



Nashoba Valley  
Amateur Radio Club

# SIGNAL

A club since 1992



Since 1993



Since 1996

de N1NC

March 2019

Volume 28 Number 3

## This Month's Meeting

Fred Hopengarten, K1VR, our newly-elected ARRL New England Division Director, will join us this month. Fred suggested discussing antenna zoning (his specialty) and current ARRL matters (his new job). He's an accomplished speaker, a contester and an alumnus-affiliate of a local college radio club, so the session just might easily meander following audience interests.



Photo via QRZ.com

As an added treat, Bruce, K1BG, will recap the club's participation in the recent science fair at the Bromfield School in Harvard MA.

And (maybe) some club discussion of the upcoming elections and our Field Day plans.

All this and coffee, too. Who could ask for more?

## Groton Road Race

### Groton Road Race Requests Amateur Radio Support

Sunday April 28 will be the 28th running of the Groton Road race. The Groton Police Department and the Race Committee are again formally requesting support from the Amateur Radio community for logistics and safety communications for this high-profile event.

The Groton Road Race has been a major event for Amateur Radio in North Central Massachusetts. NVARC has been coordinating the Ham participation since the second year of the event. Many NVARC members are 26-year (soon to be 27-year) veterans. Those of you who have joined us in past years know that the run-

ners sincerely appreciate our presence. Many say so as they run past.

This event is so large that Police Departments from several other communities come to assist the Groton PD. Part of our role is to provide the communications from the Groton Police to these out-of-town officers who come to help with the event.



Stan KD1LE and Billerica CERT operators at Net Control watch the runners pass shortly after the start of the race in 2017. KD1SM photo

Contributing to the public good is one of the reasons Amateur Radio exists. Our public service events are a key opportunity for us to show our colors, volunteer our skills and equipment, and demonstrate why it is in the public's interest to continue to allocate precious RF spectrum to our the Amateur Radio Service.

The Groton Road Race is a low-stress event and a great way to gain more experience with the public service aspect of Amateur Radio. Please consider joining us on the 28th.

If you are interested in helping at events like this but are unsure of what is expected of you or what equipment you may need, please do not hesitate to ask Ralph KD1SM, Stan KD1LE, or John KK1X. You can also find detailed information about the operations in previous years at <https://www.n1nc.org/Events/>.

de-Ralph KD1SM

## Last Month's Meeting

February's meeting was Short Subjects Night. We always go into these evenings wondering who might have some interesting tidbit to share. But members always come through (in this case, for the sixteen members and three guests in attendance), and this year's SSN was a success.



Rod, WA1TAC, explained the signal processing aspects of the FT8 digital mode.

Stan, KD1LE, had pictures of the Tyngsboro Girl Scouts' Thinking

Day On The Air. He also described some Army MARS activities.

Skip, K1NKR, gave a historical account of the Providence Police Mobile Radio Patrol, the predecessor to the



FCC's War Emergency Radio Service in World War II.

Steve, NA1T, [*nice new call, Steve. But I liked 'SMD better. Ed.]* gave an overview of



Mesh Networking, starting with readily available Part 15 wireless routers.

Sean, WA1TE, displayed his "multi-band microwave rover in a milk crate." It took the



award for most zip-ties used in any project."

And Bob, W1XP, gave another update on his 630-meter exploits.



close out the activity. As we all know, the work isn't done until the "paperwork" is finished. We have been asked to support a Boy Scout activity later this month in Ayer related to a Scout managing a Radio Merit Badge session. (The details of what he wants us to provide are not clear yet.) Last week we also participated in the Harvard high school science fair. It was interesting to attend. I haven't been to a science fair in many decades. There were many interesting projects.

There are a couple of regular activities coming up that require our support. Following the Boston Marathon on Monday April 15th, we have the Groton Road Race on Sunday April 28th and the Townsend Lions Club Canoe Race on May 4th. On the canoe race, I thought it interesting that the flyer calls it the "Squanacook River Canoe and Kayak Race with obstacles." Information and contacts are elsewhere in the Signal.

Some other important things coming up are elections in April for the Officers and a Board member. Also, we need a new Newsletter Editor after that meeting. Pushing out the calendar a little further from April it will only be two months to Field Day.

The ARRL has started a number of actions to renew the Amateur Radio Emergency Service (ARES). They invested in a system branded ARES Connect to manage and record volunteers' skills and participation in training. It will also be used to manage participant rosters for events entered into the system. They have also renewed the Introduction to Emergency Communication Course (EC-001) as an online and mentored course which is now free to members. Don't rush out to sign up; they opened the registration for the four sessions that were planned and all filled quickly. I did register for a future session, so I will report on it once I complete the course.

de Stan KD1LE

## Broomfield Science Fair

As part of my continued effort to explore how to connect youth with amateur radio, I decided to learn more about an annual activity that I know takes place in my town—The Bromfield Science Fair.

The Bromfield School is the public middle/high school in Harvard, MA. I've been aware of their science fair ever since my children attended school there. During the past year, I reached out to Deb Pierce, the teacher at Bromfield who coordinates the event, and found out how to participate.

## The President's Corner

We've had a variety of activities lately. Last week I mailed out the QSL cards for the Thinking Day event in Tyngsborough, so I hope to get response QSLs to take to the Girl Scout troops to

I had two broad goals: to introduce young people to amateur radio, and to find a champion amongst the Bromfield faculty—someone who would incorporate amateur radio into the curriculum, or sponsor an after school activity like an amateur radio club.

Four of us actively participated in judging the event on the afternoon of March 8<sup>th</sup>—me, Jim AB1WQ, Phil W1PJE, and Skip K1NKR. Community organizations like NVARC select projects that fit into their broad scopes of interest and judge those projects. Frankly, none of this year's projects were specifically amateur radio related, but a number had some connection to the broad subject of "electromagnetics".

We split into two teams of judges – Jim and I and Phil and Skip. Of the seven projects we reviewed, three jumped out at all of us: "Constructing a Polarimeter" by seniors Liam Makosky and Jacob Catalina, "Remote Sensing" by junior Lucy Bodtman, and "Harnessing Kinetic Energy from Footsteps for Electricity" by 8th grader Imogen Slavin. Awards were presented in the evening.



W1PJE photos



NVARC was also given the opportunity to have a table to display information regarding amateur radio. Stan KD1LE, Ralph KD1SM, and Phil W1PJE helped with the table and took some photographs. The science fair winners were given an introduction into amateur radio as well, and a number of teachers showed interest in what we are doing (no volunteer yet). We had two parents (of students) and two other students show great interest in our table. So the long term outcome of this effort is yet to be determined.

The best part about an activity like this is that it can be duplicated at any science fair at any high school anywhere. I live in the town of Harvard, but NVARC members live in some 20 or so communities in the area. It all takes a few hours of time one day a year, and is an amazingly rewarding activity. I'm already planning on doing it again next year. If two kids per science fair per year across the country got interested in amateur radio, the number of kids getting into the hobby would explode overnight. Please let me know if you are interested in helping out in YOUR town. You can reach me at [k1bg.bruce@gmail.com](mailto:k1bg.bruce@gmail.com) or at 508-341-5124.

de Bruce, K1BG

## Editor's Note

I've been thinking a lot recently about change.

Exiting from the editorship of the newsletter was about due. I had accomplished what I felt was needed, re-livening it up with club news, articles, and pictures, and getting away from what had become mostly filler. Three years is enough, though. You—and I—need a break from each other and someone else (with more new ideas) needs to volunteer.

The ARRL is going through some changes as well. Stan mentioned the rejuvenation of ARES in his column. The League is also recognizing the need to fundamentally reorient itself. Old hams are League members; new ones aren't. And the new ones have no Elmers. What do new hams need? What do, or can, the League offer? Stay tuned. This looks to be a momentous year.

Does this have any NVARC relevance? We don't have new hams. (So what?) And many members don't seem to want to do anything except for being entertained at monthly meetings. (So what? At least that's a way for us hams to get together.)

Our neighbor club in Nashua was just named Hamvention Club of the Year. (In some circles they're considered a sister club, in others they're called "that organization that won't be named.")

Depends on whether the circle sees them as competitors. They're not.) There was a while back when Nashua was languishing and not very active, doing OK but not doing much more than providing a way for the local hams to get together. (Sound familiar?) They changed. Probably not the way NVARC itself might prefer to change, but who they see themselves as is their business, not ours. Still, Nashua has new hams, new members, new Elmers, new activities, new connections, new liveliness.

Us, we're best described as an "all things to all members association of like-minded folks." And we've got a small cadre who's been carrying the load for years upon years at a time. Consistently. With little change.

Yes mostly, things stay the same. While taking the trash down to the curb on New Year's Day evening, I saw that Mr O'Ryan's constellation was rising in the sky just as it does at this time every year. That kind of consistency is comforting. So is warm water to a frog being boiled.

*de Skip, K1NKR*

## NEWS – About and From WW4EN

**Dennis, K1LGQ, and I had breakfast with Gene, WW4EN, on Friday the 8<sup>th</sup>. He's weathering his pancreatic cancer exceptionally well. So well, in fact, that he jumped at the idea of putting an article together for the newsletter. Ed.**

My wife, Judy, and I purchased another home recently. It is in Tuxedo Park, New York (TP). This would have otherwise been fairly uneventful until I discovered some "interesting" history about this beautiful, secluded community just 45 miles north of New York City.

Alfred Lee Loomis – the inventor of LORAN (Long Range Navigation System) and many other technologies maintained a laboratory in his sprawling mansion in TP from 1937 to 1939. This lab was world renown and had nicknames like "Tower House" and "The Palace of Science". Visitors to the TP Lab included scientists like Albert Einstein, Werner Heisenberg, Niels Bohr, James Franck, Enrico Fermi, to name just a few.

Loomis' work at the TP Lab was instrumental in the development and success of RADAR and the Atomic Bomb during World War II.

In 1939, Loomis hooked up with M.I.T. and maintained a new lab in Cambridge now known as the Rad Lab.

Here's a snippet from Wikipedia:

Taking advantage of his considerable wealth, Loomis increasingly indulged his interest in science. He established a personal laboratory near his mansion within the exclusive enclave of [Tuxedo Park, New York](#). He and his small staff conducted pioneering studies in [spectrometry](#), high-frequency sound and [capillary waves](#), [electro-encephalography](#), and the precise measurement of time, [chronometry](#).<sup>[10][11]</sup>

Eventually Loomis was elected to the [National Academy of Sciences](#) for his work in physics.

His laboratory was the best of its kind, containing equipment that few universities could afford. His reputation spread quickly, particularly in Europe, where money for science was scarce. Loomis often sent first-class tickets to famous European scientists so that they could travel to the United States to meet with their peers and collaborate on projects. They would be picked up at the airport or train station and brought to Tuxedo Park in his limousine. At first, some in the scientific community called him an "eccentric dabbler," but soon his laboratory became the meeting place for some of the most accomplished scientists of the time, such as [Albert Einstein](#), [Werner Heisenberg](#), [Niels Bohr](#), [James Franck](#), and [Enrico Fermi](#). Scientists who worked personally with him were convinced of his capability and industry. His wealth, connections, and charm all made him highly persuasive.<sup>[12]</sup>

He was awarded the [Franklin Institute's John Price Wetherill Medal](#) in 1934 along with [E. Newton Harvey](#).

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There was a documentary created by PBS in January 2018 called "American Experience: The Secret of Tuxedo Park".

If you are curious for more – just Google "Loomis Tuxedo" and loads of information will present itself.

For those of you that know me and my interest in all things technical – it's cool to know I can walk a few blocks to pass the TP Lab and imagine what brainstorming meetings took place there. Then again... I have my own Lab at the barn and so many of you as friends to collaborate with...

73, Gene WW4EN

## NEWS – This Just In

Remember NVARC's participation in the HamSCI solar eclipse study last year? Our HamSCI leader Nathaniel Frissell, W2NAF, was just

named the 2019 Hamvention Amateur of the Year.

On a related note, the Nashua Amateur Radio Society, formerly known as the Nashua Area Radio Club, was named the 2019 Hamvention Club of the Year.

Quite a sweep for people and organizations we know. We're really thrilled that Nathaniel's and NARS' efforts have been recognized in this manner.

You can find the announcement on QRZ-dot-com <http://forums.qrz.com/index.php?threads/hamvention%20AE-2019-award-winners-announced.650213/>

## CVRC Hamfest



We've exchanged talks with the Contoocook Valley Radio Club, and their Hamfest has always been popular with our members.

This year's CVRC Hamfest will be held on Sunday 17 March, from 8am for buyers (7am for sellers) to 2pm, at the Henniker Community School, Henniker NH. For talk-in call K1BKE on 146.895 (minus-600kHz, PL100Hz). Admission is \$3 for buyers, \$10 for sellers. There will be a grand prize raffle drawing at 1pm for a Yaesu FTM-3200 R/DE (and admission door prizes all day). A VE session will be held at 9:30am and special talks will be presented by Doug Houston W1DMH on Summits On The Air and by Dale Clement AF1T and Steve Jones N1JHJ on Optical Communications

This year's event is CVRC's 60<sup>th</sup> club birthday celebration and their 25<sup>th</sup> flea market.

*(via Mickie, W1MKY)*

## Strays

The term "YL" is applied to all female amateur radio operators, regardless of age or marital status, while "XYL" is only applied to the married. But have you ever wondered who first coined the term "YL"? It was invented by E.C. Adams of the ARRL in 1920, in a "Traffic Report" in response to an article for QST by Miss M. Adair Garmhausen, 3BCK. In Adams' response, he referred to her as "My Dear YL." The term has survived to the present day, but is not universally appreciated by all female operators.

An extract from "The Way We Were – The Art of the QSL (Part 8), by Fred Belghaus, W2AAB, in the Fairlawn ARC's Resonator for March 2019.

[Garmhausen's article "How to Build a Wireless Station," was on pp. 55-56 of QST for July 1920. Her article is referenced in a cartoon on p. 56 of September 1920 QST. Ed.]



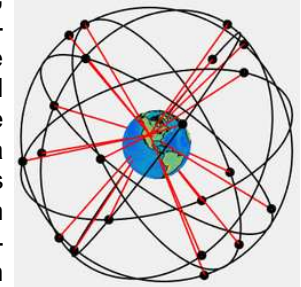
Except that your wordprocessor's autocorrect can be your worst enemy, editing a newsletter isn't all that challenging. Any takers?

## GPS "Week Number" Rollback

*From the ARRL Letter*

The GPS network will encounter a small millennium bug of its own in April when the network's "week number" rolls back to zero. **This known issue especially could affect those who use GPS to obtain accurate Coordinated**

**Universal Time (i.e., UTC).** In the GPS network, the number of the current week is encoded into the message the GPS receives using a 10-bit field. This allows for weeks ranging from zero to 1023. The current period began on August 1, 1999. On



April 6, 2019, the week number rolls over to zero and starts counting back up to 1023.

This should not affect later-model GPS receivers that conform to IS-GPS-200 and provide UTC, but testing carried out by the US Department for Homeland Security (DHS) raised the possibility that some units may misinterpret the rollover, shifting the date back to January 6, 1980, or possibly to another incorrect date. An affected GPS not only may report the incorrect date, but time accuracy that is critical to precise location data could be compromised. A nano-second error in GPS time can equate to 1 foot of position (ranging) error, according to [DHS-published guidelines](#) that explains the issue and suggests how to address it.

[The potential effects of the 1999 "week 1023 rollover" (the first one to have occurred) was treated like the rest of the world treated Y2K. Based on some naïve, but not unexpected, software assumptions, nobody was sure what was going to happen with respect to individual receiver product designs. Lots of testing and warning went on. That rollover turned my old Trimble Trailblazer into a brick. Because this happened to so many receiv-

ers, the standards for receiver software design were updated. This time, the issue may not be as severe, but a lot of design experience can be “forgotten to the pages of history” in 1,023 weeks (2 decades). Ed.]

## Homework Assignment

J.P. Costas, the inventor of the “Costas loop” used in many frequency and phase determining circuits for oscillators, demodulators, *etc.*, was a ham. Go figure out what his call was—he’s SK. And while you’re at it, read Costas’ “Poisson, Shannon and the Radio Amateur” in the December 1959 issue of the Proceedings of the IRE (the Institute of Radio Engineers, the IEEE’s predecessor).

[http://www.g4jnt.com/Poisson\\_Shannon\\_Am.pdf](http://www.g4jnt.com/Poisson_Shannon_Am.pdf)

## Treasurer’s Report

Income for February was \$45 from membership renewals, \$2 from ARRL membership renewals, and \$0.18 in bank interest. We had no expenses for the month, leaving a income for the month of \$47.18.

Current balances:

General fund	\$2,771.11
Community fund	\$5,311.52

As of 7 March, we have 48 members who are current with their dues and 18 renewals outstanding. Thank you to those of you who hand in your dues before I come to you. Please check your renewal status on the roster circulated at the monthly meeting or ask me.

**As noted in the January Signal, those of you who have been receiving mailed hardcopy newsletters must inform me if you wish the Club to continue mailing the paper copy to you. If you tell me nothing then we will not be mailing the Signal to you. This change was directed by the Board in order to save the Club some postage expense.**

If you are joining ARRL or renewing your membership please consider me letting me send in the paperwork for you. The Club will buy the stamp and will get a commission from ARRL. ARRL membership checks should be made payable to NVARC. I deduct the Club commission before forwarding your paperwork to Newington. As a Special Service Club, the ARRL expects a majority of Club members to also be ARRL members.

de Ralph KD1SM

## Board Meeting Notes

Board meeting 3/7/19

Attending: Stan KD1LE, Jim N8VIM, John KK1X, Ralph KD1SM, Ed N1FYK, Jim AB1WQ, Bruce K1BG. Observing: Skip K1NKR.

- Discussion of Ralph’s five-year budget analysis.
  - GRR coming up next month; Sunday April 28.
  - Jim AB1WQ to contact Harry Chase about a talk re: radio station in Quito, Ecuador.
  - Squannacook River Race the week after GRR; Saturday May 4.
  - Boston Marathon April 15.
  - Ed says the coffee mess is all set.
  - Bromfield School presentation by Bruce - panels for Experimentation, Fun and Friends, and Public Service. Bruce has enough people to do the judging.
  - Newsletter editor resigning - we need a new one.
  - April elections - nominees?
  - Card sort delayed until November.
- Respectfully submitted,

de John KK1X

## NOTICE, NOTICE, NOTICE

**As of the February issue of *Signal*, all distribution will be electronic. If you absolutely need a printed copy, you can actively “opt in” by contacting Ralph, KD1SM. Per discussion at the January Board meeting, because of this late notice there will be no “up-charge” for newsletter mailings at least until the renewal date of your dues.**

## Club Services

**Loaner Equipment.** We’re not an “inventory” club, but there’s a rig, power supply, and antenna available for newbies or to tide you over when your equipment is on the fritz. Contact John, KK1X.

**PowerPole Discounts.** Need PowerPole connectors? Don’t want to pay full price (or higher)? They’re about a buck a set on the street; fifty cents a set (*i.e.*, one red plus one black, 30 amp) from NVARC stock. See Ralph. He mostly packages on request, preferring multiples of five, but is willing to do other quantities.

**WAMC Award.** NVARC sponsors and administers the Worked All Massachusetts Counties Award. Counties (there are fourteen of them), not cities and towns (there are 351 of them). Aren't you relieved? See <http://www.n1nc.org/WAMC/> for information.

## Calendar

### March

3 RADIO 50 Antique Radio Flea Market, Nashua NH  
17 Contookook Valley ARC Flea Market and Hamfest, Henniker NH. See <https://k1bke.wordpress.com/>

### April

13 Seacoast Amateur Radio Flea Market (Port City ARC), Portsmouth NH See [www.W1WQM.org](http://www.W1WQM.org)  
15 Boston Marathon  
28 Groton Road Race (NVARC activity)

### May

4 Squannacook River Race (NVARC activity)  
18 Antique Radio Flea Market, Brookline NH

### Upcoming Operating Activities

#### 2019

Canadian NPOTA (all year!)

### March

2-3 International DX Contest (phone)

### April

27-28 FreeDV HF Digital Voice QSO Party (<https://freedv.org/> <http://www.areg.org.au>)

### May

5 Indy Car Grand Prix. See [www.w9ims.org](http://www.w9ims.org)

Are you a "contest nut?" See <http://www.arri.org/contest-calendar> (Contest Corral) for month-by-month listings of both ARRL and non-ARRL contests.

## Advertisers

Yes, we can accommodate advertisers.

## Articles

*All this space (and more) could have been yours!*



## Nashoba Valley Amateur Radio Club

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<http://www.n1nc.org/>

**President:** Stan Pozerski, KD1LE

**Vice President:** Jim Hein, N8VIM

**Secretary:** John Griswold, KK1X

**Treasurer:** Ralph Swick, KD1SM

#### **Board Members:**

Jim Wilber, AB1WQ, 2016-2019

Ed Snapp, N1YFK, 2017-2020

Bruce Blain, K1BG, 2018-2021

Property Master: John Griswold, KK1X

Librarian: Peter Nordberg, N1ZRG

Emergency Coordinator: [open]

N1NC Trustee: Bruce Blain, K1BG

Join NVARC! Annual membership dues are \$15; \$20 for a family.

Meetings are held on the 3rd Thursday of the month at 7:30 p.m. in the Pepperell Community Center.

Contact us on the N1MNX repeater.

442.900 (+), 100Hz

147.345 (+), 100 Hz

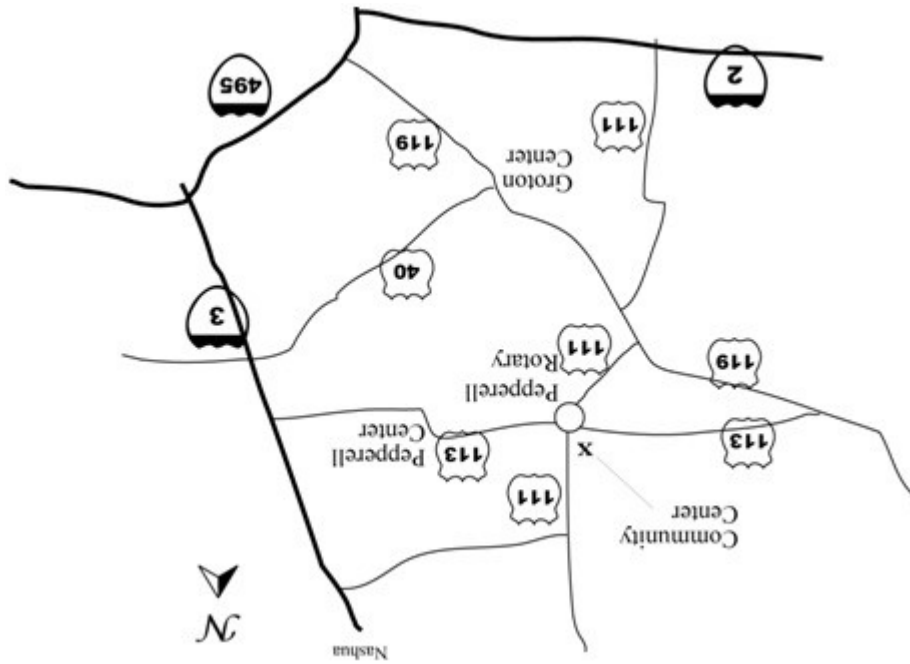
53.890 (-), 100Hz

This newsletter is published monthly. Submissions, corrections and inquiries should be directed to the newsletter editor. Articles and graphics in most PC-compatible formats are OK.

Editor: Skip Youngberg, K1NKR

*(term concludes at April meeting)*

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