beach (March '04); Mid-Hudson (April '04); Cedar Rapids (June '04); Pittsburgh (August '04); Bombay (October '04) and France (November '04). Thus, the Chapter count is now 29. What's more, with Cedar Rapids, Region 4 has joined the Regions having at least one LM Chapter.

But, LMC would like to see many more Chapters under its umbrella. Only six registered LMs are needed to form a Chapter and only two meetings/programs a year are required to be viable. So in honor of goal setters everywhere, we would like to have 50 LM Chapters by the end of 2005. That's less than two formations a month. It seems doable considering that roughly 70 Sections have over 100 LMs each and about 50 more Sections have 50 or more LMs.

Interested in helping us meet the challenge? All that is needed is a petition requesting the formation with the name of the Section, the name of the organizer (who is the acting LM Chapter Chair pending elections at the Chapter's organization meeting) and the list of at least six Section Life members who are willing to be part of the Chapter if approved. (Go to <www.ieee.org/lmc> click onto LM Chapters and download the "information package." The petition form is on page 7.)

Room for growth at the top
LMs by Section (top 15)

R	Section	LMs	LM Chapter
1	Boston	957	yes
6	Santa Clara Valley	858	
2	Philadelphia	731	yes
2	Washington	669	joint with NoVA
1	Long Island	587	
1	North Jersey	572	
3	Florida West Coast	561	yes
6	Orange County	498	
2	Northern Virginia	493	joint with Wash.
6	Coastal Los Angeles	449	
6	Phoenix	442	
1	Connecticut	433	
6	San Diego	410	
6	Seattle	392	
1	New York	322	yes

October 2004

The petition is then submitted to the IEEE Regional Activities staff at 445 Hoes Lane, Piscataway, NJ 08854. They verify that the petition is in order (i.e. confirm that at least six of the names belong to Life members). Staff then contacts the Regional LM Chapter Coordinator, the Region Director and the Section Chair requesting permission to form the LM Chapter. (If the Region doesn't have a Life Member Chapter Coordinator, the IEEE LMC Chapter coordinator will be contacted.) Upon receiving the appropriate approvals, the LM Chapter will be formed. A letter from the LMC Chair with a copy to the Region Director and Section Chair will be sent to the acting LM Chapter Chair. That's it. Contact your Region's LM coordinator and/or check out the LMC web site for more details.

So the LM Chapter has been formed. Now what? Okay, admittedly, the chapter is going to probably need either a clique of folks who want to see the Chapter succeed or one very driven, probably under-appreciated, go-getter. Could that person be you? If so, an informal email survey using the list of LMs the Section can provide will help. Having a sense of the majority's preferences will go a long way to making sure LMs attend regularly. Questions should include preferable meeting times (morning, afternoon or evening, how often), interest in tech talks or facility tours, philanthropic interests, preserving technology's history or whatever. Then use this information when developing group activities.

Lastly, we need Chapter news! Please email your LM Chapter news to: <m.campbell@ieee.org>.

Life members Chapters—the push is on

LM Chapters Regional Coordinators. They act on behalf of their respective Regional Director in establishing LM Chapters. Jacob Baal-Schem 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. listed below.

Region	Coordinator	Email alias
1	Julian Bussgang	j.bussgang@ieee.org
2	TBA	lm-chapters@ieee.org
3	Dave McLaren	d.mclaren@ieee.org
4	Jack Hotchkiss	j110330@cs.com
5	Ross Anderson	r.c.anderson@ieee.org
6	Len Carlson	l.carlson@ieee.org
7	Ron Potts	r.potts@ieee.org
8	Jacob Baal-Schem	j.baal.schem@ieee.org
9	Eduardo Bonzi Correa	e.bonzi@ieee.org
10	Matt Darveniza	matt@carr.ug.edu.au

Jacob Baal-Schem, Regional LM Chapter Liaison,
Email: <j.baal.schem@ieee.org> or <lm-chapters@ieee.org>

tales from the vault

We are looking for fun, unusual, interesting and short stories that are somewhat tech/work related. Stories should be preferably non defense in nature. But, of course, defense plays a huge part in technology's recent past. And a good story is a good story, no matter where it occurs. Details for submissions are on page 12.

IBM ARCHIVES

Who does that back belong to?

The IBM photo in the "1st & 2nd quarters, 2004" issue was taken in the Philadelphia IBM sales office then on the second floor of the Atlantic Refining Building on the corner of Broad and Locust Streets. The date is about 1958. As a Sun Oil Company computer specialist, I often used the machine in that room and recognize the configuration.

The woman in the photo is "Duff" Hagerty (Mrs. Dorothy L. Hagerty), a self-effacing IBM employee, who knew all there was to know about punched card machinery, the IBM 650, and the workings of the local IBM bureaucracy. She represented IBM on the Conference Committee of the 1964 National Conference of the Association for Computing Machinery.

She lives in retirement in Atlanta and has declined my invitations to write her computing memoirs for the *IEEE Annals of the History of Computing*.

Eric A. Weiss, LS
Kailua, HI

Life before the Internet

Computer networking today is so dominated by Internet technology that few people consider alternatives or are aware of what preceded it. Those with some interest in of history are inclined to believe that computer networking began with ARPANET which first became operational in 1972 and morphed into the Internet in the 1980s. But computer networking was alive and well in the two decades preceding ARPANET. Literally hundreds of large-scale networks were developed in the 1950s and 1960s and deployed throughout the world. They were robust, operationally successful and serving many important user communities.

This article is a reminiscence about one of these early networks, the Autodin System, whose first site became operational in 1962. Autodin is unique for several reasons: it was the first computer network built for the military using commercial standards and methods; it was developed in three years, yet every element of the system, hardware and software, was built from scratch; it used advanced networking techniques that would later be "discovered" by others. Autodin was quite successful, evolving over the years as new technology replaced old, and remaining operational as a world-wide communication network for the U.S. military until the 1990s.

The authors of this article were members of the RCA engineering team that developed this system. Walter A. Levy was a staff engineer and is now writing a history of the telecommunications industry. Anthony L. Genetta was a lead designer and later managed the RCA implementation team.

The Autodin system was developed for the US Air Force by a team of three companies—Western Union, RCA and IBM—starting in 1958. It was to replace a system of five manually operated communications centers that supported the Air Force Ballistic Missile Program. Autodin's original name was "ComLogNet" reflecting its logistics mission. But the name was changed to its present form when the government realized the system's value in support of general military communications.

Full scale implementation began in late 1959, the first site became operational in late 1962, and the system became fully operational in 1963. The vintage 1960 transistorized computer equipment provided by RCA and IBM proved quite reliable and the system architecture, sophisticated for its time, proved sound. The initial network consisted of five computer switching centers and 350 terminals in the US. The data links used a full duplex synchronous protocol, quite advanced for its time, which would be a model for later protocols such as X.25 LAP and ADCCP. It had a distributed network, with multiple paths among its computer centers, and no central switch, anticipating the distributed ARPANET "mesh" architecture by 10 years. Packet switching was considered during the planning of this first implementation because of concerns over line quality but the government chose not to try something still believed experimental.

Almost immediately after initial operation, the government expanded the network to nine domestic and five overseas centers, and added many more terminals. The Autodin system became the major carrier of US military message communications and remained in service, extensively modernized, with all nine domestic switching centers still in operation into the 1990s.

Walter A. Levy, LM (Philadelphia, PA)
and Anthony L. Genetta, LM (Princeton, NJ)

In 1944, I landed in Tidworth, England as a young physician with the Army's 103rd General Hospital. A large outfit operating with 40 or 50 nurses.

After weeks of travel, the female nurses were anticipating the luxury of ironing their uniforms with their American-made irons. Aside from the plugs, major technological disaster soon struck... the irons and hair curlers were 110 V, the English system, 220.

No transformers were to be found. Ohm's Law to the rescue. I went over to their quarters (off limits). Armed with some tools and wire, I paired the irons in a series- same with the curling irons. We soon had the best looking nursing staff in the area.

Frank L. Tabrah, MD
Honolulu, HI

I spent 32 years with the Lord Electric company after obtaining an EE degree from New York University in 1950 under public Law 16 (Rehabilitation of disabled veterans). I mostly worked as an Estimator and Project Manager on high-rise office buildings, power plants, refineries and as an estimator for the World Trade Center electrical installation bid.

When I was Lord's Project Manager on Western Electric's new home office at Nassau Street and Broadway (approximately 700,000 ft), I was invited to a luncheon conference with the 3M salesmen and one of their factory representatives. The discussion was about why I wasn't buying their newly designed spring type "wire nuts."

After several Manhattan cocktails, I told them what they should manufacture and why they would sell to every electrical contractor worldwide as well as all home electricians. I said we had as many as 5000 fixtures to install and that the necessary wire was pulled by separate crews with 12 inches left out at all junction boxes.

Another highly trained electrician would splice the proper wires at

A totally worthwhile sales call

(or why it pays to listen while the customer is drinking)

each junction box and leave the two exposed wires for the fixture hanging person. "If this guy used your [3M's] spring type connector, his fingers would be bleeding before noon," I went on. My suggestion was:

1. Install insulation around the spring center with 1/2 inch of insulation past the spring. (This would eliminate needing rubber and friction tape.)

2. Make a range of sizes from two #14 wires to three #8 wires.

3. Provide a small tool that fit over the wire nut to make it easy to turn the insulated spring over the wires.

4. Provide a gauge on the tool that would show how much insulation to skin off the wires.

The factory man that was present never said a word, but listened intently. He either had a terrific memory or a hidden tape recorder.

About three months later, I received a call from the 3M salesman. He wanted me to be the first person to see his new line of wire nuts to be advertised across the United States. To my amazement, the line was exactly what I had told him to do except for the larger gray size for three #8 wires, which were added later.

To my knowledge, the 3M Company had exclusive use of the patent for 17 years and to this date they are sold worldwide. My only compensation was two free lunches.

Matthew Kammenzind, LM
Kennewick, WA

...But a lesson not totally learned at 3M

I went to work for the 3M Company in their physics laboratory right after obtaining my BS in Physics from the University of Minnesota in 1950. I was 19 and I was told that time off for graduate school at Minnesota could be arranged, and it was.

The physics lab had seven staff on the 5th floor of a converted liquor warehouse in downtown St. Paul. About 200 chemists made up the rest of the technical staff of Central Research, as we were officially called.

3M had become interested in magnetic recording due to my boss's employment at the Naval Ordnance Lab where a couple of German "Magnetophone" recorders had ended up. The recorder would be an ideal 3M product making full use of their coating technologies and product distribution capability. 3M was the largest audio (that's all there was then) tape manufacturer.

About 1952, the company decided to launch a full-press research effort into video recording and assigned me to the project. It was clear from the success of commercial network audio recording that program time shifting would work for television as well as it was working for radio.

Back then, the conventional approach to video recording was simply to speed up the tape velocity to handle the orders of magnitude increase required in bandwidth. In 1954, 3M, with RCA, demonstrated a full-color recorder using five tracks on a 2" wide tape running at 200 inches per second (ips)!! It took 30 seconds to get the reels up to speed.

But, in one of those intuitive flashes, I had the idea in 1953 to record across the tape. Three heads were mounted on the periphery of a wheel whose axis was perpendicular to the tape and at its centerline. The heads' peripheral speed was the requisite 200 ips. The tracks were only about 50 mils wide.

Each head on the wheel was energized successively, recording a transverse arc, 50 mils wide, across the tape. The tape was 2" wide; the arc length therefore was approximately 4". So every 4" of arc length (one pass of one head) the tape advanced 0.050". To get 200 ips, each arc took 20ms (4"/200ips). Fifty passes advanced the tape linearly 0.050" times 50 or 25 ips. The linear tape speed was reduced by a factor of eight (200/25). I sketched out the idea—using three heads on a wheel—in my notebook. I had it witnessed and submitted it to the patent committee for evaluation.

The patent committee then only had chemists on it. Thus, I had difficulty conveying how the record heads would be commutated and the tracking maintained between record and playback. Also, 3M was skittish about manufacturing mechanical products due to past problems. To them, this was a mechanical invention.

The patent committee rejected the idea and declined to file a patent on it. When I left 3M in 1959, I sent to 3M's president a copy of the page from my notebook along with a copy of Ampex's helical scan-patent whose filing date was after the date in my notebook. (By then, commercial video recording was a multimillion-dollar business.) I pointed out the similarity of my sketch and that on the Ampex patent. They were nearly identical.

Clark E. Johnson, LF
Waunakee, WI

oh, rapture, oh "joy," oh..no...

In 1957 I was an undergraduate Physics major at the University of Pennsylvania. One afternoon I noticed that "they" were digging a large hole under the Physics building. I don't remember the details, but later that year the hole contained me, Dr. Saul Gorn, several other people, and a UNIVAC I (Serial number 37).

I'd actually written my first computer program in 1951 – the father of a girl I knew was the chief engineer on IBM's 701 project, and she'd gotten a manual for me. Computer language seemed kind of natural to me, and her father kindly ran the program I'd written.

So it was not a particularly big step for me to become a programmer for this monstrous box. And it wasn't just one box. The UNIVAC itself communicated with the outside world through metal tapes – ten of them – a free-standing console clearly designed by a frustrated organist, and a console typewriter. The High Speed Printer had four boxes; one was the printer itself, one was the tape drive, one was the control circuitry, and one was the power supply. There was also a tape-to-card converter (three bays of equipment, and, separately, a card punch and a tape drive) and a card-to-tape converter (almost as much equipment as the tape-to-card converter). I don't count, in this list, the Unitypers – the keyboard-to-tape devices used to prepare programs so that the UNIVAC could read them, nor the 65-ton air conditioning unit. And to put all of this hardware in perspective, in modern terms it approximates a computer with 8K of RAM that runs at 250KHz!

Somehow, I understood the UNIVAC. Never understood people, and still don't, but the computer and I kind of hit it off. I remember Dr. Gorn calling me into his office one day. He'd decided that we needed a demonstration for the occasional visitor to the Computer Center, and thought that a good one would be to have UNIVAC play tic-tac-toe against a human being. To his frustration, I had already written the code by the time he'd finished explaining all of the clever ways he'd thought it could be programmed.

Since U of P was in the same town as the plant where UNIVACs were built, there were frequent trips to 19th and Allegheny. In order to get to Grace Hopper's office (which I had to do occasionally to discuss programming issues), one took the freight elevator to the roof, then walked across the roof to the "penthouse" where she and her staff were quartered. Anatol Holt and William Turanski were frequent visitors to the Computer Center, as was John Mauchly.

I learned programming. Not, as seems to be the current popular trend, this programming language or that programming language, but programming, as an art-form. I had opportunities to learn from great artists! Grace Hopper had written a three-address pseudo-code system called A2, for programming mathematical functions, and she was delighted to explain to me how her code handled the rules of commutativity and associativity to generate more efficient programs. Andrei Ershov (of the Computer Center at Akademgorodok, Siberia) was delighted to explain his algorithm for minimizing temporary storage locations.

Holt and Turanski had written a system for UNIVAC I called GP (Generalized Programming, later eXtended to UNIVAC II as GPX) – the first system for UNIVAC that had separately linkable subroutines from a library. I took their compiler apart to see how it worked, and modified GP so that it could take advantage of the UNIVAC II "I m" instruction (a register-to-memory transfer that made some programs more efficient) that had been retrofitted to the University's UNIVAC I.

While I was doing this, one of the computer users began to complain that half of the code he'd written had vanished while he was compiling a program he'd written in GP. It took several hours to discover that in the middle of his code he had chosen to use the constant "JOYJOYJOYJOY"; unfortunately, GP used this same constant to flag the end of the output of its first pass, so when GP's second pass read it back in, it figured that it was done when it encountered it! If I hadn't taken the GP compiler apart, I'd have never fixed that problem!

Peter Zilahy Ingerman, LS
Willingboro, NJ

Simulating the past

A couple of years ago, in the best "because-it's-there" tradition, I decided I wanted to write a simulator for UNIVAC. UNISYS was, to say the least, bemused by my request, but granted me official permission to do so.

In the process of writing this simulator I encountered two chaps who had maintained UNIVACs, who were kind enough to help debug the simulator and my simulation of the High Speed Printer, complete with its plugboard! The plugboard was particularly challenging to simulate, because the High Speed Printer did a lot of things in hardware that now-a-days are taken for granted as being done in software. One of these was left-zero suppression in a field. The other was permitting an input line to be printed more than once, with different portions of the input line printing each time. This allowed, for example, an input line (120 characters) to contain a name, address, and city-state, but to have the High Speed Printer print these three fields one under another, in "normal" address format. An input line could be printed up to six times, with (possibly) different data printed each time.

The complete simulator is available as freeware. If you're interested, contact me at pzi@ingerman.org and I'll provide details.—*PZI*

UNISYS

Grace Hopper with UNIVAC binders

Puttering with the radio was my first passion. I got a Ham license, W2HRT, at age 14. Unfortunately, the military had other plans for me.

I went to work as an Engineer Grade P-1 at the Signal Corps General Engineering Laboratory, Ft. Monmouth, NJ, after graduating Columbia University School of Engineering in May 1941. I was assigned to the Vehicular Installation (VI) section instead of the Radio Section I wanted. In attempting to rapidly become state of the art (for 1941) in vehicular communications, some very serious problems had arisen.

Problem 1: It was standard procedure to suppress for radio interference (now called RFI) by suppressing ignition interference in the Command vehicles only and then placing them at the lead and rear of the convoy. Surprise! Communications was impossible because of the RFI from all the other vehicles in the convoy.

Problem 2: During First Army maneuvers in the Carolina's, the Red radio operator warned the Commander of the Blues that the enemy was getting ready to attack. "How do you know?" he was asked. His answer, "I can hear the ignition interference from their engines as they are starting up."

A command decision was made that every vehicle in the army must be suppressed. Easy to say; not so easy to do. I think there were only three engineers in the VI section at the time.

However, I rapidly learned the technique. A 10k in-line resistor in the ignition line to suppress the transients developed by the ignition spark; bypass capacitors on the generator and regulator; bond all sheet metal together (fenders, firewall, hood, etc) to make a solid electrostatic shield around the engine; minimize wires coming through the firewall and filter those that must come into the passenger compartment.

I was sent to Raritan Arsenal, Aberdeen Proving grounds, Holabird and so forth to design pilot suppression systems for tanks, trucks, motorcycles, everything. I was sent to Endicott, NY to IBM. I suppressed Machine Records Unit (MRU) #1, the first use of IBM punch card machines for the First Army. Every one of those 80 column cards had electrical contacts which created RFI.

The Jeep was under development in the summer of 1941. Willys-Overland had won the contract to produce it. This was the first vehicle to be suppressed in production.

A suppression of communication

On 7 December 1941, I learned of Pearl Harbor over my BC-312D while testing our design of the suppression installation in Toledo Park at 4 am. Every Jeep produced there had the letter "S" appended to the serial number. I'm pleased to be able to say that every Jeep bore my imprint in some small way.

What I did not know was that the military was planning a North African invasion AND that every vehicle going to North Africa must be suppressed AND I, at age 22, was the most trained person to do the job. I was given three radio mechanics with no suppression experience to go to ETO (England) and get the job done. (What I also did not know was that there was a specific order: "No civilians to be sent into any theater of operations.")

I was ordered to Governor's Island, New York City to receive the requisite shots, passport (destination: secret; purpose: secret). I was given an assimilated rank of Captain in the event of capture by the enemy. After all, a member of the military not in uniform would be presumed to be a spy and dealt with accordingly.

I was instructed to report to the Brooklyn Army base to ship out.

"Where are my orders?"

"The Officer aboard the ship will have them for you," I was told.

26 August 1942, I walked up the gangplank of the "Del Norte," and reported to Major Nathan Harris, the officer in charge. I asked for our orders. His manifest showed four civilians, but he had no orders or any facilities for us. We decided in absence of any authority to be on the ship, we would leave. I led the way back down the gangplank to be met by a MP with a pistol. He told us, "Once on this ship slated to depart, no one gets off." We turned around.

The "Del Norte" was a banana boat refitted for troops. This was her first military voyage. There was room for 38 officers plus 200 enlisted men. But, no facilities for us. I was first assigned a ship's crew berth in forecastle. Ever sleep with your head 18 inches from the anchor chain? It's an experience. I was finally berthed with the ship's purser.

On 20 September 1942, I arrived at APO 871 HQ SOS Cheltenham, a "reppel-deppel" Replacement Depot for "casual" personnel...not assigned to any specific unit. Eventually, a Lt. Lee found us, *knew* about us, found our supplies and tools, and relieved me of command. I was assigned to the Aintree Reception Park which was the Aintree Race track taken over for a motor pool. By 15 January, we had suppressed 27,000 vehicles. On 31 January 1943, we started home aboard a Canadian Pacific Luxury liner in first class no less.

I wrote a report and was summoned to Washington, DC. I related how I was stopped at least twice a week by G-2 or other officers to explain why a civilian was riding around in a US Army vehicle, among many other problems a civilian with no orders encounters in a Theater of Operations. Because of my experiences, the Army Specialist Corps was created. All technical civilians needed in a theater of operations were to be in uniform with a shoulder patch indicating status.

As a result of my ETO service and having survived enemy bombing raids, I was awarded the "Commendation for Meritorious Civilian Service" in 1944.

Leslie Balter, LM
Ramsey, NJ

On a first name basis only

In WW-II in the Pacific, my Mother and I were not yet captured. We still lived in our house in Surabaja on the Island of Java.

With our radio, we listened secretly every evening to Radio Australia. I had to use headphones because in the hot tropics there were only Venetian blinds in the windows and no glass. (Air conditioning was not widely available as yet.) Thus, a radio could be heard outside the house.

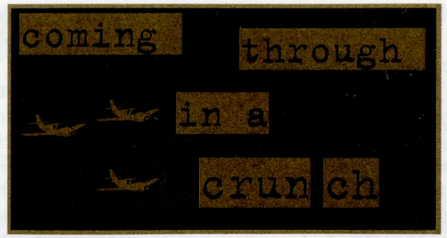
It was risky to listen to allied radio stations because it was strictly forbidden by the Japanese. We nevertheless listened because we hoped to pick up a message from my father. He was an Officer in the Netherlands Naval Air Force. When the Japanese Army was close to capturing Java, all personnel from the Naval Base in Surabaja had to evacuate to Australia.

Those that made it to Australia were given an opportunity by Radio Australia to broadcast a guarded message which might be picked up by their families left behind. These messages only gave the first names of fathers, mothers and children for obvious security reasons.

One time, we picked up the names of friends of ours whose father was a Submarine Commander and we told the family.

We never got a message from my father, although he told us later that it was sent. Throughout the war period, we did not know if my father was still alive. We only found out that he had survived the war when he came back to Java.

Ir. Jan A. Bijvoet MSEE, LM
Madison, AL



In 1957, I led a team of engineers that had designed and built the MATABE (Multi-weapon Automatic Target and Battery Evaluator) computer. This computer was built at the Burroughs Research Center under the sponsorship of the U.S. Army Signal Corps. It was intended to test the concept of having a central computer aid in the defense of a city against an attacking force of aircraft by automatically determining and initiating individual anti-aircraft battery assignment against targets. The computer used a magnetic drum for program storage, 2200 electron tubes, 12,000 crystal diodes, and 1100 relays. It required seven cabinets with a total volume of 450 cubic feet.

A key event of the project was a demonstration of the computer system to 87 military officers, scientists and engineers from a variety of air defense fields. In preparation for this demonstration, a special display board was designed and built so that the visitors could observe the progress of the raid and the action of the MATABE system.

To make all of this possible, it was necessary to find a way of generating an input data flow that simulated the approach and flight of attacking aircraft. The required data was placed on punched cards, but the then available punched card readers were not nearly fast enough for the desired simulation. However, I discovered that a Burroughs subsidiary in New York had built a prototype of a high-speed punched card reader that had the required capability. Although there was some question about its reliability, I had it shipped from New York and installed at our site. We ran it through a number of tests and by the day of the exhibition it was ready. It was run a number of times during the demonstration and performed flawlessly. Of course, I was delighted and the day was a great success.

The next day we wanted to run some exercises for ourselves and turned the reader on; but, it would not run reliably. We tried for several more days but with no success. We finally shipped the unit back to New York. I have often thought of how lucky I was that the reader ran successfully when we absolutely needed it.

Daniel Eisenberg, LM
Cherry Hill, NJ

Sign(+-)language

Time: 1949

Company: The Pilotless Plane Division of Fairchild Engine and Airplane Corp., Farmingdale, NY

At the time, Fairchild was one of the foremost guided missile companies. Our chief programs were the "Lark" and the "Skylark" surface-to-air radar guided missiles.

I was in the Systems Engineering Department developing guidance systems and learning the new concepts of Information Theory. At one point, we had obtained a large amount of target tracking data and thought it would be useful to calculate correlation functions. Essentially, this required multiplying the tracking error data, at 0.1 second, at 0.2 second and so forth then summing the results.

We had one of the first analog computers (REAC Sn #2), but this job called for digital computations. We knew that the Accounting Department had an IBM machine capable of such a job: punch numbers onto a card for every tenth of a second. Multiply the first by the second, the second by the third and so forth. Then multiply the first by the third, the second by the fourth and so forth.

We discussed this idea with the accountants. They thought this plan was feasible until they saw our tables of numbers. Some were preceded by plus signs (+) and others were preceded by minus signs (-). This notation was beyond their comprehension. A complete breakdown in communication and the ability to help us out resulted.

Finally, I resolved the issue by explaining the "weird" notation we engineers had used. What we *really* meant with these plus and minus signs were "credit" and "debit." We got our correlation functions.

Erwin Vogel, LS
Gaithersburg, MD

In 1970, I was working as a Staff Engineer for Electronics Memory and Magnetic (EMM) in Hawthorne California. They built core stacks and core memory systems for commercial and military systems.

At this time, a new Division Director named John arrived with the idea of building a mini-computer cheap enough that homeowners could afford it. The issue was how to build it without the major cost of hardware required to implement the arithmetic logical functions in a 16 bit Arithmetic Logic Unit (ALU). His idea was to build a 1 bit ALU connected to a 16 bit shift register that would allow multiple data operations on the data as it was shifted through the 1 bit ALU. The idea was that the speed loss of shifting the data could be made up by the multiple operations that could be performed on the data without the need for hardware for each data operation. A company was hired to design the Instruction Set Architecture (ISA) that would make the maximum use of this concept.

An engineer was hired to find the fastest 1 bit ALU. I took on designing the interface card between the computer and the ASR 33 teletype with paper tape reader/punch. A mechanical engineer took on building the front panel for the computer with the needed lights and switches. After three months, the engineer was still studying the 1 Bit ALU and management killed the effort by laying off the engineer.

John and I were still fascinated by the idea and wanted to go on with the project. We had built the front panel for the computer and still had on hand all of the wire wrap boards and integrated circuits that had been purchased before the project was canceled. The problem was how to do it with no funding. The next problem was how to get the boards built and then get hold of a memory unit to connect to the computer. Once the computer was up and running, John took it to upper level management to show what we had accomplished. The response was negative to say the least. We were free to bid the computer into any non-commercial market such as military or space systems but we were to avoid the commercial market. I wrote a couple of proposals for the computer's use in military and space systems but nothing came of it.

Harry Gold, LM
San Diego, CA

I spent the war in two little known Signal Corp programs: the Enlisted Reserve Corp (ERC) and the Army Communication Service (ACS). ERC started in 1942 to train Radar Maintenance Technicians. Entry required secret clearance and an Army Test Score 20 points higher than the Officer Candidate School's requirement. Graduates were promised a 2nd Lt. Commission. The Army provided a small salary but no help and no requirements other than school attendance eight hours a day, six days a week, all on electronics.

Two memories stand out: 1) the response of local civilians who took in roomers and made all feel at home, 2) the unique study incentive. Every three months, there were tests and up to 50% of the class went to active duty, most going to other Army electronic related schools.

After completing the nine month course, I was activated and sent to Miami Beach for basic training during July and August 1943. The silver lining was housing in a luxury hotel with a bar in the lobby. The bad news was my file punch card got hung up and I took three basic training cycles. Then I went to Camp Murphy, FL for fire control and early warning radar school. After nine months, we graduated. But, instead of the promised commission, we were made Privates 1st Class.

Then I went to an anti aircraft artillery brigade for more basic training. At this point, 6 man Mobile Radar Maintenance Teams were formed, equipment issued and I was promoted to T3. As soon as the equipment was cleaned and we were trained in its use, the teams were disbanded and assigned to ACS.

Twenty-seven man teams were formed to build communication stations overseas. Our group went to Hollandia, New Guinea where we erected a building, installed equipment and built a 300 pole antenna farm.

Six months later, on to Manila to build an even larger station. The stations were designed in Philadelphia and shipped as complete kits. Unfortunately, they arrived one station late. So we received the New Guinea Station in Manila. However, as Murphy's Law would predict, the station had to conform to the current location operational specs. I'm convinced we won the war, in large measure, through the ingenuity and independent action of G.I. grunts who begged, borrowed, stole, invented and ignored regulations in order to get the job done.

In 1946, I was discharged as a Tech Sergeant. Shortly thereafter, I did receive a 2nd Lt. Commission...in the reserves. However, I feel lucky to have been in both programs as I learned how to overcome obstacles.

Gerald M. Goldenstern, LS
Northridge, CA

tales from the vault (the end)

The US Navy learned about German magnetic mines from its London attaché in December 1939. The agency concerned with sea mines was the Naval Ordnance Laboratory (NOL)—at that time five elderly civilians. A huge scientific work force was obviously needed. The Navy called to duty an MIT professor of electrical engineering, Lieutenant Commander, U.S.N.R., Ralph D. Bennett, and told him to start recruiting. He communicated with all the EE academics he knew, offering interesting secret work and deferment from the draft. He avoided the long and involved Civil Service employment procedures by using a special Navy rule: civilian experts could be hired on a day-to-day basis with personal service contracts specifying a daily rate of pay and nothing else. Within a year, he had hired several hundred civilian experts in magnetic mines.

Here is my own hiring time line.

On 31 December 1940, I wrote to NOL asking for a job. On 15 January 1941 Bennett wrote suggesting that I come to Washington for an interview. On 17 January, I wrote that I would be there on 25 January. I had a 15 minute interview with Bennett's technical assistant, who mentioned a salary of $8 (a day). On 6 February, Bennett wrote and offered me $9 (a day) and proposed that I start on 17 February. I accepted by telegram on 11 February and joined NOL on 3 March. I signed a few sheets, saw a Navy doctor for 10 minutes, and went to work testing a magnetometer without any indoctrination, instruction or security check of any kind.

Note there were no phone calls. All communication was by letter with one telegram. NOL made no inquiries about me. My contract was for personal services and could be terminated by either party at any time without notice or reason. Within a year, the establishment got its hooks into the Contract for Personal Services caper, killed it and put us all into Civil Service. Thus, they restored hiring to its traditional pace.

Bennett led NOL through the war and then went on to research leadership jobs with GE and Martin. He never wrote his own story.

Eric A. Weiss, LS
Kailua, HI

Bureaucracy is the death of any achievement ■ Albert Einstein

the IEEE LMF

Officially, this column explains how your generous contributions are used. We run this piece in every issue (two a year) in the hopes that it will encourage repeat contributions and (fingers crossed) new contributors. But as much as we like to push for more, you LMs are okay. As a group, you are following a time-honored giving trend. And you look real good in comparison to the LMs of a decade past. In fact, you are a throwback to the LMs of the 1980s.

In 1981 (the years picked are somewhat arbitrary because I'm not the world's best recordkeeper), there were 2,221 contributors out of a possible 8,390 who gave a total of $41,341. In 1991 (a giving low point), there were 269 contributors out of 21,447 LMs. The total was $34,691 but that was only possible thanks to an estate contribution ($24,600). In 2001, there were 29,528 LMs (this was before returning the profile was required). That year $212,815.42 was given in contributions of which $37,000 was an estate gift. But even without that gift, the giving was an respectable $175,815.42 (especially compared to 1991). The number of contributors was 5,536. So far in 2004 as of 30 November, $178,548.22 had been given with 24,662 LMs in all. For a list and explanations of the good deeds, check out <www.ieee.org/lmc>. And thank you!

oral histories collection

According to the IEEE History Center, historians consider an oral history as a primary source of raw data that combined with other raw data can be used to create historical narratives. This "raw data" label holds even though the transcript is edited by the interviewer and then is confirmed by the interviewee that the literal interpretation is indeed correct. Why? Because "an oral history transcript is relatively unedited compared to other forms of interview," states the web page.

The IEEE History Center has an online repository of over 200 abstracts/interviews of notables such as Vinton Cerf, William Hewlett, Simon Ramo, Charles H. Townes and Vladimir Zworykin at:
<www.ieee.org/organizations/history_center/oral_histories.html>

Excerpt from the IEEE Merger Oral History Collection:
Dr. Benjamin Richard Teare Jr. was crucial to the merger of the AIEE and the IRE into the IEEE. The interview took place on 28 Dec.1979. (Teare was 72.)

Teare: ...The rate of growth of IRE membership was I think 8%, and that of AIEE was 1%....In thinking back, I suspect that it was because electronics and radio communications and that sort of thing, including computers, were growing at a terrific rate, and there was more linkage with IRE than AIEE. The groups (note: today's IEEE societies) were a powerful way to do it, and AIEE saw that, and AIEE went on paper to a group organization which in my opinion never really materialized.
George Sell (interviewer): When was that? 1951?
Teare: About then AIEE went through the business of forming groups, but I don't think any groups were formed that were effective. It was just lip service. I never really worked in the groups of IRE. I was a member; I was Chairman of the local section of IRE at one time, as I had been Chairman of the AIEE local section, but somehow I was not close to the IRE organization. But my impression, thinking about it, is that the IRE divided responsibility into groups. A member joined one or more groups, and he in effect controlled IRE's activities in that particular area. In AIEE, the control was exerted by a committee that was appointed by the president or the power structure in the organization. Those (folks) got the job done, but it was probably a lot more exciting in the IRE system. Moreover, IRE could get into new things faster than AIEE could.
Sell: Because of its structure?
Teare: Because of its structure.
Sell: It was easier to set up a new group.
Teare: Suppose that there was a group that was interested in a certain area, and that area began to move towards computers. You could take care of a computer interest without having to go through a committee of older people who might have fossilized thinking.

10 years of giving
Benjamin J. Leon,
IEEE Life Fellow

For ten consecutive years Benjamin Leon, IEEE Life Fellow, has designated a portion of his philanthropic giving to benefit services provided through the IEEE Life Members Fund. In a recent interview, Leon reflected on why he supports the IEEE Life Members Fund and how his involvement in IEEE activities and societies strengthened his initiative to give, stating, "Upon becoming an IEEE Life Member, I no longer had to pay annual membership dues, and designating these funds to the IEEE Life Members Fund seemed like the reasonable thing to do. This is a good fund, which provides important revenue for the WISE program, internships and fellowships, and helps support unique in-service projects benefiting deserving youth. Over the years, I have had the pleasure to know many of the members of the Life Members Committee and I trust their stewardship of my annual gift."

Benjamin Leon went on to explain, his many years of volunteer involvement in IEEE influenced his giving to the IEEE Life Members Fund. Leon noted, "I started my involvement as a committee chair in the first year of my first job, right out of graduate school. I went on to serve as: associate editor and editor of the Transactions on Circuit Theory; chairman of the Circuit Theory Group; IEEE VP of Education; editor for the US Activities Board; chairman of the USAB Member Activity Council; and served on committees of the Communications Society. As an administrator, approving and reviewing budgets, scrutinizing expenses, and securing income for projects, you realize the necessity to personally support a cause you have invested a life's work in. In this way, my annual giving is providing more capable, better equipped engineers for society."

The success of the IEEE Life Members Fund is completely dependent upon philanthropic contributions. No portion of the IEEE member dues is used to support the activities of IEEE Life Members Fund. If you are interested in finding out how you too can help the IEEE Life Members Fund expand its activities, please contact the IEEE Development Office at +1 732-562-3915 or email <supportieee@ieee.org>.

Karen Galuchie
IEEE Development Office

Internet for the chronologically challenged

The Internet jungle is filled with predators just waiting to pounce on your slightest vulnerability—not a very welcoming environment for any Internet user, much less so for the chronologically challenged.

Much has been written about these dangers in both the technical and popular media. It behooves all of us to read this stuff religiously, and to heed the advice that is offered. The tough part is that the threat is constantly evolving, and not for the better. It seems to me that each new operating system from Microsoft promises greater robustness but spawns ever more sinister viruses and worms. Is this because the new products are not thoroughly vetted or because they are an ever more attractive target than the competition; e.g., the Linux and Mac operating systems? No one seems to know definitively.

because it's a jungle out there!

How much trouble we each get into is to a large extent a result of our personal choices. The problem is that we often make bad choices by default. How many of us have up-to-date anti-virus and firewall programs working, the latter being particularly important with always-on broadband Internet access? How about anti-spyware to detect and eliminate "cookies," those little bits of software that are often friendly but can also send information about you and your computer to unfriendly people? The defenses against these threats are available from a wide variety of vendors and we should deliberately choose to use these defenses. Most important, we should take advantage of all of the software updates available for patching the flaws in our operating systems. All too often we make the wrong choices by procrastinating instead of waiting for trouble we should be preemptive in our defensive strategy.

Another intriguing defense that I just gleaned from January 2005 *Popular Mechanics* is Anonymizer 2004 ($30 <www.anonymizer.com>) which prevents web sites from identifying your IP address by means of a proxy server. If this service really provides anonymity, it shifts the advantage to the individual, who can then roam the Internet in disguise.

The hardest advice of all for me to follow is to use complicated passwords of numbers and upper and lower case letters that have no meaning whatsoever, to change them frequently, and to never write them down. And, of course, every sensitive account should have a different password. Right!

Even if we follow all this good advice, we can still do some very dumb things. It's pretty easy to ignore and delete e-mail attachments from unknown people. (Those of us with ieee.org aliases have the benefit of the built-in screening and deleting of bad stuff.) What's a little tougher is ignoring the fake entreaties from "Citi" such as: "Technical services of the bank are carrying out a planned software upgrade. We earnestly ask you to visit the following link to start the procedure of confirmation of customers data—etc.,etc." A modicum of thought tells you that this request is just not logical and is best ignored.

One "phishing" hack who almost got me was ostensibly from PayPal, the payment arm of eBay Inc.. The message said something like, "Congratulations. We have just successfully charged $175 for your recent purchase to your credit card. For details of this transaction, please go to the following link—." Instead of surrendering to my anxious curiosity, I forwarded the message to PayPal, and they confirmed that it was a dangerous hoax. I learned the next day from *The Wall Street Journal* that clicking on this specific link would have unleashed the Mydoom worm, which exploits a newly discovered flaw in Microsoft's OS code.

Let me close with something that we can all look forward to—JPEG picture files that can run malicious code on unprotected systems. News of this little gem comes from Jay Munro at *PC Magazine*, 30 November 2004. Just how this works is too complicated for my aged mind to comprehend. Let me just say that JPEGs stored anywhere on your PCs can be inadvertently opened by a variety of photo editing programs, allowing embedded "comments" to begin to do their damage. While everyone is encouraged to apply the SP2 patch to the XP operating system, it is said not to be a cure-all solution. C'est la vie.

Be careful out there!

Fred Andrews, LF
f.andrews@ieee.org

an Internet IEEE milestone

On 5 September 2004, the IEEE Israel Section dedicated the IEEE Lempel-Ziv Data Compression Algorithm Milestone at Technion—the Israel Institute of Technology, located in Haifa. The plaque reads:

The data compression algorithm developed at this site in 1977 by Abraham Lempel and Jacob Ziv became a basis for enabling data transmission via the Internet in an efficient way. It contributed significantly in making the Internet a global communications medium.

The LMF helped support the celebration attended by Distinguished Professor Ziv, the President of Technion Yitzhak Apeloig, IEEE President-Elect Cleon Anderson, IEEE Communications Society President Curtis Siller, the Chair and members of the Israel Section and other dignitaries.

our mailing list

The 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 through 64 and 3) 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 as well as "war" stories. In general, published story lengths are:

1/4 page—200 words 1/3—300 words
1/2 page—450 words 1 page—900 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 beforehand, you may contact me by email Julian Bussgang <j.bussgang@ieee.org> or Mary Campbell, Managing Editor, <m.campbell@ieee.org>.

The deadline for possible inclusion in the next issue is 8 April 2005. Please include your town, state, country, phone number and/or an email address with your piece.

stopping IEEE services

Those Life members who wish to have all services stopped should contact IEEE Member Services. 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.

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2005 Life Members Committee

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.

have questions, ideas or problems?

Have questions regarding your Life member status? Contact Member Services (see address left). Got something else you need to ask or discuss? Email the Life Members Committee or its Staff at <Life-members@ieee.org>, or call: +1 732 562 5508, or fax: +1 732 463 3657.

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