



PCARA Update



Volume 4, Issue 2

Peekskill / Cortlandt Amateur Radio Association Inc.

February 2003

Tech class anyone?

Most recently there has been interest expressed in having a Technician class. If you or someone you know is interested in participating in a Technician class (as a student or an instructor), please let us know. The Technician question pool is scheduled to change on July 1, 2003. A class would need to be scheduled well before the change to allow students adequate opportunity to take tests before the change, or begin sometime after this date so the class could cover the new syllabus.



— 73 de Greg, KB2CQE

Show and tell



Ray, W2CH brought his new Yaesu FT-897 HF/VHF/UHF portable/base transceiver to the January PCARA meeting. XYL Marylyn and Clint, KB2ZRJ are looking on.

Call from Karl

Does anybody have quartz crystals suitable for the 160 meter, 80 meter or 40 meter bands that could be purchased or borrowed by Karl, N2KZ? Karl is specially



Quartz crystals come in all shapes and sizes.

interested in CW segment frequencies, for use with his Heath equipment. You can contact Karl at karlzuk@hotmail.com.

Contents (Cat and Mouse edition)

Adventures in DXing, N2KZ	2
The mouse ran up the atomic clock.....	3
Adventures in DXing - II, N2KZ	4
WECA General Class.....	5
PARC Extra Class.....	5
Obituary KC2DYT.....	5
Sounds of Silence, WB2HNA.....	6
PCARA Officers.....	7
Electronics Trivia, N2EAB.....	7
PCARA Calendar, Hamfests, VE sessions...8	



Adventures in DXing

— N2KZ

When your cat wakes you up at three in the morning, and you feel too awake to go back to sleep...think twice! I jumped onto 40 meter CW and looked to the bottom of the band where several pile-ups were going on. This could not last forever, I thought, and listened for a while seeing where the calling stations were. There were a lot of interesting Europeans and some of the signals were intense. I had a chance at this.

Here's GM3YTS pounding in. I take a shot and he hears me at a 579. The QSO lasts only about a minute, but it was a miracle. It was the first time I had jumped across the pond on 40 meter CW. Quite a thrill using a 32 year old tube rig and a spartan dipole just barely above my roof. I try to break-in to a couple of other pile-ups without much success. Then, LA2EG calls *me!* It's Hans in Bergen, Norway saying I'm 449. I tell him I'm using a Heathkit HW-16 and he sends back "HI HI What are you really using?" What a great night! I work a couple of more British stations. It's now about five AM. Life is good!

My receiver has always been about 10 kHz high in calibration, so I decide to take it down to my basement and tweak it so I can hear the bottom of the bands now very important to me. I take the top cover off and adjust the little trimmer capacitor. I re-assemble it and return back to my office shack. I hook the VFO back up to the transceiver and give it a try. It won't transmit! I plug a crystal into the front panel and I'm back on the air. What did I do? The VFO seems active. I can hear



Karl's Heathkit HW-16 TX/RX, matching HG-10B VFO, Navy Sparkproof Straight Key and Goldie the cat.

the VFO's output when I set it to "spot." What gives?

I open up the VFO and get out my tube tester. Both tubes seem fine. I check the voltages at the output tube. Every pin reads almost exactly as recorded on the print. I open up the transceiver and look carefully at all the wiring. It seems fine. I test the two driver tubes in the transmitter section. They are way above nominal reading. I'm thinking: "Why did I have to tweak this thing? It was working just fine!"

I am beside myself. This is a rig I wired with my father back in 1968! What did I do to it? I check the output at the VFO itself and it seems OK. I check the output at the other end of the jumper cable. Nearly nothing! I unscrew the covers of two RCA connectors at each end of the jumper. Aha! A wire has broken away from one of the RCA connector's center pins. I remake the connector and all is well. The clock now reads 7:15 am. I hear my daughters getting up. I am so tired! I work CO2JD in Havana and call it quits. I dragged through the entire day. I had no trouble sleeping that night!

Next morning, I turn on the TV and notice tremendous co-channel ripping over TV channel 2. E-skip is in! I tune to the higher channels. The old pest, WEDU from Tampa is full-quieting on Channel 3 with "Angelina Ballerina" and even channel 6 has a talk show coming in clear. Ten meters must be wide open! I have to do some errands, so I take my ten meter rig into the car and place my mag-mount whip on the roof. I call CQ and CX1SI comes back to me. He sends me a 569 and it's a great day. All of a sudden, a huge clump of snow smashes on top of my car and the windows go white blinding me. I hear my mag-mount whip hit the ground. I put my wipers on to see where I'm going and quickly pull over to the side of the road.

A lady walks over to me (I'm blocking her driveway) and she says: "Can I help you?" I tell her, kindly, that I don't think so and that something fell off my car. I take a quick look and I see that all that is left of my antenna is the cable and part of the mount. Even the big round magnet is gone! I guess it's time to get a new antenna! This was a QSO that ended very, very quickly! There was not a trace of the antenna's remains on the side of the road. May it rest in peace.

Now, I believe that trouble like this comes in threes. Just a few minutes later, I'm in a local Shop Rite grocery, shopping for the week. An annoyed, disgruntled old lady is in front of me in the bread aisle and is mumbling in anger. She pulls out a long sandwich bread and smacks me in the leg with it. "Don't you rush me, young man!" she quips. I don't get it. Not even a little! What a weekend! I'm going to be very, very careful for the rest of the day!

- 73 de N2KZ Karl

The mouse ran up the atomic clock – NM9J

When the clocks “spring forward” in early April, do you get tired of walking round the house, resetting each one? Do you like to have precise time for the logbook, but can’t be bothered resetting the radio room timepiece to WWV every week?

Perhaps you need an “atomic clock”, or maybe you need more than one... The consumer “atomic clocks” on sale today aren’t really atomic — they don’t contain a 9.2 GHz cesium beam frequency standard — but they do synchronize themselves with the National Institute of Science and Technology’s WWVB radio station, transmitting on 60 kHz from Boulder, Colorado.

If your HF transceiver has general coverage down to 60 kHz, you may be able to hear the signals from WWVB. Tune down to 60.00 kHz and select CW mode with narrow selectivity. Depending on your antenna and the time of day, you should hear a weakish carrier, which sounds as though it is being slowly keyed on and off every second or so. In fact the output is reduced 10dB during pulse-width modulation keying, with the current minute, hour, day and year digits sent as binary coded decimal data. The whole cycle takes one minute — this is a **slow** data transmission rate of only **1** bit per second. The timing is derived from cesium atomic clocks in Boulder, which are kept in agreement with national and international standards.

WWVB’s power level was increased in 1997 and 1999 to its current 50kW ERP – and that’s sufficient for clocks on the East Coast to synchronize easily overnight when the signal is strongest and electrical interference is least. Depending on local circumstances, you may even be able to synchronize during the day. If you would like to see photos of the transmitters and antennas, pay a visit to the NIST Internet site: <http://www.boulder.nist.gov/timefreq/stations/wwvb.htm>.



Eurochron office wall clock is synchronized with WWVB in Boulder, CO.

My favorite style of “atomic clock” is the circular wall clock that looks just like a conventional quartz-controlled model. The price has dropped to \$30.00 - \$60.00 — take a look at Atomic Time’s web site <http://www.atomictime.com> for a variety of attractive styles. These clocks usually include a mechanism to let the electronics “know”

where the hands are pointing — so that time setting is completely automatic. You can buy cheaper ‘Atomix’ models from Walmart or BJ’s where the owner must set the hands manually after the AA battery is first inserted. With both types of clock, it’s fun to stay up late in April and watch the hands fly round the dial to catch up with daylight saving time at 2:00 a.m.

If you prefer a clock with a digital display, inexpensive models are available ranging from small desktop/bedside types to larger wall-mount units with digits up to 3 inches high. Clocks sold in the U.S. can usually be adjusted to one of four or five time zones — for our area you simply select

Eastern Time. Life gets more difficult if you want a clock for the radio room that can display Greenwich Mean Time or UTC — you’ll probably want a 24 hour display as well, and you probably won’t want your GMT clock to “spring forward” in April to British Summer Time. There are only a limited number of models that are suitable – the one I have is an MFJ-120, which powers up to GMT as the default setting. Unfortunately, it then tries to synchronize with WWVB at 9:00 p.m. eastern and gets confused by the TV time bases. MFJ (<http://www.mfjenterprises.com>) no longer markets the MFJ-120, though Atomic Time has a similar ET-31B model available, and advertises the dual time version ET-31BD as being UTC capable.

The ultimate “atomic clock” is one you can carry round with you. Junghans makes some very expensive models, but Casio and other manufacturers are now producing wrist watches in the \$40 - \$100 range.

One final hint – don’t be tempted by atomic clocks intended for the European market. They are designed for use with the German DCF77 (Mainflingen 77.5 kHz) or British MSF (Rugby 60 kHz) LF transmitters and would not synchronize in the U.S.A.



MFJ-120 digital atomic clock with humidity and temperature — can be set to display GMT.



Casio “Wave Ceptor” radio controlled wrist watch

— Malcolm, NM9J

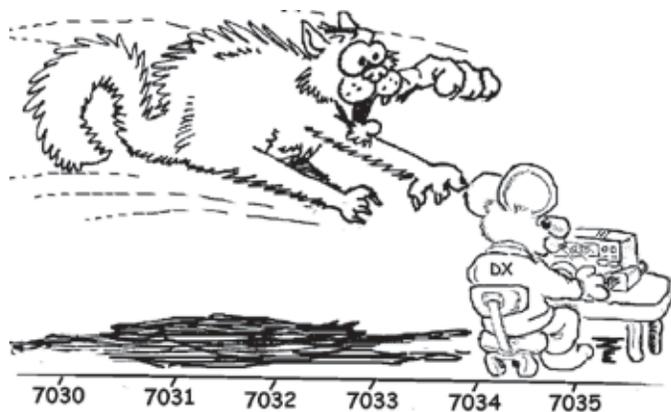
Adventures in DXing-2

- N2KZ

Life In The Fast Lane

I've run my first 40 meter CW sprint! I learned to walk in the Novice segments. Later, I found my way into the mainstream of CW, the 30 to 50 neighborhoods of 80 and 40 meters (3530 to 3550 kHz and 7030 to 7050 kHz) where the pace goes as fast as 25 wpm or so. With great courage and daring, I have now jumped into the major leagues of code. When you dip down to the first 25 kHz, every day is contest day. This is the world of the thirty-second QSO. Here is my postcard all about my first visit.

The most important thing to remember is to observe and listen. If you can't send and receive code that fast, you can complete QSOs with dignity if you listen carefully. Find yourself a pile-up where dozens of stations are trying to reach a rare catch. You'll have as many chances as you like to copy the call of the station you want to log. Get a letter at a time and you'll be all set. Add the shorthand of letters for numbers: 599 is sent as ENN. Once in a while the distant station will actually give you a true signal report, which will sound even stranger. How about EBN for 579? Listen to where and how everyone else is sending. Are they offset by 100 kHz? Stand out from the crowd and set your offset to 120 kHz. When the current exchange is done, there will be a blizzard of calls. Try to jump in right after everyone calls so that you will be in the clear in the gap right before the DX station replies. Another approach is



"Try to jump in right after everyone calls..."

to just wait until the pile-up clears. In any case, be very patient! It's worth it!

Ready for a fast exchange? Here's what it would sound like: First, get your call sign heard. Send "N2KZ" The distant station does not hear you well and sends: "AGN" for "again." Again, you send your call sign once. He hears you! "N2KZ ENN" You reply: "DL7DX ENN NM

KARL" The DL7 sends "TU KARL" (thank you, Karl.) You are done.

Although you may encounter DX at nearly any time of the day or night, a great time to try is during grayline. Some people refer to this as sunrise skip and sunset skip. When the sun is passing your horizon, or the horizon of the distant station, there is a short, and often amazing, enhancement of propagation. The weak become strong. The strong become ever stronger. The lift is best when both ends of the QSO are in grayline, but it can be effective when only one side is grayline. I have discovered that 3am to 4am is a great time to work Western and Central Europe on the low bands during the winter. Europe is just going through dawn and we are at the height of our darkness. If my measly station can compete, so can you! Take a look at grayline maps on the Internet at: <http://www.spacew.com/www/topband.html> to predict where you might connect at any given moment. Happy hunting and good luck!

Living In The Past

If you believe in time travel, listen around 7:30 pm Eastern local time to 3544 kHz 80 meter CW Monday through Friday nights. Three hams: Bob KB1TD, John NB3X (an old Morse pipeline telegrapher), and Larry WK2M, chat with each other in a nearly extinct language *American Morse*. I discovered this net by chance one night. While I waited patiently for a chance to join in, I listened in fascination for twenty minutes or so and copied bits and pieces of what was being said. When I heard the conversation ending, I courageously tailgated the net sending CQ in American Morse "dit dit...dit dit dit dah dit" with my call. I wrote it all out before I sent it. My call sounds very strange in old-fashioned code! Bob, KB1TD, replied in American Morse. I got most of it. I returned with apologies that I wasn't fluent, just very interested. We had a great rag chew for about half an hour. What an amazing life Bob's had! He's 91 years old, and his fist is a solid as a rock!

Here's an excerpt from the letter he sent with his QSL card: "I had my first ham ticket, W1BWS, in 1931, so you can see how old I am. I learned code listening to ship spark transmitters on 600 meters. They had a very



Karl's recent birthday cake, decorated in American Morse by his wife and daughters.

nice tone, too, but they are long gone. I also use a straight key. My key is from an old telegraph office, a KOB (key on board), that is a key and telegraph sounder on a small board. It was made by Brunell and it must be very old (circa 1900). The key knob is worn down by many years of use; but those long gone ops were top flight using the Phillips Code abbreviations of the newspaper press. Before my own time. I worked for The Navy when NAA moved to Cutler, Maine. Two megawatts on 15000 meters. The antenna current was 2400 amps!

I also worked as a tech. for HPC and HPD in Panama connecting to Boston, New York and NOLA (United Fruit Co.) I did make many voyages on the old Panama Railroad Steamship Line from New York to Colon, Panama as we then lived in the Canal Zone. I would hang around the radio shack aboard. The op would go out and fool around with the girl passengers and tell me to stay in the shack in case he got a call from WSC for traffic. So, I can recall what the old 600 meter band sounded like. It was hot in those days. In the daytime you couldn't get out very far. He had a message around noon from some passenger, so he cranked up his old ET 3666, a nice 750 watt radiomarine CW rig on 2100 meters. We were going through the Bahamas and no problem. I once met some Chilean radiomen on a train to Boston. They told me they were in Guayaquil, Ecuador with a message to the U.S.A and raised New York on 2100 meters with no problem, and that's 2500 miles! I also worked on radio broadcast rigs in Venezuela: YVKL 20 kW on 590 kHz." Bob celebrates his 92nd birthday this year! Take a listen to their sked. It's a rare snapshot of the past!

Radio Shack humor

You can hear a broad spectrum of wisdom visiting local Radio Shack outlets. Here are two gems:

I walk into the store and bring a pre-made RG-58/U cable with PL-259 connectors up to the counter. The young salesman says to me: "You know, RG-6 is probably better for what you are doing." I assured him this was not for TV. "You'll need adapters for those connectors, too. I'll get them for you." I explained it was for a shortwave transmitting antenna. "You know, you need a license for that..." I started to lose my patience: "Yes, I know. Just sell me the cable!" "Can I have your address?..." "JUST SELL ME THE CABLE!" He did, eventually!

Episode two: I was looking to replace the mag-mount whip destroyed when the enormous snowball fell on my car. This is the first year that Radio Shack has not published a catalog. Now you must suffer searching through their web site. I surf for a minute or two and scribble down a model number or two. As I look around the store, I discover antennas are no

longer part of the display racks. The guy behind the counter says he has a few CB whips in the back of the store and he'll show them to me. Proudly, he appears with a long mag-mount fiberglass whip. "It's our best seller!" I said, "Do you have any stainless steel ones? I want to cut it down for ten meters." He looks at me like I'm crazy and says, "We don't have any that long!"



– Happy trails and CUAGN soon,
de N2KZ Karl "The Old Goat",

WECA over-the-air General Class

Do you have your Technician license and have you been thinking about getting on HF? Do you know a Technician licensee who might benefit by taking that next step in Amateur Radio?

WECA is pleased to announce a General Theory Course starting on **March 12**, 2003. The course will meet on 147.060 MHz every Wednesday from 8:00 PM to 9:00 PM for approximately 12 weeks. The instructors will be N2SE, Sandy Fried and K2MIT, Jeffrey Steinberg.

Participants should purchase "The ARRL General Class License Manual" (\$15.00). To order from ARRL, click on the following link: <http://www.arrl.org/catalog/?item=8004>.

There is no charge for this course. Please e-mail k2mit@weca.org to register.

— Jeffrey, K2MIT, WECA Education Director Show and tell Show and tell

PARC Extra Class

Poughkeepsie Amateur Radio Club has an **Extra Class** starting Wed Feb 12 in Wappingers Falls. See <http://www.qsl.net/mbarc/service/extclass.rtf>.

KC2DYT SK

Marion Brown, KC2DYT passed away on January 18. Brown (as he was known) was a member of QSY, WECA and PCARA. He paid several visits to PCARA meetings over the past few years.

Marion Brown was a resident of Peekskill. He served two tours of duty in Vietnam with the U.S. Army and worked for the NYS Department of Corrections at Sing Sing Prison for 26 years. (TNX - KR2V, N2TTO, K2DFJ and *North County News*.)

Sounds of Silence - WB2HNA

I was preparing to move my shack from my unfinished basement to one of the bedrooms on the second floor of the house after my son moved out. I won't have to contend with the rumbling of the furnace and this room is heated! I need to be able to use the room as a mini recording studio as well, so I wanted this room to be as "dry" and echo-free as possible. Did you ever work another station on HF that was using an amplifier with fan noise that registered 20dB over S9 without the guy talking? Or how about someone who sounded like he was transmitting from his shower stall with loads of echo? I didn't want to have transmit audio that ever fell into either of these categories. Hard bare walls reflect sounds easily, so I wanted to cut down on the internal reflections of sound within the room (reducing the reverberation time). This called for additional absorption. I was not trying to reduce transmission of sound through the walls or to stop sounds from the rest of the house from coming into the room, since the house tends to be pretty quiet most of the time. Any sound treatment also had to be esthetically pleasing and not too expensive. While most everyone is familiar with various types of acoustic foam wedges for sound absorption, my wife ruled out that option.

A visit with Bob, N2CBH, to the WCBS-FM studios in New York gave me the idea to use sound absorbing panels covered by acoustically transparent fabric like speaker grille cloth. I did a bit of reading on acoustics and picked up some brochures from a few companies that supply acoustic materials. Putnam Music in Mahopac is a retail supplier for Auralex Acoustics (<http://www.auralex.com>). In addition to the traditional foam sound absorbers, Auralex manufactures acoustic mineral wool fiber panels. They are made from dense fiberglass-like material and are



Auralex mineral fiber panel as used by WB2HNA in his sound absorption project.

available in two inch or four inch thickness. I selected the two inch version of the panels. Each panel is two feet wide by four feet high

and a carton contains six panels for a total coverage of forty-eight square feet. I ordered a carton from Putnam Music for \$65.

I originally thought that I would place all six panels vertically across the top half of one of the walls in the room and cover the entire set with grille cloth.

The Parts Express catalog, (<http://www.partsexpress.com>) had grille cloth on sale for \$5.25 per linear yard with a width of 67 inches. I needed to replace the torn grille cloths on two large stereo speakers that I had in the basement, so I ordered 10 linear yards of the black fabric for both jobs. It's also available in white or gray.

A bit more reading convinced me to make separate sound panels and to distribute them in the room, rather than putting all of the panels on one wall. This arrangement actually produces more sound absorption than placing all the panels together. I bought a bunch of 1" x 3" wooden furring strips at Home Depot for \$1.35 each and made two foot by four foot frames for each panel. I just mitered the corners and used wood screws to join the wood, which I stained. I cut the grille



Construction of acoustic absorption panels as designed by WB2HNA. The mineral fiber material is covered with speaker grille cloth and set in a wood frame.

cloth in 36" lengths and put the cloth into the frame, set the panel in place behind the cloth, and stapled the cloth to the rear edge of the frame after removing all of the wrinkles in the fabric. The stapled grille cloth prevents the panel from coming out the front of the frame, and I used two pieces of baling wire screwed into the back of the frame to keep the panel from coming out the rear of the frame. So each framed panel looks like the front of a large speaker, except its depth is just under three inches.

Using hangers designed to hang heavy mirrors, I mounted the panels on three of the walls in the room. The fourth wall of the room has the entry door, a closet, and bookshelves, so there was no room to put a panel on that wall.

There's a noticeable difference in the acoustics in the room. Without the panels, after clapping your hands, you would hear a ringing, repeating hollow

sound as the sound bounced back and forth between the walls. So the room is pretty “dry” now, but not totally “dead”. If I want to liven it up, I can just remove a few of the panels from the wall. We may add some decoration to the front of the panels to change them into “art objects”



WB2HNA's new radio room is quiet as a mouse thanks to six sound absorption panels covered in black speaker cloth.

Reverberation time is defined as the length of time it takes for a sound in a room to decay 60dB (or subjectively, the time for a very loud sound to become inaudible). Materials can be rated for their sound absorbing effectiveness and this is usually expressed as its NRC or “noise reduction coefficient”. The NRC is an average of several measurements of absorbency made at specific frequencies from 125Hz to 4000Hz and can give you a pretty good idea of how efficient a material is in absorbing sound. The panels I used greatly reduce the reverberation time for middle and higher frequencies. As you can imagine, bathroom tiles have a very low NRC, while four inch acoustic foam wedge insulation has a much higher value. The Auralex web site has good information and a short “Acoustics 101” paper for additional reading.

— Gary, WB2HNA

PCARA Officers

President:

Greg Appleyard, KB2CQE kb2cqe @ arrl.net

Vice President:

Bob Tarsio, N2CBH; n2cbh @ arrl.net

Secretary/Treasurer:

Mike Aiello, N2HTT n2htt @ arrl.net

Electronics trivia —N2EAB

What is the meaning of **BNC**, as in BNC connector? — I hadn't given it much thought until the question was raised over coffee and donuts at a PCARA club meeting. Seems like there were as many answers as there were people involved in the discussion. Here's what was found on the web:

Webopedia:

“Short for **British Naval Connector** or **Bayonet Nut Connector** or **Bayonet Neill Concelman**, a type of connector used with coaxial cables such as the RG-58 A/U cable used with the 10Base-2 Ethernet system.” (http://www.webopedia.com/TERM/B/BNC_connector.html)

Amphenol website:

“Developed in the late 1940's as a miniature version of the Type C connector, BNC stands for Bayonet Neill Concelman and is named after Amphenol engineer Carl Concelman. The BNC product line is a miniature quick connect/disconnect RF connector.” (<http://www.amphenolrf.com/products/bnc.asp>)

— Mike, N2EAB

Editor's note: Thanks Mike. By the way, the “Neill” in “Bayonet Neill Concelman” is for collaborator Paul **Neill** of Bell Laboratories. He collaborated again with Carl **Concelman** of Amphenol to develop the TNC (Threaded Neill Concelman) connector in the late 1950's. TNCs show up on some cell phones and commercial HTs. The **Type N** connector, which is still



Right Angle Type N (left) and BNC connector (right) for coaxial cable. Paul Neill was involved in both designs.

popular for UHF and above, was developed in the 1940's by and named after Paul Neill.

See: http://www.marvac.com/funpages/rf_information.htm and <http://www.qsl.net/zl2aa/other.html> for more details.

— NM9J.

Peekskill / Cortlandt Amateur Radio Association

Information/Fax line: 914 737-0348

E-Mail: w2nyw@arrl.net

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

PCARA Update Editor: Malcolm Pritchard, NM9J

E-mail: NM9J@arrl.net

Newsletter contributions are always very welcome!

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 the Hudson Valley Hospital Center, Route 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.

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

Sun Feb 2: January meeting, 3:00 PM. HVHC.

Hamfests

Sun Feb 23: Long Island Mobile ARC, Indoor Hamfair, 9:00 A.M., Levittown Hall, 201 Levittown Parkway, Hicksville NY.

Sat Mar 1: Splitrock Amateur Radio Association Hamfest, 8:00 A.M., Parsippany Police Athletic League Bldg, Rt 46 & Baldwin Rd, Parsippany NJ.

Sat Mar 15: Cherryville Repeater Assn Hamfest, 8:00 A.M., North Hunterdon Regional High School, on Rt 31 South of Clinton NJ.

Sat Mar 15: Eastern Connecticut ARA Hamfest, Pomfret CT

Sat Apr 5: Orange County ARC, New Windsor NY.

Sun Apr 27: Mt Beacon ARC, Poughkeepsie NY.

VE Test Sessions

Feb 2, Mar 2: Yonkers ARC, Yonkers Police Dept., 1st Precinct, East Grassy Sprain Rd, 9:00 A.M. Contact: Daniel Calabrese, 914 667-0587.

Feb 10: Split Rock ARA, Hopatcong HS, Hopatcong, NJ. 7:00 P.M. Contact K2GG@ARRL.NET.

Feb 17: Columbia Univ ARC, Watson Labs, 612 W 115th St. New York, NY 10025, 6:30 P.M. Contact Alan Crosswell, 212 854-3754.

Feb 21: Bergen ARA & Fairlawn RC, Fair Lawn Cultural Center, 12-56 River Rd, Fair Lawn NJ, 7:30 p.m. Contact Donald C Younger, 201 265-6583.

Mar 1: Splitrock ARA Hamfest, Parsippany PAL Bldg, Parsippany NJ, 9:00 A.M.



Peekskill / Cortlandt Amateur Radio Association Inc.
PO Box 146
Crompond, NY 10517