



**CQ**  
de WA2LQO

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## **Who Invented the Telegraph?** **By Bob Wexelbaum, W2ILP**

Although most would agree that Samuel Finley Breese Morse (1791-1872) invented the telegraph, there were others who challenged him for patent rights and others who profited more than he did when nationwide telegraph systems were put into service. Morse at first planned to send only numerals and have the numerals represent messages, but he soon realized that a code which contained letters, numerals and some punctuation would be more flexible. Morse knew nothing of the “International Morse Code” that radio operators use, because he died long before Marconi or Fessenden started to use it. It differs from the American Morse or Continental telegraph code, as it is a code that depends on recognizing the spaces between clicks. The International Radiotelegraph Code is the code that all hams had to learn in order to get licensed, before the no-code era. This is a code of dots and dashes that are received as short and long audible tones, rather than clicks. Morse did not expect operators to copy his click code at any speed, thus his first telegraph system included a recorder that had a stylus which punched the clicks of the code on paper tape. Technically the basic theory behind the telegraph comes from the Scotch physicist, Faraday, who had simply stated that an electrical current can produce a magnetic force. This concept led to the development of earphones, which could cause a metallic disk to click audibly when an electrical current was conducted through small coils of wire that were wrapped around cores of soft iron. Faraday’s equation is considered as important as Einstein’s famous  $E = MC^2$ , because it led to the development of not only earphones, but generators, motors, electrical relays, buzzers, doorbells and Morse’s click recorder, as well as all of the devices that depend on a transformation of electrical to magnetic energy or a transformation of magnetic to electrical energy. A version of Faraday’s equation is included in Maxwell’s famous set of equations, which sum up all electromagnetic relationships.

Sam F. B. Morse was originally not a scientist or an engineer. He was, at first, a fine artist, who specialized in painting oil paint portraits of famous people of his day. One of his masterpieces was a large mural which showed many of the members of the U.S. Congress and the Supreme Court, with accurate renditions of each of their faces. Although Morse was well known for his artistic talent, he was not well liked by U.S. congressmen or even by many of his fellow artists. That is because he believed that the U.S. government should support fine art in the same way that both the governments and the churches of Europe did. The U.S. Congress ruled that art should be privately supported by those who want it and not by the government. Uncle Sam would thus not become a patron of the arts. Morse found that Americans would not pay admission just to see art work in art galleries, preferring live shows. Thus, American artists could only get paid by wealthy individuals who wanted pictures of themselves or their own families. His falling out with the government led the Congress to commission another artist to paint an important mural for the Capitol that Morse believed should have been his job.

Morse went to Italy and to France to study art and to teach art among the best painters of his day. While in Europe he learned that Louis Daguerre, a Frenchman had invented the camera. On the ship returning to the U.S., Morse lamented that the camera would make portrait painting obsolete. He realized that when people wanted accurate portraits they could go to photographers rather than to artists, and so he would have to change

his occupation. The French and the Russians had proposed making communication systems that used a number of electromagnets and a multi wire cable in order to drive mechanical flags that would signal in the manner of Semaphore flags. Their complex systems were never tested over any significant distance. During his voyage on a ship returning to the U.S. Morse mused about an idea for a single circuit telegraph with another passenger. It is not known if the passenger contributed anything to his concepts, but years later Morse was challenged by the passenger in a costly patent battle. The passenger claimed that coded telegraphy was his idea, not Morse's.

Morse consulted with the best American physicists of his day and became convinced that the telegraph would work. He asked the U.S. government for money to build an experimental telegraph system from Washington, D.C. to Baltimore, MD. After much controversy, he was granted a fixed amount of money to build it. He started by burying pipes, which would contain the telegraph wires underground, but this project was much more expensive than he had estimated. Water had leaked into the pipes. He thus had to resort to using wooden poles (which became known as telegraph poles) that would carry the telegraph wires above ground. He had to use much of his own money to complete the project, when other investors deserted him. The telegraph was a success! Morse then asked the government to advance funds so that he could begin to wire up the whole nation. Congress ruled that the telegraph was a luxury that should not be subsidized in any way by the government. The majority of congressmen believed that unlike postal mail, which had been government run since the days when Benjamin Franklin was the Postmaster General, the telegraph was not a necessity. Perhaps they did not want Morse to compete with postal mail. In most other nations, there was never any question about both postal mail and the telegraph being government responsibilities, but unlike in most other nations, the U.S. government refused to sponsor the telegraph. Morse had no money to invest in telegraph system expansion and others eventually installed telegraph wires, mostly in parallel with railroad tracks, across the U.S. The original telegraph systems became parts of Western Union, which was a private enterprise. Eventually, land-line Morse telegraphy was replaced by teletype (TTY), which used its own five bit code. Western Union ceased operating TTY systems sometime in the 1960s. They were replaced by FAX, which now runs on telephone lines.

**PRESIDENT'S NOTE by ED GELLENDER, WB2EAV**  
**January 2010**

We had a very nice holiday get-together at Bertucci's on Route 110 in Huntington Station. Everyone enjoyed themselves and a good time was had by all.

It is now the second decade of the twenty first century – Where does the time go? Seems like only yesterday that we were in the twentieth century but it has been ten years already.

Speaking of the new year, it is now time for the annual club dues. For the record, regular dues are \$20, family dues (multiple members at the same mailing address) are \$25, and retirees living out of town are \$10. Checks should be made out to Grumman ARC – P.O. Box 644 – Bethpage, NY 11714-0644.

In some unfortunate timing, the big news for January is Ham Radio University, which is already over! I would so love to play it up big in the newsletter, but it was too far ahead for the December issue, yet is over for the January one. If you missed HRU this year, let's plan ahead to do it right next year.

Everybody has always noticed that hams never seem to get around to antenna work in nice weather...too busy running around to think about antennas, When you are trapped inside, you have time to plan the next antenna, which has to go up as soon as things improve. Of course, by the time things improve a little, you can't wait anymore so you go and do stuff in weather that makes a family scratch their heads in amazement. Well, lately we have had just the kind of weather to astound and impress ourselves doing feats of derring-do in the cold and snow. So don't complain that I didn't warn you. You can't resist; can you? Then again, I'm going camping with the Boy Scouts this weekend which provides proof that I have no sense anyway.

GRUMMAN AMATEUR RADIO CLUB  
MINUTES OF GENERAL MEETING 12/16/09  
[Holiday Party]

By Karen, W2ABK, secretary.

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

**TREASURERS REPORT – Ed, WB2EAV**

Finances continue to be in good shape.

**REPEATER REPORT - Gordon, KB2UB**

The repeaters are working.

**VE REPORT – Bob, W2ILP**

Due to a lack of applicants, there was no VE session this month.

**NET REPORT- Zack, WB2PUE**

Thursday night net had usual turn out.

**OLD BUSINESS**

There were no challengers to the incumbent officers, therefore all were reelected.

**NEW BUSINESS**

GARC dues will be the same as last year. HRU 2010 will be on January 10<sup>th</sup> at Briarcliffe College.

**PROGRAM**

Our meeting was the holiday party at Bertucci's. Thirteen members attended. The food was delicious and the service was excellent. Everyone had a good time.

Happy New Year to all!

**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

Did you ever wonder about famous people who were licensed ham radio operators? Who were they? Did you ever work them yourself? Had they talked about their hobby and helped to make it famous? There are several lists of famous hams and ex-hams on Internet websites. Here is the best one that I could find. It was compiled by N2GJ and W2SG. If you know of any famous hams that should be listed they would like to hear from you. I know some hams that should be famous but I dunno if many others would agree and it takes more than a few ham club fans to make anyone famous enough to belong on a listing like this. Anyway..Go to:-

[http://users.tellurain.com/gjurrens/famous\\_hams.html](http://users.tellurain.com/gjurrens/famous_hams.html)

Please note that there is a “\_” between “famous” and “hams” that you may not see if the URL gets underlined.

It is interesting that although Edwin Armstrong, the inventor of the superhet and of FM radio, was a ham; no one has been able to find his ham radio call sign. There is a call sign that was given to him for his first FM experimental broadcasting station. I didn't know if it could have been the same as his ham radio call, because I believed that that FCC separated experimental broadcasting from amateur radio, but the call: W2XMN seemed that it might have been a ham call in the 2 area, where Armstrong lived as well as where his FM station was located. Noticing that, I looked in my oldest Call books (the old ones that had the flying horse on the cover and now have dried up pages that are flaking apart.), and couldn't find W2XMN. In fact there were no ham calls listed that had an X after the number 2. “X” calls must have been used for experimental stations only, in the days when all ham calls began with W or K. This is no longer true, because there are now hams that do have an “X” after the numeral in their call signs. This started after the FCC ran out of call sign possibilities and had to include “X” after the numeral as a possibility starting with calls that began with “AA”.

### PUZZLE

**Here is another Cryptogram: MYFZIXT YU ICG QYUCEUC ZP YFKZXEKLHC, ZP JZXMYQ**

**JKQU; CKIGAUYEUJ ZP IGC PXCC EKQ MAZTEKI. EKQ PCFF QYUHAUUYZK EXC IGC**

**EKIYQZICU ZP MZIG. -IGZJEU DCPCXUZK--**

**Solution to the December 2009 Cryptogram: THE KIDS FROM FIFTEEN COUNTRIES TOOK MATH AND SCIENCE TESTS. THE U.S.A. CAME FOURTEENTH, BEHIND SLOVINIA, WHICH HAS ONLY BEEN A COUNTRY SINCE LAST TUESDAY. --BILL MAHER--**

CQ de WA2LQO

January 2010

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**CONTRIBUTING WRITERS**

All the members of GARC (we hope!)

CQ de WA2LQO is published monthly by the Grumman Amateur Radio Club for its members and friends. Send articles and amateur equipment advertisements to: W2ILP. Articles may be sent by e-mail or postal mail. They can be in MS Word format or simply in plain text. Articles will only be edited when permission is granted by the author.

**ELECTRONIC SUBMISSIONS**

For insertion to the WA2LQO website, information may be sent to Pat Masterson.

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Edward.Gellender@ngc.com or  
wb2eav@yahoo.com

## EDITORIAL

As I complete this newsletter, I am preparing to run a forum at HRU 2010. My subject this year will be "Communications Systems". This is the subject of a college one semester course, which requires that an EE student has completed math courses including Calculus III, Differential Equations, and Random Variables". I did well in the course because I was a ham. The other students had to learn about modes of modulation that I was familiar with. For example: It was difficult for them to apply communication theory to single sideband since they had never operated it or built a Heathkit SSB transceiver. Much of the basic communication theory can be explained to people who have passed ham tests, without going into heavy math that the college course demands and I will try to do just that. I will however try to go further than the ARRL Handbooks go, when explaining the laws and theories involved with communications modulation and how information theory applies to getting the messages into the base-band signals efficiently, which applies to digital modes that hams are now using. I dunno if I will get much of an audience at the HRU. I will be writing about this subject in future newsletters, so stay tuned.

73,  
w2ilp (Informative Little Pulses)

## 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

President	Ed Gellender	WA2EAV	X02-14	516-575-0013
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2Yr Board Member	Bob Christen	W2FPF		
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Trustee WA2LQO	Ray Schubnel	W2DKM	Retiree	

### STANDING COMMITTEE CHAIRMEN

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GRUMMAN AMATEUR RADIO CLUB  
Sixty Six Years 1944 -2010  
P.O. Box 0644  
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FIRST CLASS

DO NOT DELAY

**John Kanzius, K3TUP  
(SK)**

John Kanzius, K3TUP passed away on February 18<sup>th</sup>, 2009 at the age of 64. He had chronic hypocytic leukemia, a rare cancer, which he was trying to treat by radiating himself with RF from a transmitter that he had built himself. I had written about K3TUP in this newsletter's May 2008 issue, in an article titled "Can RF Cause Cancer or Can RF CURE Cancer?" I wrote about this after seeing a presentation about John on "Sixty Minutes," which was narrated by

Lesley Stahl. Unfortunately RF alone could not cure John's cancer, although he had hopes that it could work. His doctors agree that the radiation alone did not either hurt or help John. He had hopes that it was working when he felt better after stopping chemotherapy and played golf at his Sanibel, FL home, but his cancer remained. The doctors still believe that RF may work to burn up cancer cells in cancers where the bad cells are in defined areas and where they can be injected with carbon or gold nanoparticles which may be heated by the

RF. The sad result of John's self induced RF experiment was also broadcast on a "60 Minutes" TV program. The work of Kanzius continues. The Kanzius Foundation in Erie, PA was awarded \$700,000 by the U.S. Dept. of Health and Human Services. The University of Texas Cancer Center in Houston was awarded \$ 2.1 Million by the National Cancer Institute, specifically for following up on John's work. Yes, there is hope that some types of cancer may be cured with RF.  
--w2ilp--