



PCARA Update



Volume 20, Issue 4 Peekskill/Cortlandt Amateur Radio Association Inc. April 2019

We can fix that

We started March with our monthly **PCARA Membership Meeting** on March 3rd at NYP/HVH with an attendance of 15. Those visiting us included Joe W2BCC from the Orange County Amateur Radio Club (OCARC) and new PCARA member Matt KD2QYQ. Last month I had mentioned that Lou KD2ITZ had entered PCARA into the Icom America Club Net Contest to try and win some Icom swag and we did! PCARA was chosen as a 2019 – Segment 1 Monthly Winner. Lou provided us with an update, and there is a bunch of stuff available!



Icom swag as seen at March meeting.

What we thought we'd do was to hold a 50/50 Raffle and drawings for the items which include: Icom Ham Crew T-shirt, water bottle, hat, and backpack. Come along to the April meeting to try your

luck! Also mentioned during the meeting was that ARRL Hudson Division Director **Ria Jairam N2RJ** is scheduled to attend the November 3, 2019 PCARA Membership Meeting. Please mark this date on your calendars, and think of topics you might wish to discuss.

On March 16, 2019, PCARA performed our own form of a *trifecta* or *hat trick* – three in a row! Over the span of a few hours, we had a **PCARA Breakfast** at 9:00 a.m. at Turco's in Yorktown, a **PCARA V.E. Test Session** at 11:00 a.m. at the John C. Hart Memorial Library in Shrub Oak, and co-sponsored the first **Peekskill Repair Café** at 12:00 noon at the Peekskill Neighborhood Center. Whew! Details of these events follow.

At the breakfast we had an attendance of fifteen including three XYLs (aka the PCARA Ladies Auxiliary). Discussions included a 40 meter antenna design for use at Field Day 2019. As well as technical discussions, breakfast was enjoyed by all. If you haven't had a chance to attend one of our PCARA Breakfasts please consider doing so. I promise that you won't be disappointed!



Electrical Appliances table at the first Peekskill Repair Café.

The PCARA **V.E. Test Session** had two walk-ins from CT who both earned their Technician CSEs. Thanks to Mike W2IG for coordinating the session, and VEs Stan WA2NRV, Gary WB2HNA, Lou KD2ITZ and Verle W2VJ. We would also like to thank the John C. Hart Memorial Library for their continued support for PCARA's VE Test Sessions. Look for the next PCARA VE Test Session in mid-May 2019.

The first **Peekskill Repair Café** was quite an adventure. Members from PCARA attending included Mike, N2HTT, Malcolm NM9J, Joe WA2MCR, Lovji N2CKD, Tom WB2NHC, and myself. There were toasters, lamps galore, bicycles, jewelry, CD Players, computers, clothing, and furniture present for repair! There was a very good turnout of people looking to have items repaired rather than

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Contd. from pg 1. ⇨ tossing them into the trash. Thanks to Frank W2GIO, Peekskill Toastmasters, City of Peekskill Common Council, and the Field Library for inviting us to help make this event such a great success. Everyone had a great time, and we're eagerly looking forward to the next Peekskill Repair Café. A YouTube video of the event is available. [See report page 6 –Ed.]

Moving forward we have a fairly busy schedule as follows:

- Tuesday April 2, 2019 at 7:00 p.m. - PCARA Antenna Workshop, Town of Cortlandt CUE Room, Cortlandt Town Center, Mohegan Lake, NY. Computer modeling and construction of 40m beam for Field Day. [See page 5 –Ed.]
- Saturday April 20 at 9:00 a.m. - PCARA Breakfast at Turco's in Yorktown Heights, NY.
- Saturday April 20 at 1:00 p.m. – PCARA UHF Simplex Challenge on 446.000 MHz.
- Sunday April 28, from 8:30 a.m. – Orange County Amateur Radio Club (OCARC) Spring Hamfest in Middletown, NY. PCARA has taken a club table for members to bring along any items they wish to sell.
- Sunday May 5 – Mount Beacon Amateur Radio Club (MBARC) Spring Hamfest.
- Saturday May 11 at 3:00 p.m. – PCARA Foxhunt.
- Sunday May 25 – Bergen Amateur Radio Association (BARA) Spring Hamfest.

Our next regularly scheduled Membership Meeting is on Sunday April 7, 2019 at 3:00 p.m., at New York – Presbyterian / Hudson Valley Hospital in Cortlandt Manor, NY. I look forward to seeing each of you there.

- 73 de Greg, KB2CQE

PCARA Board

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Net night

Peekskill/Cortlandt Amateur Radio Association holds a weekly net on the 146.67 MHz W2NYW repeater on Thursdays at 8:00 p.m.

Join net control Karl, N2KZ for news and neighborly information.

Adventures in DXing

- N2KZ

Take the Challenge!

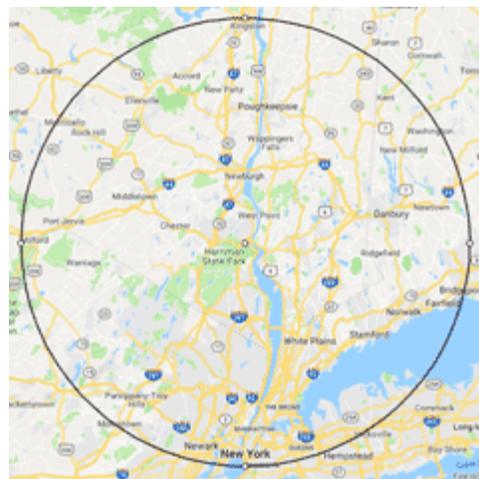
On Saturday afternoon, April 20, 2019, Malcolm NM9J and Karl N2KZ will appear high atop Bear Mountain to host our first UHF Simplex Challenge. We will be perched at the summit of Perkins Memorial Drive, 1284 feet above sea level, seeking contacts far and wide. Starting at 1:00 p.m., you will find us on the national 70 cm simplex calling frequency: 446.000 MHz.



Flashback to the VHF Simplex Challenge from Bear Mountain on May 21, 2016.

This high altitude QTH will provide us with a line-of-sight horizon radius of 44.3 miles covering four states: New York, New Jersey, Connecticut and even touching Pennsylvania. The possibilities are endless!

Our UHF Simplex Challenge is... simple! Without the use of the usual VHF/UHF repeaters we regularly enjoy, we are going to be attempting to contact one another from point to point directly using simplex. Please make sure that your radios are programmed for 446.000 MHz without any repeater offset or PL tones. Also make sure that the receive side of



Map shows horizon distance as a 44 mile radius circle, centered on Bear Mountain.

your transceiver does not have a PL squelch (or any squelch) in action.

A best-case scenario would be hearing static noise when your radio is receiving. Weak signals might not 'break' your squelch and you might miss hearing 'the good stuff!' Make sure your receiver is free and clear as you begin our challenge. Useful tip: Store an Adobe Acrobat .pdf copy of your transceiver's user's manual on your phone for easy reference. You don't want to ruin your participation because you couldn't discover the correct button or button sequence to help you out of a jam!

Hosts Malcolm, NM9J and Karl, N2KZ will be operating the base station atop the Perkins Drive summit at Bear Mountain. We will be operating at 5 or 10 watts into a single element vertical antenna at a height of roughly 1300 feet above sea level. We will also have an Icom HT connected to a Phelps-Dodge Yagi for spotting weak, difficult to hear stations that may be attempting a call from afar.

Adventure is ours!

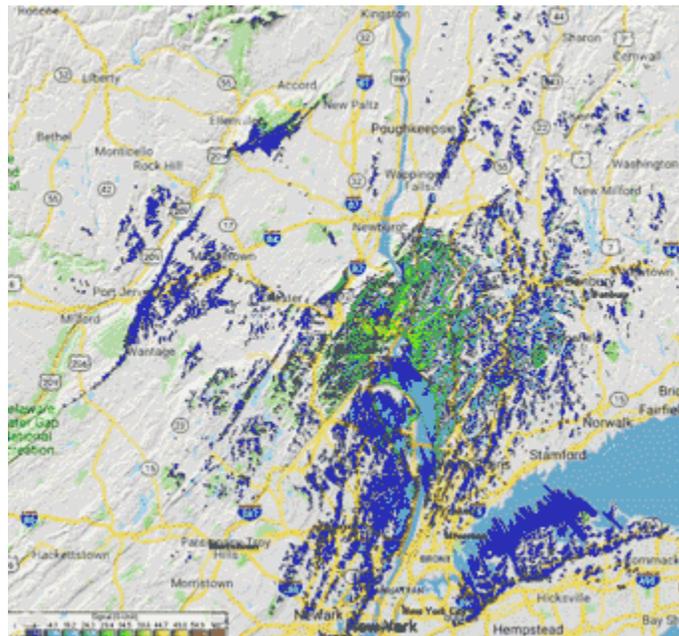
There will be many things for the Bear Mountain base station to contend with during our quest. Although our location will be high and clear, things can get in the way. Living in a region filled with leftover glacial sludge from the ice age, we are surrounded by a bumpy, hilly environment built with piles of rock and stone. UHF signals behave with great similarity to visual light where 'bounce' and reflections are common. Mountains and hills will block UHF emissions creating dead spots that are very difficult to surmount.

Many more challenges lurk: By late April, moist leaves will be filling the trees creating UHF foliage loss. Temperature changes, weather fronts and tropospheric ducting may come into play. Watch out for aircraft high in the sky that might make or break a good reflection trying to reach us! Many things will challenge all of us.

To aid your site selection, Malcolm, NM9J, created a Radio Mobile prediction map for a simplex station at the summit of Bear Mountain operating with 10 watts to a 5dB gain vertical, height 2 meters above local ground level. The colored tints show received signal strength of S9 or better. The frequency range is UHF, 440 to 450 MHz. This map makes it quite obvious that although the Bear Mountain site offers great overall height, the UHF transmit pattern is anything but round. Use this map as a source of guidance as you decide where you might want to be on April 20th.

Two Meter Simplex

Reviewing the historic audio recording of our original 2 meter simplex challenge presented on May 21, 2016, several things were brought back to mind. The one area Malcolm and I had trouble reaching was



Predicted coverage of 10W UHF transmitter on summit of Bear Mountain, using Radio Mobile software by VE2DBE.

towards Danbury, Connecticut. We could hear Jay, N1NRP but our attempts to reach him proved futile. I guess our calls to Jay were being physically blocked by the rock formation known as Anthony's Nose and surrounding high points to the northeast. David, KD2EVI, was operating from California Hill in Kent and relayed our messages to Jay making the correspondence complete. Thank you for being our human repeater!

Our first simplex adventure on two meters was encouraging. The enthusiasm of our fellow PCARans was wonderful to see and hear. Creative home-brewed antennas and antenna mounts, clever mobile power solutions and some vigorous hiking and long distance driving produced a grand spectrum of stations for our test. Thank you everyone! Great fun!

Dream Big

For our upcoming UHF challenge, I have dreams of enormous participation. Our first Facebook announcement of this event, posted on March 8th, has had (as of this writing) 2,843 views with 120 engagements — a leviathan turnout for our club's Facebook page. If we only hear from one percent of this crowd — 28 entries — we will be thrilled! Rest assured: Malcolm and I plan to bring plenty of paper for logging the event and will be making an audio recording of the session, as well.

Due to the tentative and unpredictable nature of the 70cm band, we will be starting with an optional 'early check-in' via our robust 2 meter repeater, W2NYW, at 146.67 MHz with a minus 600 kHz offset and a 156.7 PL. You should hear us no later than 12:50 p.m. — ten minutes before the beginning of the simplex event. This will allow us to know that you are

ready to participate. We want to put you on the list of stations we should look for!

The event will formally begin with a roll call similar to the start of our weekly Old Goats Net. Malcolm and I will be calling stations by groups (i.e. short-time stations, DX stations beyond New York, New Jersey and Connecticut, stations from Orange County, then Putnam County and so on. Participants should please be prepared with their specific details of their station: call sign, operator's name, type of transceiver, operating power, antenna type and mount and an estimate of your height above sea level. Also, try to keep notes of whom you can hear during the roll call and what challenging stations you would like to call to confirm contact.

We could use your help during the roll call. If you can hear someone calling us up on the mountain — and — Malcolm and I can not hear them from our perspective and location — *please let us know!* Our base station atop Perkins Drive will be primarily using an omnidirectional vertical antenna to conduct business. We will also have a second receiver using a quite directional multi-element antenna to enhance reception of very weak signals. Our promise is to try to extract every caller possible to insure the very best results for our logbook. Please take pictures and make good notes regarding reception from your location to add to our database! You may be featured in the next edition of *PCARA Update!*

After we complete the basic roster and ask for any opening questions or comments, we will continue with a round robin session. Each station will have the opportunity to try to reach other stations participating in the challenge as they like. Please experiment with levels of output power or alternate antennas. Just how far can we push the QRP envelope? All ears open! We are here to listen! These exchanges add an exciting new level to the depth of our study. The results may prove remarkable!

Bring a Little Walkie-Talkie

As we reach the end of our UHF challenge, we hope to experiment with *very* low power by testing the capability of unlicensed FRS (Family Radio Service) transceivers. These are inexpensive simple two-way radios operating in the UHF spectrum close to amateur radio's 70cm band. We will be using 462.5625 MHz (FRS channel 1) with no PL. This frequency also appears as GMRS (General Mobile Radio Service) channel 9.

Palm-sized FRS walkie-talkies operate with just 500 milliwatts (½ watt) with tiny fixed 'rubber duck' antennas. Some of these radios are marketed as being able to span 37 miles or more. Let us discover just how far they can go! I will have a GMRS (General Mobile Radio Service) walkie-talkie with me at the Bear Moun-

tain summit waiting for your call. My call sign for GMRS use is WPWK312.

One round robin call will be made on 462.5625 MHz as the last segment of the UHF Challenge.

Make sure any PL is off, and if possible, turn the

squelch off on your unit so you can hear background static and very weak signals. We will return back to the amateur radio frequency of 446.000 MHz to wrap-up our session.

See if you have (or can borrow) an FRS walkie-talkie for this last part of our test. Since FRS is an unlicensed service, you do not have to hold an amateur radio license to participate. This could be a great opportunity to allow newcomers to our hobby to enjoy operating for the first time. Give it some thought!



Family Radio Service (FRS) and General Mobile Radio Service (GMRS) walkie-talkie radios [N2KZ pic.]

FRS Chan	FRS Freq MHz	FRS Power	FRS B/W	GMRS Power	GMRS B/W	GMRS Chan
1	462.5625	2 W	12.5 kHz	5 W	25 kHz	9
2	462.5875	2 W	12.5 kHz	5 W	25 kHz	10
3	462.6125	2 W	12.5 kHz	5 W	25 kHz	11
4	462.6375	2 W	12.5 kHz	5 W	25 kHz	12
5	462.6625	2 W	12.5 kHz	5 W	25 kHz	13
6	462.6875	2 W	12.5 kHz	5 W	25 kHz	14
7	462.7125	2 W	12.5 kHz	5 W	25 kHz	15
8	467.5625	0.5 W	12.5 kHz	0.5 W	12.5 kHz	
9	467.5875	0.5 W	12.5 kHz	0.5 W	12.5 kHz	
10	467.6125	0.5 W	12.5 kHz	0.5 W	12.5 kHz	
11	467.6375	0.5 W	12.5 kHz	0.5 W	12.5 kHz	
12	467.6625	0.5 W	12.5 kHz	0.5 W	12.5 kHz	
13	467.6875	0.5 W	12.5 kHz	0.5 W	12.5 kHz	
14	467.7125	0.5 W	12.5 kHz	0.5 W	12.5 kHz	
15	462.5500	2 W	12.5 kHz	50 W	25 kHz	1
16	462.5750	2 W	12.5 kHz	50 W	25 kHz	2
17	462.6000	2 W	12.5 kHz	50 W	25 kHz	3
18	462.6250	2 W	12.5 kHz	50 W	25 kHz	4
19	462.6500	2 W	12.5 kHz	50 W	25 kHz	5
20	462.6750	2 W	12.5 kHz	50 W	25 kHz	6
21	462.7000	2 W	12.5 kHz	50 W	25 kHz	7
22	462.7250	2 W	12.5 kHz	50 W	25 kHz	8

List of common FRS and GMRS channels. All FRS channels are simplex. GMRS requires an FCC license. GMRS channels 1-8 can be used simplex or as repeater outputs with inputs +5.0 MHz.



Karl N2KZ conducts the previous Simplex Challenge from Bear Mountain in 2016.

Event Program

To summarize, here is a schedule of events for our UHF Challenge on Saturday, April 20, 2019:

12:50 p.m. PCARA 2m repeater 146.670 MHz -600 kHz offset 156.7 PL

- On-air meet and greet in preparation for the event.

1:00 p.m. 70cm Simplex on 446.000 MHz – No PL – Squelches OFF

- Roll call starting with short-time stations, DX stations, QRP stations and then general stations by locations - counties - states.
- Round robin – all stations get a chance to work selected stations
- Question and comments open to the group

Family Radio Service QRP test

FRS Channel 1 – GMRS Channel 9, 462.5625 MHz

- Roll call to all stations with FRS gear and short round robin session.

Return to 446.000 MHz for summary and final comments

Announcement on PCARA 2m repeater – 146.670 MHz – regarding location of meeting place after the event: Westchester Diner, 300 Albany Post Rd, Peekskill, NY. (914) 734-4949 (Welcher Avenue exit on Route 9).

Gather your UHF equipment and power source and try it out. Pick out a fun location to operate from. Join us for this historic event! See you on April 20th!

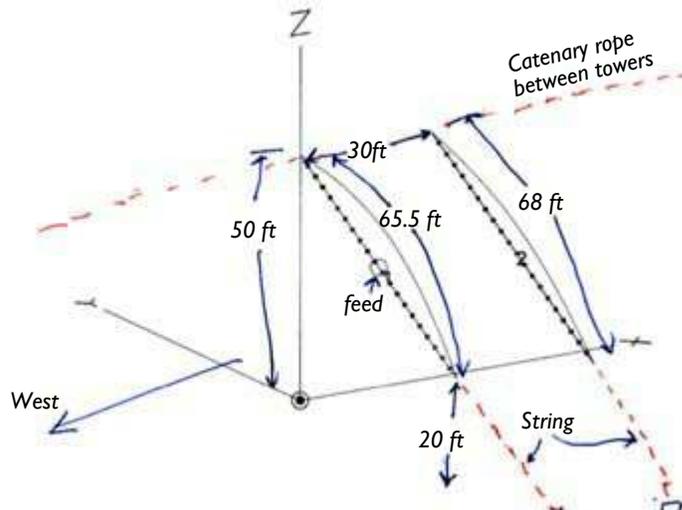
73s and dit dit de N2KZ 'The Old Goat'



Antenna Workshop

Peekskill/Cortlandt Amateur Radio Association will be holding an Antenna Workshop on Tuesday April 2, 2019. Start time is 7:00 p.m. There will be presentations on antenna modeling software and resultant antenna designs plus construction of a 2-element wire beam antenna as suggested by Jay NE2Q for use during Field Day at the Walter Panas High School site.

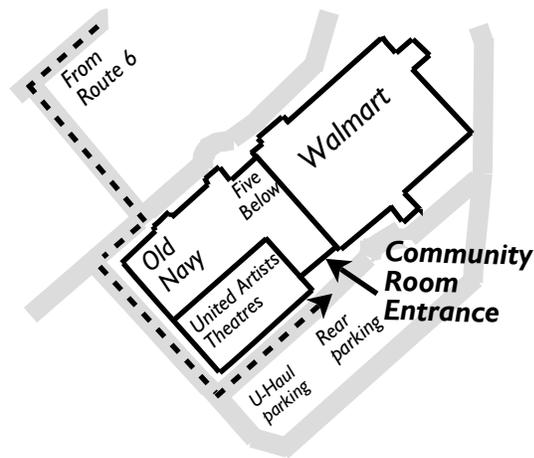
Details of this antenna were provided by Lou, KD2ITZ in a June 2018 PCARA Update article entitled "A closer look at 40 meters on Field Day."



Sketch of 2-element 40 meter sloping antenna by Jay NE2Q, first published in June 2018 newsletter.

The workshop will take place at the Town of Cortlandt Community Room, which is located off Route 6. This is the same location as used for the UHF Workshop on January 16.

The CUE / Community Room is located within the Cortlandt Town Center shopping complex, alongside the NY State Police Satellite Station at the rear entrance to United Artists' movie theatres. Take the access road alongside Old Navy, then drive past the U-Haul parking area in order to reach the cinema parking lot.



Materials for construction of the wire antenna are being provided by Joe, WA2MCR. For additional information, please send a message to: mail 'at' pcara.org.

Repair Café Peekskill

At PCARA's UHF Workshop on January 16, Frank, W2GIO gave a presentation on **Repair Café-Hudson Valley** and its plans to hold an event locally. Announcement of the date for the first **Peekskill Repair Café** as Saturday March 16 came just too late for the March 2019 *PCARA Update* but word was passed to members through Yahoo! Groups and the club web sites.

Venue was to be the Fields Library in Nelson Avenue, Peekskill, from 12 noon to 4:00 p.m. The event was sponsored by the Peekskill Conservation Advisory Council



with support from the Field Library, Peekskill Toastmasters and PCARA.

Saturday March 19 was a busy day in the PCARA calendar, starting with Breakfast at Turco's followed by the V.E. Test Session at 11:00 a.m. Fortunately several members were still available to serve as volunteer repair coaches at the Repair Café that afternoon. They included Mike N2HTT, Greg KB2CQE, Lovji N2CKD, Joe WA2MCR and Tom WB2NHC. As part of the Yorktown contingent, Tom was sharing a table with Bob N2DVQ from WECA, accompanied by Sarah N2EYX. Representing Dutchess County were Frank W2GIO (Fishkill) and Janet KC2LUR (Wappingers).

Arriving at the library shortly before noon, your editor found the event taking shape in the Community Room/Senior Nutrition Room. This large, airy room had a sign-in table so volunteers and participants were aware of their legal obligations. Circular tables were arranged around the sides, labeled for different activities including Textiles, Sewing, Jewelry, Bicycles, Furniture, Computers, Electrical items and Electronics.



Sign-in table for Peekskill's first Repair Café, located in the large, airy Nutrition Room at the Field Library.



Circular tables were arranged around the room for the different repair activities. [N2CKD pic.]

Mike N2HTT and your editor set up store next to Tom WB2NHC and Bob N2DVQ on the Electrical Appliances table. We had brought a collection of tools and test equipment

plus a small amount of PCARA publicity material for anyone who expressed an interest. We were subsequently joined by Greg and Joe.



Mike N2HTT, NM9J and Greg KB2CQE at the PCARA repair table. [N2HTT pic.]

The first item for repair was a Bluetooth stereo speaker which was failing to light up or generate any sounds. Mike checked the power cord then commenced disassembly of the unit. The speaker grille came off easily enough, but the plastic molding beneath was made of stronger stuff. After removing a dozen Phillips screws, the front panel was still resisting removal. We decided it must be held in place with glue so Mike took a knife to the seams and separated the parts.



Mike N2HTT opens up a reluctant Bluetooth loudspeaker.

With the on/off switch and transformer revealed, it was possible to troubleshoot the power supply. Using multiple hands to hold wire leads and test-meter probes in place we discovered that the transformer was receiving 120V mains input, but was not providing any AC output for the rectifier circuitry. Sadly we declared the item not repairable (today) because of the faulty transformer.

We had more success with a multi-CD player whose owner said it was not working. The unit had a ¼-inch “phones” jack on the front panel. With a pair of stereo headphones borrowed from the adjoining table, we showed the unit was successfully playing, though the level needed to be brought up from zero. The test-meter showed roughly 0.5V AC available at the stereo output jacks while the disk was spinning. The owner was advised to take the unit home and check the cable connection to his amplifier.

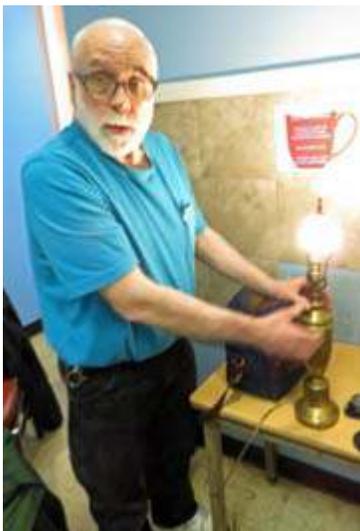
Small triumphs continued with Mike assisting one visitor with installation of a Philips voice-recognition microphone on an Apple computer while Greg and Joe



Joe WA2MCR and Greg KB2CQE work on a faulty floor lamp while (background) Mike N2HTT troubleshoots dictation software on an Apple notebook.

provided assistance with replacement of faulty lamp sockets on light fittings.

At the end of the session, Mike and your editor prepared a list of additional tools and other items that we might need at future sessions. The organizers told us they had welcomed 30 visitors with 54 items repaired. This included 19 items of clothing, eight lamps, seven clocks, five items of furniture, three appliances, three printers, three CD/DVD players, one microphone and one TV remote (diagnosed by Greg using his smartphone camera).



Greg KB2CQE has success repairing a table lamp.

PCARA members who took part said they had all enjoyed the experience and were looking forward to next time. There is a short video of the event available on YouTube at: <https://youtu.be/UPYXgd5Ny1c> .

- NM9J

Photos from the ‘50s

Bill NA2M recently sent some pictures of PCARA from the 1950’s. “How can that be?” you may ask — when Peekskill/Cortlandt Amateur Radio Association was not incorporated until the year 2000.

Bill writes: “You may be interested in the PCARA photo from 1955. It was the **Putnam County Amateur Radio Association**. There were other members not shown in the photo which was taken by Bill Nichols, K2DBE (SK).”



Bill’s caption for this PCARA 1955 photo: L to R: Visitor W2IN; Joseph Gaul, Putnam County Civil Defense Director; Ed Frost, W2JXQ; Stan Wolff, W2HIQ; Joe Tracy, W2FCA; Peter Marquardt (son of W2RGP); kneeling in front of Bill Hellman, W2PQZ (NA2M); and Gus Marquardt, W2RGP.

“Of interest is that I was the best man at the marriage of Peter Marquardt many years later. Except for me, all are deceased.”

Bill continues: “In the second photo of the PCARA 1955 you will recognize me on the left. I don’t remember the name or call sign of the man in the middle. On the right is Chris Vinson, W2GJJ (SK). He later was the Civil Defense Radio Officer of the Town of Yorktown.”



Picture of another PCARA from 1955 courtesy of Bill NA2M.

- 73, Bill NA2M.

V.E. test session

PCARA's latest Volunteer Examiner test session took place on Saturday March 16 at the John C. Hart Library in Shrub Oak. VE Team Liaison Mike W2IG was joined by VEs Gary WB2HNA, Stan WA2NRV, Lou KD2ITZ and Verle W2VJ. Two candidates who had traveled from

Wilton, Connecticut to take the Technician exam were successful. Their new licenses were granted by the FCC on March 22. Congratulations to Corey KC1LEJ and Michael KC1LEK.



Candidates (left) at the start of the March 16 V.E. Test Session in Shrub Oak.

Straight Key Night

Straight Key Night is the annual event organized by ARRL to celebrate hand-sent Morse Code. It takes place on New Year's Day (0000 UTC through 2359 UTC on January 1). Use of a straight key or bug key is preferred and conversational contacts are encouraged.

On page 93 of the April 2019 issue of *QST*, our own N2KZ is listed in the "Soapbox Comments" section of the 2019 Straight Key Night report:

- Karl Zuk, N2KZ, reminisced that the event marks a special occasion for him. "It is the anniversary of my very first QSO on January 1, 2000, and my becoming a ham — now 19 years ago... How could I not love Straight Key Night?"

Vertex virtuoso

Your editor recently received a request to republish a *PCARA Update* article on another platform. Bob WA1MIK is webmaster for the site: <http://www.repeater-builder.com/> and was asking permission to re-post an article by Warren K2WD from the February 2016 issue of *PCARA Update* entitled "Vertex VX-4000 and VX-6000 modification".

Warren's article describes the steps necessary to convert VX-4000 series mobile FM transceivers manufactured by Vertex Standard Co. Ltd. from commercial frequencies to the amateur bands. This is not as straightforward as it sounds, since the radio's settings file needs to be modified in a hexadecimal editor before re-tuning of the VCO and RF circuitry can be carried out.

Warren, K2WD said he was happy for his article on retuning the VX-4000 for 6 meter use to be re-posted. In Warren's opinion, this Vertex series is a great low-band radio that radio amateurs should be buying and re-purposing since they can be found for \$50.00 – \$90.00 on the used equipment market.



Yaesu VX-4000 commercial grade LVHF/VHF/UHF FM mobile transceiver.

Warren's article is now available on the Repeater-Builders Technical site from the following page: <http://www.repeater-builder.com/yvs/y-v-s-index.html>. Scroll down to "Modifying the VX-4000, VX-5500, and VX-6000 VCO for 6 meter operation" under the heading "Land Mobile Radio (commercial two-way) Articles and Manuals".

If you have not visited the [repeater-builder.com](http://www.repeater-builder.com) web site before, have a browse around. There is lots of good advice on FM installations, plus reference information on equipment manuals and schematics.

High-fiber diet

The cable television industry is at an inflection point as households switch from conventional cable-TV packages to streaming of video over the Internet from the likes of Netflix and Amazon. High-speed gaming over the Internet is another draw. Would you rather watch what the networks offer on their fixed schedules or pick from a proliferation of program activities when and where you decide?

In recent weeks, contractors for Cablevision/Optimum have been stringing fiber optic cable on utility poles along the highways and streets of Cortlandt Manor.

Altice USA, Cablevision's new owner since June 2016, has announced that during 2017-2022 it will deploy fiber-to-the-home over its entire



Prismian fiber optic cable was being unreeled down the length of this Cortlandt street, supported high on the utility poles.

Optimum footprint that includes areas of southwestern

Connecticut, northern New Jersey plus southern New York. Altice claims this will be the first fiber-to-the-home (FTTH) network in the USA ultimately capable of delivering broadband speeds up to 10 gigabits per second.

Verizon has been offering its own FiOS fiber-to-the-home service in our area since 2006. See “Finding FiOS” *PCARA Update* May 2006 and “Full force FiOS”, December 2013. Verizon’s available Internet speeds reached 1 gigabit per second (1 Gbps) in 2017.

Altice is moving from its existing hybrid fiber/coaxial system to “GPON” technology, meaning Gigabit-capable Passive Optical Network. A Passive Optical Network (PON) allows a single optical fiber to support multiple premises using unpowered fiber optic splitters. A splitter can feed up to 64 individual fibers, each one passing down the street to the Optical



Prysmian Figure 8 cable has an integrated steel messenger line to support the polyethylene jacketed cable — which can contain up to 216 fiber strands in 5-18 buffer tubes.

Network Terminal (ONT) installed at the residence.

Downstream signals are broadcast to all ONTs simultaneously, with

encryption to avoid eavesdropping. Upstream signals from the ONTs are combined at the unpowered splitter using a multiple access protocol. Time Division Multiple Access (TDMA) has each sender wait for its time slot before transmitting. Downstream and upstream traffic are separated by using different infrared wavelengths on the same optical fiber, 1490 nm for downstream and 1310 nm for upstream.

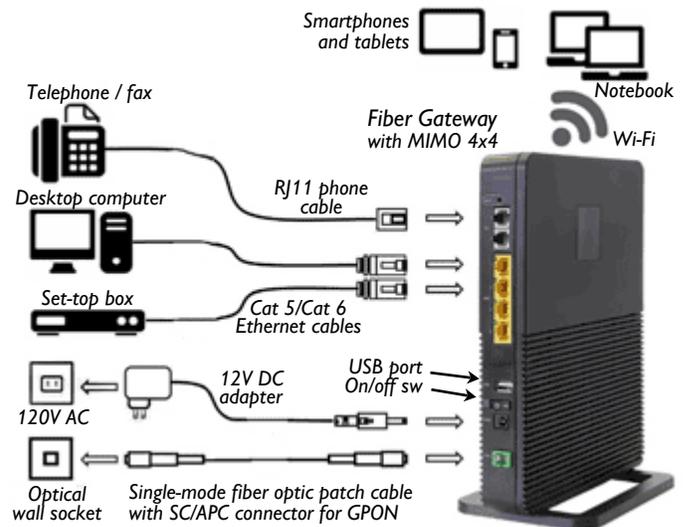
In September 2018, Altice USA announced the launch of Gigabit fiber symmetrical Internet service over its new fiber-to-the-home (FTTH) network for residential customers in areas of Long Island, with an \$80 monthly initial rate for new customers. Then in February 2019, the company began selling similar service in some Connecticut communities priced at \$75 a month for new subscribers. You can check whether 1 gigabit fiber service is available at your own address using the web page <https://www.optimum.com/fiber>. If FTTH is not available yet, Optimum offers Internet service up to 400 Mbps over its existing hybrid fiber/coaxial (HFC) system.

Fiber optic service will be brought into the home via the company’s new compact Fiber Gateway, designed by Altice Labs in Portugal. This device combines the functions of an Optical Network Terminal, network router, Wi-Fi access point, Voice-over-IP adapter and gigabit Ethernet switch. The gateway is claimed to be “the first all-in-one integrated giga-optics router and smart Wi-Fi device offered by an MSO

(cable Multisystem Operator) in the United States.” Altice’s Fiber Gateway optimizes traffic on the home Wi-Fi network with simultaneous dual-band capability (2.4 GHz and 5 GHz), plus optional Wi-Fi extenders to create a mesh network for increased coverage. The Wi-Fi aspect can be managed by a smartphone app.

A farewell to coax?

If you examine the diagram below for home usage of an Altice Fiber Gateway, you will see **no** coaxial cables in the picture at all. This is in contrast to the current Cablevision/Optimum system which employs coaxial cable along the street, followed by a coaxial cable drop to the house where an RF splitter (or splitters) feeds through more coax to the cable modem and set-top boxes. Verizon’s fiber optic FiOS service makes use of *some* coaxial cable from the ONT (optical network terminal) to each set top box for the home’s TV sets.



Typical home use scenario for an Altice Fiber Gateway. Each set-top box is now fed with unshielded twisted pair network cable. SC/APC = Standard Connector / Angled Physical Contact. [Diagram adapted from GR240B User Manual.]

Chairman and CEO of Altice USA, Dexter Goei has said that Altice Gigabit will rely exclusively on wireless Internet as opposed to coaxial cable behind walls. “You no longer are going to be tethered to the wall,” Goei said. “You are going to completely bypass the in-house, ‘coax’ infrastructure — which creates massive issues with service calls. ... Forty percent of our service issues relate to the in-house wiring.”

Altice is making a large investment in the fiber-to-the-home infrastructure at a time when viewing of conventional television is shrinking. It will be interesting to see whether this downward viewing trend is offset by increased revenue from customers seeking higher Internet speeds, taken with the reduced maintenance costs for Altice’s new passive optical network.

- NM9J

Hooking back up

One year ago in the pages of *PCARA Update*, readers were introduced to the little-known work of British radio amateur Bert Firs in the article “Seeing it through”. Reference was

made to an earlier article in the journal *Radio Communication*, but unfortunately it proved difficult to locate on this side of the Atlantic. In order to satisfy readers’ curiosity, here is a short extract from *Radio Communication*

which dates back to the year 1980. Note — some British usage and spelling are included in the text.

HOOKING UP

by M. G. Pritchard, G3VNO*

It is not widely known that Bert Firs, G2LPA, was a member of the research team responsible for one of the most exciting developments of the 20th century. Although the early work was cloaked in secrecy, Bert received special permission to take one of the first experimental devices home for use in his amateur radio station. The device—which looked like a large toroidal core—had the effect of completely reversing the direction of any field trying to pass through it. The mathematics of this phenomenon are very involved, but an important consequence is that gravitational attraction is completely reversed within the area of the device. Bert’s first idea was to fasten a heavy weight to the toroid (it happened to be an old transformer) and attach around 330ft of 16swg copper wire. The device was switched on and the wire slowly paid out from the centre of Bert’s back garden under cover of darkness. The result was a $5\lambda/8$ vertical antenna for 1.8MHz which was nearly as stable in a high wind as if the transformer had been dangling downwards. With this arrangement, G2LPA worked all continents on 1.8MHz within a week. The only disadvantage was that the antenna had to be pulled down just before dawn in case any curious neighbours started wondering what was holding up the far end!

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The strength of G2LPA’s signal soon became a topic of conversation at Bert’s local radio club. “Just

how much power are you running anyway, Bert?” asked Ray, one of the younger Class B licensees (who nevertheless had his head screwed on the right way). “You’ll have to let me see your 1.8MHz gear.” A few evenings later Bert obliged, and Ray was amazed to see an old home-built valve transmitter with a 5763 in the power amplifier. “I don’t believe it,” said Ray, “you can’t have a signal as strong as yours with only 10W.”

“Wait and see!” was all that Bert would say, knowing full well that it was far too dark to see anything in the garden that night.

Shortly afterwards, in a conversation with the company research director, Bert received permission to take Ray into his confidence. After being sworn to secrecy, the magic of the vertical antenna was revealed. Ray was overcome with emotion. “Bert, you’ve just got to let me have one of those!” he said.

“Whatever for?” asked Bert.

“Well, I’ve always wanted a better 144MHz signal than old G3- - -. With my aerial 200ft up in the air, I could beat him hollow with only 10W.”

“I’ll see what I can do”, said Bert.

So, one evening shortly afterwards, Bert and Ray were to be found in Ray’s garden fastening another antigrav device to Ray’s 144MHz beam. The antenna was “raised” into the sky with two nylon cords attached to opposite ends of the boom. The light-weight coaxial cable was allowed to dangle from the centre of the antenna. With Ray on one cord and Bert on the other, the Yagi could be rotated by the two of them walking around the garden. Levelling the antenna took a little time, but eventually the coaxial feeder was plugged into Ray’s ssb transceiver and signals could be heard. The beacons were much stronger than usual, and before long Ray was enjoying himself working stations that he had never been able to hear before. All too soon, Bert indicated that he would have to leave and it was time for the antenna to be pulled in. “Never mind, Ray”, said Bert, “the patent should be accepted before too long and we’ll be able to carry out our tests quite openly then”.

Bert was correct, because a few weeks later the patent was published and the scientific world found out that an antigrav device was possible. Even so, for a while the only antigrav devices in existence were to be found in Bert’s laboratory and, since his company would not enter into licensing agreements with competitors, the devices were not available anywhere else. This explains how all the earliest application work for radio came to be carried out by Bert and Ray.

Before long, Ray had the permanent loan of one of the devices and was working out the best ways of raising multi-Yagi arrays and rotating them from the ground. To overcome feeder losses he tried to persuade Bert to lend him some more antigrav units so that these could be attached at intervals to a thicker coaxial cable. Bert refused to do this – “Use some 300Ω ribbon instead”, he said, “the losses and the

*Forest Road, Southport, Merseyside PR8 6HX

weight will both be less". Ray soon found that this was true. Meanwhile Bert was concentrating on large beam antennas for the other hf bands, and it was not long before the neighbours were amazed to see a 3.5MHz quad floating 250ft above Bert's house. The first complainant was eventually satisfied by Bert's explanation that the tv interference would now be considerably less with the antenna so much further away.

One evening at the radio club, Bert and Ray were in a corner chatting about the problems they were having with their new antenna systems. "It's no good, Bert", Ray was saying, "if you're operating on uhf then the feeder is still a difficulty. Above a few hundred feet, the advantage of the extra height is offset by the feeder losses, and the sheer cost of the cable is getting too much for me". G3 - - - who had been listening to their conversation, joined in. "Why don't you use a repeater technique? Send the entire transceiver into the sky, as high as you like. If it's battery powered, the height is only limited by the length of rope you can afford." G3- - - was on the committee of the local uhf repeater group and so, a few weeks later after several 'phone calls to the RSGB and the Home Office, GB3AG became the first tethered 70cm repeater, operating at a height of 950ft above Bert's house. The range was increased to such an extent that overlap with distant repeaters was a serious problem until the Home Office agreed to a special frequency for the "aerial station" (as they insisted on calling GB3AG).

The first few days' operation was on battery power, with the whole station reeled in for recharging at night. Later on, a 1,000ft length of mains cable was acquired by Ray so that the battery could be float charged as it floated!

The repeater had been covered with a large plastic bag to prevent low cloud getting into the electronics. Photographs of this weird object in a national newspaper raised objections from the Civil Aviation Authority who thought that there was a danger to aircraft. A blanket ban on all amateur experiments with tethered equipment was in fact threatened, until Bert's research director intervened to point out that conventional air traffic was about to be revolutionized just as soon as larger antigrav devices were developed by his company.

Although the supply of devices was severely limited during those early days, Bert and Ray pioneered several other important applications. Ray became the first human being to be lifted by an antigrav unit when he used the device loaned by Bert to carry out repairs at the top of his old antenna mast. Bert was completely unaware of this adventure. In fact his company had been carrying out secret tests on animals to make sure that the antigrav field had no harmful effects. When Ray told Bert about his exploits, he found himself rushed to the medical experts for a series of checks. Fortunately, there were no unpleasant side effects at all, and today we are all familiar with

the controlled antigrav platforms which have replaced ladders and scaffolding throughout the Western world.

The first large-scale antigrav devices were tested by Bert's radio club during VHF NFD, when the entire operation was carried out at a height of 500ft above the club house. This feat has never yet been repeated, mainly because the yls and xyls objected to the oms being completely out of reach for a whole weekend. Besides, the RSGB has now altered the contest rules so that field day stations have to be in contact with a genuine grassy field.

By this stage, production of the smaller antigrav devices had expanded sufficiently to allow their commercial launch. The world-wide demand was phenomenal and had an immediate beneficial effect on Britain's balance of payments. Bert had suggested to his research director that a Consultancy team should be set up to advise customers on the best ways to use the devices, and several members of the radio club found themselves offered new jobs – after all, they knew more than anyone else about suspending pieces of radio equipment in the air, and the professional engineers were showing great interest in the possibilities.

The subsequent growth in the use of antigrav devices is too well known to be described again, but the important role played by a few radio amateurs in the early development of what has always been known to the fraternity as a "sky hook" can only now be told.

(from *Radio Communication*, 1 April 1999)

The original article actually appeared in **April 1980**.

If you would like to find out more about amateur radio in the United Kingdom, you might want to take out a subscription to *RadCom*, monthly journal of the Radio Society of Great Britain. Subscriptions are available through ARRL's web store — see: <http://www.arrl.org/shop/RadCom-Magazine-RSGB/> . You can find out more about the advantages of RSGB membership from the Society's own web pages:

https://www.rsgbshop.org/acatalog/Online_Catalogue_Join_the_RSGB_22.html .

- NM9J



Essential₂ the elements

The year 2019 is a special year in chemistry. The United Nations Educational, Scientific, and Cultural Organization (UNESCO) has officially proclaimed 2019 as “The United Nations International Year of The Periodic Table of Chemical Elements,” or “IYPT 2019.” The reason for this celebration is that 2019 marks the 150th anniversary of the publication of Mendeleev’s Periodic Table of Chemical Elements.



In 1869, Russian chemist **Dmitri Mendeleev** noticed that there was a periodicity to the physical and chemical properties of the 63 chemical elements known at the time — when they were listed in order of **atomic weight***. Previously, in 1787, French scientist Antoine Lavoisier had identified substances that could not be decomposed into simpler substances as elements and noted the differences between metals, non-metals and gases. Shortly before Mendeleev’s discovery, in 1865, British chemist John Newlands observed that when elements were listed in order of their atomic weight as determined by the method of Stanislao Cannizzaro, a repetition in properties occurred for every eighth element. Newlands likened this repetition to musical octaves — which caused some ridicule.

*Atomic weight is nowadays known as **atomic mass**.

Valency view

Mendeleev took a wider view. As professor of chemistry in the University of St. Petersburg he was busy writing part II of a chemical textbook and trying to decide which group of chemical elements should follow the alkali metals in his next chapter. The idea came to him of how to arrange the elements in atomic weight order so that elements with the same **valence** would appear in the same row of a table. Valence is a measure of the combining power of an element — originally defined by the number of atoms of hydrogen that will combine with



Dmitri Mendeleev.

one atom of the element. For example lithium forms a monohydride (LiH) just like sodium (NaH), and potassium (KH) — while beryllium forms a dihydride (BeH₂) like magnesium and calcium (CaH₂).

Atomic dreams

Mendeleev had been working with a set of cards containing each element’s symbol, atomic weight plus physical and chemical properties, trying to organize them into an overall pattern that would make the most sense. He achieved this with the **help of a dream** — as described in *Soviet Psychology*, 1966-67, 5(2), 18-37:

‘According to his words, for three days and three nights Mendeleev did not lie down to sleep, but worked at his desk, trying to combine the results of his mental constructions in the table, but his attempts to achieve this seemed unsuccessful. Finally, suffering from extreme fatigue, he lay down to sleep and immediately slept deeply. Concerning what happened next, he several times reported to [his friend] Inostrantzev:

“I saw in a dream a table where all the elements fell into place as required. Awakening, I immediately wrote it down on a piece of paper — only in one place did a correction later seem necessary.”’

Dmitri Mendeleev published his first Periodic Table in March 1869 in a Russian journal. An abstract appeared later that same year in the German publication *Zeitschrift für Chemie* (Journal of Chemistry), shown below in translation.

On the Relationship of the Properties of the Elements to their Atomic Weights

From D. Mendelejeff

By ordering the elements according to increasing atomic weight in vertical rows so that the horizontal rows contain analogous elements, still ordered by increasing atomic weight, one obtains the following arrangement, from which a few general conclusions may be derived.

			Ti = 50	Zr = 90	? = 180
			V = 51	Nb = 94	Ta = 182
			Cr = 52	Mo = 96	W = 186
			Mn = 55	Rh = 104,4	Pt = 197,4
			Fe = 56	Ru = 104,4	Ir = 198
		Ni = 59	Co = 59	Pd = 106,6	Os = 199
			Cu = 63,4	Ag = 108	Hg = 200
H = 1			Zn = 65,2	Cd = 112	
Be = 9,4	Mg = 24		? = 68	Ur = 116	Au = 197?
B = 11	Al = 27,4		? = 70	Sn = 118	
C = 12	Si = 28		As = 75	Sb = 122	Bi = 210?
N = 14	P = 31		Se = 79,4	Te = 128?	
O = 16	S = 32		Br = 80	J = 127	
F = 19	Cl = 35,5		Rb = 85,4	Cs = 133	Tl = 204
Li = 7	Na = 23		K = 39	Ba = 137	Pb = 207
			Ca = 40	Sr = 87,6	
			? = 45	Ce = 92	
			?Er = 56	La = 94	
			?Yt = 60	Di = 95	
			?In = 75,6	Th = 118?	

1. The elements, if arranged according to their atomic weights, exhibit an evident stepwise variation of properties.
2. Chemically analogous elements have either similar atomic weights (Pt, Ir, Os), or weights which increase by equal increments (K, Rb, Cs).
3. The arrangement according to atomic weight corresponds to the

valence of the element and to a certain extent the difference in chemical behavior, for example Li, Be, B, C, N, O, F.

4. The elements distributed most widely in nature have small atomic weights, and all such elements are marked by the distinctness of their behavior. They are, therefore, the representative elements; and so the lightest element H is rightly chosen as the most representative.

5. The magnitude of the atomic weight determines the properties of the element. Therefore, in the study of compounds, not only the quantities and properties of the elements and their reciprocal behavior is to be taken into consideration, but also the atomic weight of the elements. Thus the compounds of S and Tl (Te), Cl and J, display not only analogies, but also striking differences.

6. One can predict the discovery of many new elements, for example analogues of Si and Al with atomic weights of 65-75.

7. A few atomic weights will probably require correction; for example Te cannot have the atomic weight 128, but rather 123-126.

8. From the above table, some new analogies between elements are revealed. Thus Bo (?) [sic--apparently Ur was intended] appears as an analogue of Bo and Al, as is well known to have been long established experimentally.

Elementary predictions

Mendeleev left gaps in his table for undiscovered elements. He even predicted the properties of five of these elements and their compounds. Over the next 15 years, three of these elements were discovered and his predictions turned out to be accurate. The original table has a gap, shown as $?=68$ where Mendeleev predicted an element with atomic mass of about 68 should be located. He called this element eka-aluminum as it was in the same period line as aluminum. In 1871, he predicted this new element would have a density of 6 g/cc, with a low melting point. Four years later in 1875 eka-aluminum or **gallium** was discovered by a French chemist. Its atomic mass was 69.7 and density was 5.91.

Mendeleev predicted another element at the gap marked by $?=70$ which he named eka-silicon. The density would be around 5.5 g/cc and melting point would be high. The element **germanium** was isolated by German chemist Clemens Winkler in 1886 with atomic mass 72.6 and density 5.3 g/cc.

Another prediction from Mendeleev was for the gap marked $?=45$ for which he named a new element eka-boron. He went on to predict an atomic mass of 44. In 1871, the element **scandium** was discovered spectroscopically with atomic mass of 44.95.

Two of Mendeleev's predicted elements turned out to be significant in electronics.

Germanium was used in World War II for point-contact radar-detection diodes. Its use grew following the discovery in 1948 of point-contact transistor action by Bardeen, Brattain and Shockley of Bell Labs.



Germanium transistors from the 1950s-1960s by Mullard.

Germanium was the major element used in semiconductor devices during the 1950s and into the late 1960s when silicon began to be preferred for its superior high-temperature stability and lower cost. My own portable receivers of the 1960s — from a Fidelity Coronet to a Heathkit



Mohican — all used germanium transistors and diodes. Nowadays germanium has been totally overtaken by silicon as the semiconductor of choice, but the element still has significant use in solar panels and night vision equipment. Germanium oxide, GeO_2 has a high refractive index, making it suitable for wide-angle lenses in cameras and in microscopes. It is also used in fiber optic cables as the dopant for silica to increase refractive index at the core of the fiber.

Heathkit Mohican communications receiver employed 10 germanium transistors. The British version included Mullard OC45, OC81, OC171 and AF115.

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Gallium has a melting point of 29.8°C , and can be alloyed with other metals for even lower melting points. This unusual physical behavior for a metal is the basis of applications outside the field of semiconductors, for example in mercury-free glass thermometers. The compound of gallium with arsenic, **gallium arsenide**, GaAs, was investigated in the 1960s as a semiconductor and came into radio use in the 1970s for low noise field effect transistors or “GaAsFETS”, suitable for use up to microwave frequencies. Nowadays, gallium arsenide finds use in low-noise transistors for cell phones and satellite receivers as well as in our own VHF/UHF radios, not to mention high speed logic chips. The compound of gallium with nitrogen, **gallium nitride** GaN, can also be used for UHF/SHF transistors, capable of high power operation. Gallium nitride is employed in light emitting diodes, with application as the laser diode in Blu-ray disk readers and for generation of the blue light component of “white-light” LED lamp-bulbs.



Sony SGM2016M dual gate GaAs MES FET — as used to repair the front end of a Yaesu FT-8000 transceiver.

The modern day Periodic Table is somewhat different from Mendeleev's earliest suggestion. Mendeleev turned his first table round so that similar elements were in vertical columns, rather than horizontal rows.

The noble gases discovered by William Ramsay in

Gr. I	Gr. II	Gr. III	Gr. IV	Gr. V	Gr. VI	Gr. VII	Gr. VIII
R ⁰							
1 Li=7	2 Na=23	3 K=39	4 (Cu=63)	5 Pb=207	6 (Ag=108)	7 Cs=133	8 (Au=197)
2 Be=9,4	3 Mg=24	4 Ca=40	5 Zn=65	6 Cd=112	7 Hg=200	8 Tl=204	9 Pb=207
3 B=11	4 Al=27,5	5 Ga=69,7	6 In=75	7 Tl=204	8 Pb=207	9 Bi=208	10 Po=209
4 C=12	5 Si=28	6 Ge=72	7 Sn=118	8 Pb=207	9 Bi=208	10 Po=209	11 At=210
5 N=14	6 P=31	7 As=75	8 Sb=122	9 Bi=208	10 Po=209	11 At=210	12 Fr=223
6 O=16	7 S=32	8 Se=78	9 Te=127	10 Po=209	11 At=210	12 Fr=223	13 Ra=226
7 F=19	8 Cl=35,5	9 Br=80	10 I=127	11 At=210	12 Fr=223	13 Ra=226	14 Ac=227
8 Fe=56	9 Co=59	10 Ni=58	11 Cu=63	12 Zn=65	13 Ga=70	14 Ge=72	15 As=75
9 Mn=55	10 Cr=52	11 V=51	12 Ti=48	13 Zr=90	14 Nb=94	15 Mo=96	16 Tc=98
10 Ca=40	11 Sc=45	12 Ti=48	13 V=51	14 Cr=52	15 Mn=55	16 Fe=56	17 Co=59
11 Sr=87	12 Y=88	13 Zr=90	14 Nb=94	15 Mo=96	16 Tc=98	17 Ru=101	18 Rh=104
12 Ba=137	13 La=138	14 Ce=140	15 Pr=140	16 Nd=144	17 Pm=145	18 Sm=150	19 Eu=152
13 Ra=226	14 Ac=227	15 Th=232	16 Pa=231	17 U=238	18 Np=237	19 Pu=239	20 Am=243

Mendeleev's rearranged Periodic Table of 1871.

the 1890s were fitted in by Mendeleev as an additional vertical group on the end of this table.

Position in the Periodic Table predicted by an element's atomic mass did not always match the position expected from its chemical properties. Mendeleev had started the practice of re-positioning elements according to properties, rather than atomic mass, thinking that weights determined experimentally might be inaccurate. In 1913 British physicist Henry Moseley measured the X-ray line spectra of different elements and showed that the square root of X-ray frequency has a linear relation to an increasing integer for each element taken in turn — rather than to the atomic mass. Moseley deduced that this integer was the charge on the atomic nucleus. The same number also provides a natural order for classifying elements and Moseley developed the first modern periodic table, basing his sequence on **atomic number**.



1910 picture of Henry Moseley working in the Oxford University chemistry laboratories. During World War I he served as a Signals Officer in the Royal Engineers and was killed at Gallipoli in 1915.

In 1920, British physicist Ernest Rutherford identified the nucleus of the hydrogen atom — which he named the proton — as the particle making up the positive charge in the nucleus of each element, with atomic number being equal to the number of protons.

The lanthanides or rare earths were placed in a separate row below the main body of the periodic table

because of their chemical similarity to lanthanum. This development had been foreseen by Mendeleev.

The last major change to the periodic table resulted from Glenn Seaborg's work in the mid-20th century. Starting with the discovery of plutonium in 1940, he discovered the transuranic elements from 94 (Pu) to 102 (Nobelium, No). He then placed the group known as the actinides in a second row below the lanthanides. 150 years after Mendeleev's insight, the Periodic Table now contains a total of 118 elements.

Modern Periodic Table of the Chemical Elements has Lanthanides and Actinides in separate rows beneath the main table. Three of Mendeleev's predicted elements are tinted yellow. The total number of elements is now 118.

IYPT 2019

Celebration of the 150th birthday of Mendeleev's great idea will be taking place throughout 2019. The event has pages on Facebook (facebook.com/IYPT2019), Twitter (twitter.com/IYPT2019) and Instagram (instagram.com/IYPT2019).

The American Chemical Society began the year with an "I Spy a Periodic Table" photo contest. See the results at: <https://cenm.ag/ispyphoto>. The Royal Society of Chemistry has an interactive Periodic Table at: <http://www.rsc.org/periodic-table/> — check out the 'Podcast' tab for an audio account of each element in the table. IUPAC also has an informative web site about the International Year at: <https://www.iypt2019.org/>



Readers' Choice winner in ACS' "I Spy a Periodic Table" contest was this picture of a junior chemist in 'I'm Cu Te' shirt, submitted via Twitter.

Peekskill / Cortlandt Amateur Radio Association

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E-Mail: mail 'at' pcara.org

Web site: <http://www.pcara.org>

PCARA Update Editor: Malcolm Pritchard, NM9J

E-mail: NM9J 'at' arrl.net

Newsletter contributions are always very welcome!

Archive: <http://home.lanline.com/~pcara/newslett.htm>

PCARA Information

PCARA is a **Non-Profit Community Service**

Organization. PCARA meetings take place the first Sunday of each month* at 3:00 p.m. in Dining Room B of NewYork-Presbyterian/Hudson Valley Hospital, Rt. 202, Cortlandt Manor, NY 10567. Drive round behind the main hospital building and enter from the rear (look for the oxygen tanks). Talk-in is available on the 146.67 repeater. *Apart from holidays and July/August break.

PCARA Repeaters

W2NYW: 146.67 MHz -0.6, PL 156.7Hz

KB2CQE: 449.925MHz -5.0, PL 179.9Hz

N2CBH: 448.725MHz -5.0, PL 107.2Hz

PCARA Calendar

Tue Apr 2: Antenna Workshop, Cortlandt Town Center CUE, 7 p.m.

Sun Apr 7: PCARA meeting, NewYork-Presbyterian /Hudson Valley Hospital, 3:00 p.m.

Sat Apr 20: PCARA Breakfast, Turco's, Yorktown Hts. 9:00 a.m.

Sat Apr 20: PCARA 440 FM Simplex Challenge, 12:50 for 1 p.m.

Sun Apr 21: *(To be confirmed)*. Easter Sunday coordination, Church of the Holy Spirit, Rt 202, Cortlandt Manor. 9:00 a.m.

Sun Apr 28: PCARA club table, Orange County ARC Hamfest.

Hamfests

Sun Apr 27: Splitrock ARA North Jersey Hamfest, Roxbury Senior Center, 72 Eyland Avenue. Succasunna, NJ. 8:00 a.m.

Sun Apr 28: Orange County ARC Spring Hamfest, Wallkill Community Center, 2 Wes Warren Dr., Middletown, NY. 8:30 a.m.

PCARA Club table.

Sun May 5: Mt Beacon ARC Hamfest, 83 Red Schoolhouse Road Fishkill, NY.

VE Test Sessions

Apr 11: WECA, Westchester Co Fire Trg Center, 4 Dana Rd., Valhalla, NY. 7:00 p.m. S. Rothman, (914) 949-1463.

Apr 14: Yonkers ARC, Yonkers OEM, 789 Saw Mill River Rd, Yonkers NY. Pre-reg. John WB2AUL, (914) 969-6548.

Apr 15: Columbia Univ ARC, 531 Studebaker Bldg, 622 W 132nd St, New York. 6:30 pm, Alan Crosswell (212) 854-3754.

Apr 19: Orange County ARC, Munger Cottage, 183 Main Street, Cornwall NY. 6:00 p.m. Contact Joseph J. DeLorenzo (845) 534-3146.

Apr 27: PEARL, Mahopac Public Library, 668 Route 6, Meeting Rm 3rd Floor, Mahopac NY. 10:00 a.m.

Apr 28: Orange County ARC Hamfest, Middletown NY. 9:00 a.m.



Peekskill / Cortlandt Amateur Radio Association Inc.
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Crompond, NY 10517