PCARA Update

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Group gathering

I think that Hamfests are good for getting PCARA members together! For the second time within two months, a bumper crop of members attended an event. This occasion was the Mt. Beacon Amateur Radio Club Hamfest on April 10, 2011 at Tymor Park in LaGrangeville, NY. According to my sources, there were at least nine members present!

A heartfelt thank you to those who generously donated a portion of your proceeds from the sale of some of your wares at the club table to the PCARA treasury. I would be remiss in my duties if I didn't acknowledge Malcolm, NM9J and Joe, WA2MCR for their efforts in setting up and manning the club table. Thank You!

Joe WA2MCR and Mike N2EAB oversee the club table at Mt Beacon ARC Hamfest on April 10.

Just another reminder that our neighbors at PEARL will be hosting a VE Test Session on Saturday April 30, 2011 at the Mahopac Public Library, 10:00 am to 12:00 noon. PCARA member-VEs will be lending a hand.

Field Day 2011 is just around the corner, and we will be planning in earnest at the May 2011 meeting. I encourage anyone who's interested in participating in Field Day this year to attend the meeting. This year Field Day is June 25-26, 2011; "*always the last full weekend in June*". I think the theme this year is going to be "*Keep it Simple*".

Outdoor tables at Mt Beacon ARC Hamfest. It was cold out there. Brrr!

Our next regularly scheduled meeting is at 3:00 pm on May 1, 2011 at Hudson Valley Hospital Center in Cortlandt Manor, NY. I look forward to seeing each of you there.

- 73 de Greg, KB2CQE

PCARA Officers

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Contents

Group gathering - KB2CQE	1
Adventures in DXing - N2KZ	2
Coaxial chronicles - NM9J	4
Homebrew antennas	7
New tower	9

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.

Adventures in DXing

-N2KZ

Changing Times

Here is a challenge: Find a basic AM/FM radio that plays by itself (with its own speaker — no ear buds) for under $50. Simple? Think again! A recent check of available units resulted in a very, very short list. Sony has a near monopoly on viable AM/FM portables with their ICF-38. No other major manufacturer markets a similar model. Good old shirt pocket handheld transistor radios are down to just two choices: The Sony ICF-S10MK2 and the Panasonic RF-P50. Has the demand for old fashioned radios fallen so low?

Sony ICF-38 AM/FM portable radio.

I search for similar models wherever I go and I haven't found much! Only the uninformed would purchase very inexpensive and poorly made portables by Craig, GPX or Coby. I have even checked Radio Shack and found they were offering just one handheld model (12-586.) All the carry-along portables are now gone! Sangean has become a leader in portable radios, but nearly all of their models are elaborate and cost more than $50. You could always defer to a huge, clunky boombox - but why?

The legendary GE Superadio has had a horrible fate. The latest model in this series, marketed as the RCA Superadio III, has become less-than-adequate. With a list price of $59.95, I have heard nothing but unflattering things about its performance. The original GE Superadio was released in 1982 and became known as one of the best AM/FM radios ever made. Designed for GE executives based in Schenectady who vacationed in the Adirondack Mountains to the north, it offered amazing sensitivity using a tuned RF stage and a long robust ferrite loop antenna. The fidelity was often compared to a Wurlitzer jukebox! Find yourself a used Superadio I or II. Version three is not worthy of the Superadio name!

My conclusions on this study were bleak. People simply don't buy radios like they used to anymore. Today's portable audio devices almost always require ear buds or similar headphones. Only those who don't have an iPod, satellite radio or a CD collection still listen to broadcast radio in their cars. You'll find more and more mobile people listening to their tunes via smartphones and similar devices as they drive along. Thank goodness for the three-conductor stereo mini 'AUX' jacks provided in many new cars! So many audio alternatives are available at the click of a mouse via computers at home. I'm still amazed as I listen to BBC Radio Scotland or Ireland's RTE 1 in full fidelity day and night. What a different world this has become!

Will the AM/FM portable radio become entirely extinct? I find it amazing that I am even posing that question! I am also fascinated at the new trend to simulcast full-service AM radio stations on FM outlets. In New York State alone, WBEN Buffalo and WSYR Syracuse have both found their way to doubling on FM recently. Legendary WGY in Schenectady can also be found on FM, too. As broadcasters continue to consolidate their operations, it looks like we are reverting back to the way it was back in 1960. AM stations simulcasting on FM - what a new concept!

Box of Fun

Out of curiosity, I also surveyed currently available shortwave portables. Today's major labels are Eton (who also produces the current Grundig line,) Sangean, Kaito and Sony. Years ago, Sony was an industry leader in shortwave portables marketing many models such as the classic ICF-2010 from the 1980s. Now in the year 2011, the last remaining Sony is the miraculous ICF-SW7600GR. It is the product of decades of development and expertise. Can one radio do everything you've dreamed of (especially for $130?) Yes, it can.

GE Superadio I stands behind a modern Sony ICF-SW7600GR SW receiver.

My perspective includes decades of listening beginning 46 years ago in 1965. Back then, a standard shortwave radio for a casual listener was not portable. It was a five-tube desktop model that simply expanded upon tried and true AM radios found in every household. If you needed advanced features and high performance, you would need to invest in a multi-tube boat anchor!

Times have changed dramatically. The Sony ICF-SW7600GR covers 150 kHz to 30 MHz, featuring a

double conversion design with synchronous detection, along with the 76 to 108 MHz ready for FM reception worldwide. Gone are mechanical pushbuttons. The Sony challenges you to fill up 100 electronic preset memories! Included is a multi-zone clock displaying local time and UTC. You can choose regular AM reception or USB/LSB along with CW. A very useful RF gain control and a display light (for night operation) are provided, as well. The features go on and on!

Sony ICF-SW7600GR receiver covers LW/MW/SW and FM

My smiles began early. I was extremely impressed with its operation. The controls are quite intuitive and simple to master. I entered one of my favorite frequencies, 14.060 MHz (the 20 meter CW QRP calling frequency) and immediately heard a one watt KA9 station calling CQ. The telescopic whip antenna was down with just my finger resting upon it. There was no shortage of in-the-clear shortwave broadcast stations to listen to. How do they make a portable radio this selective and sensitive?

More early trials produced more amazing results. Again, with no whip antenna extended, I pulled in several time reference broadcasts from America's WWV and CHU Canada. Reverting back to my childhood, I tried aeronautical VOLMET weather frequencies and logged New York, Gander, Newfoundland and Shannon, Ireland immediately with little effort. The precision of frequency direct-entry combined with the clarity of the sideband reception was almost unnerving! Plenty was heard on 30 and 40 meter CW. All I could say was 'Wow!'

One transmission lives on through the decades. Radio Australia still broadcasts towards the east, covering the Pacific islands and beyond, every morning on 9580 kHz. They have ruled this frequency for decades with a dominant signal hard to surpass. I took the ICF-SW7600GR to work and tried to pick them up. Radio Australia locked in with full quieting while standing by a window. I walked into the building among literally tons of electronic equipment surrounded by steel and concrete. The signal could still be heard! I know Radio Australia uses a lot of power but this is miraculous.

Longwave reception was also pretty remarkable. Again, with just built-in antennas, I logged NDBs (non-directional beacons) FR 407 kHz in Farmingdale, Long Island and OGY 414 kHz near Jacob Riis Park in The Rockaways in Queens. These stations are used as navigation aids and transmit very slow AM modulated Morse Code continually. You'll never hear a station more anxious to be logged! A great list of NDB stations can be found at: http://www.dxinfocentre.com/ndb.htm .

The ICF-SW7600GR also offers synchronous detection. You can derive a full AM carrier from just one sideband. This is particularly useful if you have a very strong adjacent station or you are trying to maneuver through digital IBOC HD Radio interference. I often get clobbered by the digital sideband of KDKA 1020 Pittsburgh while trying to listen to WBZ 1030 Boston. Synchronous detection can make this noisy mess into something quite listenable. It is certainly welcomed at this listening post.

This is a sophisticated radio delivered in a classy manner. It is beautifully designed and quite attractive. The ICF-SW7600GR is the size and weight of a somewhat heavy paperback book. Every button and control was found in a logical place which could be easily memorized for in-the-dark middle-of-the-night reception. The LCD display is big and easy to read. With 100 memories, you don't need to do a lot of direct tuning. Multiple frequency comparisons are a breeze. Sony even thought of every final touch. The unit comes with a very attractive black cloth case. Slip the radio into the case and a fold-over leaf covers it neatly secured with a couple of pieces of Velcro.

Karl was pleased with the Sony ICF-SW7600GR.

I'm sure I have only just begun to appreciate everything this radio can do. I'm still mesmerized with direct frequency entry. There is no noticeable drift and the battery life seems endless. Sony's operations manual goes on for dozens of pages. Also included is the 128 page Sony Wave Handbook, a very comprehensive all-band guide to familiarize you with the world of shortwave and beyond. A cute self-contained reel of wire, with built-in end clips, is included as a useful portable antenna. Sony included everything you need to get started immediately. You can become a

fairly sophisticated worldband listener by just opening the box. What fun!

The essence of shortwave has not changed that much since 1965. All the bands are still there. You'll even find several new band allocations for broadcasters have come alive. Like visiting old neighborhoods from your childhood, often the flavor has become something completely new. Many of the old standard broadcasters are hard to find or gone entirely. The Netherlands, Switzerland, Sweden, Germany and even the BBC and Voice of America are missing in action. Many religious stations have popped up along with some newly dominant Asian broadcasters. You can find a handy simple-to-read schedule guide covering the entire world of shortwave at primetimeshortwave.com.

As a side note to this review, this receiver can also be used as a fairly accurate frequency counter. Maybe I need to get out a lot more, but nearly everything I use to pursue amateur radio has either inaccurate analog tuning or dubious digital tuning without reliable accuracy. With a zero-beat accurate Sony ICF-SW7600GR around, I can finally discover what frequency I am actually transmitting on!

Sony ICF-SW7600G from 1994

In a reality check, I am certainly aware that this wonderful receiver is really nothing new. Its direct ancestor, The Sony ICF-SW7600G, was first released in 1994 and has nearly every feature the current ICF-SW7600GR offers. This Sony line of compact shortwave receivers can be traced back to 1977 with the release of the original ICF-7600 featuring an analog tuner. For everything you'll ever want to know about these Sony receivers, please visit the remarkable web site: http://stephan.win31.de/sony7600.htm.

Original Sony ICF-7600 from 1977

For up-to-date news and tips all about amateur radio, please visit the PCARA Facebook page. For weekly entertainment and fun talk, tune in and join in The Old Goats Net on the PCARA repeater (146.67 MHz) Thursday nights at 8 pm. Want to inspire a potential new ham? Pass a copy of *PCARA Update* to a friend!

Have a wonderful month! 73 de N2KZ Karl dit dit.

Coaxial chronicles

The most popular way of carrying radio frequency energy around our amateur radio shacks — and around our homes, and commercial radio installations — is with coaxial cable. Let's take a look at the history of coax to see how it came into being.

Modern coaxial cable - a reel of Belden RG58A/U

The origins of coaxial cable go back to the early days of telegraphy and telephony in the 19th century. Telephone and telegraph signals were originally carried over a single wire with an earth ground return. This caused problems when separate signals had to be carried over multiple wires — cross-talk would appear between the separate circuits. The first solution was to give each circuit a *pair* of wires — one wire for the outgoing signal and a second wire for the return path. Twisting the pairs would give additional protection by canceling some of the external interference.

Shielded start

The principle of coaxial cable was first described by English electrical engineer **Oliver Heaviside** — who we first met in the March *PCARA Update* for his 1902 proposal of a reflecting layer to explain radio wave propagation beyond the horizon. In 1880, Oliver Heaviside received British Patent number 1407 on "Conductors for Telephonic and Telegraphic Purposes". Heaviside pointed out that a pair of wires can still suffer inductive interference from signals carried by


Oliver Heaviside

another, nearby wire. In order to prevent such external influence, Heaviside wrote:

"I use two insulated conductors for the circuit, and place one of them inside the other; thus one conductor may be a wire and the other a tube or sheath, thus forming a compound conductor consisting of a central wire surrounded by insulating covering, which is in its turn surrounded by a conducting tube or sheath... the circuit as thus described is completely independent of other circuits, and any number of such circuits... may be laid side by side and worked without any mutual inductive interference..."

Could you ask for a clearer explanation of coaxial cable? Four years later, in 1884 the German company Siemens & Halske received a German patent for coaxial cable. But these developments did not see much practical use until almost fifty years later when two engineers at AT&T's Bell Laboratories were looking for a way to carry multiple voice conversations and television signals across long distances.

Lloyd and Herman

Lloyd Espenschied

Lloyd Espenschied was born in St Louis MO in 1889, then at the turn of the century he moved to Brooklyn, NY. He was an early radio amateur and ships' wireless telegraph operator, later installing spark transmitters for the US Navy. He joined AT&T's Engineering Department in 1910, where he worked on loading coils for long distance telephony, long wave radio transmission and quartz crystal bandpass filters. In 1916 he began work on "long lines" — multiple carrier landline systems — where he met Herman Affel.

Herman Affel had previously collaborated at MIT with Arthur Kennelly (who also appeared in the March *PCARA Update* article on the ionosphere), where they investigated the skin-effect of conductors at radio frequencies. After joining AT&T, Affel's work with Espenschied led in 1918 to AT&T's first multiple carrier system, between Baltimore MD and Pittsburgh PA.

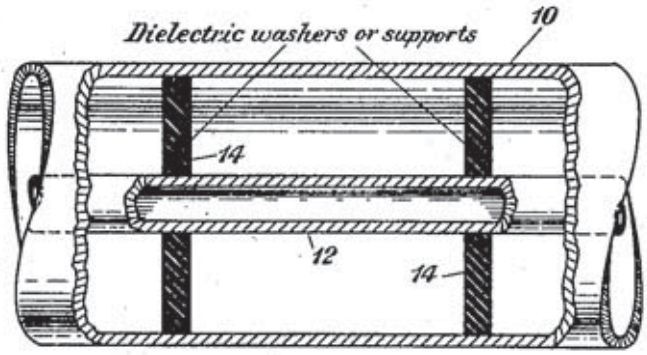
Eighty year old patent

Espenschied and Affel knew that open wire transmission lines could send only three or four carrier-based voice circuits over long distances. Espenschied said that induction between the open wire lines was so bad that for carrier frequencies higher than about 30 kHz, it was impossible to re-use the same channels on adjacent lines without them interfering. Not only did the open wire lines suffer from internal cross-talk but they also picked up interference from external radio stations using the same frequencies – and performance deteriorated with wet weather. Espenschied and Affel appreciated that the useful bandwidth (<100kHz) of open lines was *far from the multiple megahertz* needed for future multiplexed voice circuits and television.

In 1929 the two AT&T engineers applied for a US Patent, which was granted in December 1931, almost eighty years ago. In US Patent 1,835,031 they proposed...

"a novel form of transmission system involving a large single pair concentric conductor arrangement, which does appear to meet such wide band requirements. It permits the use of conductors in tubular form having a low skin effect and low conductor losses for high frequencies. It permits also the possibility of a construction in which the dielectric is largely air, low loss insulation spaces being employed at wide intervals to separate the inside from the outside conductors. This shield, properly made, serves to keep moisture from the dielectric space between the inside and outside conductors. It serves electrically to afford an almost perfect barrier for the crosstalk between adjacent similar type conductors or interference from external fields, a barrier which is extraordinarily useful because its effectiveness increases as the frequency is raised."

Espenschied and Affel described a cable structure that could be semi-flexible and supported on utility poles by means of a messenger wire, or made more rigid and placed in underground conduits. Their patent shows a sectional drawing of the cable.



Longitudinal section of coaxial cable from US Patent 1,835,031 "Concentric Conducting System" by Lloyd Espenschied and Herman Affel of AT&T.

"It comprises an outer tubular conductor (10) of copper or other conductive material with a second tubular conductor (12) concentrically mounted with respect to the tube (10). The conductors are so associated with the terminal apparatus that the one tubular conductor acts as a return for the other and not as a mere shield."

The proposed cable had an air dielectric —

"The two conductors are held in proper concentric relation and out of electrical contact with each other by means of spaced dielectric washers (14). These washers should be separated from each other a suitable distance and should be made as thin as possible with the required mechanical strength, and they should be composed of some dielectric of small loss angle and low dielectric constant..."

Pyrex glass or isolantite (ceramic) were recommended for the insulating washers. Provided the outer tube was waterproof, there would be no penetration by rain or moisture, and the insulators would not be

compromised by damp or dirty surfaces. This was a major improvement over open wire lines.

Espenschied and Affel went on to describe the circuitry necessary for combining multiple voice circuits — traveling in both directions — onto the coaxial cable. They suggested splitting the bandwidth of a 2MHz cable into two bands, using 0 - 1 MHz for transmission in the forward direction and 1 - 2 MHz for the reverse direction. Individual voice signals would be modulated onto carrier waves, then modulated onto a further carrier for the desired transmission frequency ranges. The same carrier frequencies would then be used for demodulation at the receiving end. To conserve bandwidth, they suggested suppressing the upper sideband, and using a carrier spacing of 3 kHz.

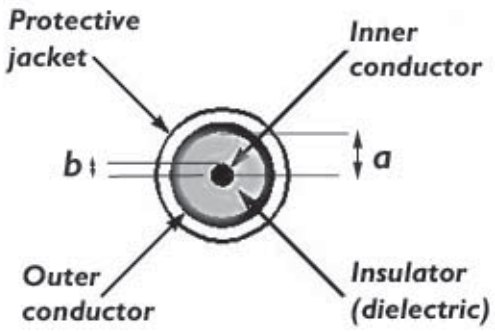
Choose your impedance

Our inventors carried out further work on coaxial cables at Bell Labs in the 1920-30s to determine the **most efficient impedance** value. They tested thousands of cables with different dimensions.

The characteristic impedance of a coaxial cable is related to the size of the conductors and the dielectric constant of the insulator by the following formula:

$$Z_O = \frac{138}{\sqrt{\epsilon_r}} \times \log_{10}\left(\frac{a}{b}\right)$$

— where Z_0 is the characteristic impedance of the cable in ohms, a is the inside radius of the outer conductor, b is the outside radius of the inner conductor and ε_r is the dielectric constant of the insulating material between inner and outer conductors.



From all the testing, it turned out that with air dielectric, the best dimensions for lowest attenuation produce a coaxial cable with a characteristic impedance of **77** ohms. An impedance of **30** ohms is the best choice for high power (high current) while for high peak voltages, **60** ohm impedance is optimum. Unfortunately, 30 ohm cable is very difficult to manufacture, so these results have since morphed into the standard values of 50 ohms for RF power transmission and 75 ohms for signal reception, including domestic TV, FM radio and cable distribution.

Commercial coaxial

AT&T continued commercial development of coaxial cable for long distance transmission. In 1936, the first experimental coaxial cable was laid between New York and Philadelphia. This cable was 225 miles long and had automatic booster stations every ten miles, accessible through manholes. The cable had a maximum capacity of 240 voice channels, with quartz crystal filters used to separate the different voice signals on their multiple RF carriers. The first voice transmissions were made in November 1936, with demonstrations to the press. That same year the UK Post Office installed its own coaxial cable between London and Birmingham, capable of carrying 40 telephone calls.

In 1936, a technician pulls a section of the New York-to-Philadelphia coaxial cable underground. [Photos courtesy AT&T]

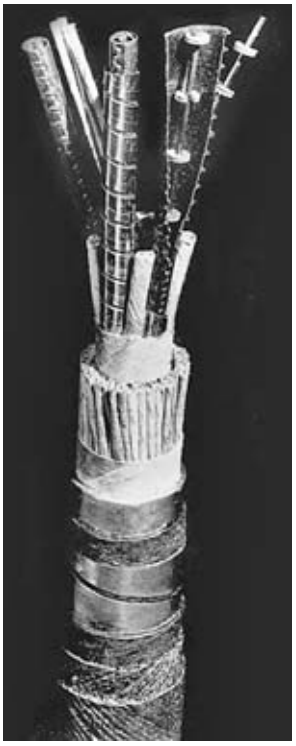
New tube

The invention was also being developed for television — in that same year of 1936, video signals were delivered from NBC's New York studio at Rockefeller Center to the new TV transmitter on the Empire State Building over a coaxial cable, while in Germany, TV pictures from the summer Olympics in Berlin were delivered by cable to Leipzig.

In 1937, AT&T experimented with transmitting motion pictures over the New York - to - Philadelphia cable at a bandwidth of 1 MHz. This was a much higher frequency than anything technically feasible with the earlier open wire lines.

Forties first

Seventy years ago, in 1941, the first non-experimental installation of coaxial cable by AT&T was placed into service between Minneapolis, MN and Stevens Point, WI. This first commercial system,



First non-experimental coaxial cable in the AT&T network was installed between Minneapolis, MN, and Stevens Point, WI in 1941.

known as "L-1" could accommodate 480 voice calls or a single television channel.

WW II

With the outbreak of World War II, coaxial cable was recruited for the transmission of RF energy. Amateurs and professionals had previously used open-wire transmission line for feeding RF from their transmitters to a remote antenna. But those two-wire transmission lines had the same problems discovered by the telephone engineers. They could pick up external interference, their electrical characteristics were affected by the weather and more importantly they were modified by the presence of other conductors nearby. As a result, open wire feeders had to be run with care, keeping them well away from other conductors such as metal window frames, gutters, masts and towers.

Those new coaxial cables designed for the war effort replaced AT&T's rigid tubes and air dielectric with flexible cables and the modern insulating plastic polyethylene. They were manufactured by companies such as Andrew Corporation and Amphenol.

In 1949, Lloyd Espenschied (left) and Herman Affel reflect on the 20th anniversary of their invention of coaxial cable. Espenschied holds a section of the experimental cable they developed at AT&T while Affel holds a section of cable as laid throughout the Bell System in the 1940s.

So — next time you transmit radio frequency power using a length of coaxial cable to the antenna, remember the debt you owe to Oliver Heaviside, Lloyd Espenschied and Herman Affel.

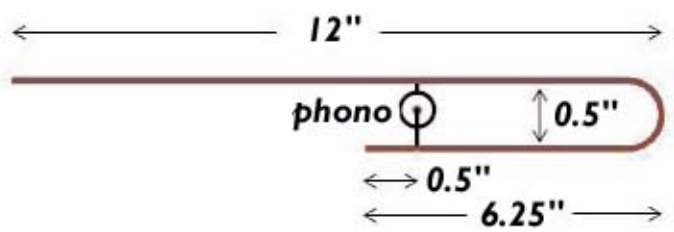
- NM9J

Homebrew antennas

440 beam

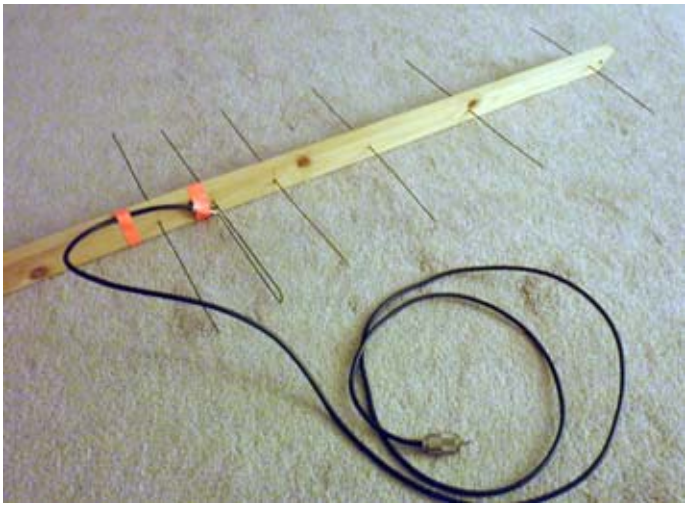
Ray, W2CH has been experimenting with beam antennas for 440 MHz from his location in White Plains. Ray's first efforts were inspired by an article in the April 2011 issue of *WorldRadio* — which is now available as a free download from CQ Publications, http://www.worldradiomagazine.com.

The article, "A Coat Hanger Beam to Hang Your 440 MHz FM Signal On" by Richard Fisher, KI6SN describes the use of elements cut from a metal coat hanger, inserted through holes in a length of half-inch diameter PVC pipe. The driven element is half-folded and directly driven from the coaxial feed.



Driven element for 440 MHz beam antenna is a folded length of coathanger wire, fed directly with 50 ohm coax.

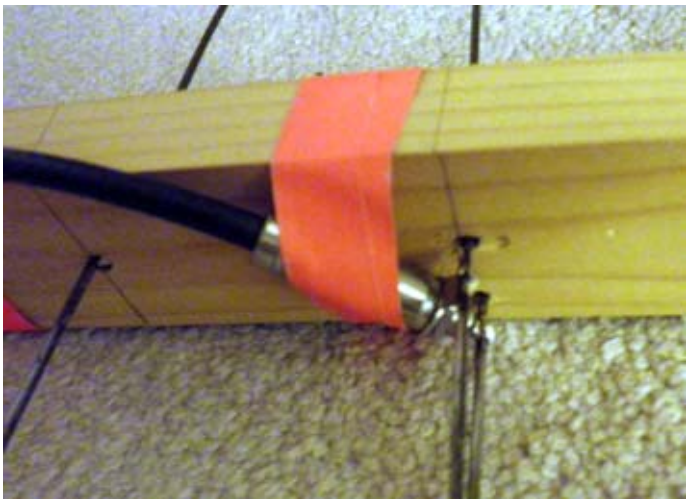
The original design originated from an article "Controlled Impedance 'Cheap' Antennas" by Kent Britain, WA5VJB — http://www.wa5vjb.com/yagi-pdf/cheapyagi.pdf. In this article, the boom material is given as ¾" square section wood or ½" x ¾" wood. The antenna elements can be made from bronze welding rod, aluminum rod, or solid ground wire. Coaxial cable



Homebrew 440 MHz antenna assembled by Ray W2CH.

should be soldered directly to the driven element, preferably made from welding rod or solid copper wire.

Ray chose a wooden boom and assembled a 6 element Yagi antenna for 440 MHz with elements made of coat hanger wire, cut to the recommended lengths. The wire elements were pushed through narrow holes drilled in the wooden boom, then the coaxial feed was soldered to an RCA phono connector, as recommended in *WorldRadio*.

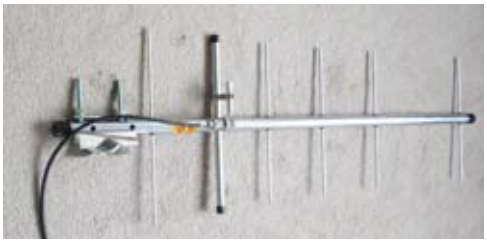


Detail of coaxial feed to Ray's 440 MHz inexpensive yagi antenna. An RCA phono connector is soldered to the driven element. Photos by W2CH.

Ray found that the antenna works well from his balcony, beaming toward the 440 MHz repeaters around White Plains. The SWR was around 2:1 in the middle of the band, rising to close to 3:1 at 440 and 450 Mhz. "It's not bad for a quick and cheap homebuilt beam with a simple antenna matching point" said Ray.

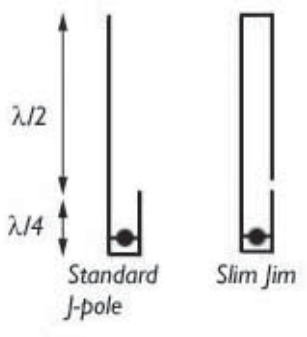
Ray tried to improve matters using two small whip antennas for the driven element, that could be adjusted in size. He also tried changing the coaxial cable. The effect was to move the lowest SWR down toward 440 MHz.

Mount Beacon Hamfest provided another source of antennas for Ray — he picked up a Cushcraft-Laird PE457-6 six-element Yagi for 450-470 MHz, brand-new in the box from one of the hamfest vendors. By adjusting the matching device on the new antenna, Ray was able to achieve a good SWR across the 440-450 MHz amateur band. Aiming the antenna toward New York City, Ray found the 440 D-STAR repeater there was a stronger signal than on Ray's omni-directional MP antenna, though the MP antenna — described in the April newsletter — works well in *all* directions and on multiple amateur bands. Ray was able to make D-STAR contacts through the WG2MSK UHF repeater in New York City (447.7375 MHz), working Dave, N2KTO, in Sparta, NJ who has a VHF D-STAR repeater there (146.635), through which he was linked to the NYC D-STAR station. Ray was also able to work Brian, ZL1HN, in Hamilton New Zealand, linked via D-STAR.



Cushcraft-Laird 6-element Yagi antenna for the 450-470 MHz commercial band purchased by Ray at Mt Beacon Hamfest

Vertical colinear



A recent recruit to our Amateur Radio Association is Lovji, N2CKD. Lovji lives around the corner from PCARA President Greg, KB2CQE.

At the March meeting, Lovji brought along his latest construction project, which is a "plumbers delight" version of the Slim Jim antenna for two meters.

Slim Jim antenna for 2 meters constructed by Lovji N2CKD.

As reported in the October 2007 issue of the *PCARA Update*: "Another antenna worth considering is the Slim Jim. This modification of the J-pole was devised by Fred Judd, G2BCX and published in *Practical Wireless* in April 1978 and in the *Two Metre Antenna Handbook* (Newnes, 1980). The Slim Jim design replaces the single, vertical half-wave element of the J-pole with a folded half-wave, which is left open at the lower end. The antenna was christened a Slim Jim because it is so slender — no ground plane elements are sticking out —and it has a **J**-type **I**nte-

grated **M**atching stub."

Lovji's version of the Slim Jim was a delight to behold, fabricated from shiny copper tubing. You can imagine the two meter electromagnetic waves being especially pleased to land on such a fine antenna.

Alongside the N2CKD Slim Jim was another recent acquisition — a Wouxun KG-UVD1P Dual Bander handi-talkie, as seen on the KJI booth at the Orange County ARC Hamfest last month.

New tower

At the March PCARA meeting, Clint KB2ZRJ mentioned that he has recently raised a brand new tower in his back yard. Greg, KB2CQE and your editor just had to take a look.

Clint's tower stands on a substantial concrete base.

Clint's tower actually came from Kevin, N2KZE — where it has been on standby duty for a while. Despite all the waiting at Kevin's QTH, the tower still looks very clean and shiny.

Since there are no large antennas mounted on the tower yet, Clint has it free-standing on a large concrete base. Clint dug a deep hole then mixed and poured the concrete himself. The tower was set on the base, then pulled up with voluntary assistance from Clint's work colleagues.

Antennas on the tower include a Cushcraft A627013S tri-band VHF/UHF Yagi with three elements for 6 meters (horizontal polarization), plus five elements for 2 meters and another five elements for 440 MHz (vertical polarization). This directional antenna is mounted on a rotator. There is also a vertically polarized Antennacraft ST2 scanner antenna covering 30-1300 MHz, plus an HF multiband mobile antenna mounted off the side of the tower.

Keep an eye open for Clint's new, stronger signal on the VHF and UHF bands!

- NM9J

Multiple antennas mounted on Clint's tower.

Greg KB2CQE (left) and Clint KB2ZRJ survey the new tower from Clint's deck.

Hamfest pic

Members meet up at Mt Beacon ARC Hamfest — L to R Gary WB2HNA, Mike N2EAB and Mike N2HTT.

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 May 1: PCARA monthly meeting, Hudson Valley Hospital Center, 3:00 p.m.

Hamfests

Saturday May 28: Bergen ARA Spring Hamfest, Westwood Regional HS, Washington Township, NJ. 8:00 a.m.
Sunday June 5: LIMARC Hamfair, Briarcliffe College, 1055 Stewart Ave., Bethpage, NY. 9:00 a.m.

VE Test Sessions

Apr 30: PEARL, Mahopac Public Library, 668 Route 6 Mahopac, NY. Contact NM9J
May 1: Yonkers ARC, Yonkers PD, Grassy Sprain Rd, Yonkers, NY. 8:30 a.m. Contact Daniel Calabrese, 914 667-0587.
May 12: WECA, Westchester Co Fire Trg Center, 4 Dana Rd., Valhalla, NY. 7:00 p.m. Contact Stanley Rothman, 914 831-3258.
May 23: Columbia Univ VE Team, 2960 Broadway, 115 Havemeyer Hall, New York NY. 6:30 p.m. Contact Alan Croswell, (212) 854-3754.

Peekskill / Cortlandt Amateur Radio Association Inc.
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