

CQ de WA2LQO

Seventy Three Years: 1944 -2017

The official independent voice of the Grumman Amateur Radio Club.

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How Ham Radio prepared me to be an Engineer

by Bob Wexelbaum, W2ILP

(Continued from January 2017)

On the second day of the 18 day ship journey to Korea there was a drill to prepare us to efficiently abandon the ship if it was sinking. We were told how to find yellow life jackets and report to specifically assigned life boats in the event of a disaster at sea. On the 14th night of our journey I, and several troops that bunked near me, were awakened by the cry of a soldier who yelled "Abandon Ship! We are sinking!" I hastily put on my fatigues and rushed up on deck. The guy who had alerted us was already at work unfastening a life boat, but there were no other men on deck besides for those who bunked near to us. We soon realized that this was a false alarm. The GI who made it later stated that he had dreamed that the ship was sinking and remembered what he had been taught during the preparation drill. False alarms are serious enough for the perpetrators to be medically evaluated and/or punished. The alarmist was escorted to the ship's brig where he joined several other troopers who had developed mental disorders or failed to follow orders. Most of us laughed at the situation while returning to our bunks. Is all reality only a bad dream? Is there nothing to fear but dreams themselves?

I was worried about carrying my duffle bag off the ship when we would get to Incheon. I almost fell when trying to bring it up on board so I asked Sgt. Le Duc how we would be disembarking at Incheon. He had some very bad news to tell me about landing conditions. The port of Incheon was not, at that time, deep enough to allow large ships to come close to the docks, even at high tide. Thus we would have to get off our anchored ship using rope ladders that would get us down into landing crafts. We would have to carry our duffle bags while descending the ladders. "Why can't they drop the duffle bags onto the landing crafts and let us descend without carrying them like albatrosses on our necks?" Le Duc explained that before the cease-fire, when Incheon was invaded by Marines and Army forces, the men carried rifles and other weapons as well as field equipment strapped to their backs as they went down rope ladders. The Koreans saw that they were tough enough to do so. The appearance of being physically tough was important (and it still is important) for all Koreans to believe that Americans are braver, stronger, bigger, better fed and more obedient to authorities than they are. It always was (and is) important to show Koreans (both of the North and South) that we were (and are) prepared and ready for battle. This was the last time that I would see Sgt. Le Duc.

In the dark of night there was finally a cry of "Land Ho!" I hoped it wasn't another false alarm but it was true that we were arriving at Sasebo, Japan. I scanned the horizon but initially saw nothing and then suddenly I sighted flickering lights in the fog high above us. There were Japanese people living high on the cliffs. As daylight broke we actually sighted the port. The ship tied up into port and was quickly invaded by Japanese stevedores, who climbed up and down on ropes, unloading and loading stuff. They were as impressive as circus acrobats and I especially remembered the sneaker-like shoes that they wore. The rubber shoes were like mittens for feet because they separated the big toe from the remaining toes with slots that enabled rope climbing better than regular sneakers could. This required wearing socks that separated the big toe from the others and enabled both men and women to wear leather sandals or wooden shoes that depended on the same sort of toe separation. This observation was just the beginning of my introduction to Asian clothing and tools, which were often remarkably different from the ones that were familiar to Americans.

The time came to climb down into the landing barges. They were not allowed to touch the ship because bumping into the ship could cause damage. Thus there was a gap between them and the ship that I feared that I would fall into if I couldn't hang on to the rope ladder. My heavy duffle bag hung precariously from my shoulder because I feared that if I couldn't carry it into the landing craft I would have to jettison it into the sea

rather than drop overboard myself. I got to a point on the ladder where my hands couldn't let go because of my fear of falling. The rope ladder was a giant network in which four soldiers could go down in parallel. I was about to free one of my hands from the ladder in order to let go of my duffle bag when a strong soldier next to me grabbed my bag from me and carried it down in addition to his own bag. I was then able to get down to the barge myself. I thanked the big guy for saving my life. I never knew his name. Finally the landing craft reached the shore and we were able to walk on land. I was dragging my duffle bag because I was still unable to lift it. We all entered a military base where we had to be processed. We had to unlock our bags and prepare them to have their contents inspected. We had to have our hair crew cut by Korean barbers and to put all of our clothes into our bags. Then we had to enter a large shower area where we were physically inspected to see that we were not bringing anything into Korea that was not in our bags along with our travel orders. We exited the shower and were lent towels to dry ourselves with. Then while standing nude we witnessed the processing of our own duffle bags. Our sets of Class A dress uniforms and shoes were removed and tossed on a pile with those of all the other troopers. All our fatigues and clothing were also removed. We were only allowed to keep our underwear, socks, combat boots and toilet items, except for aspirins and shaving lotion. I was allowed to keep my books but not my technical magazines. I was allowed to keep my wallet, my slide rule and my Swiss Army knife. Our cash money was placed into transparent bags. It would then go to cashiers to be exchanged for Military Payment Certificates (MPCs). We had to have every US dollar exchanged for MPC dollars. US coins were added up. Those that totaled to dollars had to be exchanged for MPCs. We were only allowed to keep less than one dollar's worth of coins. We were not permitted to use US "green money" in Korea. We could exchange for Korean money but I was told that although we were technically only permitted to use Korean money when dealing with Korean nationals the Korean cash was almost worthless. The exchange rate was about 500 Wan to a US dollar but no Koreans wanted Wan. The MPCs had great value because we could buy lots of things in the PX with MPCs. We were then allowed to dress in our new green fatigues (shirts, pants and caps and a field jacket) that were issued to us. They had a strange smell...sort of like the cosmoline that metal tools and radio parts are coated with to prevent them from rusting. We were told that the odor was from mite-aside, which was supposed to repel mites that could cause us to get dreaded hemoragic fever. We were told to always have our fatigues laundered where they would again be impregnated with mite-aside. This meant giving them to our Korean house boys and paying MPCs for laundry service. It was ironic that my heavy duffle bag now was easy to carry! I had to schlep it from the US to Korea only to have most of its contents confiscated. It didn't make any logical sense but it was the "Army Way".

Before getting onto "deuce and a half" trucks which would bring us to our final destinations, we were allowed to visit a PX. There we could buy cans of Pepsi Cola, magazines, cigarettes, toilet items, souvenirs, and boxes of candy bars. Some of the stuff sold in the PX was the same as items that had been confiscated.

Next month I'll talk about my arrival at the 181st Signal Company in Yong Dong Po. Stay tuned.

PRESIDENT'S NOTE by ED GELLENDER, WB2EAV

A few weeks ago I attended ham Radio University 2017 at Briarcliffe College in Bethpage. As always, it was an educational and collegial way to spend a snowy winter Sunday with many good seminars and a chance to catch up with old friends. There are a couple of looming shadows though. A short term issue is that Briarcliffe College is closing their Bethpage campus later this year and a new location for HRU 2018 must be found. More troubling in the long term was the small turnout at the seminar on amateur radio youth and school programs, with only one attendee coming from that targeted population.

The other evening I went down to my basement with a balky home appliance. As I put it down on my workbench to open it up and troubleshoot it, I idly turned on the HF rig that was sitting there on the table, as I occasionally do just to see how the bands are doing. The rig turned on at 7032 kHz, presumably where I last turned it off, and heard nothing but the familiar sound of atmospheric noise you get on 40 Meters. A few seconds later, to my great surprise, a slow-speed CQ started coming in right on frequency. While I can handle CW speeds well enough to hold my own on Field Day, my favorite activity has always been a nice slow ragchew, and this was just too good an opportunity to pass up. Not wanting to take the time to recheck the transmitter and tuner settings, I gambled they were still OK and immediately called him ... and got a 599+ report from Massachusetts as well as a delightful half-hour chat. What a pleasant surprise.

GRUMMAN AMATEUR RADIO CLUB
MINUTES OF EXECUTIVE BOARD / GENERAL MEETING 1/18/2017

The meeting was called to order by Gordon at 5:30 PM.

TREASURER'S REPORT – Ed, WB2EAV

Finances are in good shape.

REPEATER REPORT – Gordon, KB2UB

Repeaters are working.

NET REPORT – Karen, W2ASK

Sunday Net at 7:30 AM on 7.289 had 0 check ins.

Thursday night net at 8:15 PM on 146.745 MHz had 1 check in but unable to hear.

Thursday night net at 8:30 PM on 145.330 MHz had 2 check ins.

VE REPORT – Ed, WB2EAV

No applicants applied. No VE session in January.

GARC NETS: Net Controller Karen W2ABK **40 Meters: 7.289 MHz at 7:30 AM EST Sundays**
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.
ARES/RACES NETS: Mondays.

NEW BUSINESS

Discussing the Hotel Island Marriot/Casino plans on removing radio antennas/repeaters.

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. The membership roster has not been updated to delete Silent Keys and to enter new e-mail addresses for remaining members and friends. Please inform Pat Masterson if you want to update or edit roster information.

PUZZLE

This month's question is:

What is an optocoupler?

- A. A resistor and a capacitor
- B. An FM helium-neon laser
- C. An AM helium-neon laser
- D. An LED and a phototransistor

Last month's question was:

What happens to photoconductive material when light shines on it?

- A. The conductivity of the material increases
- B. The conductivity of the material decreases
- C. The conductivity of the material stays the same
- D. The conductivity of the material becomes temperature dependent

Answer: The correct answer is A. In the dark a photo cell has high ohmic resistance. When you shine light on it conductivity increases and thus ohmic resistance increases.

Numbers? Constants? Atoms? Waves? Quantum?

(Continued from January 2017)

I will now continue the chronology of significant physics discoveries and begin by calling attention to the significance of Louis de Broglie's duality principal of 1923.

In 1923 Physicists were still struggling to understand the significance of Maxwell's equations, which linked electrostatic waves with electromagnetic waves. Leon de Broglie's hypothesis of another type of duality: the duality of waves with particles was considered so highly exotic at the time that it was not easy for de Broglie to get papers published in any reputable journal at first. This was true because de Broglie was not yet a member of a reputable Physics Society. De Broglie had to pay a small physics magazine to publish three papers that detailed the lab experimentation and the theoretical conclusions that he had hypothesized for his PhD thesis. De Broglie asked Paul Langevin to look at his conclusions. Louis de Broglie even had a formula that linked the wavelength λ of the "particle" to equal h/p where h is Planck's constant. Langevin sent a copy of de Broglie's dissertation to Einstein and Einstein said that de Broglie had "lifted a great veil." Louis de Broglie the young brother of Maurice de Broglie then became Dr. Louis de Broglie. Furthermore Dr. Louis believed that if matter has wave properties then a beam of electrons spreading out like a beam of light should be diffracted. In one of his papers Dr. Louis predicted that a group of electrons that passes through a small aperture would show diffraction effects. He tried but failed to prove this to physicists that worked in his brother's lab, so he initially did not pursue the matter. This was long before modern day spectrum analyzers could begin to show that the analog sine waves from HP audio generators and the analog sine waves from General Radio (General Radio went out of business) RF signal generators were not perfect. It was before there were digitally clocked oscilloscopes that could sample and store single waves with nano-width transmission gate resolution. In reality there could never be a perfect sine wave because it would display no bandwidth on a perfect spectrum analyzer and thus couldn't exist. There could never be a theoretically perfect figure 8 antenna pattern from a perfect reference dipole antenna. We know that there would not be only main lobes but side lobes because it would be physically impossible to make an antenna that would resonate perfectly at only one frequency and radiate zero bandwidth. William Elsasser, a physicist at Gottingen University, proved that de Broglie was right, not by using audio or radio frequencies but by using light frequencies. He showed that a simple crystal would diffract a beam of electrons hitting it since the spacing could be small enough for a particle the size of an electron to reveal its wave character. Einstein told Elsasser, "Young man, you are sitting on a gold mine", Elsasser waited too long and Clinton Davisson of Western Electric Co. of NY (later to be Bell Labs) beat him to a Nobel Prize. Now let us go back to the chronology that I started in the previous issues of this newsletter.

1924 In an attempt to counter Einstein's light-quanta hypothesis Bohr, Hendrik Kramers, and John Slater proposed that energy is only conserved statistically in atomic processes. [This idea was experimentally disproven in 1925.] Heisenberg visits Bohr for the first time in Copenhagen, and leaves Gottingen to work with Bohr. Einstein defends de Broglie's wave-particle duality thesis.

1925 Pauli discovers the exclusion principle. Heisenberg leaves Gottingen and goes to Helgoland, an island in the North Sea to recover from hay fever. While there he uses matrix mechanics in order to configure quantum in a way that AxB does not equal BxA , when solving a sought after theory to fit sub atomic mechanics. Heisenberg's first ground-breaking paper on matrix mechanics, "On a Quantum Theoretical Reinterpretation of Kinematics and Mechanical Relations" is published. Samuel Goudsmit and George Uhlenbeck propose the concept of quantum spins eliminating the need to have more than three dimensional sub atomic configuration. Pauli applies matrix mechanics to the hydrogen atom and publishes conclusions. Schrodinger constructs what will become his celebrated wave equation while in the Alpine ski resort of Arosa.

1926 Back in Zurich, Schrodinger applies his wave equation to the hydrogen atom and finds that it reproduces the series of energy levels of the Bohr-Sommerfeld hydrogen atom. A three man paper by Heisenberg, Born and Pascual Jordan offering a detailed account of the mathematical structure of matrix mechanics is published after being submitted to the *Zeitschrift fur Physik*. Schrodinger's first wave mechanics paper is published in the *Annalen der Physik*. Another five papers by Schrodinger and others prove that wave mechanics and matrix mechanics are equivalent and they are two forms of the same theory of quantum mechanics.

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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 at Bethpage Community Park. Ham Exams are – Technician: Element 2, General: Element 3, and Amateur Extra Class: Element 4. The fee is \$14. All applicants must pre-register with Ed Gellender wb2eav@yahoo.com; Sessions are cancelled if there are no applicants. All new applicants should be aware that unless they have a FRN number they must write their Social Security number on the application form. All applicants must bring a photo ID (driver's license) and if upgrading, a copy of the present license that we can keep. Study material may be obtained from ARRL-VEC at <http://www.arrl.org>, W5YI-VEC at <http://www.W5YI.org> or other VECs. All VECs use and update the same Q&A pools.

Editorial

PSEG is in the process of installing new poles for electrical energy distribution in my back yard and the yards of my neighbors. So far they have not disturbed my 40 Meter dipole antenna that is attached to a tree that is near to one of the new poles. The new poles will be about eight feet taller than the old ones were. The work began about two weeks ago but it is going slow because of several restarts due to unexpected rain or snow conditions. An Altec machine folds up well enough to pass through my back yard gate. Then the machine opens up and digs a hole for a pole. Mats are laid down to protect my grass and weeds as the machine moves to the spot where the hole is dug and the machine drops the pole into the hole. So far there is only one wire connected to a high voltage insulator at the top of the pole and it goes to and from my two nearest neighbor's pole tops. I assume that there will be a cross piece of wood with two more insulators, so that there will be a total of three high voltage wires connecting to two more insulators. I read in Newsday that a family in Commack is suing PSEG because they claim that a power surge had occurred after new poles were installed and electricity was switched on to them and it had destroyed their computer. PSEG has refused to pay them anything because they claim that unless they are proven negligent they are not responsible to pay for any loss of frozen food or electronic equipment or electrical appliances due to power surges or power outages. I must keep watching the work on the new poles and disconnect my computer and TV from the power lines as soon as I see that they will be switching power. When alerted, instead of using the computer or TV I can watch the new power poles and transformers get connected. I hope my line voltage will then stay solidly higher than 110 Volts RMS because now it dips below that voltage when it gets loaded by motorized appliances. Watching news on the TV or the Internet brings to mind politics that doesn't belong here..so I'll continue to update you on watching my own electrical pole distribution grow. It's as innocent as talking about the weather..I think...What else can an old man watch without controversially commenting about conservatives or communists these days?

73, Bob w2ilp (Intermittently Loaded Poles?) Don't demand a recount.

FIRST CLASS MAIL
Do Not Delay

Numbers?, Constants?, Atoms?, Waves?, Quantum?
(Continued from Page 4)

1926 (continued) Heisenberg delivers a two hour lecture on matrix mechanics attended by Einstein and Planck. Afterwards Einstein invites Heisenberg to his apartment to discuss the physiological background of his work. Heisenberg is appointed Bohr's assistant and lecturer at Copenhagen University and begins using wave mechanics to account for the spectral lines of helium. Dirac receives a PhD from Cambridge for his thesis entitled "Quantum Mechanics". Born proposes a probability interpretation of the wave function. Schrodinger lectures in Munich and during a question-answer session, Heisenberg complains about shortcomings of wave mechanics. Dirac goes to Copenhagen and develops a transformation theory, which shows that Schrodinger's wave mechanics and Heisenberg's matrix mechanics are special cases of a general formulation of quantum mechanics. Schrodinger goes to Copenhagen, where he, Bohr and Heisenberg fail to agree about the physical interpretation of either matrix or wave mechanics.

1927 Clinton Davisson and Lester Germer obtain conclusive evidence that de Broglie was right about wave-particle duality as it applies to matter when they succeed in diffracting electrons. Bohr remains angry and disagrees with Heisenberg's physical interpretation of quantum mechanics. Bohr leaves to go skiing in Norway and Heisenberg discovers and publishes the uncertainty principle alone. At The Volta conference at Lake Como, Italy, Bohr presents a principle of complementarity and the central elements that later becomes known as the Copenhagen interpretation of quantum mechanics. Bohr, Heisenberg and Pauli are present. Schrodinger and Einstein are absent. At the 5th Solvay conference in Brussels Einstein debates with Bohr over the foundation of quantum mechanics that conflicts with the nature of reality. Schrodinger succeeds Planck as professor of theoretical physics at Berlin University. Compton gets the Nobel Prize for the 'Compton effect'. Heisenberg, at age 25, becomes a professor at Leipzig University. George Thomson, son of J.J. Thomson, the discoverer of the electron, reports the successful diffraction of electrons employing a different technique than Davisson and Germer.

1928 Pauli is appointed professor of theoretical physics in Zurich. Heisenberg lectures about theoretical physics at Leipzig University.

1929 De Broglie receives the Nobel Prize for his discovery of the wave nature of the electron.

This chronology will be continued next month. It will then start at 1930.