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Who Invented Radio? (Continued from the August CQ de WA2LQO)

By Bob Wexelbaum, W2ILP

Marconi did not invent any part of the equipment that he used. He simply assembled devices to make his crude communication system. His transmitter used a Hertzian spark oscillator invented by Righi. His receiver used an iron filing coherer that was invented by a Welchman named David Edward Hughes (1831-1900), and simultaneously developed by Popov, who Russians credit with its invention. The coherer was greatly improved later by Edouard Branly, a Frenchman who tried many other metal granules in search of ones which would change electrical resistance in proportion to small RF signals. Marconi's antennas were modified versions of Loomis' aeriels. His RF transformers were invented by Sir Oliver Lodge who had also devised anti-coherer mechanical methods to break up clumping of metal filings between the dots and dashes of Morse code.

The term "solid state" became popular only after the invention of transistorized radios. But after the coherer and liquid detectors were found lacking in sensitivity, the most inexpensive and popular detectors were solid mineral diodes. These solid state detectors utilized carborundum, silicon, galena and other minerals. The liquid detectors (also known as barrettas) had depended on the electrolysis of water or any other liquid electrolyte which is an electro-chemical way to make a device which can rectify an RF signal.

When Thomas Edison was working to improve the life of early incandescent light bulbs, technicians in his lab noticed that a mysterious electrical current would flow from the lamp filament to a plate within the light bulb. This became what is called "The Edison effect", but Edison had little understanding of what this device might be used for. A better understanding of the vacuum tube diode was proposed by John Fleming, an Englishman who did much of his work in the U.S. Fleming had worked with Marconi in England before inventing the vacuum tube diode. Fleming called his device a "valve", and unlike Edison, connected the plate to a positive DC voltage source or to AC which it could rectify by allowing current to flow only when the plate was positively charged. The Fleming valve was thus a power rectifier as well as a radio detector. The theory that made the Fleming valve possible was the hypothesis that electrons flowed from the hot glowing filament to the positively charged plate. This idea upset the basic electrical theory that had been standardized by Benjamin Franklin, who had named the electrical polarities. Franklin believed that lightning traveled from the rain clouds, which were usually positively charged (we now know that clouds may also, on rare occasions, be negatively charged) with respect to the Earth ground. He reasoned that the Earth was negative with respect to the clouds. Colleges are slow to change their text books. They continued to teach that electricity flowed from positive to negative. New vocational schools arose, where a new subject called "Electronics" was being taught, based on the discoveries of the Fleming valve and other vacuum tubes which we will talk about later. If the PNP transistor had been invented before the Fleming valve, then "Electronics" would be called "Protonics", and Franklin's concept would not have survived. This is because although analogies are made to water flow, electricity does not "flow" the way that water does and so the direction that it flows in is only a moot theoretical analogy.

(Continued)

Speaking of terminology; the term “radio” was officially designated as a term for wireless systems and devices by an International convention which occurred in Berlin, Germany in 1906, and was attended by representatives of 27 nations. This was a formal way of defining what had been proposed in Berlin in 1903 by 10 nations who worked out a common protocol for shipboard and associated coastal stations. There are certain words that are recognized in every language of the world. “Radio” is one of them. “Taxi” is another. The British were resistant to calling “wireless” “radio”. This is probably because when Marconi worked in Britain they called it “wireless”. They were also resistant to calling Fleming’s diode a “vacuum tube”, but continued to call all vacuum tubes “valves”. Terminology may be recognized as an attempt to emphasize who invented something first, by refusing to call it by the same name that is used by later inventors.

Much of the above may be a repetition of previous articles, but now we come to a significant turning point in the development of radio technology. That is because up to this point all of the inventors considered themselves radio experimenters. Although Marconi was the most interested in commercial profitable applications of radio, he referred to himself as an amateur experimenter. Long before there was any licensing requirement for amateur radio transmitters, those who tinkered and experimented with them were the first hams!

Enter Dr. Lee deForest, who was the first inventor to begin as a formally educated radio engineer. I’ll explain why and tell of his invention of the triode vacuum tube, which made high power radio transmitters possible, and eventually made AM radio receivers common household entertainment centers...next month...

(To be continued next month)

<p style="text-align: center;">PRESIDENT’S NOTE by ED GELLENDER, WB2EAV September 2009</p>
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Our annual picnic worked out very well. We did not have quite as large a turnout as we did last year, but everyone said that they had a really good time. The food, as always, was excellent and everybody commented on how much they enjoyed it.

This time we had the picnic in Syosset-Woodbury Park, which worked out nicely. It is really convenient to highways and the directions to get there were simple to follow. It really helped that no one had trouble navigating to the picnic. The picnic grove is pleasant and isolated from the rest of the park. The only possible problem was the lack of a gazebo or some other shelter in case of rain.

Actually, the skies were not the beautiful blue that we would like to remember. It was quite cloudy, and rain was forecast for later in the evening. Fortunately, the clouds provided shade, and we were long gone before any rain started.

Business trips kept me out of town until literally just before the picnic started, and I missed all the preparation and setup. However, things went so well without me that I am now thinking of blowing off more of my club obligations. Seriously, congratulations to everyone for a really good job.

The repeaters are doing quite well. I encourage the club members to try the Bethpage repeater. While it is simply not going to have the coverage of the Hauppauge repeater, it has better coverage than its lack of usage would imply. I try to throw out my call when I can on the Bethpage repeater and then, with no response, I often try the Hauppauge machine.

GRUMMAN AMATEUR RADIO CLUB

MINUTES OF GENERAL MEETING 7/15/09

By Karen, W2ABK, secretary.

The meeting was our annual picnic meeting. It was called to order by Ed at 5:15 PM.

TREASURERS REPORT – Ed, WB2EAV

Finances continue to be in good shape.

REPEATER REPORT - Gordon, KB2UB

Both repeaters are working fine.

VE REPORT – Bob, W2ILP

There were 7 ham applicants; three passed Technician Exams, four passed General Exams. In addition we had a commercial applicant who earned a Ship Radar Endorsement for his GROL. VEs were W2ABK, W2QUV, WB2IKT, AB2ZW and W2ILP.

NET REPORT- Zack, WB2PUE

Sunday morning net suffered poor propagation. Thursday night net had good turn out.

OLD BUSINESS

Ray is still mailing out certificates for those who worked our Apollo 11 Special Event stations.

NEW BUSINESS

We are seeking speakers for future meetings.

PROGRAM

This meeting was a picnic at the Woodbury-Syosset Park. There were plenty of hamburgers and hot dogs for everyone. Many members showed up that we hadn't seen in a while, some with their XYLs, who brought home made salads and dips. Everyone had a good time. Although rain was predicted, it did not rain during the time of the picnic.

The meeting was adjourned at 7:15 PM

GARC NETS:

40 Meters: 7.255 MHz at 7:30 AM EST Sundays. *Note: Frequency has changed.*

2 Meters (via repeaters): 146.745 MHz (-.600 kHz) at 8:15 PM EST Thursdays.

145.330 MHz (-600 kHz) at 8:30 PM EST Thursdays

[Tone for both repeaters is 136.5 Hz]

(ARES/RACES) Mondays

MEETINGS

General Meetings of the GARC are held on the third Wednesday of each month, starting at 5:30 PM. The meetings are usually held at the Ellsworth Allen Park in Farmingdale. Driving directions and maps 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 eight days before the General Meeting.

GARC WEB SITE

The web site of the GARC 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 I recommended a weather Internet site, called "Weather Watcher". This website was supposed to be unlike "Weather Bug", which I had previously recommended because it was entirely free at first but became a pay site.. Unfortunately it is now going to be replaced by another weather site that will not be free, and it will no longer exist. So Weather Watcher also won't be free. Looks like Mark Twain was wrong when he said that everyone talks about the weather but no one can do anything about it. In modern times some people can do something with the weather, but still very little to change it. They can predict weather on the Internet and use it to advertise and to make a profit. No more dedicated weather sites for me...I can get weather reports from my MSN home page. I hope that that continues to be free.

Now here is something that is now free and I hope it will remain free. Most of you remember CQ Magazine and a publication called WorldRadio (there is and was no space between the "World" and the "Radio"). I thought that these pubs were going out of business but... No... They have now been combined! We can now download entire issues of the new WorldRadio CQ Magazine in full color for free if we go to the following website and have Adobe Acrobat installed. The website of the Internet link of this Month is:-

<http://www.cq-amateur-radio.com>

Once you get the home page, you can double click on the cover to get the entire issue or double click on sections of the contents that you want to read. Back issues are also available. I learned about this free site from an advertisement in the "QCWA Journal". I'll have to look into getting our VE sessions listed in the new magazine. It is also possible to get our club meeting information advertised there. At my first impression this new magazine seems better than either of its namesakes because it has diverse contents which can cater to those of us hams who have special interests. Peruse it for yourself and let me know what you like or don't like about it...but I hope you will also continue reading "CQ de WA2LQO".

PUZZLE

Here is another Cryptogram:

AUQSOBHZ TUPHZW ZCX UXPW ASMSCB KO; MUNSHLX TUPHZW ZCX YHPP KO.

--FUJX M. YSXXSAW--

Solution to the August Cryptogram:

JUST BECAUSE YOUR VOICE REACHES HALFWAY AROUND THE WORLD DOESN'T MEAN YOU ARE WISER THAN WHEN IT REACHES ONLY TO THE END OF THE BAR.

--EDWARD R. MORROW--

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All the members of GARC (we hope!)

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ELECTRONIC SUBMISSIONS
For insertion to the WA2LQO website, information may be sent to Pat Masterson. Pat Masterson's e-mail address: Pat-Masterson@tampabay.rr.com. Ed Gellender's e-mail address: Edward.Gellender@ngc.com or wb2eav@yahoo.com

EDITORIAL

I must admit that I am not very active on the air but I am active with some ham radio related stuff. I try to keep in touch with the local Ham Radio community on Long Island.

On August 25th I attended the first preparation meeting for Ham Radio University 2010, which is scheduled to be held at Briarcliffe College on Sunday, January 10, 2010. So far a key note speaker has not been confirmed, but steps are underway to seek one.

On August 26th I attended a meeting of the Radio Central Amateur Radio Club in Centereach. I am a member of that club but I don't get to many meetings because of its distance from Commack. Anyway there was an interesting program which was a slide show about the 1980 Palmyra and Kingman Reef DX-Pedition.

The presentation was narrated by Bob Von Rekowski, W2II. Bob was a member of that expedition. It is good to hear the story of the expedition told by a man who was there. It includes a crash landing and lots of exciting adventure...but I think that we can get Bob to speak at a future GARC meeting...so I'll let him tell his story himself.

73,
Bob w2ilp (I License People)

GARC VE EXAMS

We are continuing to proctor exams for all classes of ham licenses on the second Tuesday of each month, starting at 5:00 PM.

The present exams are:-

The Element 1 CW exam is no longer required.

Element 2: Technician

Element 3: General

Element 4: Amateur Extra Class

The fee for 2009 is \$14.00 for all exams taken in one sitting. The ARRL-VEC now charges \$15 but W5YI-VEC has decided not to change the required fee.

Applicants for upgrades should bring their present license and a photocopy of it and know their FRN number.

New, first time applicants should be aware that their Social Security number will be required on their application form, unless they register with the FCC for an FRN.

All applicants should bring picture ID such as driver's licenses.

Until further notice exams will be given at:-
Briarcliffe College
1055 Stewart Avenue
Room: Long Beach #5
Bethpage, NY
Briarcliffe, Bethpage is located in a building that was formerly part of the Grumman complex.

All applicants should contact W2ILP to register, so as to confirm location. If no applicants apply, the exam session will be cancelled.

For any information e-mail w2ilp@optonline.net or phone- (631) 499-2214

Study material is available at the web sites of the ARRL
<http://www.arrl.org>
or W5YI
<http://www.w5yi.org>
All VECs use the same Q & A pools.

Since the beginning of the VE program the GARC has provided opportunities to take the ham exams monthly, during all 12 months of every year.

Bob Wexelbaum, W2ILP and the GARC VE team.

GRUMMAN AMATEUR RADIO CLUB OFFICERS FOR 2008

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GRUMMAN AMATEUR RADIO CLUB
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FIRST CLASS

DO NOT DELAY

