

Sidebands

The Newsletter of the EAST GREENBUSH AMATEUR RADIO ASSOCIATION



www.egara.club

April 2018

President - Tom Scorsone, KC2FCP
Secretary - Steve VanSickle, WB2HPR

Vice-President - Ridge Macdonald, KB2HWL
Treasurer, Webmaster & Newsletter Editor - Bryan Jackson, W2RBJ

Sponsors Line Up for Hamfest 2018

EGARA's Hamfest 2018 is rapidly approaching, but sponsors have already begun lining up to support the May 12th event. As of the end of March, the club had received commitments from five major sponsors, with each providing ham radio items for giveaways. These sponsors include, ARRL, MFJ, Quicksilver Radio, Trojan Electronics, and KJI Electronics. Invitations have also been extended to several other Amateur Radio companies.

"Each year our Hamfest continues to grow and gain support," said EGARA President Tom Scorsone, KC2FCP. "We're grateful for the many hams who attend from all over the region, and for the great Amateur Radio companies that help to make our Hamfest a success."

In return for their sponsorship, EGARA has offered to prominently feature each company on the club's website and in its newsletter, as well as at the Hamfest itself. Members are also urged to patronize our Hamfest sponsors when they are in the market for Amateur Radios and accessories.



EGARA Elections - Call for Nominations

April brings spring showers -- and it also brings EGARA's annual election of officers. In addition, this year also brings election of board members. Member in good standing (dues paid for 2018) have the opportunity to run for any office, as well as to nominate candidates. Nominations were accepted during the March membership meeting, but will remain open until the election by secret ballot which will be held at the next club meeting on April 11th.

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Offices to be filled include:

- President
- Vice President
- Secretary
- Treasurer
- Board of Director (3 open positions)

Members in good standing who wishes to nominate themselves or another member for any of the offices may submit their nomination(s) by email to W2RBJ@Outlook.com on or before April 10th. Nominations may also be made in-person prior to voting at the regular membership meeting to be held on April 11th. The ballot will also have provisions for write-in candidates. Any member who wishes to vote or run for office but has not yet paid their dues will be able to submit payment prior to the vote and be considered a member in good standing with all privileges. All members are urged to attend and to consider running for one of the open offices.

Save the Date! Next Membership Meeting - April 11, 2018 at 7 pm

Club Presentation: Tracking Noise & a New Use for Hula Hoops

At the March 14th meeting, Steve VanSickle, WB2HPR, gave a dual presentation -- one part on how to track down noise in your shack, and a second part on his recently constructed 40 Meter magnetic loop transmitting antenna.

He began by recapping his story about the efforts made in eliminating interference on 160 and 75 meters in his shack. Most of the noise issues were traced to defective street lights in and around his neighborhood. He used the National Grid on-line resources to report the defects and they have been cleared up – at least, for now. Steve said that Mike Lucas, WB2TTV encouraged him to try out the Timewave ANC-4 to reduce noise interference. The ANC-4 was discussed in the last issue of Sidebands. This has become a very useful station accessory, especially for 160 Meters.

Steve also demonstrated the directional characteristics of two small tunable receiving loops that were fabricated from surplus materials he had on hand. By carefully turning these loops, he was able to track down the direction of noise sources, as they receive signals strongest in line with the face of the loop. A quick Google search of the Internet using terms such as “HF loop receiving antenna” will return a number of plans and schematics for building your own.

Meanwhile... Steve's success with these receiving loops served to stimulate his interest in a magnetic transmitting loop antenna.

After approximately four weeks of design, and trial and error, a workable transmitting loop was developed that allowed him to make contacts over a 600+ mile path, with the antenna positioned inside his house. He said that such a configuration would be a workable solution to allow hams located in homeowner association restricted areas (HOAs) to get on the air without an outside antenna. The antenna was constructed entirely from readily available materials from Wal-Mart, Home Depot, and Trojan Electronics – using common hand tools such as one would find in the average home type workshop. In fact, the frame for his loop was fashioned from a good old Hula Hoop he found in a Wal-Mart.



Steve demonstrating his simple receiving loop for tracking down noise in the shack

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2018 EGARA Hamfest Sponsors The East Greenbush Amateur Radio Association gratefully recognizes the following firms for their support!



FCC Asked to Expand HF Privileges for Entry-Level Hams



Expanding operating privileges for Techs would bring more young people to ham radio says ARRL

ARRL has asked the FCC to expand HF privileges for the entry-level Technician license to include limited phone privileges on 75, 40, and 15 meters, plus RTTY and digital mode privileges on 80, 40, and 15 meters, where Technicians already have CW privileges. ARRL believes the additional digital privileges will attract younger people to Amateur Radio.

The proposed additional HF phone privileges are 3.900 to 4.000 MHz, 7.225 to 7.300 MHz, and 21.350 to 21.450 MHz. Technicians already have HF privileges on parts of 10 meters.

Some in the Amateur Radio community have questioned the need for expanded Technician privileges. ARRL has responded to point out some of the key advantages of its petition, which recognizes the tremendous technological advances and changes in Amateur Radio.

Some key points:

A thorough review of operating privileges available to the entry-level license has not taken place since the late 1970s, when the Novice-class license -- the entry-level license at that time, and no longer issued -- was modified to allow Novices access to a limited portion of 10 meters. This included the first HF phone privileges for Novices.

The two-year process that led to the development of ARRL's petition includes significant input from the Amateur Radio community. The two surveys that the ARRL board's Entry-Level License (ELL) Committee conducted on this issue drew more than 8,000 responses from ARRL members.

The 378,000 Technician licensees comprise more than half of the US Amateur Radio population, yet the Technician-class license no longer serves its original purpose from 18 years ago. Many Technicians do not participate actively, pursue on-air and public service opportunities, renew their licenses, or upgrade. An uncomfortably large attrition rate exists among Technician licensees. Technician licenses are not upgrading, because they don't find their operating privileges interesting enough to keep them in the hobby.

The proposed addition of 275 kilohertz of HF phone privileges, spread across 80, 40, and 15 meters, would allow Technicians the opportunity to develop and expand their understanding of HF propagation. In addition, this proposed change would allow Technician licensees to participate in public service-oriented, emergency, and Section traffic nets on 75 meters, from 3900 to 4000 kHz, where primary state/Section-wide public service activities often take place.

Additional operating privileges for Technicians will not limit their incentive to upgrade. ARRL points out that Technicians now have access to 850 kilohertz of spectrum in four HF bands. ARRL proposes an additional 275 kilohertz on three of those bands, so the total under this proposal is 1,125 kilohertz on four bands -- 80, 40, 15, and 10 meters.

Compare that to current General-class HF privileges: 3150 kilohertz across nine HF bands -- 160, 80, 40, 30, 20, 17, 15, 12, and 10 meters. In addition, Generals have access to the five 60-meter channels and to the two newest bands, 2200 and 630 meters. The incentive to upgrade from Technician to General is a tripling of the available HF spectrum; upgrading to General allows access to eight additional bands, including the prime daytime bands of 20 and 17 meters.

Also, Technicians upgrading to General or higher are permitted the maximum amateur power level of 1500 W PEP.



The Cure for Cabin Fever? - A Ham Swapfest!

Photos by:

Steve VanSickle, WB2HPR
and
Bryan Jackson, W2RBJ

After two straight weeks of Nor'Easter snowstorms, many area hams were ready for almost anything that would get them out of the house for a few hours. A ready remedy was the annual Ham SwapFest sponsored by the Saratoga Amateur Radio Association on Saturday, March 10th in Ballston Spa. There were plenty of bargains and the chance to catch up with fellow hams from across the region. With May quickly approaching, can EGARA's Annual Hamfest be far behind?



Save the Date!
EGARA's Hamfest is May 12th

Thanks to These Members for Their Support!

EGARA gratefully acknowledges the following members for payment of their 2018 dues.

- Vince Gizzi - KC2USV*
- Ridge Macdonald - KB2HWL
- John Maddalla - WB2HTZ
- Joseph Squillace - KC2HLC
- Tim Antonacci - WA2WDX
- Lee Hatfield - K2HAT
- Paul Dahoda - KD2JMM
- Nick Field - KD2JCR

* Special thanks for an additional donation in support of club activities

**Paying Your Dues Has
Never Been Easier!**

Just go to:
<https://www.egara.club/pay-dues>

It's Fast, Simple & Secure!

Titanic / Marconi Events Will Operate in April from Cape Cod National Seashore

April marks two related and historic events in early radio history: The sinking of the luxury liner Titanic disaster in 1912 -- and the birth of Guglielmo Marconi in 1874, who developed the wireless gear aboard the ill-fated ship that transmitted the distress signal after the gigantic vessel struck an iceberg in the North Atlantic on its maiden voyage. Amateur Radio special events will commemorate both from "FN51" -- a rare grid square that's mostly water. Both events will be held at the Nauset Coast Guard Station in Eastham, Massachusetts.

The Titanic/Marconi Memorial Radio Association of Cape Cod operation will use W1MGY, in recognition of the Titanic's MGY call sign. Operation will begin on Saturday, April 12, at 9 AM ET and continue until April 15 at 1:27 AM ET (0527 UTC) -- the time when the Virginian heard Titanic's last radio message 106 years ago. The Titanic disaster claimed some 1,500 lives. W1MGY trustee Barry Hutchinson, KB1TLR, said plans call for coverage on all bands, mostly within the General-class subbands, on CW and SSB. Two stations are planned.

Marconi's wireless station in Wellfleet on Cape Cod -- now on the National Register of Historic Places -- played a role in the rescue of 740 survivors from the Titanic. Marconi's wireless operator aboard the rescue ship Carpathia contacted the Titanic that fateful night to inform the wireless operator that the Cape Cod station was transmitting messages to the ill-fated ship. The Titanic's Marconi wireless operator promptly replied, "Come at once. We have struck a berg," initiating the rescue of survivors.



A mock-up of the Titanic radio room was on display at the 2018 Orlando HamCation.

[Bob Inderbitzen, NQ1R, photo]

Русское Восточно-Азиатское Пароходство.					
The Russian East Asiatic S. S. Co. Radio-Telegram.					
Received from		S. S. <i>Burma</i>		Delivered to	
1 19				1 19	
By				By	
No.	Words.	Origin Station.	Time handed in	Via.	Remarks.
69.		<i>Titanic</i>	<i>11:58 April 14-15</i>		<i>Distress Call Ship Soud</i>
<i>Cgd - sos. from M.G.Y.</i> <i>We have struck iceberg sinking</i> <i>fast come to our assistance</i> <i>Position Lat 41-46 N. Lon 50 14 W</i> <i>M.G.Y.</i> <i>L. L. Barrow</i> <i>SOHed.</i>					

Titanic's plea for help as intercepted by the radio operator aboard the S.S. Burma.
Titanic sent both distress calls of the day -- "CQD" and the newly established "SOS"

The Saturday, April 21, International Marconi Day (IMD) operation by the Marconi Cape Cod Radio Club will use the call sign KM1CC, which recognizes the former WCC shore station on Cape Cod. Operation will be on CW, SSB, and digital modes.

KM1CC will be among many stations participating in IMD activities on April 21. The 24-hour event is typically held on the Saturday closest to Marconi's birth date. During IMD, Amateur Radio enthusiasts around the world will attempt to make contact with various historic Marconi sites with communication techniques similar to those that Marconi used. Registered stations must operate from a site with some connection to Marconi.

The Meaning of the Distress Call "SOS"

Ask most people what "SOS" stands for and they will likely tell you "Save Our Ship" or "Save Our Souls." In fact, SOS doesn't stand for either -- or anything else.

"SOS" was chosen for the simple fact its pattern is easy to copy and understand, even in heavy static conditions.

Dot-Dot-Dot / Dah-Dah-Dah / Dot-Dot-Dot

... --- ...

EGARA March Meeting Minutes

- The March meeting of the EGARA was called to order at 7:12 PM by President Tom Scorsone, KC2FCP. The Treasurers report was presented by Bryan Jackson, W2RBJ and approved by the membership. Dues were also accepted by the Treasurer.
- The Race for Literacy will be held on May 6th at the Schodack Island State Park and the club has agreed to provide radio communications again this year. A sign-up sheet was circulated. An update was also provided on the annual Hamfest, with planning is well under way. Several key sponsors have agreed to support the event.
- ARRL band plans were available. They will be included in the new welcome package to be distributed to new club members and successful candidates at future VE sessions.
- A weekly VHF ragchew/club roundup will be held at 7 PM on Monday evenings. The club repeater 147.270 (+) / 94.8 will be used.
- Elections for EGARA officers and board members will be held next month and nominations are being sought. Ridge Macdonald KB2HWL has announced he will not be running for re-election as Vice President. Nominations should be emailed to W2RBJ@outlook.com for inclusion on the ballots.
- Lee Hatfield K2HAT announced two Hamfests: Southington, CT, and Rippers.
- Next month, we will be inaugurating the club's new griddle. Hamburgers will be served instead of pizza.
- A presentation was given by Steve VanSickle WB2HPR on the use of magnetic loops used to track down QRN. Also, he demonstrated an indoor transmitting loop for 40 meters for use in HOA restricted environments. The transmitting loop was constructed using commonly available materials. Results have been encouraging, with contacts made over 600 mile paths while the loop was located indoors.
- A raffle was held and a number of prizes were awarded.
- Refreshments were on hand for all in attendance. The meeting was adjourned at 9:00 PM.

--de Steve VanSickle WB2HPR / Secretary

It's New... So Join The Chew

If you're looking to stay in contact with other club members -- and keep up with what's going on in local ham radio -- join the EGARA ragchew on VHF each Monday nights at 7 pm. The "chew" will use the club's repeater on 147.270 (+) / PL Tone 94.8.

RagChew

Members are invited to join in on the conversation and share whatever topic comes up. It will not only provide a chance to catch up on club news, but it will also provide a chance to ask the club's Elmers questions you may have about operating or technical issues. There will be no formal "net" protocol, so members can jump in any time there's a break to make a comment or ask a question.

Holding the weekly ragchew on the 147.270 repeater also makes participation available to all license classes -- from Tech to Extra.

**EGARA Elections are Set for April 11th
Please Plan to Attend and Cast Your Vote!**

On the Beam

News & Notes

Nor'easters Keep Regional Amateurs Busy

Amateur Radio volunteers with WX1BOX at the National Weather Service in Taunton, Massachusetts, and various ARES groups had their hands full during March, as Mother Nature's hat trick of nor'easters brought severe weather conditions and a lot of snow to the northeastern US.

The storms caused the Cape Cod ARES team to extend activations for SKYWARN, WX1BOX, and regional shelter operations. "This has been a very active period of significant severe weather for the region after a relatively quiet stretch from late January through the end of February," observed Rob Macedo, KD1CY, the Eastern Massachusetts Assistant Section Emergency Coordinator for SKYWARN. The first in the trio of nor'easters — on March 2 and 3 — brought mostly heavy rain and wet snow to parts of Massachusetts, Connecticut, eastern New York, and northern New England. Strong to damaging winds swept central and southern New England, with hurricane-force gusts across southeastern New England and Cape Cod and the Islands. The storm caused severe coastal flooding across multiple high-tide cycles.



From the "What Goes Up... Must Come Down" file...

Ham Rescued from Top of Mast

The Martha's Vineyard Times reports an 80-year-old radio amateur had to be rescued from his backyard antenna by the Edgartown Fire Department. William Welch, K1IOC, an electrician and avid amateur radio operator, got his sneaker caught atop a 20-foot-tall backyard antenna after he scaled the structure to secure it ahead of the impending nor'easter, his wife Betty told The Times. Firefighters were dispatched for a report of a man trapped on a tower.

Among the first of his department on scene, Fire Chief Alex Schaeffer climbed the tower — an antenna — to assist Welch, who held on just below the apex. Edgartown's ladder truck arrived shortly after Schaeffer and the ladder was telescoped parallel to Welch and Chief Schaeffer.

Firefighters moved back and forth over the ladder and put a helmet on Welch and fitted him with a harness. After being positioned adjacent to Welch, he and Chief Schaeffer lowered safely to the ground. Welch was taken into an Oak Bluffs ambulance for observation and released. His wife said his pride is a little bruised, but nothing else.

Chinese Radar Reported Interfering on 7 mhz Band

The International Amateur Radio Union Region 1 (IARU-R1) Monitoring System (IARUMS) reports that one of China's over-the-horizon radar (OTHR) installations has been causing interference in the Amateur Radio 7 MHz band. IARUMS reports on that intruder and others.

Other top intruders include a "single-letter beacon" transmitting either the letter "K" or the letter "T" on 7039.3 kHz. The source is believed to be the Russian Pacific in Petropavlovsk-Kamchatsky. A Russian F1B teleprinter signal (RDL) has appeared on 7193 kHz, with an encrypted frequency-shift-keyed (50-baud) signal, originating in Kaliningrad. Authorities in Germany and Switzerland have filed official complaints.



A Russian orthogonal frequency-division multiplex OFDM 60 signal has been showing up on 14.235 MHz, covering 2.76 kHz. It's said to be located in Moscow. Three Russian OFDM 60 signals were active at the same time on February 13. A Russian F1B signal has been observed on 14.308 MHz, 50 baud, 500 Hz shift, also reported to be in Moscow.

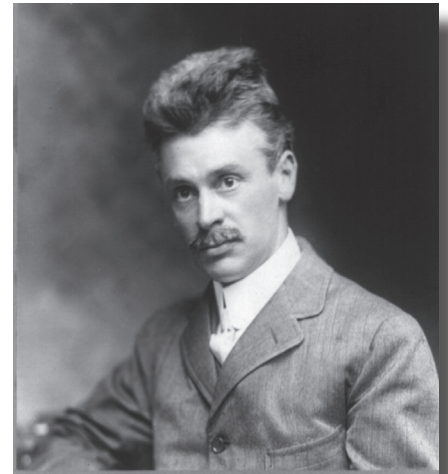
The History of Ham Radio: Getting Organized

Chris Codella, W2PA, author, John Pelham, W1JA, editor, Phil Johnson, W2SQ, editor

(Editor's note: By special arrangement with the authors, Sidebands is pleased to present this multi-part series on the history of ham radio. Subsequent chapters will be published in future monthly editions of the newsletter)

A growing number of clubs across the country, especially in and around cities, continued to spur interest in amateur radio. One of them, the Radio Club of Hartford in Connecticut, held its first meeting on 14 January 1914, and would soon play a larger role than most in amateur radio history.

Local businessman and engineer Hiram Percy Maxim was among the group in Hartford that evening. Already a prominent radio amateur, he operated a one-kilowatt station, with call sign 1WH, capable of reaching 100 miles or more under good conditions—an astounding distance for an amateur and about the best that the state of the art and legal restrictions made possible. Seeing the limitations more than the accomplishment he began to experiment with relaying messages, one station to the next, a technique used to extend range that had been practiced by ships and land-based stations alike for some time. Beyond the simple idea and its practical use, Maxim saw it as a driving principle around which to build a collaborative, national organization, something he had believed necessary ever since witnessing the machinations leading up to the 1912 radio law. On 6 April, he presented his ideas to a receptive audience at the club, which then voted to establish the American Radio Relay League, a name Maxim had thought up as he pondered the idea driving to his office one day.



Hiram Percy Maxim



Clarence D. Tuska

The club organized a committee to work on the idea. Maxim, and 18-year-old club secretary Clarence Tuska, wrote letters to all the active amateurs with capable stations known to them and the club. They enclosed a form that respondents could use to describe their stations and register for the relay league. So great was the response, surprising even Maxim and Tuska, that by summer they had already demonstrated several relay routes in the northeast. The list of registered relay stations grew to over two hundred by August, spread across the US and Canada. League membership, though free of charge, was open only to qualified stations capable of effective relay operation. In October the club published their List of Amateur Stations, and sold it for 50¢, along with message pads and maps showing station locations—the first call book. More than simply a roster, the list had a practical intent: it was the first routing table, too. Whether you originated a message or were relaying one, you would use the map to help determine which stations were located in the general direction of the message's destination, and try to send it to one of those next.

Maxim began working to establish the League's visibility with the government and helped some amateurs obtain special licenses to operate on 425 meters for message relaying—his main objective. To prevent interference to maritime communications, only those stations located away from the coast were granted special licenses. The government permitted them to operate on the longer wavelength under the condition that no interference resulted, and issued them special call signs with suffixes beginning with X or Z. Maxim's station call changed to 1ZM, and Tuska's became 1ZT.

The number of relay stations continued to grow steadily as did League participation and message volume, with many stations now handling messages as their primary or sole on-the-air activity.

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Ham Radio: The First Regulations

(continued from page 8)

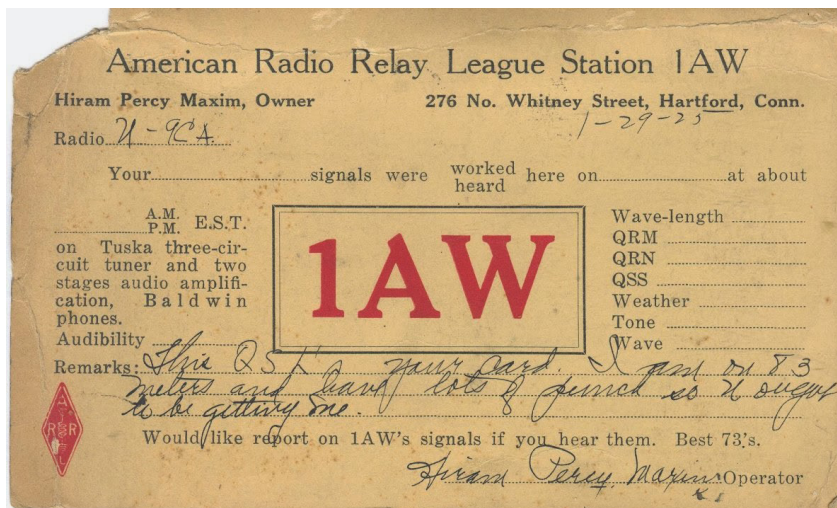
By early 1915 it was becoming clear that the League had taken on a life of its own, with a mission that extended well beyond what made sense for a local club. So in February, after discussions at club meetings, Maxim, Tuska and club President David L. Moore resigned and incorporated the American Radio Relay League as an entirely separate entity. Maxim personally repaid the Hartford club for expenditures it had made in establishing the League.

In addition to selling the list of stations package, the League began asking for a voluntary membership fee of 50¢ per year. The second edition of the List of Amateur Stations in March contained 600 entries.

By the end of the year, after steadily improving their stations in spite of the new restrictions imposed three years earlier, amateurs were once again outperforming many government and commercial stations. They had crawled back up from the slap-down of the 1912 radio law, due in part to being better organized around a shared goal. The organization was comprised of a very effective mixture of individuals—a few mature professionals, exemplified by Maxim, teamed with very many more members in their teens and twenties, like Tuska, all sharing an intense passion for the science, art, and practice of radio communication. As serious “wireless bugs,” they were equals; age was of no consequence.

They now needed a better way to keep their operation coordinated. Clearly a newsletter or magazine was the answer, but it had to be self-supporting since the League itself had no funds to speak of.

Next Month: QST at the Beginning



Handy Loop Antennas

(continued from page 3)

Steve explained: “I wanted to keep things simple – to allow others to easily duplicate the antenna if the were faced with similar restrictions. None of the parts are exotic, although they were modified to fit the project” The antenna was designed to be light weight for use inside the home. He recommended two publications for more information -- The ARRL Antenna Book- 19th Edition, and Magnetic Loop Antenna published by EDUCA TV o.p.s., although the second may be harder to find.

Steve also cautioned that great care must be used when operating with this type of antenna. Accidental contact during operation could result in fire – or worse – a painful shock, as transmitting can produce thousands of volts on portions of the antenna . Great pains were taken to assure safe operation through the use of Teflon insulation, and shielding the connections from accidental contact.

He said that future projects would address coverage of other bands, and also to make further improvements in the design and build of the present 40 Meter loop.

Members interested in knowing more are invited to speak with Steve at the next membership meeting.



Steve shows his compact 40 meter loop transmitting antenna. Using it indoors he made contacts 600+ miles away Check out the pink hula hoop frame!

April: The Month in Radio History



April 2, 1974: Intel introduces the 8080 processor

April 2, 1997: FCC auctions first S-DARS licenses to CD Radio and American Mobile Radio Corp.

April 3, 1973: Martin Cooper of Motorola makes the first public cell phone call.

April 5, 1985: Thousands of radio stations and other audio outlets simultaneously play the song "We Are the World."

April 5, 1964: First official Society of Broadcast Engineers meeting held in Chicago

April 6, 1875: Alexander Bell granted patent for multiple telegraph

April 8, 1948: Ampex delivers first audio tape recorder, the Model 200, to Bing Crosby Enterprises.

April 9, 1860: Edouard-Leon Scott de Martinville invents the phonautogram to record sound

April 10, 1989: Intel introduces the 486 processor family

April 14, 1983: Society of Broadcast Engineers holds first national frequency coordinators meeting at KLAS(TV), Las Vegas

April 16, 2005: NRSC adopts NRSC-4 (United States RBDS) and NRSC-5 (United States IBOC) standards

April 17, 1934: WLW *licensed* to operate at 500,000 Watts (actual operation would begin in May)

April 19, 1928: Harry Nyquist publishes Nyquist Sampling Theorem

April 19, 1965: Gordon Moore describes Moore's Law

April 20, 1961: FCC authorizes the standard for FM stereo

April 21, 1921: The first real radio station arrived in Toledo, when Earl Frank fired up a 10-watt transmitter in the Navarre Hotel. His station, which he called WTAL would later become 1370 WSPD.

April 22, 1993: Mosaic, the first Web browser, is released

April 25, 1874: Guglielmo Marconi born / 1791: Samuel Morse born

CALENDAR

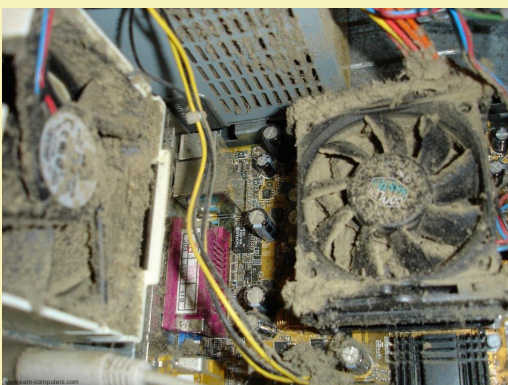
April 11, 2018 - EGARA Membership Meeting - Election of Officers - East Greenbush Masonic Temple, 7 pm

May 9, 2018 - EGARA Membership Meeting - Hamfest Preparations - East Greenbush Masonic Temple, 7 pm

May 12, 2018 - EGARA Hamfest 2018 - 8 am to 1 pm at the East Greenbush Fire Department.

June 23-24, 2018 - Field Day, Masonic Temple; Setup on Friday, June 22nd @ 6 pm

Pro Tip: Cleaning Gear



It's important to get keep electronics running clean and cool. In fact, sometimes all a device needs is a good cleaning to work again. Repairs are the perfect time to clean out your gear—especially if there's a fan.

But when you've got the case open make sure your first instinct ISN'T to flood the dust bunnies and Cheeto crumbs with Windex. Before you go rifling under the sink, read on!

Many commercial cleaners can damage electronics. Your first method of attack: compressed air. Give the gear or component a good blast of air to get rid of as much particulate matter as you can. Follow up with an ESD-safe brush or a lint free cloth. If things are still dirty, try spraying a gentle electronics cleaner, like Omnicleanz, on a clean, lint-free cloth and wipe the device again.

Never use any household cleaners, abrasives, or solvents unless you like your electronics like you like your eggs: fried!



For Sale

- **SPECO 2 channel scope.** Good for audio work. Power cord and New probe kit included. Very clean and in good working condition. \$60.00
- **Decibel Products, DB-4072, UHF Duplexer,** with mounting brackets, A really low price. \$145.00
- **Kenwood TKR-720 VHF Repeater,** 50 Watts, CTCSS, \$349.00
- **50 W dummy load** with SO-239 connection. \$7.00
- **CSI 12 frequency Selector Switch, CTCSS Generator,** BNC Connector \$25.00
- **UHF RX Preamp** 3 output 1 input for multiple receivers \$25.00
- **VIZ WV-98C Senior Voltohmyst,** Very Clean condition \$49.00

*For items above contact: John Maddalla, WB2HZT
at radiowizzzz@aol.com*

- **Eldico R-104 RECEIVER,** 80-10M Receiver \$ 300.00
- **Hammarlund HQ-170 RECEIVER,** 160 through 6 Meter receiver. Does not cover the newer WARC bands of 60, 30, 17, and 12 Meters. \$ 225.00

*For items above contact: Tom Scorsone by email at
KC2FCP@nycap.rr.com*

- **Swan 700 cx** -- Immaculate condition, collector quality. Recently overhauled. includes Shure 444 desk microphone, VX-1 VOX in factory box, very rare Model 510X external 10 pos. crystal oscillator, Model 117XC speaker/power supply and original manual. Asking \$700.
- **Swan 250-C / TV-2C** -- Complete 6 and 2 meter station in beautiful condition – Swan 250-C in factory box– recently checked for proper alignment and operation. With Model 117XC speaker/power supply in factory box, (2) Model NS-1 Noise Blankers, with Swan Model TV-2C Transverter with Shure Model 404-C microphone and Swan 210 external VFO. \$750.

*For more info contact Steve VanSickle by email at:
svansick@nycap.rr.com*

Looking to Buy, Sell or Swap?
Send your info to W2RBJ@outlook.com