



PCARA Update



Volume 24, Issue 1 Peekskill/Cortlandt Amateur Radio Association Inc. January 2023

Twenty two review

As we reach the end of one calendar year and approach the beginning of another, there's a natural tendency to look back and review what we've done — to reflect on the highlights.

For 2022, PCARA held ARRL and Laurel VEC Testing Sessions as well as formal PCARA presentations at the Putnam Valley Free Library and at the Putnam | Northern Westchester BOCES Tech Center.

The Annual PCARA Bring and Buy Auction resumed in March at the Town of Cortlandt CUE Room. Due to circumstances beyond our control the PCARA Facebook page was restarted. PCARA Hamfest participation returned with the booking of a table at the Orange County Amateur Radio Club (OCARC) Hamfest.

2022 ARRL Field Day was moved from Walter Panas High School to the George Washington Elementary School due to construction of a new athletic field. PCARA held a Parks on the Air (POTA) activation at Indian Hill Park in Jefferson Valley, NY. Up on the hill the 2m and 70 cm repeaters were replaced with newer units.

A new PCARA YouTube Channel was started with presentations available. PCARA once again helped provide communications support for the Harry Chapin Memorial Run Against Hunger in Croton-on-Hudson, NY.

More recently, the PCARA Annual Holiday Dinner was held at the Cortlandt Colonial Restaurant on Sunday December 4, 2022, where 28 folks were in attendance and Jay NE2Q was presented with the PCARA Radio Amateur of the Year 2022. Congratulations Jay!

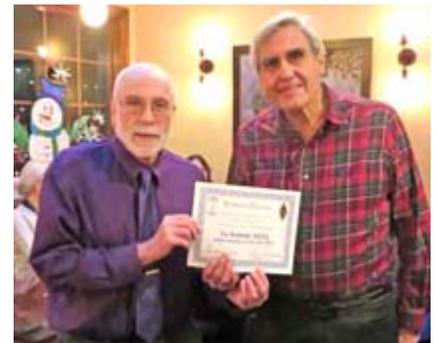
On Saturday December 17, 2022 a PCARA Breakfast was held at the new Uncle Giuseppe's Marketplace



PCARA Breakfast at Uncle Giuseppe's, December 17.

in Yorktown Heights, NY. Everyone had a great time with much Holiday Spirit in the air!

On Wednesday December 21, 2022 at 7:00 p.m. a PCARA ARRL VE Test Session was held at the Putnam | Northern Westchester BOCES Tech Center in Yorktown Heights, NY. Two candidates were present. One qualified for Technician with the other receiving a CSCE for a General Class license! Con-



Greg KB2CQE presents Jay NE2Q with PCARA's award for "Radio Amateur of the Year 2022" at the Holiday Dinner.

Continued on page 2 ⇨



Members enjoyed themselves at the Holiday Dinner.

Contents

Twenty two review - KB2CQE	1
Bring and Buy Auction	2
Adventures in DXing - N2KZ	3
Field Day revisited	6
Community bag is back.....	6
New General Question Pool	6
VE Test Session	7
Ham Radio University	7
Where we are - N2KZ.....	8
Church support	11
Looking ahead	11
Beaming up - NM9J	12

gratulations to the candidates, and thanks to the Putnam | Northern Westchester BOCES for the use of the facilities.

The final event for 2022 was the Parking Detail for Christmas Eve Mass at the Church of the Holy Spirit in Cortlandt Manor, NY. The frigid 15°F temperature was endured by Bob N2CBH, Malcolm NM9J, Al K2DMV and David KD2EVI. Gentlemen, thank you for your efforts! You certainly helped make the season feel WARM!

Now onto upcoming events for 2023:

- **January 2023:** PCARA has been chosen once again for the Stop & Shop Community Bag Program for the month of January 2023! This is the 3rd time PCARA has been selected to participate in the program. THANKS to Stop & Shop for their support! Please visit the Stop & Shop in the Beach Shopping Center on Route 6 in Cortlandt Manor, NY.
- **Saturday January 7, 2023:** Ham Radio University (virtual event). Details on page 7.
- **Sunday January 8, 2023:** 2023 PCARA Annual Bring and Buy Auction / PCARA Membership Meeting at 3:00 p.m. at the Town of Cortlandt CUE room at the Cortlandt Town Center. Bring along your surplus treasures!
- **Saturday January 21, 2023:** PCARA Breakfast at 9:00 am at the new Uncle Giuseppe's Marketplace in Yorktown Heights, NY.
- **Wednesday, January 25, 2023:** (Provisional) PCARA ARRL VEC Test Session at 7:00 p.m. Location to be confirmed. Please watch Google Groups.
- **Saturday February 4, 2023:** PCARA Membership Meeting and presentation on "Introduction to 3D Printing – A Ham Radio Perspective" by Mike N2HTT at 10:00 a.m. at the Putnam Valley Free Library in Putnam Valley, NY, followed by a PCARA Laurel VE Test Session at 11:30 a.m.

It looks like we'll be keeping up the pace for 2023! I look forward to seeing each of you at the January 8, 2023 PCARA Membership Meeting / PCARA Annual Bring and Buy Auction at 3:00 p.m. at the Town of Cortlandt CUE Room at the Cortlandt Town Center! Stay safe!

- 73 de Greg, KB2CQE

PCARA Board

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Net night

Peekskill/Cortlandt Amateur Radio Association holds a roundtable net on Tuesday evenings at 8:00 p.m. and a directed 'Old Goats' net on Thursday evenings at 8:00 p.m. Both events take place on the 146.67 MHz W2NYW repeater, offset -0.600, PL 156.7 Hz.

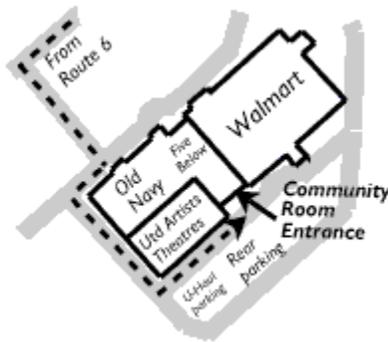
Join the roundtable to find out what members have been doing or join the Old Goats with net control Karl N2KZ for news and neighborly information.

Bring and Buy Auction

PCARA's annual Bring and Buy Auction is scheduled for Sunday January 8, 2023 at 3:00 p.m. Location will be the Town of Cortlandt Community Room (CUE Room), in Cortland Town Center on Route 6. To reach the CUE Room, head toward the 'Old Navy' and Walmart stores then take the access road down the side of Old Navy to the parking lot behind the cinema. The Community Room is next door to the cinema entrance and the NY State Police satellite station.

Take a look around your attic or basement for equipment that you have not used in a while. Would

it be of value to someone else? If so, dust it off, make sure it is working then bring it along to the Auction.



PCARA
Peekskill / Cortlandt
Amateur Radio
Association

**BRING AND BUY
AUCTION**

All are welcome to buy & sell radio-related items
Participants are encouraged to make a
voluntary donation to PCARA

SUNDAY 1/8/23 3PM

CUE Community Room
Cortlandt Town Center
3131 Main Street
Mohegan Lake, NY 10547

Take access road near Old Navy to
rear parking area, behind cinema

**FREE ADMISSION, ALL ARE WELCOME
FOR INFORMATION: MAIL@PCARA.ORG**

Bring and Buy poster courtesy of KD2ITZ.

Adventures in DXing

- N2KZ

New Beginnings

Seasoned amateurs live in their own little technological bubble. We are all fluent in the hobby's vocabulary, practices and etiquette. How do newcomers acclimate to such a complex specialized new world? It isn't easy!

A brand new ham taught this old dog some great new tricks. I fielded a question I don't often hear: "How do you set up a ham station? What gear do you need and what plugs into what? What cables do you need? How do you configure everything? How do you learn all this stuff? It's so frustrating!" *How do you meet these challenges?*

There is an old adage that reminds us to walk a mile in the other guy's shoes. What truth lies within! I pondered this idea and it hit me between the eyes. *It really must be pretty rough for newbies to understand the myriad of technology we take for granted.*

Think about what it is like when you encounter your first all-electronic car. Where do you put the key? How do you turn it on? How do you even open the car's doors? (Get the idea?)



Honda Smart Key.

It sounds basic but I must admit that it has been decades since I thought about this dilemma. The first thing you have to do is open a window and let in some fresh air... figuratively. You don't want to get to the point that one of my new friends presented me with a few days ago:

"Karl, please pass on message that I'm finished with radio. The more disappointed effort I put in, the more unwell I become. I might as well be on the moon. Enough



is enough." I was crestfallen when I read this. What to do? My friend just needed a friend. It worked!

Scroll back and start anew. It is best to start from the very beginning. New hams need one thing that cannot be bought: A good friend. A good mentor. A good 'Elmer.' It makes all the difference in the world! Put yourself in their shoes. They invested a lot of effort and interest to earn their Technician license. They passed the test! Here comes the anti-climax: 'Now what?'

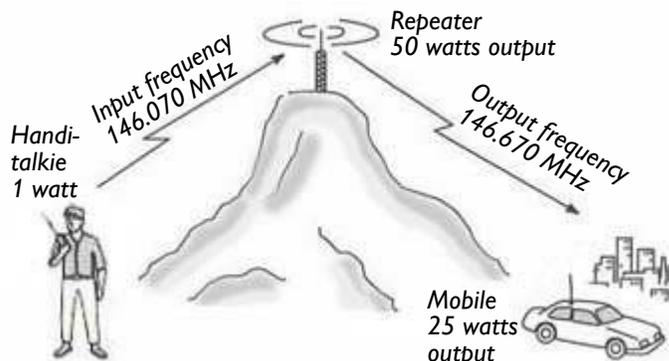
Well, my best advice is to gain experience and become a skilled *listener!* Join a club! Find out when local chat 'nets' meet on the air. The PCARA convenes every



Karl's best advice — join a club!

Tuesday and Thursday nights at 8:00 p.m. on our 2 meter band repeater: 146.670 MHz. Use a -600 kHz offset (you transmit on 146.070 MHz) and use a 156.7 Hz PL privacy tone. We can help you understand what that is all about, too! Are you still uneasy about going on the air yourself? Build your confidence by becoming a good *listener*. Tune in and learn all about what each amateur radio band has to offer and what everyday conversations sound like. Before you know it, you will be able to have a QSO all by yourself. Repeat after me!

There are about 770,000 amateurs just in the United States and they all want to help you. You have to get out there and meet them! There is a lot to consider before you move forward. Don't be discouraged if you become overwhelmed with information and technicalities. Ask a lot of questions and find good conversations. We all learned about our hobby and it's time we taught you!



Hilltop repeater extends range of low power handi-talkies and medium power mobile stations that would otherwise be shielded from each other. Repeater receives signals on its input frequency and retransmits on output frequency.

Try to create goals for yourself. Think simple! Many new hams are anxious to buy complex new equipment and find instant gratification. A good friend

of mine gave this good advice: Ask around and see if anyone can *lend* you basic equipment and/or buy *used* equipment at hamfests. Play around and see what everyone else is doing. When your knowledge and skills evolve and you discover your wants and needs — then — buy a ‘real’ rig.

Older equipment is less sophisticated and easier to learn and operate. Chances are that if someone from our area lends you or sells you a HT walkie-talkie it will have already been configured for local use. You are lucky to live in an area that has good population density. There are a lot of local hams to meet and greet! A great place to find other eyes to look at your problem are the **PCARA breakfasts** and monthly **membership meetings**. Don’t forget YouTube. Can you name any problem that cannot be solved by watching a YouTube video?

The most popular weekend of the amateur radio calendar is the fourth full weekend in June. It’s time for Field Day — the greatest day on Earth to learn about our hobby. Newcomers will find this a dream event! You can join a team that will assemble very impressive amateur radio stations out in the field — usually with generator power — at local schools, local parks, mountaintops or anywhere they like! Every group will try to reach every other group for over 24 hours. The amateur bands will be jam packed with activity. You can operate great gear and make many, many new friends. Lots of barbecue food is often available. Does it get any better than this?

Read The Book

Today’s new equipment can intimidate and scare even the most seasoned operator. User manuals can be hundreds of pages long! A major hint: *Download the manual of whatever you obtain or purchase onto your phone or computer for future reference.* You don’t want to ruin your fun when you suddenly become impossibly stuck. You won’t be — if you have a copy of the manual! Don’t be angry and frustrated. Don’t let one bad button push put you off the air! Take a break then read the equipment’s book! Your answer is within its pages.

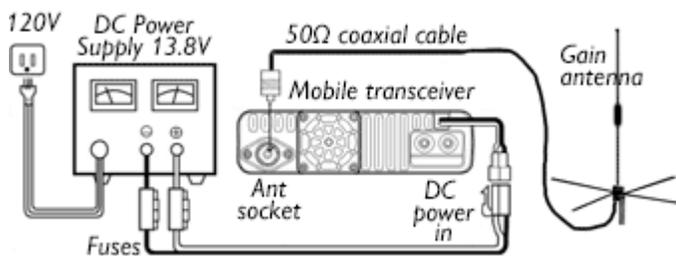


[Hint: Nifty Mini-Manuals available from N6FN provide a digest-sized alternative to the full-size manufacturer’s manual. – Ed.]

Examine your surroundings carefully. Can the local repeaters be heard easily at your home? Unless you are in a particularly good spot — or very close by to a repeater — it may be hard to join in

with local ham activities. Intermittent and weak signals from a HT (**handi-talkie**) can be very frustrating for all involved — you and the folks who are trying to hear you. You might need a stronger signal and a good antenna. Find out before you buy, then purchase things that are appropriate to your goals.

Four ingredients are essential towards a more powerful and reliable home station: A ‘mobile’ transceiver, a matching power supply, an effective antenna and a co-axial cable to connect the transceiver to the antenna. “*How do you connect this stuff?*” Your fellow club members may be able to help you build the antenna or even assemble the entire station. It would be a great beginner project for you! A solid transceiver and an outdoor antenna will open a whole new world for you especially when a HT is just not good enough.



A mobile transceiver equipped with external antenna, running off a 12 volt DC power supply will provide a stronger signal than a handi-talkie.

Other small improvements can improve your results. One easy trick for portable HTs is to upgrade to an ‘extended whip’ antenna. A longer antenna with more efficiency can improve your signal dramatically. Remember to be vigilant about recharging your HT after every use and/or have a backup battery or two should you run out of ‘juice.’ You don’t want your only battery pack to fail while you are on the air! Always have a ready backup battery to prevent a very embarrassing complete loss of signal. “Oh, no! Where did he go?”

All About Computers

Today’s amateur radio is quickly becoming **computer radio**. The very latest designs for sophisticated transceivers and many useful accessories (example: antenna tuners and rotators) are actually powerful computers that are dedicated to our specific tasks. Software defined radios (SDRs) and complete transceivers are capable of features and magical abilities way beyond our wildest dreams even just a few years ago. Get ready to be amazed!



The computer-based miracles are not only in your shack. Many advanced operating modes and interlinks are all based on host computer servers and the Internet. Wouldn't it be nice if you could find a place where your receiver would be free of noise and interference? By operating remote-controlled software defined radios (SDRs) you can actually listen to your own signals as they are being heard thousands of miles away! It's easy. Use someone else's receiver far away from your house and jump over your local static! Amazing tricks can produce amazing results. Brainstorm with your amateur radio buddies and come up with a new plan or challenge. Fun awaits.



Kiwi-SDRs can receive from DC to 30 MHz while connected to the Internet for remote control by listeners. See map at <http://rx.linkfanel.net/>.

There are plenty of computer-driven operating modes and techniques to learn and experiment with. Popular point-to-point digital modes like DMR and D-Star are becoming dominant with crystal clear reception and worldwide contact ability using just a HT in the palm of your hand. Raspberry Pi micro-computers are often the backbone for the Echolink application also providing worldwide coverage linking a world of hams together for great exchanges of ideas and conversations. Who needs a transceiver or expensive and elaborate ham shack when you can use your smart phone instead? What doesn't use a computer these days?

Learn From The Past

Starting with a very basic older 'legacy' rig should be required training for all new amateurs. You will learn the very basics and get some first-hand experience operating your very first station. Venture to a local hamfest and see if you can find some starter gear to get yourself going. Bring along a PCARA club member or two and get some opinions on what might work for your first voyages! There is a lot of older used legacy equipment looking for a new home. Maybe it will become yours!

Sixty years ago it was easy to operate a ham station by adjusting just a handful of essential controls. All you really need is an audio volume control combined with an on/off power switch, a frequency tuning knob and maybe a one knob antenna tuner. Plug in a micro-



SW20+ simple QRP transceiver.

phone or a straight key for Morse code CW and you are all set. Mission accomplished! Get comfortable with the simple stuff then visit a friend and try out more advanced features and buttons. Your confidence will grow and so will the entries in your log book.

Highly recommended reading: The ARRL *Operating Manual* and the ARRL's monthly magazine *QST*. (ARRL: Amateur Radio Relay League at <https://www.arrl.org/>). The *Operating Manual* will provide you with a fully detailed bible and reference you will be using for years to come. *QST* will bring you what the amateur radio world is talking about and great insight to the very latest technologies and new gear. Keep up with these two publications and you will gain a solid foundation as you sample the many facets and activities of our hobby. Good fun is waiting for you!



My New Year's resolutions will include this passage: *A radio amateur is friendly... with slow and patient operation when requested, friendly advice and counsel to the beginner, kindly assistance, co-operation and consideration for the interests of others. These are the hallmarks of the amateur spirit.* — from the Radio Amateur's Code by Paul M. Segal, W9EEA, in 1928.

Straight Key Night

Want a great way to listen to Morse code? Tune in to the ARRL's Straight Key Night event starting New Year's Eve at 7:00 p.m. and continuing for 24 hours until 7:00 p.m. New Year's Day. You will hear very, very slow code being manually sent with simple Morse code straight keys. Many amateurs also fire up their old legacy gear from long ago or homebrew projects they have created. It is the perfect moment to try out CW yourself, so don't be shy! The event is filled with very slow code, patient hams and fun all around! Check out these frequencies: 80 meter CW 3525 to 3560 kHz and 40 meter CW 7025 to 7060 kHz. See if you can catch me on the air!

Please remember the PCARA's 2 meter nets every Tuesday and Thursday at 8:00 pm. 146.67 MHz - minus 600 kHz offset and please use a 156.7 PL tone. You can listen in, too! No license necessary for listening! Check our web page at <http://pcara.org/> and our Facebook page at <https://www.facebook.com/pcararadio>. Join the club! It's great fun. Happy Holidays! Happy New Year! Happy Trails!



73 de N2KZ 'The Old Goat.'

Field Day revisited

For ARRL Field Day 2022 on June 25-26, PCARA's location was moved from Walter Panas High School to George Washington Elementary School. On page 7 of the December 2022 newsletter, PCARA's results were summarized. This included the aggregate scores of neighboring stations and a table of top scores in the Eastern New York (ENY) Section of ARRL's Hudson Division.



Unfortunately, by press-time for the December newsletter, ARRL had not yet published its full database of Field Day 2022 results — so no further listings were possible.

An initial database in '.csv' format (comma separated values) appeared on December 2 on the ARRL web site. After importing the results into Microsoft Excel, the following achievements can now be reported:

In ARRL Field Day 2022 PCARA was...

- **First** out of one entry in Category 2A, ENY section.
- **13th** out of 64 in all of ENY section.
- **Sixth** out of 10 in Category 2A, Hudson Division.
- **35th** out of 174 in the entire Hudson Division.
- **102nd** out of 300 in Category 2A nationwide.
- **771st** out of 4929 total entries listed.

For comparison, here are PCARA's positions in Field Day 2021, held at Walter Panas High School...

In ARRL Field Day 2021 PCARA was...

- **First** out of two entries in Category 2A, ENY section.
- **Seventh** out of 90 in all of ENY section.
- **Second** out of 10 in Category 2A, Hudson Division.
- **18th** out of 220 in the entire Hudson Division.
- **41st** out of 277 in Category 2A nationwide.
- **343rd** out of 5878 total entries listed

Community bag is back

Peekskill/Cortlandt Amateur Radio Association, Inc. has once more been selected to receive \$1.00 from every \$2.50 reusable Community Bag sold during the month of January 2023 at Stop & Shop, 1831



"Give Back" Community bags on display in the Peekskill 'Stop & Shop' store.

East Main Street, Peekskill NY. Previous participation in the program during December 2019 and August 2021 resulted in substantial donations to PCARA.

The Stop & Shop Community Bag Program, launched in May 2019, is intended to facilitate community support, making a difference in communities where shoppers live and work.

PCARA was selected as the January beneficiary of the program by store leadership at the Stop & Shop located at the Beach Shopping Center in Peekskill. PCARA will receive a donation every time a reusable Community Bag is purchased during January 2023 — unless otherwise redirected by the customer through the 'Giving Tag' attached to each bag.

New General Question Pool

The National Conference of Volunteer Examiner Coordinators' (NCVEC) Question Pool Committee (QPC) has released the 2023 - 2027 General Class FCC Element 3 Syllabus and Question Pool to the public. The new General Question Pool is effective July 1, 2023, through June 30, 2027.

The new pool incorporates 432 questions, of which 51 are new questions. The pool is available as a Microsoft Word document and in PDF format from: <http://www.ncvec.org/page.php?id=369>.

General class candidates preparing for examinations before June 30, 2023 should continue to use the 9th edition of ARRL's "General Class License Manual" and the 6th edition of "ARRL's General Q & A". New editions of ARRL licensing publications will be available in May 2023, for exams taken on or after July 1, 2023.

Here are some sample questions from the new pool to test your "General knowledge"...

G8A09 (A)

What type of modulation is used by FT8?

- A. 8-tone frequency shift keying
- B. Vestigial sideband
- C. Amplitude compressed AM
- D. 8-bit direct sequence spread spectrum

G0B10 (A)

Which of the following is a danger from lead-tin solder?

- A. Lead can contaminate food if hands are not washed carefully after handling the solder
- B. High voltages can cause lead-tin solder to disintegrate suddenly
- C. Tin in the solder can "cold flow," causing shorts in the circuit
- D. RF energy can convert the lead into a poisonous gas

VE Test Session

PCARA's latest Volunteer Examiner Test Session took place on Wednesday evening, December 21 at Putnam | Northern Westchester BOCES Tech Center, 200 BOCES Drive, Yorktown Heights, NY. In anticipation of students attending, this session was scheduled with the ARRL Volunteer Examiner Coordinator (ARRL VEC) to take advantage of ARRL's Youth Licensing Grant Program.

Under this program, ARRL will cover the one-time \$35.00 application fee for new license candidates younger than 18 years old for tests administered under ARRL VEC. In addition, candidates younger than 18 would pay a reduced exam session fee of \$5.00 to the ARRL VEC VE team at the time of the exam.

Two unlicensed candidates arrived to take the test, though they did not qualify for the ARRL Youth Licensing Grant.



Two candidates took part in PCARA's December 21 V.E. Test Session at BOCES Tech Center.

Lewis Kohl of North Salem, NY passed both the Technician and General examinations and is now qualified for General. Greg Jannacone of Yorktown Heights NY passed Element 2 and is now qualified for the Technician license. Congratulations to both.

Thanks to V.E. Team Liaison Mike W2IG and to the Volunteer Examiners who administered the session — Lou KD2ITZ, Rob AD2CT and NM9J.

PCARA's next V.E. Test Session is provisionally scheduled for Wednesday January 25th, starting at 7:00 p.m. Please keep an eye on Google Groups e-mail for confirmation of this event's location. Candidates must contact Mike W2IG using w2igg@yahoo.com.

A further Test Session is scheduled for Saturday February 4th at Putnam Valley Library. Start time will be 11:30 a.m., following PCARA's 10:00 a.m. main meeting and presentation on 3D Printing by Mike N2HTT. The test session will be under the auspices of Laurel VEC, so candidates must contact Dave KF2BD using daveharper@vivaldi.net before the event.

Ham Radio University

Lou KD2ITZ reminds us that the 24th annual Ham Radio University (HRU) educational conference will be held on Saturday January 7th, 2023 from 8:00 a.m. to 4:00 p.m. EST (13:00 - 20:00 UTC) as a GoToWebinar on-line video conference. HRU 2023 will also be the on-line Convention of the NYC-Long Island Section of ARRL.

Registration is now open for the following presentations by experts in a broad range of Amateur Radio activities. Advance registration is required for each presentation.



- An introduction to HRU and Newcomer's meeting
- ARRL Forum NYC/LI including EMCOMM
- Building your first HF station
- Basics of HF operating
- Basics of Grounding in the ham shack
- Contesting: All Your Questions Answered
- QRP low power fun
- Amateur Radio Satellites in Space
- Overview of Ham Radio Logging Programs
- Morse Code Key Show & Tell
- Cables and Connectors
- The ABC's of DXing
- HF Digital Modes including FT8 and WSPR
- Parks on the Air
- Software Defined Radios
- Raspberry Pi applications for Ham Radio
- Practical HF Antennas

As in previous years, participation will be free of charge, with an optional suggested donation of \$5.00. Detailed information, including the schedule of forums and advance registration is available on line at: <https://hamradiouniversity.org/forums/>

Yorktown hole

Lou KD2ITZ draws our attention to the following report on CBS News of a sink-hole in Woodlands Legacy Fields Park, near Granite Knolls Park:

<https://www.cbsnews.com/newyork/news/massive-sinkhole-opens-up-inside-yorktown-n-y-park/>

Dad joke

Did you hear about the two antennas that got married? The wedding was terrible, but the reception was great!

(Dad Jokes, Share the Love Gifts.)



Where we are - N2KZ

Our PCARA Update newsletter serves as a wonderful historic diary of our world over many years. Look back into our archives and marvel at all that has changed. I hope this column will serve as an additional little snapshot of the world around us as time goes by. As we begin the new year, here is a look at where we are.

The more things change the more they remain the same. I grew up using a 2 transistor reflex AM transistor radio featuring a supplied mini-whip antenna. Today, I use a Sony ICF-P26



Radios old and new: two-transistor reflex left, Sony ICF-P26 right. [N2KZ pic.]

analog tuned pocket-sized superhet and a smaller palm-sized Sony SRF-M37W. Same size and form-factor. Much better selectivity and sensitivity! Like most of the world, I also listen to my car radio, always looking for a new station catch. My ears are always attuned for gray-line DX, dawn and dusk and I always cherish the wee hours of the overnight for the deepest DX. It worked for me for almost 70 years. It still does!

The End of the World?

Some people don't share these nostalgic joys. Audi, Porsche, Tesla, Volkswagen and Volvo have dropped the AM band from their radios with Ford about to make a similar move. What is their logic? EV all-electric and hybrid cars create too much electronic noise to co-exist with analog AM radio reception. It's



All-electric 2023 Ford F-150 Lightning has FM stereo but no AM.

not worth the bother and expense to shield a car radio from a bee hive of car-created noise... and, hey, who listens to AM radio anymore anyway? Right?

Other signs of AM radio deterioration: Local 50,000 watt clear channel radio network station



WCBS-AM 880 has suffered several similar attacks. Their signature all-news format is now often replaced with paid 30 or 60 minute product pitches or seemingly endless sports events.

All around the country, promi-

nent legacy all-news stations are now being simulcast on FM.

Some examples: Chicago's WBBM 780 AM and now also on 105.9 FM, KNX 1070 AM Los Angeles now on 97.1, WSB 750 AM Atlanta now called News 95.5. WCBS-AM sister station all-news WINS 1010 has just expanded to its own full powered FM simulcast on



92.3 MHz. Even my rural AM favorite WLEW 1340 Bad Axe, Michigan has just started an FM simulcast on 94.1 FM. WLAD 800 Danbury, Connecticut likes that frequency too and is now also simulcast on 94.1 FM. We are being slowly and involuntarily weaned off of the old AM radio band into the future. I wonder if I will ever see medium wave go completely silent.

This new trend towards FM simulcasting does provide an unexpected advantage for medium wave DXers. Let me explain with a great example! Scotland's Medium Wave Circle listener's club has established a Kiwi SDR installation in a little enclave way up in Northwestern Scotland called Clashmore. Through very clever engineering, the receiver is set to switch between remarkable Beverage antennas over the hours of the day to favor the best reception from different areas of the planet. The 'ears' of this setup are simply not to be believed!

Fellow MWC member Steve Whitt looked for help in identifying a very rare catch for Scottish listeners - 1320 WGHQ in Kingston, New York heard through the Clashmore SDR. He had captured a fine recording of an ID but needed more verification and less presumption for his logbook. We both listened to the clip and heard a mumbled 'WGHQ 920' which was followed by 'and 92.5 FM.' Yes! Hearing the associated FM frequency mention nailed the ID!



Kiwi SDR Control Panel set up to receive on 1320 kHz LSB. 'A' is the A/B VFO switch. Rotating red arrow is the clip 'record' button.



The double frequency combination often confirms an otherwise imprecise ID when you are fishing

through a melee of stations.

Kiwi SDRs have several useful features: amazing bandwidth filtering (for notching out annoying heterodyne tones), a fine clip recorder and a dual A/B VFO. For instance, you can listen to Newfoundland's VOCM St. John's on 590 kHz and compare it with a sister broadcast of the same programming on 620 kHz AM from Grand Falls – Windsor with just the press of a button.

When you look at the Kiwi's waterfall display, you can immediately see if you are receiving North American stations because they will appear as carrier lines every 10 kilohertz. All the European and Middle Eastern stations use a 9 kHz spacing so their carriers are (for the most part) quite distinctly different than the Western Hemisphere signals. The fun you can have when DXing through a remote SDR! Steve and I once enjoyed hearing a station from Nigeria on medium wave gray-line skip. Simply amazing! Sample radio reception all over the world by switching from Kiwi to Kiwi! Just phenomenal.

Local FM Curiosities

Unusual activity is not limited to AM radio. Consider these two interesting cases on FM: WMNR is a classical music station based in Monroe, Connecticut.

They have been trying to relocate their Mount Kisco translator, W209CJ 89.7 FM for months and months since they lost access to their



Cell tower behind CVS in Bedford Hills.

original transmitter location. It was difficult to find a spot that would meet their FCC allocation requirements and still be financially viable. They decided to perch on a short cellular communications tower right behind the Shop-Rite and CVS Pharmacy in Bedford Hills, New York directly adjacent to the Saw Mill River Parkway right at the Green Lane exit.

You have to admire the determination of the WMNR staff. The FCC had to approve the proposed



Two-bay Shively 6812 antenna at W209CJ, Bedford Hills. [N2KZ pic]

site. The tower rental had to be negotiated. They had to arrange Optimum Internet service to deliver the program audio. A nest of ospreys sat near the proposed antenna position. The birds needed to be delicately worked around. They bought a two-bay antenna but the connecting stacking harness was incorrect and they had to order a custom replacement with a very specific type of cable to make a proper match. In the meantime, they had a 2 watt translator up and running to a cross dipole antenna down below on the tower to keep the station on the air. Now they are waiting for the new cable harness! Whoever thought that the comm tower behind CVS would host an FM station?

Another head-scratcher is WKBR-LP 102.3 FM residing in a re-purposed house between Lincolndale and Baldwin Place. This 100 watt low power station delivers the Catholic religious service 'Relevant Radio.' It is an unmanned station with a single antenna up on what looks like a consumer grade TV antenna pole. They have had several instances of broadcasting an open carrier for days at a time or being completely off the air due to their lone transmitter failing.

Going Digital

Around the world, some countries are two steps ahead of us. In Norway, even FM radio broadcasts have been shut down in favor of multiplexed Digital Audio Broadcasting — DAB. One digital signal can send a cornucopia of different services all on one carrier. The United Kingdom has also followed this lead. Long wave and medium wave broadcasts are slowly being retired, replaced with either over-the-air or satellite-delivered digital multiplexes. What is the primary reason for these dramatic worldwide adjustments?

Show Me the Money

Every young person who first launches into the world after schooling learns one harsh lesson. At 20 years old, many recently graduated students are filled with ambitions and great ideas. Their thoughts have a universal theme: "I have a million innovations in my head and I can make this a better world!"

Indeed you probably can — but there is one tough revelation to be learned. Radio and television (and just about everything else) *is a business*. It is not primarily a place for people to create their magic and art. Someone else makes the decisions and tells you what they need to do. Making profits is paramount! This is why consolidation is so prevalent. It's all about money!

No longer are there only one or two radio or television stations specifically dedicated to local areas. No business model can sustain high expenses when advertising stops bringing in unbridled amounts of profits. Now that we have thousands and thousands of program sources from all over the world — combined with a heavy dose of podcasts and YouTube videos — the

analog dollars of yesterday have turned into digital dimes or even pennies.

When there is no financial support for a station, nationwide syndication takes over. Why have an extraordinarily expensive staff of dozens of employees when you can get a feed of a nationwide broadcast through a satellite receiver to fill your air time? Just sit back and relax and hope your local commercials can foot the bill. No one can afford very local programming anymore.

Westchester County and surrounds are a perfect example. You would think we have incredible population density here and lots of high income listeners to sustain local broadcasting. Yet most of the local radio stations have shriveled up and died. Peekskill's WLNA is now a simulcast of two FM stations up the Hudson. It's confusing to hear

only the FM stations' call signs on their casual IDs. Hey! Where's WLNA? Putnam County's WPUT is gone and buried. New Rochelle's WVOX still holds on to a little local content serving

ethnic and specialized broadcasts. Mt. Kisco's former WVIP AM/FM is now the outlets for two international religious broadcasters — Family Radio on FM and Radio Visión Cristiana *en español* on AM. WFAS White Plains is an all-digital AM experiment. Their FM was moved to Yonkers, sold to a new owner and soon will become a syndicated religious station. Even the powerhouses, WHUD 100.7 and WSPK 104.7 are now living together (with other co-owned stations) in a consolidated facility in Beacon, NY.

Radio has also adopted a very casual nature in many respects. Many stations are part of co-owned company 'clusters.' One sole engineer may be responsible for a multitude of stations sometimes over large geographical areas. It is not that unusual to hear stations go silent or suffer disturbing technical problems for long, long periods of time. Mt. Kisco's WRVP 1310 is known for going silent for days and weeks on end when their satellite receiver goes south or some other problem occurs. WINE 940 Brookfield, Connecticut has been 'broadcasting' nearly an open carrier for months and months and months. They have some sort of programming whispering away at about 10 percent modulation. Why they continue with no recourse I will never understand. Is this to preserve an FCC license so they can claim they are not silent?

Another approach is to barrage your audience with multiplicity. If you can't rustle up good profits from just one source, offer your market many sources. Picture this: we used to bring in dollars with one station. Now



WINE and WPUT were a simulcast team with CBS Sports Radio. WPUT had its towers removed and building sold. WINE subsists with nearly no audio / open carrier.

we bring in all the dimes we collect from many stations. Internet and satellite delivery make this strategy possible and many broadcast groups have rediscovered financial

success with multiple station packages. Consider our national conglomerates like Audacy and iHeart Media. Literally hundreds of stations contribute to



THE UK'S NO.1 HIT MUSIC STATION



Capital Radio's morning host Roman Kemp with sidekicks Sonny Jay and Sian Welby.

their solvency. Britain has the Global group offering multiple Capital Radio, Heart, Smooth and LBC stations. France's NRJ offers dozens and dozens of niche narrowcast stations serving the most discerning tastes.

Can You See?

Television suffers from the same financial malaise. Again, thousands of viewing sources vying for audience numbers severely cuts advertising income. Station and network owners need to conjure new ways to save money and create new revenue streams. You know times are rough when the rock of American broadcasting, NBC Television, starts to ponder if it would be a good idea to hand back the prime time 10 p.m. to 11 p.m. hour to local stations as a mutual effort to meet financial goals. The recent appearance of accessory programming offerings — Paramount+, Peacock, Pluto and Freeform follow the 'collect the dimes' strategy.

If I could prophesize the future, one obvious move is overdue. I once worked in what could only be termed a factory for cable, streaming and network TV. Dozens and dozens of networks poured out of our facility. The amount of personnel and expense required for quality control, 'ingesting' all the program material into produced files for air, playout and transmission are mind-boggling. Unless there is a current news or sports event that requires immediate presentation, the majority of viewers today prefer on-demand programming to fulfill their every whim. Pause a show, rewind, fast forward, change languages and so on must be available with a single click. Even DVRs are considered archaic. VHS tapes and DVDs? What's that? In one word: forgotten!

Our technological world changes so quickly. We can only wonder what new directions we will experience. What's next? Stay tuned! - de Karl N2KZ

Church support

After a break of three years since the last request in 2019, PCARA was once again invited by Kathy, XYL of George N2LJO, to provide parking support for the 4:00 p.m. Christmas Eve Mass at the Church of the Holy Spirit in Cortlandt Manor.

At 2:30 p.m. on December 24, 2022 Bob N2CBH, Al K2DMV, David KD2EVI and NM9J gathered at the entrance to the church grounds. We were in no hurry to leave our vehicles as the temperature outside was just 15°F, with a gentle breeze taking the wind chill down to 5°F. This was to be our coldest parking operation ever — brrr! Dressed in multiple layers, we pulled on our high visibility vests and ventured outside to see Fr. John and Fr. Vernon. The garage was opened so traffic cones could be positioned to guide vehicles around the circle to the lower lot, past the church then up the hill to the upper lot and on-grass parking.



David KD2EVI, Al K2DMV and Bob N2CBH were clad in warm clothes and high-visibility vests on December 24th.

Al K2DMV parked his vehicle alongside the first set of traffic cones, providing a view of incoming vehicles and a place for chilly operators to warm up for a while. NM9J was located on the traffic circle, adjacent to the lower parking lot, Bob N2CBH was near the church door where passenger drop-offs were taking place while David KD2EVI kept watch over the upper parking lot and on-grass parking.

Vehicular traffic began to build from 3:30 p.m. The lower lot filled around 3:50 p.m. with situation reports passed between all four stations using 146.565 MHz FM simplex. The upper lot filled just before the service started at 4:00 p.m. and David had to guide vehicles onto the grass. At that point, Bob assisted with a minor casualty at the church where one of the parishioners slipped on the steps and cut her hand.

Cars continued to arrive and were guided around the circle up the hill toward the on-grass parking. By 4:15 p.m., the flow had diminished dramatically so we



By 4:00 p.m. on Christmas Eve there were 150+ vehicles neatly parked at the Church of the Holy Spirit.

picked up the traffic cones and ended the operation.

There was no need to close the entrance and direct vehicles to alternative locations this time. The reduced attendance might have been the result of extremely cold weather or residual COVID concerns. Thanks to all who contributed to another PCARA Christmas Eve support operation.

- NM9J

Looking ahead

Looking ahead to February, there will be a monthly meeting on Saturday February 4th at the Putnam Valley Library when

Mike N2HTT will present “An Introduction to 3D Printing, a Ham Radio Perspective.” Those wishing to attend in person or remotely via

Zoom are asked to register at Putnam Valley Library’s web site using <https://bit.ly/3WEAzF7>.

(Note the lower-case ‘z’)

The presentation will be followed by a V.E. Test Session starting at 11:30 a.m.

Candidates for this Laurel VEC session must contact Dave Harper KF2BD using daveharper@vivaldi.net.

A blue poster for a presentation titled "INTRODUCTION TO 3D PRINTING A HAM RADIO PERSPECTIVE". It features a photograph of a 3D printer. The text indicates the presentation is on Saturday February 4th at 10AM at the Putnam Valley Library. It also mentions sponsorship by the Putnam Valley Library and the Peekskill/Cortlandt Amateur Radio Association, and provides a QR code and a website link for registration.

A yellow poster for a "Test Session for FCC Amateur Radio License". It features a row of colorful pencils. The text indicates the session is on Saturday February 4th at 11:30am and that a free study guide is available.

Get your amateur radio license and discover...
Comradery – Community Service
Emergency Preparedness – Fun
Science – Technology

Laurel Volunteer Examiners – No Testing Fee
There are no Morse Code requirements
Must RSVP - daveharper@vivaldi.net 914-432-2639



Fliers for Feb 4th courtesy of Lou KD2ITZ.

Beaming up

One Square K

On December 5, 2022 the **Square Kilometer Array** Organization announced that construction had begun on the World's largest radio telescope. This international effort will employ thousands of steerable dishes covering 350 MHz to 15.3 GHz at a radio-quiet area in South Africa and 130,000 "low frequency" (50 MHz – 350 MHz) antennas in another radio quiet zone in Western Australia. The project will be managed by the not-for-profit SKA Organization and coordinated from its headquarters at **Jodrell Bank** in England.



Crossed log-periodic Yagi antennas for 50-350 MHz beam upwarp from a ground plane in West Australia. [SKAO pic.]

In the shadow of a dish

When I was youngster in northwest England, one of the dramatic science projects taking place nearby was construction of the giant steerable dish at Jodrell Bank in Cheshire. This grew out of work carried out by **Sir Bernard Lovell** and his team from the University of Manchester.

Bernard Lovell (1913 – 2012) had an early interest in radio from building his own receivers as a boy and transmitting by the age of 11. He was trained as a Physicist at the University of Bristol, gaining a PhD for work on conductivity of thin metal films. In 1936 he moved to the University of Manchester as an assistant lecturer where he was working on cloud chambers and cosmic ray detection in the lead-up to World War II.

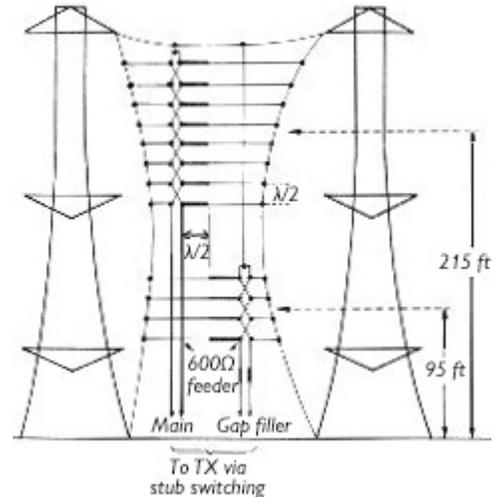


Bernard Lovell with Mk 1 telescope.

Join the chain

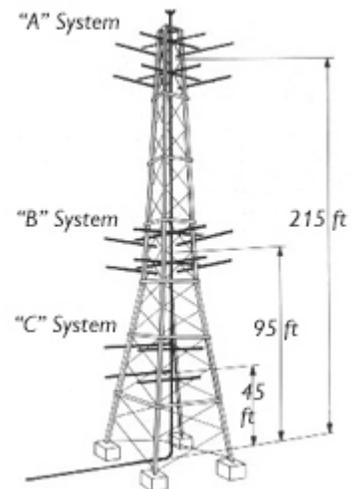
In August 1939 Bernard Lovell was introduced to early radar techniques at the "CH" (Chain Home) radar stations constructed around the coast of eastern and southern Britain to detect approaching enemy aircraft.

Each CH station had separate antenna systems for transmit and receive. The transmit array consisted of end-fed horizontal wire dipoles plus reflectors suspended between 360 foot high steel towers. The array was fed with 200 kilowatts of pulsed RF at frequencies in the range 22-30 MHz (13.5 – 10 meter wavelength). The Radio Society of Great Britain was asked not to publish letters from amateurs reporting pulse transmissions in the 10 meter band.



TX array at a Chain Home radar station. Eight half-wave dipoles spaced a half-wavelength apart are end-fed by an open wire transmission line with alternate feed points transposed. Reflectors are spaced 0.18λ behind each dipole.

The receiving antenna system had arrays of crossed dipoles mounted on a 240 ft high wooden tower. Distance to target was measured by displaying received RF energy from the 215 ft array as y-deflection on a cathode ray tube, with the x-timebase triggered by the outgoing RF pulse. Bearing was obtained by adjusting a goniometer (phase shifter) for a null on the 215 ft array. Height was derived from the ratio of received signal strengths on the 215 ft and 95 ft arrays.



Receive antennas at a CH station. Center-fed crossed dipoles have a switchable reflector behind them for sensing front/back direction.

Chain Home may look primitive, but it was the height of 1930s technology, with twenty stations installed around the east and southern coasts by the outbreak of war in 1939. Skilled operators interpreted the signals and sent their reports to Fighter Command, where fighter squadrons could be directed over HF ra-

dio to intercept incoming enemy bombers until the enemy came into sight.

During his time at the Chain Home station near Scarborough Bernard Lovell observed the background of sporadic echoes which the WAAF (Women's Auxiliary Air Force) operator had to distinguish from aircraft signals and wondered where the echoes might come from. He discussed with his University Professor — Patrick Blackett — whether the sporadic signals might be reflections from ionized clouds in the upper atmosphere formed by cosmic-ray showers.



WAAF radar operator plots aircraft on the CRT in a Chain Home Receiver Room. Her right hand has selected direction or height-finding and her left hand is ready to register the goniometer setting.

Night fighters and bombers

Interception at night was far more difficult than in daytime and the search was on for an airborne radar that would allow night fighters to detect enemy aircraft several miles away. Bernard Lovell worked on air interception radar during World War II using frequencies of 200 MHz (1.5 meters) and 600 MHz (50 centimeters). At the time these frequencies were the practical limits for high power transmission using conventional vacuum tubes. Then in



Bristol Beaufighter with 200 MHz airborne interception TX antenna on nose.

1940 John Randle and Harry Boot developed the cavity magnetron at Birmingham University, with further development at GEC Wembley producing a pulsed output of 10 kW on 3000 MHz, 10 cm wavelength.

Bernard Lovell worked on airborne antennas for this new short wavelength and settled on a parabolic dish reflector in the aircraft nose, covered by a Perspex radome. He found that the beam could be slewed by offsetting the dipole from the focus of the parabola. Dr. Lovell was transferred from airborne interception to a new project code-named H₂S — the use of centimeter radar to allow bombers to navigate to enemy targets at night and above clouds. Equipment was developed, wavelengths were reduced to improve resolution and in

1943 Pathfinder aircraft equipped with H₂S led the way to the bombing of Hamburg.



Halifax bomber with H₂S downward-looking radar mounted in the perspex cupola below Royal Air Force roundel.

Back to Manchester

When World War II ended, Bernard Lovell returned to the University of Manchester and his dust-covered cloud chamber — where money for new parts was limited. Prof. Patrick Blackett reminded Dr. Lovell of their wartime plans to detect cosmic ray showers by reflection of radio waves. This triggered memories of the HF World War II radar systems at Chain Home stations — hardly practical for use in central Manchester. Another memory was of gun laying radar employed by the British Army to detect enemy aircraft and direct anti-aircraft guns toward them. Dr. Lovell arranged the loan of one of these radar units consisting of separate trailers containing transmitter, receiver and mobile diesel generator. The equipment operated on 72 MHz (4.2 meters) with tiltable Yagi antennas mounted on the roof of each trailer cabin.

Escape to the country

The equipment was set up in the Physics Department quadrangle, located near DC-powered electric trams on Manchester's Oxford Road, where sparks from the overhead trolley poles caused intense interference on the radar receiver. The search was on for a quieter location. The first site, southwest of the city near Lymm was crossed by high voltage grid lines, with sizzling insulators... no good! The next site was offered by University botanist Frederick Sansome, who had a few acres of experimental grounds, 25 miles south of the University. He also happened to be a radio amateur and became interested in Bernard Lovell's plans.



Electric trams in Oxford Road, Manchester.

The Yagi antennas were dismantled and the mobile radar trailers towed to their new location — where a sign on the gate announced “University of Manchester, Jodrell Bank Experimental Grounds”. The site was remote, with no electricity, no telephone and just two gardeners.

With help from a local farmer the diesel generator



First day at Jodrell Bank in December 1945 with army radar receive trailer alongside the Botany Department huts. [University of Manchester.]

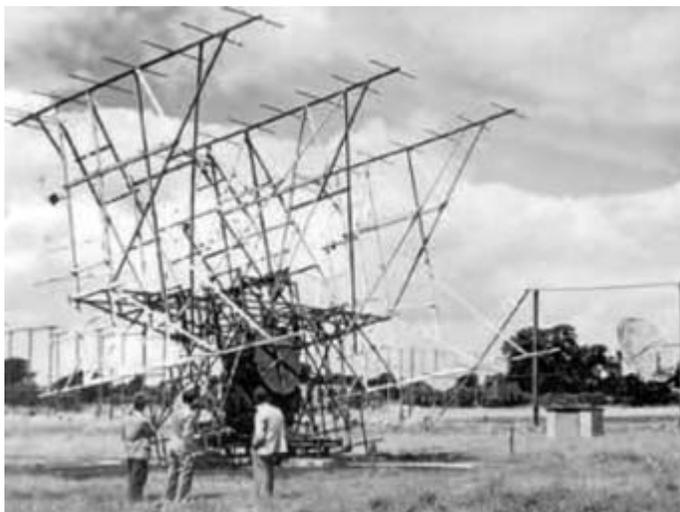
was started, and according to Lovell's notebook: "power generated, transmitter switched on according to army instructions, can draw sparks with my fingers from the transmission lines to the aeri-als*", so radar pulses being transmitted into space, retire to receiver cabin, switch on receiver and anxiously gaze at cathode ray tube." At that point in late 1945 Dr. Lovell observed echoes on the CRT that were caused by either meteors or cosmic ray showers.

*Don't try this at home!

Moving the beam

More accurate positioning was needed to determine origin of the echoes. One of Doctor Lovell's assistants J.A. Clegg was an antenna expert who built a large array of Yagi antennas, mounted on a borrowed army searchlight. During a visible meteor shower, this fully steerable array proved that RF energy was being reflected from the column of ionization generated by each meteor as it burned up in the earth's atmosphere.

In order to detect reflections from cosmic rays,



Broadside array of Yagi antennas for 72 MHz mounted by Dr. John Clegg on a steerable army searchlight proved that sporadic radar reflections came from meteors.

much greater sensitivity would be needed. One possibility was to build a large broadside array 100 feet by 100 feet using scaffolding poles — but this proved impractical, so the poles were used to build a giant, ground-mounted parabolic reflector. Twenty four poles with height of 24 feet were mounted around the perimeter of a circle 218 feet in diameter. The reflecting surface was made up of eight miles of 16 gauge galvanized steel wire, attached to stronger 3/8" steel wires stretched between each scaffold pole and the center. Wives and children contributed to attachment of the thin galvanized wire to the steel wires.

Focal length of the ground mounted dish was 126 feet so the antenna feed point had to be mounted on top of a 126 foot tubular steel mast.

One advantage of the parabolic reflector was that its operational frequency could be altered simply by changing the antenna at the



218 foot diameter wire paraboloid was fixed to the ground, with 126 ft mast carrying the antenna at the focus. Robert Hanbury Brown (center) would tilt the vertical mast to shift the beam slightly.

focus. This device, with its beam firing straight up, was called the "large transit telescope" and was initially used in 1947 to detect cosmic ray showers — but it proved far more useful for another purpose.

Birth of radio astronomy

Pre-war results from Karl Jansky of Bell Telephone Labs at 15 meters and from Grote Reber W9GFZ suggested that radio waves were coming from space. Grote Reber built a 31 foot diameter parabolic dish in his side yard in Wheaton, IL and produced a radio map of the sky at 160 MHz (1.87 meters). He detected radiation from the Milky Way and later from the sun.

Bernard Lovell's transit telescope was much larger than those pre-war antennas and was easily able to detect a large increase in cosmic noise as the earth's rotation took the telescope's beam across the Milky Way. The polar diagram was measured using an aircraft-mounted transmitter and results published in 1949.

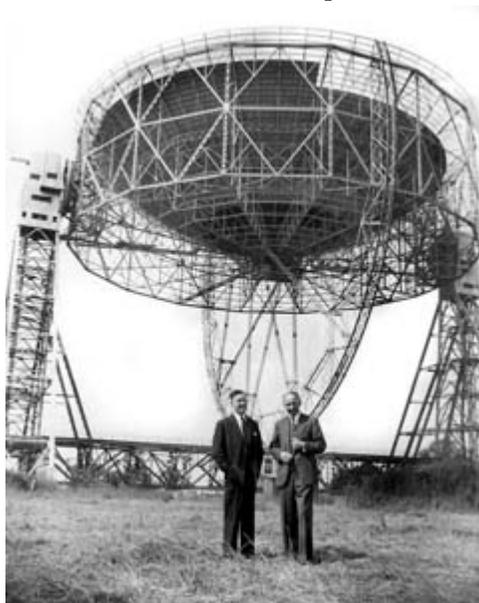
Robert Hanbury Brown modified the transit telescope from its original radar frequency of 72 MHz / 4.2 meters with open wire feeders to a new frequency of

160 MHz / 1.89 meters, fed through 300 feet of coaxial cable with a loss of only 2.7dB. This narrowed the beam to 2° and showed even more detail as the earth's rotation took the beam across the Milky Way and other sources. In order to direct the beam away from the zenith, they experimented with tilting the vertical mast by adjustment of its 18 guys. They could tilt up to 15° away from vertical and established that the spiral galaxy in Andromeda was a source of radio emissions from 2 million light years away.

The sky's the limit

Early results from the paraboloid transit telescope inspired Bernard Lovell to think about a larger dish antenna that could be pointed toward *any* part of the sky. He came across a consulting engineer — H.C. Husband — who provided a potential design for a 250 foot diameter dish that could be rotated and tilted — and most importantly would be able to survive high winds. This was presented to the Department of Scientific and Industrial Research who gave the go-ahead for a design study. The rim of the dish would be supported at a height of 180 feet using 27 foot diameter gear racks previously used to aim guns on a battleship.

After a great deal of discussion, £335,000 was granted in 1952 by DSIR and the Nuffield Foundation for construction of the Jodrell Bank radio telescope. Work began on the circular concrete foundation that would carry a double railway track to support two rotating towers attached to the edge of the dish. Costs were rising as the amount of steel increased, the driving mechanism was re-priced and the reflector surface was changed from mesh to solid steel plate in order to work at the 1420 MHz / 21 centimeter emission frequency of neutral hydrogen atoms. Five years later in the summer of 1957 construction was completed. Measurements were made on the radio source in Cassiopeia — the beam shape and power gain were exactly as planned. But there were arguments about the engineering decisions and cost overruns, with some £150,000 debt still owed.



Bernard Lovell (right) with H.C. Husband, and the 250 foot radio telescope in 1957.

Space race publicity

Attitudes changed when the USSR launched its first earth satellite *Sputnik I* on October 4 1957, beeping away on 20.005 and 40.002 MHz. A simple dipole on the ground could pick up these transmissions, but nobody in the west could track the rocket that had launched the satellite into orbit — which was also Russia's launch vessel for an inter-continental ballistic missile. A radar set producing 150 kW pulses on 36 MHz intended for tracking meteor trails was hauled up into Jodrell Bank's elevated laboratory below the telescope bowl in order to search for the rocket. The effort was successful, tracking the launch rocket as it passed over England at a height of 100 miles. There was a great deal of interest from press, radio and television, even more so when *Sputnik II* was launched with the dog Laika aboard. Jodrell Bank once again tracked the launch rocket until it burned up in the atmosphere.

The 250 foot diameter dish at Jodrell Bank went on to tracking USAF Pioneer rockets and Russia's Lunik rockets aimed at the moon in 1958-1960. More publicity followed and led to Lord Nuffield paying off the amount still owed for construction.

While radar transmissions were off, studies continued on reception of radio signals from the entire sky visible from the northern hemisphere. In collaboration with other radio and optical telescopes it was discovered that many weak radio emissions were associated with extragalactic sources, receding at great speed, with large red shifts, now known as quasars. Angular resolution was improved by employing a second receiving dish with a microwave link back to Jodrell Bank, forming an interferometer. This technique had been pioneered by Professor Sir Martin Ryle, G3CY at Cambridge University.

I remember several visits to Jodrell Bank during my time in England. I can also remember talks given at grammar school and at Bury Radio Society by a member of the team who was a radio amateur. He pointed out that with the dish pointed at the horizon it was possible to attach a 2 meter radio to the feed point and achieve antenna gain of something like 40dB! Now there was a real fire-breathing monster.

Sources: "Astronomer by Chance", Bernard Lovell 1990. "The Story of Jodrell Bank", Bernard Lovell, 1968. "Glide Path", Arthur C. Clarke, 1963 - chapter 11. "The Secret War", Brian Johnson, 1978 - chapter 2. Square Kilometer Array: <https://www.skatelescope.org/the-ska-project/>



Jodrell Bank Mark IA telescope at dawn. [SKAO pic.]

Peekskill / Cortlandt Amateur Radio Association

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PCARA on Facebook: <https://www.facebook.com/pcararadio>

YouTube Channel:

<https://www.youtube.com/@peekskillcortlandtamateurr7670>

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Newsletter contributions are always very welcome!

Archive: <http://nm9j.com/pcara/newslett.htm>

PCARA Information

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

Organization. PCARA meetings take place every month (apart from July/August break). See <http://www.pcara.org> for current details.

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

Masks and Social Distancing may be required.

Sun Jan 8 2023: PCARA Bring & Buy Auction, 3:00 p.m., Cortlandt Town Center CUE Room.

Sat Jan 21: PCARA Breakfast, 9:00 a.m., Uncle Giuseppe's, 327 Downing Dr. Yorktown Heights, NY.

Wed Jan 25: PCARA VE. Test Session, 7:00 p.m., Location to be confirmed, watch Google Groups for information, see below.

Sun Feb 4: Introduction to 3D Printing - A Ham Radio Perspective, N2HTT, 10:00 a.m., Putnam Valley Library, followed by VE. Test Session at 11:30 a.m, see below.

Hamfests

Check with organizers before leaving.

Sat Jan 7 2023: Ham Radio University, third year as a virtual event with registration links for forums. See: <https://hamradiouniversity.org/>

Sun Jan 29 2023: LIMARC Virtual Hamfest. Registration required, see: <https://limarc.org/>

VE Test Sessions

Check with the contact before leaving.

Jan 25: PCARA, 7:00 p.m., location to be confirmed, watch Google Groups for information. Must contact Mike W2IG, w2igg@at.yahoo.com.

Feb 4: PCARA, 11:30 a.m. Putnam Valley Library, 30 Oscawana Lake Rd., Putnam Valley NY. Must contact Dave KF2BD, daveharper@at.vivaldi.net

For additional local VE Test sessions in 2023 please see:
<https://www.arrl.org/find-an-amateur-radio-license-exam-session>



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