



PCARA Update



Volume 10, Issue 2 Peekskill / Cortlandt Amateur Radio Association Inc. February 2009

Moving experiences

It looks like we have another PCARA tradition in the making! The Second Annual PCARA Bring and Buy Auction was held at the January 2009 meeting.

Member turnout was very good and there was spirited bidding over quite a few items. I didn't go home empty handed! I picked up a boxful of assorted microphones and mobile speakers for only \$5.

My Radio Shack PRO-433 scanner now has a beautiful Motorola external speaker, with awesome audio. I would be remiss if I didn't thank our Auctioneer Malcolm, NM9J for his efforts, as well as all the members who brought in their merchandise! **Thank You!**



Communications has moved from their Newington, CT location to their new home in Berlin, CT. The new store should be open for business in mid-February, and their updated website should be online soon (<http://www.lentinicomm.com/>). I don't know 'bout you, but I'm thinkin' "Road Trip!"

I ask that you bring your ideas for future PCARA activities to the February 1st meeting at 3:00 PM at Hudson Valley Hospital Center. I look forward to seeing each of you there.



- 73 de Greg, KB2CQE

PCARA Officers

President:

Greg Appleyard, KB2CQE, [kb2cq at arrl.net](mailto:kb2cq@arrl.net)

Vice President:

Joe Calabrese, WA2MCR; [wa2mcr at arrl.net](mailto:wa2mcr@arrl.net)



Malcolm, NM9J moving more Motorola merchandise at the PCARA Bring & Buy auction in January. [Photo - N2EAB]

Some big news from a somewhat local purveyor of amateur radio equipment (an increasing rarity), Lentini

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 neighborly news and technical topics. (See Karl's article for further details.)

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Adventures in DXing

– N2KZ

Only the Beginning

Is the entire world converting to digital? It certainly seems like it! Unless there is a last minute extension to the deadline*, the grand television switchover to digital is only 17 days away. Some areas, most notably Wilmington, North Carolina and the entire State of Hawaii, have already completely cutover to the world of zeros and ones. Hopefully, the American public will agree it was worth the effort!

A couple of things to watch for: Contrary to early belief, the new post-cutover TV stations will be delivered not just on UHF but on VHF, as well. In the New York City area, channels 7, 11 and 13 will be using their current analog frequencies after February 17. This not only means you need to rescan your digital TV or converter box to acquire the new frequencies; you also need to use a VHF/UHF combo antenna. I currently have one of my sets happily receiving every major New York City channel using a two bowtie indoor UHF antenna. After February 17, I may have to get creative and add a set of rabbit ears to capture the three stations soon to move to high VHF frequencies.

We are deep into winter and few leaves are on the trees to absorb UHF RF signals. Come spring, green buds turn into great big damp leaves that effectively add up to 10 db of attenuation to these near-microwave signals. My current VHF/UHF log periodic antenna, a Lafayette model from 1968 now mounted in its third house(!), is currently doing a fine job of capturing all New York City has to offer. When Spring arrives, will I have enough signal to receive all the digital stations I want to see? Time will tell!



Zenith DTT-901 Digital TV tuner converter box with analog pass-through.

If you need a 'granny box' converter, the model preferred by TV DXers is the LG-designed Zenith DTT901. This is the revised version of the original DTT900 which now offers analog pass-through

should you have low-powered stations nearby that will still be broadcasting in that mode after the big switch. Governmental discount coupon funds to offset the price

*At press time, a compromise bill was being considered that would extend the digital transition date to June 12, 2009. The new bill would still allow broadcasters to make the transition before June 12. - Ed.

of these converters are currently exhausted but a waiting list has been created for those who still like to apply for these \$40 rebates. Details regarding discount coupons can be found at: <https://www.dtv2009.gov/Options.aspx>.



The government has run out of funds to pay for these converter box coupons.

Digital conversion is not limited to just TV. Broadcast radio is still looking for a comfortable spot in this new world. It sounds like a firm step backwards but AM radio stations are slowly pulling the plug on in-band on-carrier digital HD Radio. This system simply does not work very well, especially at night. A few large 50 kilowatt stations have turned off their HD Radio encoders and have reverted back to good old analog. The inside industry talk regarding these decisions are two-fold. Stations are weighing if it is worthwhile to continue using the system and paying licensing fees if few people are listening to it. On the contrary, the FM version of HD Radio is holding its own even though it has not been universally embraced years after its introduction.

The AM version of HD Radio also adds incredible interference to first and second adjacent channels especially at night. Consider the battle CBS Radio is warring with itself. They own 1010 WINS New York, 1020 KDKA Pittsburgh, and 1030 WBZ Boston. At night, when all of these stations are easily heard throughout the listening areas of all three stations, the inclusion of HD Radio's digital cacophony creates a technological version of hari-kari. All three stations suffer death by mutual interference. In turn, the compatible analog signals, transmitted in the middle of this mess, lose most of their fidelity squeezing between the digital carriers. The beautiful fidelity we once enjoyed before HD Radio is squelched down to just a tinny reminder of what used to be just to make room for the broad bandwidth needed for the digital information.

America needs to take a cue from our friends across the pond in the U.K. and Ireland. Digital audio broadcasting needs to be delivered on a special band set aside for this purpose. Multiplexes of several sources altogether on one carrier would add to the efficiency of this scheme. Squeezing digital signals onto the existing AM band as "compatible digital" just isn't sensible or reliable.

Some countries have already disregarded the AM broadcast band completely as a viable medium for radio. Ireland and Austria have ended all medium wave broadcasts. Switzerland is down to just one remaining transmitter. In my eyes, it would be a shame to see AM

radio disappear. Where else can you hear stations hundreds or even thousands of miles away with a five dollar radio and nothing else?

Many, many stations in America could go off the air and AM radio would still have much to offer. Most of the 119 AM radio frequencies receivable in North America are jammed with a plethora of transmitters. Just think what it might be like if the band was weeded out. I remember how interesting reception was when the expanded band, 1610 to 1700 kHz, was first populated years ago. I could easily hear the one kilowatt signal of KCJJ in Iowa every night on simple radios. Today's AM radio is often delivered by brute force which is highly unnecessary except to get over the signal arriving from somewhere else!

In the end, AM radio is a business. Broadcast stations have big electric bills and personnel and rent to pay. If no one is listening these expenses don't make sense. In this age of the iPod, Internet and satellite radio, AM is becoming a forgotten dinosaur. I would hate to see it go entirely, but poor economics may seal its fate.



A forgotten dinosaur?

Something Old, Something New

“CQ CQ CQ Four Meters from NM9J, November Mike nine Juliet, now tuning up and down for replies!” Is something wrong here? Four meters? Tuning up and down? Most television broadcasting in the low-VHF region, channels 2 through 6, will shortly come to an end. This new vacant spectrum space has awakened thoughts of finally allocating an amateur radio band on four meters in North America. The United Kingdom and Ireland have the most established four meter frequencies where you will find operators on AM, FM, CW and packet modes between 70 and 70.5 MHz. Many other countries in Europe, and even Africa, also participate in four meter operation. Has the time come for American four meter hamming?

Four meters is a very interesting band filled with overseas ama-

teur radio operators who are passionate about using older or homebrew equipment. Virtually no new commercial equipment is available for the band, so it has become a tinkerer's paradise. If you really want to pique your interest, take a look at: <http://www.70mhz.org/>. A whole new world awaits you where low power and home construction rule!

Currently, there is some use of four meters by



Radio-controlled model aircraft can operate on frequencies around 72 MHz.

radio control enthusiasts around 72 and 75 megahertz. A nice list of RC channels can be found at: <http://www.fatlion.com/sailplanes/freqs.html>. These channels are squeezed in between current TV channels four and five. Unfortunately, these allocations are not to be used to transmit intelligence like voice or code. All hope is not lost! According to February's QST, page 93, the first crossband 6 to 4 meter contacts have been successfully achieved across the pond. (North Americans transmit on 6 meters and listen for replies on 4 meters.) Wouldn't it be nice if we could directly reciprocate on the same band?

Some four meter gear, still on the air, is quite old and rock bound. Think back to when American Novice hams were crystal controlled. You might have had only one rock for your simple CW transmitter and the ham you were trying to work might be in the same predicament. Your crystal frequency and their crystal frequency was not exactly the same. Tuning up and down the band for a reply was not unusual...it was most likely the rule! Four meters is no different. Primitive gear is often used and you look for replies where you can find them! Zero-beat is only a luxury!

As a recent article in QST suggests, a four meter allocation might be dogged by the use of TV channels 3 and 4 for many video accessory devices like DTV converters, VCRs and utility video modulators for games and the like. We can only hope for a new experimental allocation. Many hams are now participating in

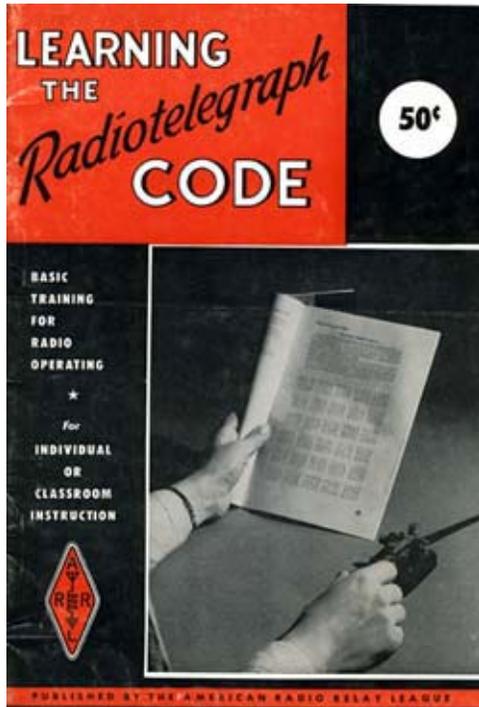


Icom IC-E90 is one of the few modern transceivers that can be modified for 4 meter (70 MHz) operation.

a very successful trial run on 600 meters (around 500 kHz just below the AM band.) Maybe it's time to awaken a new day on four!

Old Friends

For the last few months I have looked high and low for a copy of the old ARRL pamphlet "Learning the Radiotelegraph Code." Very few mentions of it were



seen on-line and no Adobe Acrobat versions were to be found. Fate brought me to Amazon.com where I discovered several sources of the well-known book. I bought a 1968 version (11th edition) that was similar to the one I used to study code as a 14 year old. I will always regret not

passing my code test back then. I missed 30 years of ham operation! The message: Never discourage new candidates to ham radio!

The pamphlet is a wonderful compendium of old-school learning. Originally published many decades ago, (the oldest version I have seen went to press in 1948) this little 48 page gem is everything you need to learn every nuance in the world of Morse. Covered are true telegrapher skills like how to properly write letters and numbers quickly and efficiently, how to send using a buzzer practice set, how to form characters and copying five letter cipher groups. Later chapters include correct practices for operating on the air, building your own code oscillators and how to wire them for multiple student practice work. I'm so glad I now have a copy. Who did I lend *my* copy to?

When All Else Fails

One of my New Year resolutions is to finally put together a strong plan of emergency preparedness for our club. We need to tackle the basics first: What we will try to achieve and how we will achieve it. In the last county-wide practice drill, the PCARA rose to the occasion providing a needed interlink between emer-

gency groups when, coincidentally, a cellular phone system failure prevented usual means of communications from getting through. "When all else fails..."

I would like to establish a frequency to be used for PCARA simplex communications, most likely our two-meter repeater output frequency of 146.67 MHz or our fox hunt simplex frequency of 146.565 MHz. We simply can not rely on repeaters continuing to work during long electric blackouts or other calamities. We need to check the effectiveness in contacting each other via simplex while on battery power. Other members of our club have already developed a mission headquarters in the Town of Cortlandt offices and ready-paks of portable transmission facilities to use on-the-go. Please contact me at n2kz 'at' arrl.net with any suggestions or additions you might have so we may solidify our plan as soon as possible. Thanks!

New Year? New Gear!

My partner in crime and CW buddy, Gil, NN4CW, sent me a couple of items that have been clogging up his basement. It was time for Karl to recondition them and give them a try!

One offering was a Sony SRF-M37V mini-radio offering four bands: AM/FM/Weather/TV (channels 2 through 13 only.) It also includes a time-of-day clock. Based on the miraculous chip also used in the ultralight



Sony SRF-M37V is an AM/FM/Weather/TV sound Walkman with 25 memory presets.

SRF-59 analog tuning Walkman, the AM broadcast reception is as good as a modern car radio or better. Gil modified this unit with a tight filter lifted from a Sangean shortwave receiver. An interesting perk: It can be changed from North American 10 kHz channel spacing to Overseas 9 kHz spacing with just a couple of keystrokes. The FM reception was better than average and I was surprised just how sensitive the TV side received. Too bad the TV band feature will be obsolete in a few weeks! This little radio can be purchased for as little as \$15 on line which is quite a bargain. It would make a nice compact radio for your next trip or at



AT Sprint II four-band transceiver kit.

work. The other rig is an AT Sprint II four band QRP transceiver designed by Steve Weber KD1JV. It is a one-board wonder stuffed with surface mount devices creating quite a soldering challenge. Little removable rectangular modules allow you to change from band to band. It features

pushbutton tuning, RIT and an annunciator to tell you what frequency you are on. I haven't gotten my arms around this one yet and it needs a little TLC. I hope to be reviewing it in the next edition of *PCARA Update*.

Join Us!

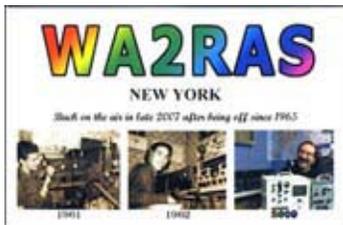
Every Thursday night you can catch up with the very latest about our club and its members. Just tune in to The Old Goat's Net on the two-meter PCARA repeater on 146.67 MHz -600 offset and a 156.7 PL. People from all over join in and you never know what

we'll be talking about. Want to know all about Gooney Boxes and Lunch Boxes? Tune in and find out! Our most consistent DX participant, Jeff, WA2RAS, from the south shore of Long Island, recently sent in his new QSL. We often talk about his ever-growing personal

museum of amateur radio and a million other things. Join in the fun and join us! All licensed amateurs are welcomed to check in! Tell your friends to listen in! It's free and it's great fun!

So until next Thursday's net, remember to have a QSO a day and...

- 73 de N2KZ, the Old Goat.



New QSL card from Jeff, WA2RAS

Technician Class

Have you ever thought about becoming an Amateur Radio operator? If so, here is an opportunity to do so. Westchester Emergency Communications Association (WECA) is proud to sponsor a Technician Class License course. Come take your first steps and join the exciting world of Amateur Radio. Enjoy talking to other Amateur Radio Operators, near and far.



Want to experiment with new technologies that utilize computers interfaced with radios? Want to join forces with county government and local volunteer organizations as Amateur Radio Operators team with them for Public Service events and Emergency communications?

Take your first steps by joining WECA for this interactive course taught by a team of knowledgeable Amateur Radio Operators.

You can qualify for an Amateur Radio Technician license by passing a 35-question multiple-choice examination. No Morse code test is required. The exam covers basic regulations, operating practices, and electronics theory, with a focus on VHF and UHF applications.

Although regulated by the FCC, license exams are given by volunteer groups of Amateur Radio operators. Operating under organizations called Volunteer Examiner Coordinators, volunteers administer and grade tests and report results to the FCC, which then issues the license. U.S. licenses are good for 10 years before renewal, and anyone may hold one except a representative of a foreign government. All material needed to pass the test will be covered in this course, along with a required book. An exam will be given at the conclusion of the course to get you started in Amateur Radio — there is a \$15 fee to take this test.

The course (no fee) will be held in six sessions beginning Wednesday March 11th, 2009 and will run March 11, 18, 25 and April 1, 8, 15. On April 22nd there will be a test given to get your license. Classes will begin at 7pm and run till 9pm if needed. The course will be held at The American Red Cross, Westchester County Chapter, located at 106 North Broadway (Route 22), White Plains, NY 10603.

If you, or someone you know, would like to study for the FCC Amateur Radio Technician license, contact Robert Kantor, N2TSE to reserve a spot in the class. The cut off date for signing up for this course is March 2nd, 2009 or when the class is full, whichever comes first. Once registered in the course, details will be provided on how to purchase the required book. You can contact N2TSE by email at n2tse@weca.org.

- N2TSE

Essential₂ memory

Here's a PCARA pop quiz. What do the following phrases mean to you?

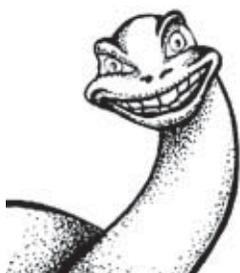
1. "Every good boy deserves favor" (or fruit or fudge.)
2. "Richard of York goes battling in vain."
3. "My very educated mother just served us nine pizzas."
4. "BODMAS"

These are all **mnemonics**, or aids to memory. The first is musical and refers to the notes E-G-B-D-F on the treble clef. The second is from Physics and helps to list the colors of the rainbow in order from longest to shortest wavelength — red, orange, yellow, green, blue, indigo, violet. Number three is from astronomy and defines the order of the planets of the solar system starting nearest the sun: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune and recently-demoted Pluto. The last example is from algebra and describes the correct order to apply arithmetical operators in an expression: brackets, 'of', division, multiplication, addition, subtraction.

Maybe you learned some of these memory aids yourself... or perhaps you learned a regional variation, depending on where you were schooled. "Every good boy deserves..." something, but it might not be the "fruit" that I learned as a youngster. Maybe "BODMAS" is a mystery word to you, and instead you learned the American version PEMDAS (Parentheses, Exponentiation, Multiplication/Division, Addition/Subtraction) sometimes remembered as "Please excuse my dear Aunt Sally." The British version is "Bless my dear Aunt Sally."

Apart from differences in geography, these variations are probably due to mnemonics being *unofficial* memory aids, made up by schoolboys long ago, and passed down through generations of youngsters ever since.

From the title of this piece, you might have guessed that chemistry was going to figure in it somewhere. (The American Chemistry Council's "Essential₂" campaign continues to explain how chemical products help keep you safe and healthy and create a brighter future for you and your family.) One of my favorite mnemonics, still fresh in my mind some four decades later is this one:



"Languid centaurs praise Ned's promise of small European garden tubs. Dinosaurs hobble erratically thrumming yellow lutes."

These words conjure up a picture of tranquility from long ago, where mythical beasts (centaurs) and ancient dinosaurs walk around a garden

center somewhere in Europe, making medieval music. In reality, the phrase is a *mnemonic* for the following names and symbols of the **rare earth** elements of the chemical Periodic Table:

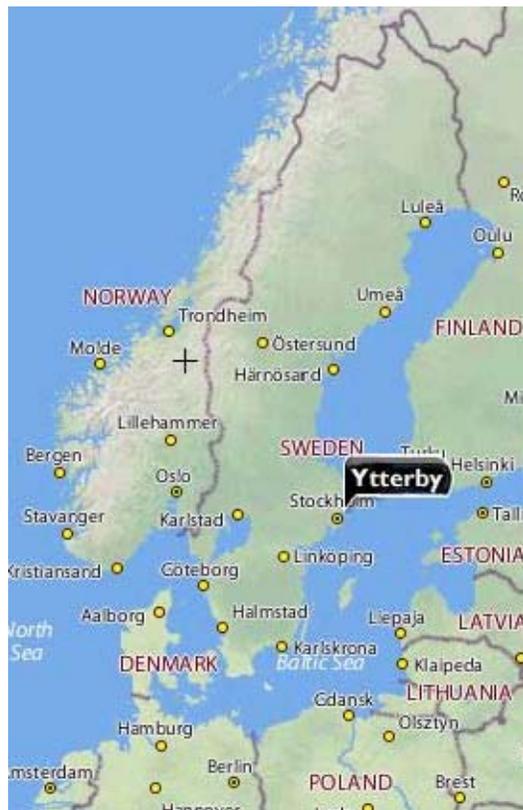
Lanthanum (La); Cerium (Ce), Praseodymium (Pr); Neodymium (Nd); Promethium (Pm); Samarium (Sm); Europium (Eu); Gadolinium (Gd);Terbium (Tb); Dysprosium (Dy); Holmium (Ho); Erbium (Er); Thulium (Tm);Ytterbium (Yb); Lutetium (Lu).

57	58	59	60	61	62	63	64	65	66	67	68	69	70	71
La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu

Section of the Periodic Table showing rare earth elements from atomic number 57 (Lanthanum) to 71 (Lutetium).

This group of rare earth elements was originally named because of their scarcity. The story begins with Johan Gadolin who discovered an unusual silicate mineral near the town of Ytterby in Sweden at the end of the eighteenth century. While the mineral was named *Gadolinite*,

the town's name became incorporated into the names of four rare earth elements: ytterbium, yttrium, terbium and erbium. (Yttrium – element number 39 – is also considered a rare earth.) Johan Gadolin's gadolinite mineral was found to contain the silicates of cerium, lanthanum, neodymium, yttrium, beryllium, and iron. The rare earth elements have similar properties to each other, making separation and purification



The town of Ytterby is on an island near Stockholm, Sweden.

especially difficult.

Just a few decades ago, the rare earth elements had limited uses. The most abundant rare earth metal, **cerium** was employed as the source of sparks in rotary cigarette lighter flints and to impart a bright light to carbon-arc lamps. The oxide was used as a component of incandescent gas mantles that glow bright white when heated in a flame. Nowadays, cerium oxide is also used in the wall linings of self-cleaning ovens, where it catalyses oxidation of the food deposits. Cerium is added to glass to counter the blue-green color caused by iron impurities and for the face glass in cathode ray tubes where it helps resist the blackening that would occur due to bombardment with electrons.

Praseodymium terbium oxides are used in the manufacture of zinc oxide based varistors — electronic



This power strip contains three MOVs, or metal oxide varistors. The MOVs absorb electrical surges that exceed the normal 120 volts AC.

components whose resistance decreases sharply when the applied voltage reaches a certain value. They are used to protect electronic devices against surges of high-voltage. Metal oxide varistors or MOVs are fabricated in a similar manner to disk ceramic capacitors, with a ceramic insulator separating two metal plates. The ceramic sintering process results in a structure consisting of conductive zinc oxide grains surrounded by electrically insulating barriers made of other metal oxides, including bismuth, cobalt, praseodymium, and manganese.

Europium oxide (Eu_2O_3) is used as a red phosphor in television cathode ray tubes and in fluorescent lamps. As mentioned in *PCARA Update* for January 2008, the phosphor used to coat compact fluorescent tubes is likely to be lanthanum phosphate doped with the rare earths cerium and terbium (for yellow/green light), and yttrium oxide doped with europium (for red light). This combination produces “white” light.

Development of modern microwave components is being driven by mobile phone technology. Yttrium is used in YIGs (yttrium - iron - garnets), which are ferrites used in microwave filters, and in YAGs (yttrium

- aluminum - garnets), used as resonators, circulators and filters in microwave equipment, including base stations for mobile telephones. Gadolinium and cerium are used as doping agents in these garnet structures, which are also employed in solid state lasers. As mentioned in the December 2008 issue of the *PCARA Update*, cerium-doped YAG is a phosphor which emits yellow light when subjected to blue or ultraviolet light. It is used in white light-emitting diodes, as a coating on the high-brightness blue InGaN diode, converting part of the blue light to yellow to produce an approximation of white light.

Neodymium is used in NPO capacitors. “NPO” stands for “negative/positive zero”; in other words the temperature coefficient of the capacity value is neither positive nor negative, but exactly zero. This requires an insulating ceramic material with a temperature-stable dielectric constant. By adding neodymium to the common barium titanate dielectric, the curve of capacity versus temperature is flattened out.

Neodymium is also employed nowadays in neodymium or NIB magnets. The acronym NIB stands for a particular combination of neodymium, iron, and boron — $\text{Nd}_2\text{Fe}_{14}\text{B}$. Neodymium magnets are the strongest permanent magnets known to date. They are cheaper, lighter, and stronger than the samarium-cobalt magnets used previously. Neodymium permanent magnets are employed in electronic products such as in-ear headphones, loudspeakers, microphones, guitar pick-ups and computer hard disks. The magnetic components must be treated with



Sony EX earbud-style headphones contain neodymium magnets for “outstanding bass performance”.



This Celestion 12 inch neodymium woofer offers a 300 watt continuous power rating from a 3 inch dia. voice coil.

caution! The tiny neodymium magnets in modern earphones are so powerful that if swallowed, they can pose a health hazard as the magnets stick together across adjacent sections of the gut. They can also affect other electronic apparatus such as pacemakers. Neodymium magnets can easily wipe the contents of a floppy disk or destroy the mag-

netic stripe on a credit card.

So – next time you read some data from your computer’s hard disk, remember the contribution of the rare earth metal neodymium. It really is Essential₂ memory, and not just “**Ned**’s promise” from the dinosaur mnemonic.

- NM9J

Peekskill / Cortlandt Amateur Radio Association

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Newsletter contributions are always very welcome!

Archive: <http://home.computer.net/~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 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. *Apart from holidays.

PCARA Repeaters

W2NYW: 146.67 MHz -0.6, PL 156.7Hz

KB2CQE: 449.925MHz -5.0, PL 179.9Hz

(IRLP node: **4214**)

N2CBH: 448.725MHz -5.0, PL 107.2Hz

PCARA Calendar

Sun Feb 1: PCARA meeting. Hudson Valley Hospital Center, 3:00 p.m.

Hamfests

Sun Mar 8: LIMARC Long Island Hamfair & Electronics Show, Levittown Hall, Levittown Parkway, Hicksville, NY. 9:00 a.m.

Sat Mar 28: Orange County ARC Spring Hamfest, Town of Walkill Community Center, 2 Wes Warren Drive, Middletown, NY. 8:00 a.m. (Club Table)

VE Test Sessions

Feb 1: Yonkers ARC, Yonkers PD, 1st Precinct, E Grassy Sprain Rd, 8:30 a.m. Contact D. Calabrese, (914) 667-0587.

Feb 12: WECA, Westchester Cnty Fire Trg Center, 4 Dana Rd., Valhalla, NY. 7:00 p.m. Contact Stanley Rothman (914) 831-3258.

Feb 23: Columbia Univ VE Team, 2960 Broadway, 115 Havemeyer Hall, New York NY. 6:30 p.m. Contact Alan Crosswell, (212) 854-3754.

Feb 27: Bergen ARA, Westwood Regional HS, 701 Ridgewood Rd, Washington Twnshp, NJ. 7:00 p.m. Contact Donald C Younger, (201) 265-6583.



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