# *CQ de WA2LQO*

**Seventy Years: 1944 -2013**

***The official voice of the Grumman Amateur Radio Club***

**January 2014 VOLUME 87 NUMBER 1**

## How I Became a Ham (continued from November 2013)

**By Bob Wexelbaum, W2ILP**

*Synopsis: Having discussed the many Elmers who influenced my early interest in Ham Radio during my grade school years, I will now continue to discuss positive inputs from my family, my friends and my teachers during my high school years All played significant roles..*

Having learned that my cousin Joel Weichselbaum W2ZXR (my uncle Dave's son) was a ham and a shipboard radio operator, I was surprised to learn that another cousin Joel Weichselbaum (my Uncle Ben's son) was also a shipboard radio operator, but not a ham. My father was the youngest of nine children (7 boys and 2 girls). The patriarch of the Weichselbaum family came to the US from Austria in 1840 and the family ran general stores in southern cities. The family population grew geometrically with time and generations later some family members migrated north, settling in parts of upper west Manhattan and the east Bronx. When I did get to visit my cousin W2ZXR, he showed me his ham station which consisted of modified ARC-5s for 40 and 80 Meters, which he used only for CW, a Hallicrafters receiver (I don't remember the model number), and long wire antennas. Joel impressed me with his Morse speed over 20 wpm on his bug key. He had worked ham friends who were at sea and in DX locations. We didn't spend much time practicing Morse, but Joel asked me if I could draw a schematic of a power supply, with a full wave rectifier and swinging and smoothing chokes, as well as Hartley and Colpitts RF oscillators, and a Class C RF power amplifier using a tetrode vacuum tube. These were diagrams that were often asked for on ham tests in those days. Joel was very favorably impressed by my drawings. I knew how to draw vacuum tubes by the old method (where grids looked like resistors) and the new method (where grids looked like dashed lines), which later became part of the MIL 15 standard.

Now I will tell about my Mother's family. My mother also was from a family of 9 children. There were 5 brothers and 4 sisters and my mother was second from the youngest. My great-grandfather had migrated from Czarist Russia to England. The family members attended British grade schools. My maternal grandparents and family - who spoke only English - came to the US in 1906 when my Mom was six years old. The two oldest brothers refused to leave their British friends and jumped ship. Unlike many of the Jewish immigrants who settled on the lower east side of Manhattan, my mother's family settled in what was called "Hell's Kitchen", on the west side of Manhattan near the theater district, because my grandfather had a job as a meat cutter in a 10$^{th}$ Avenue slaughter house. My mother attended first grade in London and continued her education in NYC.

My mother's brother, Uncle Lewis Feldman, became knowledgeable about electrical engineering in an unusual way. He ran away from home while still in England, and found work as a stable boy caring for horses and cleaning stables. Uncle Lewis was highly intelligent and not being a veterinarian or blacksmith, he worked his way up to become a horse trainer. Upon arrival in the US he parlayed his horse training skills into working with horses that were being used in the fledgling silent motion picture industry. In those early days, movies were made on Long Island and in New Jersey. Somehow Uncle Lewis upgraded to become a cameraman where his mechanical aptitude was appreciated and he patented several motion camera innovations. When the film industry relocated to Hollywood he was asked to move, but he refused because he did not want to leave his family. Then the great depression came. Uncle Lewis was recommended to become a movie projectionist, and

since people often went to the movies during the depression, Uncle Lewis was never unemployed. He had to pass a written safety test that was required for all who worked professionally with 35 mm films, since in the early days arc lights were used for projecting films, which were themselves highly flammable. If the film stopped reeling, it would quickly start to burn and could start a disastrous fire. Projecting film was a serious responsibility, especially before automatic operation and projector switching and rewinding were perfected. Uncle Lewis developed automatic reeling control methods and sold his patent rights. There was once a two page story about Uncle Lewis and his career in the movie industry in the Sunday magazine section of the NY Daily News, where he was asked about his favorite movie stars; I remember that one of them was Barbara Stanwyck. Lowe's Theaters gave Uncle Lewis the honor of being the projectionist of "Gone with the Wind" at its NY Premier showing!

When I visited Uncle Lewis at his home in Jamaica Estates, Queens he told me that if not for the Morse test, he would have become a ham. He had built several AM radios, phonographs, and high fidelity amplifiers, buying parts from Lafayette Radio. It was Uncle Lewis who taught me how to calculate the total resistance when resistors of different ohmic values are connected in parallel. Uncle Lewis gave me an obsolete TV set to break up for parts. It was a set that was manufactured by the Pilot Radio Company of Long Island City, prior to WW2. It had a 3" picture tube and only tuned to TV Channels 1, 2 and 3. (Channel 1 became the 6 Meter Ham Band.) He also gave me several war surplus items including a dynamotor. I had to fight my parents to get it all into our apartment, but they relented once Uncle Lewis told them that my interest in electrical engineering might head me on the path to a worthwhile future.

Can radio operating or engineering be inherited traits? I don't know. Perhaps we had a common ancestor who sent signals with a ram's horn and wired up secret tabernacles… Nah…I don't know if such obsessions could be encoded in DNA. Next month I will write about my high school teachers and how they influenced me with regard to Ham Radio. Stay tuned in 2014. (To be continued)

## PRESIDENT'S NOTE by ED GELLENDER, WB2EAV

Every January we request payment of annual dues. The dues are still $20. For multiple members in the same household, the group rate is $25, and for retirees living out of town the rate is $10. If you receive your newsletters by mail, you will see the year that you are paid through on the label. We are trying to avoid raising dues, so if you want to have the newsletter emailed, saving us printing and postage costs, just let me know.

The holiday party was held at Kwong Ming Chinese Restaurant in Wantagh and a wonderful time was had by all attendees, as we enjoyed a huge spread of delicious dishes.

The article on page 4 brings up memories of how a 1961 issue of Radio-Electronics changed my life. A high school classmate showed me a 4-transistor regenerative AM broadcast receiver he built from an article, packaged in a crushproof cigarette box. I was fascinated, built one for myself, and became hooked for life – hobby, education, career, everything. I can probably still draw the schematic from memory, and I would love to find that article.

During 2013 I have been the Contact VE (Lead Examiner) for the GARC VE team. First let me say that my support team: Karen W2ABK, Dave AB2EF, and George WB2IKT have done fantastic work. We have conducted a fair number of exams and I find it quite satisfying to provide this service to the community. I've been proud to say that all of our candidates earned licenses. The only time anyone failed an exam was when a candidate passed the Technician test and immediately took the General only because there was no additional fee. Well in December, it finally happened. Someone failed the Technician exam and had to leave empty-handed. When I told him I was sorry, he told me not to worry; he had been dragged there by his friend over protests that he was not remotely prepared. Apparently, the friend (who passed Tech then General) was so desperate to not be alone at the exam that he ruthlessly did whatever was necessary to have companionship.

As I finalize this newsletter, Ham Radio University was earlier today. I had asked Bob to leave me some room here to describe whatever struck me as interesting, but when I was ready to go freezing rain made it treacherous to just walk to the car, let alone drive. Conditions did not improve until it was too late, and I decided my idea to regale you with stories was not worth the risk. Sorry. – Ed, WB2EAV

**GRUMMAN AMATEUR RADIO CLUB**
**MINUTES OF GENERAL MEETING 12/18/2013**
***Holiday Party at Kwong Ming's Restaurant***
**By Karen, W2ABK**

The meeting began at about 5:30 PM

**TREASURER'S REPORT – Ed, WB2EAV**

Finances continue to be in good shape.

**REPEATER REPORT – Gordon, KB2UB**

Repeaters are working.

**NET REPORT – Karen, W2ABK**

Thursday night net at 8:15 PM on 146.745 MHz had 3 check-ins.
Thursday night net at 8;30 PM on 145.330 MHz had 2 check-.ins.
Sunday morning net at 7:30 AM on 7.289 MHz had 0 check-ins.

**VE REPORT – Ed, WB2EAV**

There were 6 applicants who applied for the Technician test, 5 passed and two also upgraded to General Class. Three VEs were present: Ed WB2EAV, George WB2IKT, and Karen W2ABK.

**OLD BUSINESS**

We need programs for our meetings.

**PROGRAM**

Our holiday party at Kwong Ming was successful with 13 people in attendance. We all had a great time, with a lot of good food and good company.

**GARC NETS: 40 Meters: 7.289 MHz at 7:30 AM EST Sundays**
Net Controller: Eugene, W4JMX
**2 Meters (repeaters) Thursdays: 146.745 MHz (-600 kHz) at 8:15 PM**
**145.330 MHz (-600 kHz) at 8:30 PM. Tone for both repeaters: 136.5 Hz.**
GARC Net Controller Karen, W2ABK
**ARES/RACES NETS: Mondays.**

**MEETINGS**

General Meetings of the GARC are held on the third Wednesday of each month, starting at 5:30 PM, at the Ellsworth Allen Park in Farmingdale. Driving directions and map can be obtained from http://www.mapquest.com. It is suggested that the GARC web site be checked to be certain of meeting location, which may change after this newsletter is distributed. Board meetings are held a week before the General Meeting at the Bethpage Skating Rink. *Meetings may be cancelled or relocated. Check the website.*

**WEBSITE**

The GARC web site can be found at http://www.qsl.net/wa2lqo . Webmaster is Pat Masterson, KE2LJ. Pictures of GARC activities, archives of newsletters, roster of members, and other information about the GARC may be found there.

## INTERNET LINK OF THE MONTH FOR INTERNERDS

Last month's internet link was so successful that I decided to use it again this month and take you on a different path within it. Here it is again:-
http://www.americanradiohistory.com
As described last month, click on: <Early Journals and site features>. When a menu comes down this time, click on: <Radio Craft 1929-1948>. Now you can get to Radio Craft magazines, which were also published by Hugo Gernsback, overlapping in time with his Radio News Magazines, which we explored last month. You can then get to the July 1929 issue which was the first issue of Radio Craft. In his editorial Gernsback explains why Radio Craft is different than Radio News. Radio Craft was meant to be for radio builders and not just for radio listeners. It was made for those who wanted to build, repair or modify radios. They were the experimenters and *Hams*! Radio "Amateur" News then became only Radio News.

Notice the schematics and pictorials. If you have an old RCA Receiving Tube Manual you may find many of the tubes listed and specified there. The trick is to recognize that the 280 tubes became known simply as type 80s. The type 80 full wave rectifier was being replaced by the 5Y3GT at the time my RCA manual was published but it was still available in most radio catalogs, as were the 227 triodes which became simply 27s. There were many radios that used bare filaments running at 2.5 Volts from batteries but eventually there was a new series of radio tubes with independent cathodes and heaters running at 6.3 Volts AC. The separate cathodes eliminated AC hum. Bare filaments were still sometimes used for push-pull audio amplifier stages where hum could be eliminated by cancelling it out phase wise. Notice the advertisements for radio schools of all types, and promises to get rich by being a radio service man. One of the radios shown in the July 1929 Radio Craft was actually a superhet. They called the mixer tube a modulator.

When I was in high school I accepted an offer from the Coyne Radio School of Chicago by mailing in a coupon from the Sept. 1949 Radio Craft Magazine (see page 93). That Radio Craft issue is the one with the electronic kiss meter on the cover…I kid you not. I received a large book of 150 diagrams of many commercial radios and TV sets free for accepting a 5 volume practical radio course on approval. I could not afford to pay for the radio course books so I sent the books back to Chicago, but the free book of diagrams was mine to keep. I still have it! Correspondence courses can be good if you are also actively working in the field or experimenting on your own. Today many people take courses that are presented via the Internet and/or by video recordings. After I began working as a lab technician (Engineering Aide) in about 1955, I took correspondence courses from the Capitol Radio Engineering Institute of Washington, DC (CREI). I took Advanced Electrical Engineering, Radar and Servo Technology, Advanced Math and Aeronautical Radio Engineering. That and 11 years of real college course classes attended at evenings 6 credits at a time (after working full time) qualified me for a BS in EE.

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## PUZZLE

*Last month I asked the following question:-*
Who invented the first junction diode?
Why was this invention very important?
Please see my answer on Page 6.

*This month's question is:*
What invention was developed by both Marconi in Italy and Popov in Russia when both were rumored to have been collaborating in the improvement of ship to shore radio communication equipment?

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**GARC 2013 Officers**

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**Newsletter**

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**GARC VE Exams**

We normally proctor exams for all classes of ham licenses on the second Tuesday of each month, starting at 5:30 PM. The exams may be given at various locations. Ham Exams are: Element 2 – Technician, Element 3 - General, Element 4 – Amateur Extra Class. All applicants must pre-register to determine the location of a VE session by contacting Ed Gellender WB2EAV. Time and location of exams are subject to change. If there are no applicants VE sessions will be canceled. The fee for 2014 is $14 for all exams taken at one sitting. New first time applicants should be aware that their Social Security Number will be required on the application form unless they register with the FCC for an FRN. Applicants for an upgrade should bring their present license and a photocopy of it. All applicants should bring picture ID such as a driver's license. Study material may be bought from the ARRL-VEC or W5YI-VEC http://www.arrl.org or http://www.w5yi.org. All VECs use the same Q & A pools.

**Editorial**

Because of my illness my sleeping times have been very irregular. Sometimes I arise too late to make the Sunday morning 40 Meter WAG net. At other times I arise much too early. Last Sunday I got up at 5:00 AM and began to listen to 40 Meter SSB after shaving and eating breakfast. I knew that the WAG net would not start until 7:30 but I scanned the band to see what might be on. At about 7:00 AM on 7.271 I heard a mild pile-up of stations who were in contact with JG1OUT of Tokyo, Japan. JG1OUT said that his handle was Mac. I worked him after my first call and we exchanged signal reports; both being 5 by 7. This was my first contact with Japan on 40 SSB! I didn't believe that it could be possible. I was running about 600 watts PEP to my wire dipole. I hadn't bothered to adjust my amplifier, which was tuned up for 7.259 the WAG frequency. When I went to the WAG frequency at 7:30 AM, Karen W2ABK wasn't there. Neither was Gene W4JMX. Bill N2SFT was the only one there and he was chatting with a ham who was running a net that was close in frequency. Bill and I decided to go to 7.2595 MHz. That was enough to get perfect copy without QRM. We had a nice chat. Bill said that he would like to see me at Field Day 2014. He expects to be there. I hope that I can make it too. No fooling with phonetics when calling DX ---ICAO: 73, Whiskey two India Lima Papa.

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**2014 Dues – See page 2.**

**THE JUNCTION DIODE By Bob Wexelbaum. W2ILP**

Original point-contact diodes (crystal detectors) were made from galena ore and cat whiskers. The cat whisker on a crystal set could be moved to a new spot on the galena when the original spot became insensitive and thereby restore AM reception. Later, small glass enclosed 1N34 diodes were developed. However, if static electricity burned the point of contact, the diode would lose its sensitivity. The US Navy experimented with replacing galena with carborundum because of its greater tolerance to static discharges, for a more reliable although less sensitive detector.

The invention of the junction diode is very important because it was the first diode where a surface area of P material was brought in contact with a surface of N material, forming a PN junction. Germanium or Silicon materials could be doped with chemical elements to become either P or N. The junction diode was not a good detector of RF because its forward voltage drop was 0.35 volts for Germanium or 0.7 Volts for Silicon, although it proved to be a reliable digital logic switching device. Most importantly, the junction diode concept led to the development of the first PNP and NPN transistors.

John Bardeen and Walter Brattain are credited with inventing the point contact transistor in 1947. The point contact transistor is virtually useless because it cannot dissipate energy in the way that junction transistors do. Transistors must work as current amplifiers to be biased stably and this makes point contact devices useless. William B. Shockley invented the first junction transistor which was put into limited production by Arnold Beckman in the USA. Then the Philco Company developed a surface barrier transistor that could amplify and oscillate at HF frequencies.

Who invented the first junction diode and started mass production of junction diodes and junction transistors in the UK and Japan? I have been trying to find out for some time but the information is not available on any website. I once read information that claimed that it was done in India by a physicist who was originally seeking better RF detectors, although I can't remember his name; only that it was a long Indian name. Americans want to say that everything was invented in the USA but that is not always the case. If anyone knows who and where the first JUNCTION DIODE was invented, I would sure like to hear about it. –w2ilp-