April 1996

72

THE NEW ENGLAND QRP NEWSLETTER

NE-QRP Club
P.O. Box 2226
Salem, NH 03079

First Class Mail

TO:

98NE56

William McNally, AE1D
7 Blueberry Road
Windham, NH 03087

72 - THE OFFICIAL
NEW ENGLAND QRP NEWSLETTER

Write For 'Your' NEWSLETTER

The goal of *72* is to make it easy for you to submit your ideas and suggestions for all to read. Send your materials, hand written or typed or MS-DOS to *72*. Use the Internet to send materials to your editor or floppy diskettes, MS-DOS Windows gladly accepted.

THE DEADLINE FOR THE NEXT ISSUE OF *72* WILL BE JUNE 8, 1996.

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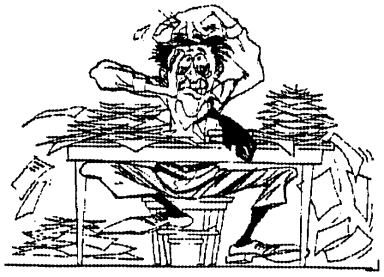

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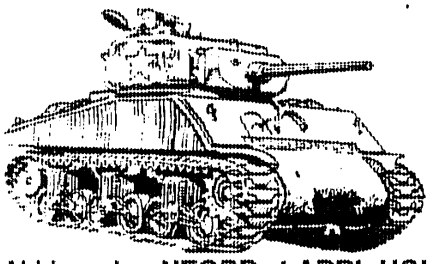

NJ invades NEQRP at ARRL HQ!

Reported by
Joe Everhart - N2CX
Brooklawn, NJ

New Jersey is really making its presence known to the QRP community! There were three groups of fellow hams from New Jersey at the March 10th New England QRP Club meeting at ARRL HQ in Newington, CT. They were: Walt Windish - KB2JE who we met at the last NJQRP meeting and his friend Gus Hintz - W2ZHA; Brian Keegan, KF2HC and a friend of his (no call), both from Caldwell, NJ and the group of Doug Quagliana - KA2UKW and Joe Everhart - N2CX.

People brought lots of QRP rigs for show-and-tell. The majority of the homebrew items were XX-40s, NorCal NC-40s, Sierras, but there were several homebrew rigs in evidence and even a QRP+. A brief business meeting was held by Dennis Marandos - K1LGQ and the club Coordinator, Jim Fitton - W1FMR. The issues discussed were dues versus the cost of postage (dues have to go up to cover mailing costs for *73*) and items with the New England QRP Club logos. Club patches were on sale, while mugs and iron on transfers for tee shirts were proposed.

Joe Everhart made a presentation on the QRP AFIELD 20-30 PVC Mast kit, which is an up-coming NEQRP club project. The proposal was well-received and approval was granted to go ahead and gear up for 30 semi-kits. After the initial quantity, future builds will be evaluated.

Doug Quagliana - KA2UPW showed his impressively simple AO-27 QRP satellite station in the ARRL HQ parking lot. There were twenty members gathered around to watch Doug pull the switches with Joe Everhart as the ArmStrong rotor for the day. Two satellite passes were worked. In one, the transmit side was a 2 meter HT and a 5/8 wave mag mount antenna. The receive side featured a hand-held *quagi*, along with a down converter and 10 meter transceiver (receiver only). The setup is almost the same as what Doug showed at the last NJQRP meeting. Doug and Dennis - K1LGQ were able to work two 1 area stations and heard others in 4 and 8 land. A second pass later used a two meter quad antenna, but the satellite was only poorly heard. However, Doug did an excellent job of demonstrating simple satellite communications and the group was suitably impressed.

After lunch at a local Friendly's restaurant, the gang was allowed to take over the equipment at W1AW. With at least for station setups and very impressive sky wires, a number of QRP QSOs were made. In addition, Joe Everhart - N2CX was able to copy the WA3NNA beacon from Newtown Square, PA on 3.577 MHz at 200 mW.

While the operating was going on downstairs in the W1AW station, a more detailed show-and-tell session was held in an upstairs. Several clever homebrew designs were in evidence, including a 79er in a tiny homebrew case and several unique station accessories by Jim Fitton - W1FMR. Jim takes his rig along when he travels on business. His favorite motel antenna is a 66 foot wire for 40 meters. He has built an ingenious tuner/SWR bridge into a small die-cast box that measures about 3X5X1 inches! Its efficacy is proven by the fact that he has worked the East coast with 1.5 watts on 40 from a motel on the West coast. Jim also had a homebrew keyer and built-in paddle in another case of the same dimensions. Oh...to get a couple of those cases!

Doug KA2UPW used the time very effectively. He huddled with Zack Lau - KH6CP/1, discussing their common interests in microwave homebrewing and satellite communications. And Zack gave him a personal tour of his lab area and upcoming goodies for ***QST*** and ***QEX***.

All in all it was a fun day. The NEQRP gang is very enthusiastic and friendly and picked almost the best location for a meeting imaginable. The only better place is the QRP suite in Dayton!

NEW ENGLAND QRP CLUB DUES UP THREE DOLLARS. NOW-$10 PER YEAR

The New England QRP Club has raised its dues to conform to the higher postal rates used to print and mail the club's newsletter. Effective immediately, the new dues will be ten dollars with no other fees attached. For your new membership to become effective, you must send your renewal between the months of October through December to the renewal chairman, listed in the index of this newsletter.

73 - NEQRP

ONE MORE ATU
A JUNK BOX L-C-L FOR $3.00

L. B. Cebik, W4RNL
NEQRP #347

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Having built C-L-C (capacitor-inductor-capacitor) Tees, inductively coupled balanced ATUs (antenna tuner), SPCs, and a couple of 10 meter L-C-L Tees, I have intended to build an all-band version of the L-C-L network for quite a while. The addition of a *QRP+* to the station gave me the incentive to go ahead. Learning of the potential front-end problems that might result from integrating the rig into the switching system that lets me select among my other rigs, the QRP+ would have to be a separate station on the side, with its own WM-1 wattmeter and its own ATU.

I needed a station unit, not a super compact field unit. It had to have enough heft to support the RG-213 I use to feed the antennas (GAP-VI and a Butterfly beam). And it had to be soon. That meant finding what I needed in the junkbox, rather than making up a design and exploring hamfests for several years to find the parts.

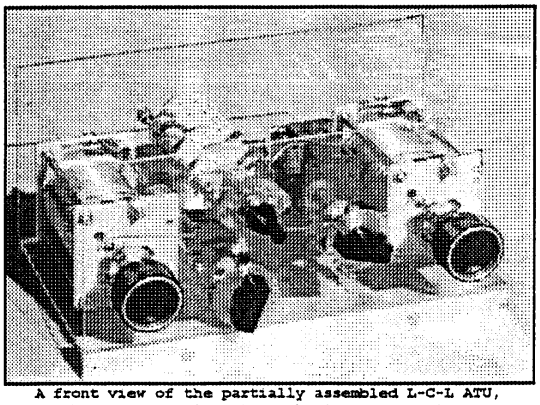
Here is what I found: 2 10 mH LaPointe rotary inductors from a remotely tuned EDZ beam project, a few HF-100 variable capacitors, a 550-550 pF 2 section capacitor from my father's junkbox (probably from a military rig), a ceramic multi-wafer 7-position rotary switch about 7 inches long, knobs galore, some ¾ inch aluminum L-stock from a portable antenna no longer in use, and about 2.5 square feet of plexiglass the previous owner of my house left behind. I also found a bicentennial quarter and two long-lost screwdrivers among the junk. That was almost everything I needed for an L-C-L Tee tuner.

The plexiglass would make the panels and chassis, supported and bound by the L-stock. That decision alone would save almost $160 (the cost of 2 new turns-counters). Since plexiglass is transparent, I could count the turns myself. Well-wired ATUs do not radiate, consisting of passive components only, so a metal case is not required. All I needed were 4 insulated shaft couplings, which I obtained from Buckeye Electronics for $3.00.

The Circuit

Figure 1 shows the schematic for my L-C-L Tee tuner. It is straightforward in every respect. The 100 pF variable capacitor is always in the circuit, while the 550 pF sections switch in, one at a time, as needed. When using the larger capacitor values, the 100 pF unit becomes a fine-tuning vernier. Hence, I had no need for an expensive reduction drive.

The inductors have spread turns at one end to maintain Q (quality factor) at low inductance values. Therefore, the short from the rotary contact goes to the close-spaced end of the coil. Incidentally, with an external wattmeter, there is no input or output side to this tuner. "In" and "out" depend on placement to the left or right of the rig.



A front view of the partially assembled L-C-L ATU, showing parts layout and basic construction.

Ten mH coils are sufficient for most situations, down to 80 meters. However, I can imagine some load types for which they might not provide an efficient match on the lower bands. If you short out all of the output coil, you have an L-circuit, suitable for end-fed random wire antennas. Alternatively, to get more inductance into the circuit, you might add a switch to move the capacitor set to the output terminal and use both coils. On low bands, one might be at full inductance and the other varied for the match.

Construction

Plexiglass offers several advantages as a case material for an ATU: it reduces stray couplings to metal, it allows see-through tuning, and it cost me nothing. The "chassis," top, and front and rear panels are all 5.75 x 11 inch 0.125" thick plexiglass, with "cut-to-fit" end pieces. A Saber saw and a sander shape the plexiglass well. It handles like wood for cutting and drilling. I use masking tape at cutting and drilling points to minimize scratching.

Two strips of L-stock hold the chassis plate off the table. The coils and capacitors mount on this plate. A set of "ground" connections run under the plate and link all parts, as well as the rails and a small aluminum plate at the rear on which the input and output coax connectors are mounted. Exact techniques depend on the components one finds in a junk box. A handful of 6-32 machine screws, nuts, and lockwashers (with a few 8-32 pieces to mount the coils) is all the hardware the project requires.

The ceramic wafer switch had enough positions and sections to handle both the switching jobs shown in the schematic. I shortened the rods (and rethreaded them) so that with the shaft mounted to the front panel, the rods just projected through the rear panel. This technique keeps the switch from sagging, reduces strain at the front mounting, and holds the front and rear panels apart at the correct distance. The switch position is read by a pointer knob that aligns with the visible detents on the switch support plate

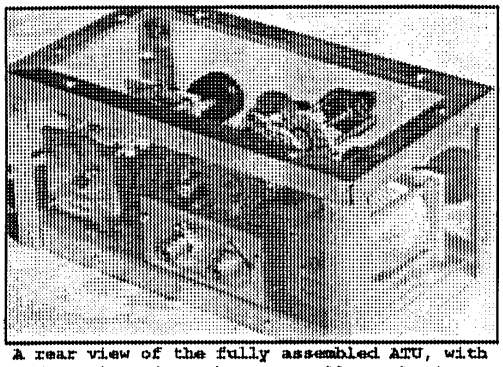
The interior photo with the top and end plates removed shows my light wiring (#18). For higher power, #14 would be preferable. I wired the chassis components first, the switch second, and made interconnections when I mounted the switch. Quarter-inch wooden dowel provides the coil and capacitor shaft extensions through the front panel to hold the tuning knobs.

The exterior photo shows the L-stock perimeter pieces, along with the sides and top of the final unit. The vertical L-stock at the corners is electrically connected to the grounded chassis rails. Only the top perimeter pieces float, but have shown no detectable RF, either to my finger tips or by detuning the circuit from semi-assembled settings. There are no panel markings because none are needed.

Operation An L-C-L Tee is an inherent low pass filter capable of a wide range of matching. Some writers have feared coil "suck-out" in the shorted turns of the coils and both inter-turn and stray capacitance. This effect has not been experienced in comparisons of received signal strength on all HF bands between the QRP+-L-C-L combination and the main station rigs and their tuners (and SPC and a C-L-C).

Despite the use of two inductors, L-C-L tuners are capable of high efficiencies. W. I Everitt, in the 1930s, provided the basic analysis of fundamental networks, including their losses. His work is summarized in Terman's *Radio Engineers' Handbook* (McGraw-Hill. 1943. pp. 210-215).

The key term for determining losses is d (delta), based on inductor losses in each type of network.



A rear view of the fully assembled ATU, with side rails and top hat, as well as the input and output connectors.

Although Terman provides graphs of d, popular in the days before computers and pocket calculators, Brian Egan, ZL1LE, has derived the d equations and added them to his very useful program, TUNER.BAS. This versatile program is now included in the collection of programs called HAMCALC, made available by George Murphy. (Contact George Murphy, VE3ERP, 77 McKenzie Street, Orillia, Ontario L3V 6A6, Canada. The software is free and can be distributed. However, to cover the costs of disks and Canadian postage, Murph asks a donation of $5.00. He donates the excess above his disk and mailing costs to the amateur radio program of the Canadian National Institute for the Blind.)

In general,

POWER LOST IN NETWORK	=	$\frac{S}{Q}$
POWER DELIVERED TO NETWORK		

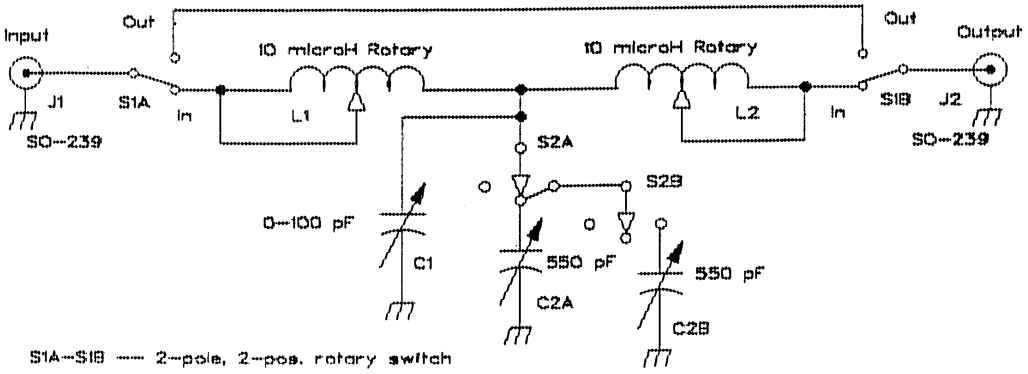
In other, equally approximate terms, network efficiency = 1 - d/Q. (Multiply this figure times 100 for a percentage value of efficiency). Figures for the d of an L-C-L network range from 1.5 to 2 for loads of 150 W, with or without reactance up to ±100 W. These figures are similar to those of the more common C-L-C tuner. Both networks will show an increasing d with increases in the ratio of impedance to be matched. A d of 2 yields about 98 percent efficiency, ignoring bad wiring, power switch contacts, lossy connectors, poor capacitor construction, and strays. In short, efficiency is not an issue in deciding whether an L-C-L network should be used as an ATU.

Using an L-C-L (or any other ATU) circuit effectively requires some forethought. Multiple matching settings are possible, and we always want to tune for minimum d and maximum efficiency at the best match (lowest SWR to the transmitter). The operative rule of thumb is this: *Choose the lowest value of L2 (the antenna-side inductor) that permits a match.* This setting will ensure the lowest obtainable value for d, whatever its actual value.

The L-C-L ATU has met all my design specifications and is doing its work well with the QRP+. The fact that the transparent case reveals the components and connections and, therefore, mystifies shack visitors is simply an unintended but welcome bonus.

L. B. Cebik - W4RNL
NE#347

L—C—L Tee Antenna Tuning Unit



S1A—S1B —— 2-pole, 2-pos. rotary switch
S2A—S2B —— 2-pole, 3-pos. rotary switch
C2A—C2B —— 550—550 pF 2-section air variable
L1, L2 —— 10 microH LaPointe rotary inductor

L. B. Cebik, W4RNL
September 2, 1995

QRP Afield Antenna Mast

Joe Everhart - N2CX
Brooklawn, NJ

MOTIVATION

Much of my QRPing is done portable fashion. When I'm near my car, a Hamstick serves as a pretty good antenna. And if there are trees around, they act as nifty antenna supports. But there are times like the New England QRP activity, QRP Afield when I'd like a quick-up quick-down setup that gives me more performance than the Hamstick.

Here on the east coast, 40 and 20 meters are the most consistant daytime bands, so that's where I hang out. And most of the stations I can work on 40 are close so a low high-angle radiator works well. A good compromise antenna height for this kind of activity is about twenty feet. Simple antennas at this height work the nearby stuff on 40 and do a fair job on the more distant 20 meter contacts.

A twenty foot mast seemed to be a very practical choice for my portable operation. Other goals were: Cost - the mast had to be cheap! Light weight - quickie setup should not include any weight lifting, *Easy* to get materials—something that wouldn't require a trip to Texas Towers or even to the closest HRO, *Easy* to assemble and disassemble—ideally a one-person operation, but in a pinch my wife or teenage kids could help, and *Easy* to transport—it had to fit inside my minivan.

OPTIONS

There are a lot of ways to go. Many of the ways have been discussed in ham literature over the years and on the Internet QRP-L mail lister within the last year. Popular solutions include: Telescoping aluminum masts—if you have a handy source of thinwall aluminum tubing, you can fab a mast with a section that will telescope inside each other for transport and can be held in place with hose clamps for assembly. Screw-together hardware "megastore" masts—national chain stores have a variety of broom handles, paint handles, etc. Some screw-masts tie together, telescoping can be extended to fifteen feet. Longer lengths can be made, too, but are less available. Bamboo poles—long a staple for quad builders (at least back in the 60s during my formative hamming years), bamboo poles can make handy masts, but they don't telescope well. Fiberglas poles—pole-vaulting poles and fishing poles make strong antenna masts, if you can afford them.

DECISION

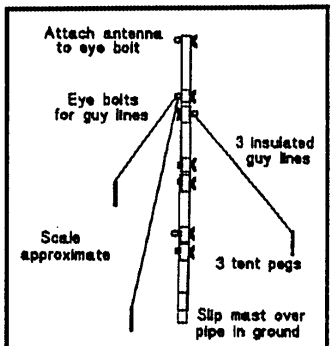
I ended up choosing a different mast material—plastic water pipe. Not that other people haven't done the same construction, of course, but my first exposure to the idea was in a book by Ed Noll, W3FQJ entitled *Easy Up Antennas*. PVC water pipe has many pluses going for it. It is pretty darn cheap at under three dollars per ten foot length, it's readily available at both local hardware stores and the megastore type home centers, and it has the added benefit of being strong, lightweight and weatherproof. It ought to be weatherproof if it's used for plumbing!

EVOLUTION

Ed Noll - W3FQJ used 2 ten foot pieces of PVC pipe telescoped together to give a nineteen foot mast. I've used a variation of this for my "Property Line Antenna," which should be published soon in **QRPp**. Another idea has been used in a motel portable mast by Randy Rand - AA2U. He uses several short pieces which fit into his suitcase chosen in sizes that telescope well. He fastens them together with hose clamps and secures them to a motel windowsill to hold a vertical dipole in place. But, that is only practical for lengths of less than ten feet.

Neither idea is what I wanted. Ten foot sections are too long to carry inside my van and there aren't too many sizes to choose from that telescope well. And I wanted a mast about twenty feet long. My variation uses five foot sections all the same diameter with coupling sections that telescope inside. Four 5 foot lengths of 1¼ inch schedule 40 PVC make a lightweight twenty foot portable mast that is fine for temporary field usage.

DESCRIPTION

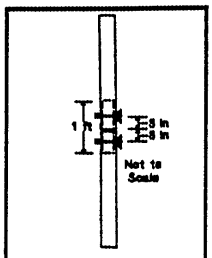


Antenna mast set up and ready to use

Figure 1

Figure 1 shows an overall view of the mast. The four sections are joined by internal couplers as described. The bottom of the mast is held in place by a pipe driven into the ground. Stability is made by guying the mast ¾ up the mast with light nylon or poly twine. The three guys are fastened to plastic tent pegs spaced around the mast and located ten to fifteen feet away. My favorite quickie antenna is an inverted Vee which is connected to the top and its ends are tied to convenient supports such as shrubs, picnic tables, tent pegs or slow moving field day participants.

Coupler detail is shown in Figure 2. Ordinary plastic pipe couplers are fine for water pipes, but don't have much strength unless they are glued. And if they're glued, you can't take the antenna apart! My couplers are simply one foot lengths of 1 inch Schedule 40 PVC pipe, slipped inside the mast where the sections come together. They are fastened by ¼ inch hardware through holes drilled three inches from each side of the joint.



Mast Connection Detail

Figure 2

Three couplers are needed, so a five foot section of 1 inch pipe provides the needed material plus an extra two foot section that can be used to stabilize the mast base. The latter is planted one foot into the ground, and the bottom of the mast slips over the exposed one foot length.

I use 2½ to 3 inch bolts to join the sections. Several eye bolts are used, with one at the top to hold the antenna, and two at the ¾ coupling for guy line

attachment, plus a fourth at the top of the lowest section to tie off the antenna line. Naturally the eye bolts serve a two-fold purpose in acting as tie points and in fastening the couplings in place. All nuts are wing nuts for fast assembly and disassembly and I used flat washers on both sides of the bolts to protect the plastic pipe.

CONSTRUCTION

Building the mast is very easy since PVC pipe is a very machinable material. That's a plus for me, because my shop skills are about on a par with Tim Taylor of Tool Time fame.

All materials should be easy to access since they were chosen with this in mind. They are:

2	- 10 ft sections of 1¼inch schedule 40 PVC
1	- 5 foot section of 1 inch schedule 40 PVC pipe
4	- 2-1/2 or 3 inch long ¼inch eyebolts
3	- 2-1/2 or 3 inch long ¼inch bolts
7	-¼ inch wing nuts
14	- ¼ inch flat washers
3	- plastic ten pegs
100	- feet or so of poly twine or 18 ga nylon seine twine
1	- lightweight antenna of your choice

Begin by cutting both of the 1¼ inch pipes in half lengthwise. You can use either a hacksaw or pipe cutter for this. The pipecutter, of course, will give a cleaner cut. Next cut three one foot sections of 1 inch pipe. Now slip one coupler half way into one of the five foot mast sections and drill a ¼ inch hole through both the mast and coupler. Hold the mast and coupler together with a nut and bolt while you drill the other holes. Since your drilling will probably be different for each section, mark the couplers and mast sections with an indelible pen so you know what section goes where. Make sure all the pieces fit together before attempting to raise the mast. Construction will go much easier if you do....

ERECTION

Drive the base stabilizer into place where the mast will be located. In soft soil you can use the two foot remainder of the 1 inch pipe. Don't try to drive it in directly with a hammer or axe because you'll "smoosh" over the end. Put a piece of wood on the end of the pipe and hit the wood with the hammer. If your soil has a lot of rocks, roots or clay, you might consider a metal pipe. Its only function is to keep the mast base in place from kicking outward.

Next, drive the guy anchor tent pegs into the ground. Place them 120 degrees apart around the base stabilizer and space them about ten to fifteen feet out. Of course if you have handy guy anchors, like a fence or whatever, you can dispense with the tent pegs. I always take them along, just in case.

Before erecting the mast, tie the guy lines onto the eye bolts at the fifteen foot level and run a forty foot piece of light line through the eye bolt at the top. It's much easier to use the top eye bolt as a pulley and lift the antenna into place once the mast is up and secured. Voice of experience speaking here.

Now carefully walk the mast into a vertical position. You'll need two people to do this since the mast is rather floppy until guyed. Tie the guy lines in place and secure. Make them tight enough to hold the mast vertical, but don't overdo it. If you over thighten them, the mast will buckle! Next, tie the center of your inverted Vee onto the hoisting line and pull it all the way up. Tie off the loose end to the screweye at the five foot level. Finally, tie off the ends of the antenna, keeping the ends at least seven feet or so above ground, and you're in business. It shouldn't take more than ten or fifteen minutes.

ANTENNAS

As mentioned, I use the mast to support the center of an inverted Vee dipole. With a lightweight antenna, such as the *Bic Flamethrower*, no additional guying is needed. Alternatively, you can use the mast as the center support for an inverted Vee half-wave or random length end-fed wire. If you use the mast as an end support for an antenna, you may need to provide additional guying at the top.

I've have a lot more ideas for portable antennas using the mast and if there is some interest, I can share them with you and your QRP Afield enthusiasts.

Joe Everhart - N2CK

"S-m-a-l-l"

The Surface Mount Amplifier That's Little And Loud

(To be featured in June 1996 QST)

Sam ulbing n4uau
Gainsville, FL

Build this project and experience working with surface-mount devices. You'll wind up with a high-quality audio amplifier that you can use for many applications.

The project is based on the new LM4861 audio amplifier by National Semi Conductor Corporation. Peak power out is over 1 watt with less than one percent distortion. The amplifier will run off 2.7 to 5.5 volts. You can operate it from a few AA batteries, or, with the voltage regulator included in the parts kit, you can run it from a 12 volt source. The PC board is 1 1/16" by 7/8" inch so the amplifier can fit nicely inside a small communications speaker.

Previous soldering experience is recommended because the parts are small but the PC board makes building easier. If your eyesight is not too good (like mine), a lighted magnifier helps.

Here are some of the possible uses:

1. Ever try to hear your handi-talkie in the car? Now you can!
2. Is your regular 2 meter not quite loud enough to over come the road noise or does it distort badly at loud volume? "Small" will help. I use my "small" with my Kenwood TN-241A 2 meter rig. Although the rig's manufacturer claims an audio output of 2 watts---more than twice the output specified for the LM4861, I was surprised to discover that the amplifier made a big improvement over an external stand-alone speaker. The audio is both louder and clearer.
3. Want to hear your 2 meter base station or your HF rig in the other room? Now you can.
4. Have a QRP rig that requires headphones? Now you can have a speaker.
5. Small portable radios give better and louder audio with "small".

THE SMALL AMPLIFIER

A kit of the parts to build this amplifier is $13.75. The kit includes all the necessary parts: 1 PC board, LM4861, 4 SM capacitors, 2 SM resistors, 1 SM diode, 1 ¼ ohm resistor, 1 5 volt regulator, plus hook up wire.

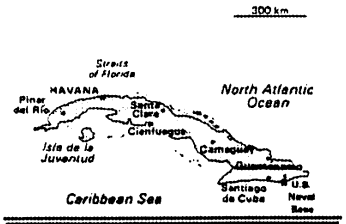
All kits include instructions and schematic. Prices include shipping in the USA. Florida residents must add local sales tax. To order, send to:

Sam Ulbing - N4UAU
5200 NW 43 St.
Suite 102-177
Gainesville, FL 32606

72/73

Sam Ulbing - N4UAU

A Mini-DXpedition



A Trip To CM/CO-Land CUBA

Tom Cooper - WA1GUV
cooper@gmpvt.com

I got back Sunday night, pooped, and I haven't had a chance to organize my notes. I took some pictures and will get them back tomorrow. Let me start from the beginning, then you'll know what I saw.

To begin with, Havana is a wreck. Most of the buildings are falling apart, the electric system is falling down and the streets are paved with potholes. The hotel room is what you would expect for a four star Cuban hotel—the furniture, fixtures, and carpets are all 40 years old and used-up. Even the patches were patched. The lobby was full of Cuban babes, eager to share their HIV with any foreigner who would buy them supper. Step outside and there is a gauntlet of cigar touts, taxi pushers and people wanting to be your friend. The rule seems to be: under 30, they want to sell something, and over 30, they are begging.

A block or two from the hotel district and the environment calms down. I walked all over and never felt threatened, but I didn't take many pictures, either. The gas shortage has most people walking, riding a bike, hitch-hiking or taking a bus. The bus can be a truck, kind of like a cattle car, that they call "camels". Night and day, the streets are full of people hanging out, staying cooler than inside. Water and electricity are intermittent, but ON most of the time.

Everyone works for the government in one way or another and pay is in Cuban Pesos, which are only accepted at the government stores. Food is rationed and very cheap in these stores, but they don't have much to sell. There are US dollar stores and they have plenty to sell. If you have a source of dollars, no problem. If you don't, you are usually out of luck before the end of the month. Brain surgeons get the equivalent of twenty dollars per month, ditch diggers six dollars. A private taxi ride costs maybe $2 or $3, so even if you get 1 or 2 riders a month you are ahead. In hotels, beer, soda, Cuba Libra's, etc. are all $1. Meals are $2 or $3 dollars. I have never felt like a rich person before in my life, but now I know what it's like.

The government has been very persistent and somewhat effective in placing the blame for their poverty on the "illegal US blockade". Have a headache? Must be the blockade. What the blockade has done is given the government the ultimate excuse. Socialismo is just as inefficient in Cuba as everywhere else. There is essentially no financial incentive to do more than the minimum. The government pretends to pay people and they pretend to work.

I didn't see or hear any evidence of the "police state". People were very open. One young fellow told me, "Sure we have health care and education. Here on Fidel's plantation, they want healthy and educated slaves." The signs that originally said "Socialism or Death" now say "Socialism is Death."

In fact, the blockade is almost totally ineffective. In some offices there were brand new US made 133 MHz Pentiums, 28.8K modems and other up to date techno-stuff. Dollar stores have every imaginable US made product. T-shirts sold on the street are "Made in USA."

What is apparent is that the government is just as broke as the people. If the blockade was lifted today, not a thing would be different, because they can buy whatever they can afford today from Canada, Mexico, Spain, scores of places. The blockade is about all that keeps the present government going, because without it, the nearly total failure of the system would have nothing to hide it. I think that if the blockade were lifted on food and medicine, the government would spend itself to death trying to show that the blockade was the problem when in fact it wasn't. Ronald Reagan's strategy with a human face.

The Cubans themselves are just wonderful people. Friendly, warm, personable, startlingly intelligent, laid back, full of fun. And, in a way, ham radio is alive and healthier in Cuba than it is in many places. Scrounging, building and experimenting are still part of everyday hamming. The general level of technical expertise is very high, and many of the high level technical positions are filled by hams. Amateur to amateur connections seem to be one of the best ways of getting many jobs accomplished.

In Cuba, you must pass examinations (given every 6 months) to obtain an operator's certificate. To get a station license, and a call sign, you must have a radio, which is inspected by the equivalent of the US FCC, and is listed on the license. Radios are the big stumbling block for many, since equipment and parts are hard to come by. The Federacion Radioaficianados de Cuba, the equivalent of our ARRL, has 3,200 members, but only 2,000 have station call signs.

The FRC is a very interesting organization. Every Saturday, the club meets at the headquarters in Havana. Members arrive on foot, bicycle, bus, taxi or, occasionally, car. Just inside the front door, a barber gives inexpensive haircuts. The hallway, library, QSL bureau, kitchen, offices and outdoor patio are bustling with hams. A simple lunch will be served later. In a small building off the patio, Cuba's only parts store is open. The FRC supports itself through the sale of parts and government surplus equipment to its members.

Pedro, CO2RP, is the club president and a major reason for the club's health. Using considerable ingenuity and his friendly personality, Pedro has managed to make officials in various government agencies aware of the value of ham radio in emergencies and as a technical learning tool. In response, they channel their surplus parts, broken radios and obsolete equipment to the FRC, instead of the dumpster. This Saturday, Pedro and others are examining a small box of HTs that the airport is no longer using. They look like IC2ATs to me. The ones that have been used to hammer nails or dig holes will be disassembled and working units will be re-constructed. There are a couple of 2 meter repeaters in Havana and a packet

network serves part of the island, all made from scavenged radio and computer parts.

The most common CW rig here is made from the tubes of a Russian television set. These sets seem to suffer from spontaneous combustion, so making one into a CW rig is actually a good idea! These rigs often have that characteristic "dwooop di dwooop di dwooop dwoop di dwooop" Cuban sound because there is no supply of 78L12 voltage regulators. The circuit board sold by the club is etched, but not drilled. The tubes are soldered in place because of the lack of tube sockets. Even the most basic tools, such as soldering irons, are very hard to find here, at least at an affordable price.

Solid state parts are particularly hard to get. Cuba has a factory that makes 2N2222 and 1N4148 type devices, but ICs, FETs, crystals, filters, small resistors, caps and inductors are all imported. Some of the radios that are donated to the club need parts that will never appear, so they get cannibalized. A few hams run QRP out of choice, but most that run QRP do so out of necessity. Forty meters is the best band for intra-island HF communications, and DSB is used by some, because that's what they've got!

For receiving, Russian and Chinese military surplus or 1950s or earlier Hammarlund, National, etc., equipment is the most common. I am not all that surprised by the low levels of Cuban participation in contests, since these receivers don't do so well in heavy traffic.

I met more hams than I can mention here, but Arnie Coro CO2KK was especially helpful since no *habla espanol*.

He is very knowledgeable of VHF propagation and techniques, and just like us, he loves his hobby.

Tom Cooper - WA1GUV
cooper@gmpvt.com

"F D 4"

Fred Bonavita - W5QJM
PO Box 2764
San Antonio, TX 78299

The **FD4** antenna has cropped up twice recently in the QRP press, but on neither occasion was there an explanation of this little-known skywire. The mentions were in the Members' News column in *SPRAT* (No. 85) and *The QRP Quarterly* (January 1996). And *QST* for February 1996 carried an article about the **FD3** antenna written by a British ham. This time there was a drawing but no mention of the **FD4**.

I have not tried either antenna, but I wanted to find out more about the **FD4**, since it was receiving rave reviews from the QRP crowd in Europe.

I managed to track down the **FD4** in the *G-QRP Club Antenna Handbook* from which the diagram comes. It is a variation of the old Windom, an off-center fed antenna still fairly popular in one form or another today.

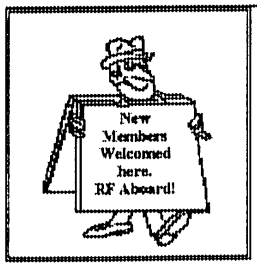
Unlike most Windoms, the **FD4** calls for 75 ohm coax, a line not often used in the US, and it is fed via a 1:4 balun. A 1:6 balun is used for a 50 ohm feedline. Both match the feedpoint impedance of 300 ohms. Users say the only band on which the **FD4** will not play is 15 meters, but it will function on 160 meters and 6 meters.

Unfortunately, the balun is described only as six turns of black and gray wire (no gauge given) on a "piece of scrap" ferrite rod (no material or length given). Not a bunch of help. Articles on winding baluns are readily available in most antenna books and handbooks, and PALOMAR and AMIDON sell baluns ready-wound or in kits.

The **FD3** appears to be an abbreviated version of the **FD4** (69 feet versus 135 feet, respectively). The **FD3** also is fed with 300 or 450 ohm ladder line. With a 1:1 balun, it performs on 40, 20 and 10 meters. It works on 15 meters with a 1:4 balun, but band-switching involves balun switching, too. The author is wrong when he says 300 ohm ladder line isn't commonplace in the US. Try DAVIS RF, RADIO WORKS, or the WIREMAN.

The *G-QRP Club Antenna Handbook* is a must for QRPers well stocked library. Drop a line to Bill Kelsey - N8ET, at Kanga US, 3521 Spring Lake Drive, Findlay, Ohio 45840, and ask if he still sells the book. Or, you ought to find a copy at the G-QRP Club's booth at Dayton in May. While you're there, see if you can find out what the **FD** means. Neither article explains that either.

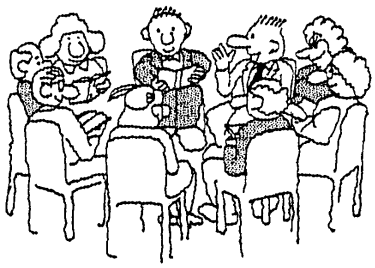
Fred Bonavita - W5QJM



NEW ENGLAND QRP CLUB NEWEST MEMBERS

The snow has melted and the airwaves are heating up. Give a warm welcome to the following RF movers and tell them you saw their name in *ZZ*. The excitement is building!

NE 444	Edward Davis, N4AHC
NE 445	Gregg Liguori, WA2JPU
NE 446	Alan Plotnick, NN1X
NE 447	Howard Kraus, K2UD
NE 448	Glenn Scott, N2ULU
NE 449	David Perrin, K1OPQ
NE 450	Roy Lincoln, WA4DOU
NE 451	Gary Rodgers, KE4GI
NE 452	Joseph Wood, K9HBO
NE 453	Claude Paluski, WB9EUU
NE 454	Jay D. Miller III, WA5WHN
NE 455	Irving Warner Jr., KC1HV
NE 456	Jim Lowman, KF6CR
NE 457	Ted Mansfield, W1BOA
NE 458	Ken Newman, N2CQ
NE 459	Charles Ludinsky



Winter ARRL Meeting

New England QRP Club
Newington, CT
March 10, 1996

The New England QRP club had a magnificent time at the ARRL Headquarters last month in Newington, CT. There was a brief meeting called to order by Dennis Marandos - K1LGQ in which twenty-four members signed in while gabbing and exchanging stories in the conference room. Doug Quagliana - KA2UPW showed his AO-27 QRP satellite station in the ARRL HQ parking lot at a short break within the meeting. Doug KA2UPW and Dennis - K1LGQ were able to work two 1 area stations and heard others in 4 and 8 land. In addition to the fun stories and exciting projects which were everywhere, the stations of W1AW were warmed up once again by the club members and given the royal work out. Needless to say, there is a special link when working W1AW to Hiram Percy Maxim.

CALL	Name
N1BKL	Bob Baker
N1QPR	Bill Northup
KE4GI	Gary Rodgers
KA1ZNZ	Denis Morin
K1BUB	Bob Gravel
KB2JE	Walt Windish
W2ZHA	Gus Hintz
N1CJB	Walt Yatzook
WA2BTR	Dan Tapper
KF2HC	Brian Keegan
N2CX	Joe Everhart
KA2UPW	Doug Quagliana
NN1G	Dave Benson
KA1PXF	Bob Moeller
W1MEP	G. Chester Mallory
K1LGQ	Dennis Marandos
AA1OC	Bill Studley
KC1GS	Bill Acito
KH6CP/1	Zack Lau
W1FMR	Jim Fitton
SWL-W1	Maureen A. Keefe
AE1D	Bill McNally
KC1SX	Mike Tracy
N1RXV	Bob Schmeichel

49er Boards are in

The circuit boards for Wayne Burdick's latest design the 49er (forty meters on 9 volts) are in. The construction article will be published in the *QQ* and *QRPp*. It is a double hit as there are many who don't subscribe to either newsletters. The 49er is one of the two choices for the projects in the second annual great Dayton Building Contest sponsored by NorCal. It is a fun rig, and if you want a board, the cost is $5 postpaid from Jim Cates.

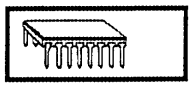
Address: Jim Cates
3241 Eastwood Rd.
Sacramento, CA 95821

Make checks or money orders out to Jim Cates, *NOT* NorCal.
The history of the 40-9er is approximately this:

Early 1995: I saw/heard some of the Pixie transceivers that people had built last year, and thought much better performance would be possible with just a few more parts.

Late 1995: Doug found some 7.040 MHz crystals at the swap meet. He needed a rig designed to help use them up.

These events left me no choice but to do the 40er. Since



there were so few parts (about ¼ the number as a NorCal 40A) I figured it was a good opportunity to design the rig around a 9 vdc supply voltage. You could put the rig into a very small box, and Doug did a nice PCB layout to achieve this.

SOME IDEAS TO KEEP IN MIND IF YOU BUILD ONE:

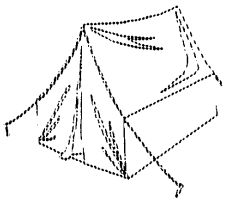
The limited VXO range has to do with how far you can pull an NE602 oscillator without having it stop. I used an RF choke, but you can increase the pull with a large toroid (like 60 turns or more on a T68-2 or T68-6). But be careful at the low end of your VXO trimmer cap; if the capacitance nears zero, it may stop oscillating (especially when you transmit, which loads the crystal further).

That ½-watt output will drain a regular 9v battery pretty fast, so consider using an alkaline or better yet a lithium battery (availble from Mouser Electronics). A lithium battery costs twice as much as an alkaline, but you'll get something like 60 hours of operation!

To keep parts count low, I used an LM380 and only a single-ended connection between the IC and the product detector whichis an NE602. You might increase the audio output quite a bit by adding a second JFET transister and go to a differential coupling between the NE602 and LM386. As it stands, there is enough audio to drive headphones to a reasonable volume in a quiet space.

I'm running everything except the final amplifier off of 5v so that receiver performance and frequency stability will be good down to 6.5V, or so. To save a few more milliamps and allow the rig to run all the way to 5.1v, you could substitute an LP2950-5.0 low-dropout regulator for the 78L05. I worked Michigan (2,000 miles) on mine. Have fun!

73 - Wayne N6KR



A QRP Adventure of the Thunderous Kind

Russ Carpenter AA7QU
McKenzie River, Oregon

The arrival of the New England QRP newsletter *Z2* several weeks back brought to mind a tale worth telling.

Last fall, I participated in the New England QRP Afield in a solo back packing venture in Central Oregon. I'd already made a computer analysis of the site and was in a state of arousal over the results. According to the topographic map, it would be possible to drive my truck to the top of a high, forested plateau and then to bushwhack to the edge of a 2,500 foot cliff. The terrain appeared to be concave and to face east. Perfect!

On Friday I drove to the plateau and parked the truck at what appeared to be the best launching point for the bushwhack. The terrain was high (7,000 feet), flat and densely forested with pines. I struck off through the forest and managed to encounter the cliff at just about the place I'd examined on the computer.

I would strapped a 26 foot collapsible aluminum mast to my pack. I erected the mast on the very edge of the cliff and hoisted a multi-band, inverted V on a halyard. I then put up my one-man tent about fifteen feet from the base of the mast and ran the coax into the tent.

I walked through the forest with my eyes grimly trained on the compass. My head lamp lit up the compass and feet, and not much else.

That night I crawled into my sleeping back and drifted off to sleep with noble thoughts—this is what human powered QRP adventuring is all about, I mused. A great location, snug tent, and good night's sleep.

KERBOOM! The interior of the tent lit up with brilliant, white light. Gosh, I thought, that sure was loud. CRASH! Again, blinding light, and the earth shook. Holy smoke! This was getting more exciting than I expected.

It was then that I understood that fifteen feet away from an aluminum mast is not the world's best place to be at a time such as this. With lightning strikes now coming only fifteen seconds apart, it occurred to be that this would be an excellent time to abandon ship.

The truck seemed like the best place to wait out the storm, even though there were a lot of featureless, black forest between me and it. I grabbed my compass, a head lamp and a nylon parka and headed for the trees.

At this point I had a learning experience. It turned out that the brain gets easily confused by lightning strikes in a thick forest. Everytime a section of the forest was illuminated by a strike, my alleged brain would say: "Oh yes, that's the way to the truck, just where the lightening struck." I've talked to other foolish people since, who have also been in dense forest during a lightning storm and they report the same phenomenon happened to them.

I realized that this would be like flying a plane IFR (instrument flight rules). I needed to focus on my compass and ignore what my senses were telling me. I figured that I could at least hit the road if I paid attention to the compass. I walked a long timed to the north and then south. If I didn't find the truck soon, I would find a relatively dry spot and wait until the storm passed and until dawn.

I walked through the forest with my eyes grimly trained on the compass. My head lamp lit up the compass and feet, and not much else. It seemed that a long time went by, but I tried to concentrate on the compass and ignore the thunder and lightning. Was my head lamp every going to pick up the sight of the gravel road under my feet?

Finally, curiosity got the better of me and I raised my head to look around. There, no more that two feet in front of me, was the side of the truck.

The next day was very mellow, as I reflected on the little miracle of the night before. I got a decent score in QRP Afield, although, I'll admit I was a little punchy.

Next time I haul my aluminum mast to the high country, and I think I'll take a little more coax.

Russ Carpenter, AA7QU,
McKenzie River, Oregon

The Ides of March have past us and now a reminder that there are only TWO MORE MONTHS left before the first annual QRP Amateur Radio Club, International (ARCI) sponsored "Four Days in May ©" QRP Symposium. YOU MUST register for FDIM © 1996 now or you may miss out on what many are calling "The QRP EVENT of the 20th CENTURY". We've been getting great publicity in the many national and regional QRP club newsletters, national magazines (**Worldradio**, QST, 73, CQ, **Hambrew**) and the UK Press (**RadCom** and **Practical Wireless**). Here's some exciting updates for the lucky few who will be able to attend this extravaganza:

1. *QRP SYMPOSIUM EXCLUSIVE*: In the January 1996 QRP Symposium posting, it was announced that the The Four Days in May © Committee had secured the exclusive rights for the world premier of a new and exciting QRP Technical Book. Rich High WØHEP of the Colorado QRP Club recently made the official announcement of this book and he has asked that the "Four Days in May ©" QRP Symposium host the world premier of this special QRP Book.

FDIM© had a chance to preview a small portion (40 pages) of the new book and it's predicted that the book will be in EVERY QRPer's library. The portion of the book reviewed was packed with reams of QRP design data on components, circuits and techniques—more QRP design information than has ever been assembled in any publication to date. In conversations with the authors, their goal was to produce a QRP design book that would bring credibility to the great advances made by the QRP radio designers of today.

For the World Premier debue, the authors will be presenting autographed copies to all FDIM© attendees. The offering is an exclusive to the QRP Symposium attendees. The news release from Rich WØHEP follows:

Colorado QRP Club News Release - February 11, 1996.

Many have been asking about the book to be published containing the articles by Paul Harden, NA5N, in the Colorado QRP Club newsletter, The Low Down. I am pleased to announce the book, **Electronic Data Book for Homebrewers©** including **QRP Yellow Pages©** will be released to the public May 17 at Dayton one day after the World Premier at the "Four Days in May©" QRP Symposium on May 16).

Registration looks like a "QRP Who's Who" with many familiar names from the International QRP community. Don't delay—get your registration in—there will be a limit to the number of attendees that we can accommodate. Don't miss out!

Electronic Data Book for Homebrewers© and **QRP Yellow Pages©** is based on the series by NA5N and features several of the popular QRP rigs. Lab measurements and spectrum analyzer waveforms are shown for these rigs.

This is the most complete and comprehensive book of its kind with over 100 pages of data sheets and information for the amateur radio QRPer, electronic hobbyist and technician. It is spiral bound for ease of use on the bench in the shack or in the lab.

The **QRP Yellow Pages** by Rich High WØHEP will provide a quick reference to manufacturers and suppliers of interest to QRPers and other amateurs. This book is a "must have" for the homebrewer. The cost is $15.00 U.S. ($17.50 postpaid U.S./$19.50 U.S. postpaid foreign) from 5 Watt Press, 740 Galena Street, Aurora, CO 80010-3922.

2. QRP SYMPOSIUM PRESENTERS: The quality of papers submitted to Bruce Muscolino W6TOY/3, our FDIM Technical Paper Chairperson, has been outstanding. Some of the sampling topics include QRP antenna design, receiver design, high quality direct conversion receivers, milliwatting, construction techniques, options to getting on the air as a QRPer, etc.

As many of you may know, we have asked that the papers to be of a non-commercial nature. It was not our intent to dissuade commercial presentations but instead to provide a forum where both QRP users and QRP vendors could freely share technical and operational aspects of the QRP amateur radio hobby. We have not forgot our QRP manufacturers though - we hope to make some future announcements about special vendor activities.

As previously announced all "Four Days in May ©" QRP Symposium attendees will receive a copy of the official QRP Symposium Proceedings as part of their registration fee.

3. LUNCHEON SPEAKER: A sumptuous and scrumptious luncheon that Paulette Quick N9OHU, our FDIM Registration Chairperson has lined up for ALL QRP Symposium attendees has been prepared. To make the lunch one of the most memorable at Dayton, we are happy to announce that famous QRPer and DX hound Dr. Rick Zabrodski - VE6GK will be the luncheon speaker. Rick will be talking on "Why QRP Operation Is Good For Your Health" (or something catchy like that). Actually, Rick gave a similar featured talk at the Radio Amateurs of Canada annual meeting a year ago in Calgary. The luncheon talk should "add some value" to our QRP lives.

More good news—the FDIM© luncheon will have some great door prizes. There is word that the Michigan QRP Club has donated a very special prize from one of it's well read members. More to come.

4. REGISTRATION: Paulette Quick N9OHU has been posting on the QRP-L internet mail list the list of attendees registered to date. Registration is going great and with over 40 folks registered and with two more months to go, this event will be a great gathering. Registration looks like a "QRP Who's Who" with many familiar names from the International QRP community. Don't delay—get your registration in—there will be a limit to the number of attendees that we can accommodate. Don't miss out!

Registration for the QRP Symposium will be $30 (US) if prepaid to Paulette N9OHU by May 1, 1996 and $35 if paid after that date or at the door. We may have to limit May 16, 1995 at-the-door registration if we are sold out of facilities. Please register early to guarantee a seat at this not-to-be-missed QRP event. Registration will cover all day Thursday QRP Symposium activities including the QRP presentations, the autographed world premier QRP Design Databook, the QRP Symposium Proceedings book, the scrumptious QRP luncheon and finally the endless QRO coffee pot.

Send your registration and $30 (US check or money order) made out to "Paulette Quick" by May 1, 1995 to:

Paulette Quick, N9OUH
FDIM registration
P.O. Box 145,
Madison, WI 53701-0145
plquick@facstaff.wisc.edu

E-mail for information only (608)263-9326 (work phone)-telephone for information only.

73/72 Bob VO1DRB/WA6ERB
FDIM Public Relations Chairperson

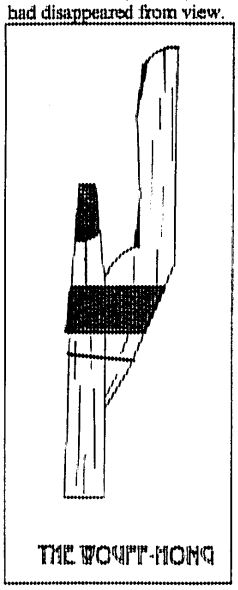
PS: Start finalizing your travel and lodging reservations for Wednesday night May 15, 1996 to Sunday May 19 for the BIG QRP Event of the Year. Cheers!

The Wouff-Hong and the Rettysnitch Lost Traditions?

L. B. Cebik, W4RNL NEQRP #347
1434 High Mesa Drive
Knoxville, TN 37938-4443 U.S.A
e-mail: cebik@utkvx.utk.ed

The ***Wouff-Hong*** is amateur radio's most sacred symbol and stands for the enforcement of law and order in amateur operation. The ***Rettysnitch***... is used to enforce the principles of decency in operating work.
The Radio Amateur's Handbook, 1930, p. 11

In 1930, the ARRL *Handbook* had pictures of both instruments of enforcement. By 1936, only the Wouff-Hong appeared, and by 1947, the *Handbook* had deleted both photos. Just when we needed traditions of law and order and of decency in amateur operations to guide its growth in the post World-War-II explosion of technology and easier licensing, the symbols had disappeared from view.



Many of today's hams have no idea what a Wouff-Hong and a Rettysnitch look like. To rectify that gap in hamdom's essential history, I have used my very limited CAD abilities to make sketches of the two instruments. Figure 1 is the Wouff-Hong. The two main pieces appear to be wood banded by metal strapping and by heavy wire. What the sketch cannot convey is the darkness at the upper end of the longer wood piece, as if stained by blood or purified for its grave duties in the fires of purgatory---or both.

Figure 2 is a sketch of the Rettysnitch, an all-metal tool. Of the 5 teeth around the disk near the pointed end, only three remain. According to tradition, the other two have done their work and perished in the effort. Again, my limited skills in rendering the Rettysnitch rob the device of its terrible demeanor, and therefore of its force to ensure operating decency among amateurs.

Perhaps the last time the story of the Wouff-Hong and the Rettysnitch was told was in 1934. Thanks to Ed Guilford in Bothell, Washington, I have the May '34, *QST* in which Rufus P. Turner---famous in the annals of electronics writings---recounted "Hamdom's Traditions: A Bedtime Story for Young Squirts." But even by Turner's time, the Rettysnitch was relegated to a paragraph on the story's continuation page in the back of the magazine, with no picture. Somehow, even then, folks had forgotten that you can never have law and order without first having decency. Some pessimists think that we now have neither.

I do not subscribe to the pessimist's view. Sure, the number of rotten operators has skyrocketed, but not their proportion to the main corps of good, legal, and decent operators, capable and courteous to a fault. We should not be troubled by the size of the job of curing amateur radio of its illegalities and indecencies, for we have more folks to help use the Wouff-Hong and the Rettysnitch just where and how they ought to be used. No, not on others, but on ourselves---to make sure that we set a model for how amateur operations ought to be conducted.

Turner offers no prescription for using either device, but thought the Wouff-Hong able to beat our King Kong's brains or easily plow up acres of Manhattan bedrock. That will tell you something of the power of these machines. But it won't tell you how they came to be.

Among the almost unintelligible gibberish in his headphones were words like "wouff hong" and "rettysnitch," surely instruments of terrifying punishment.

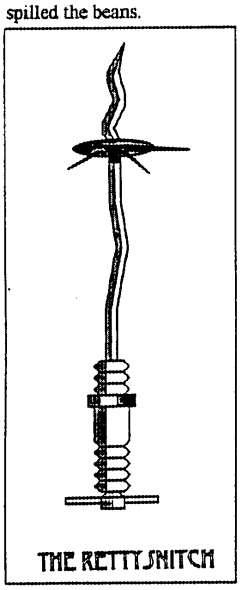
Remember T.O.M.---The Old Man---who wrote in earliest days of "Rotten QRM." His very first article in 1917 blasted concocted abbreviations just coming into use. Among the almost unintelligible gibberish in his headphones were words like "wouff hong" and "rettysnitch," surely instruments of terrifying punishment. By mid-1917, ARRL was besieged by orders for these contraptions, orders that could not be filled because the League staff had never seen either device.

In 1919, after World War I (then called simply the Great War since no one could imagine doing all that destruction and killing all over again), the League once more took up its work in earnest. At just this critical time, the Directors received from The Old Man a package containing an authoritative and well-preserved specimen of Wouff-Hong. Turner described the contents of the package as "the gruesome instrument of torture." By order of the Directors, it was hung in the office of the Secretary-Editor, within easy reach. Its first portrait appeared in *QST* for July that year. At each Board meeting, the Wouff-Hong stood on display, to the blanched looks of the humbled Directors.

The Old Man also presented the world with its first glimpse of the Rettysnitch. In 1921, the monstrous machine was presented to the League traffic manager by the Washington, D.C., Radio Club, ostensibly after receiving it from T.O.M. Even at its first public appearance, two of its teeth were missing, suggesting a long history of necessary and effective use. However, to this day, the Rettysnitch has lost no other teeth. It was ordered to hang by its mate.

In the 20s and 30s, many a reproduction of both instruments, but especially the Wouff-Hong, materialized across the country. A group of hams in Flint, Michigan, created the mystic society called the Royal Order of the Wouff-Hong. The

society endures to this day, according to legends to which I have so far not been privy. And The Old Man has been given a name: Hiram Percy Maxim, W1AW. At least, legend tells the story that way, perhaps based on the fact that T.O.M. glared at "Kitty" while reflecting on the "rottenness" of everything. Maxim did have a cat. However, true to feline nature, Maxim's cat never spilled the beans.



But what has become of the Wouff-Hong and the Rettysnitch? More important, what has become of their power to enforce both decency and law and order on the ham bands Hams used to cringe at the thought, let alone the sight, of these dreadful tools of enforcement. But, we do not hear of them much anymore. Oh, a tremor of curiosity every now and again brings out a ripple of questions and speculation. But not much more more than a ripple.

You see, today, we have much more terrifying weapons, things like Oozies and H-booms and the like. They scare us in ways that seem to make the Wouff-Hong and the Rettysnitch tame and toothless. However, even in Maxim's day, objectively more powerful weapons were used in France, like tanques and gas more poisonous than that made by Texas chile. Why were the Wouff-Hong and the Rettysnitch so powerful to those early hams?

Because those hams cared about amateur radio in their hearts. They wanted what they knew they could never have: a perfectly law-abiding and decent radio service that would inspire young and old alike to become hams or, lacking the inclination to electronics, to become admirers of hams. Every minute of on-the-air time was a chance to show how noble a pursuit amateur radio was and should always be. They feared the Wouff-Hong and the Rettysnitch as instruments of their own consciences, as they strove to meet the standards they set for themselves.

And that is where today you will find both the Wouff-Hong and the Rettysnitch—deep in your own conscience. If they seem to hold no power, then you know it is time once more to elevate your standards a notch higher, and then to strive to achieve them perfectly. Each of us has a secret and private office where no one else may go. Above the door, facing our individual operating tables, hang two instruments, one of law and order, the other of decency. However, much the outside world may neglect the tradition of these terrible reminders of responsibility, each of us possesses our own Wouff-Hong and Rettysnitch. May you never deserve their sting.

Like all legends, this one, too, must end with special words: pass it on.

L. B. Cebik - W4RNL
NEQRP#347

ANNOUNCING....

The New England QRP Club is now offering its third club kit, the *QRP AFIELD 20-30 Portable PVC Mast* kit. Based on the Mast PVC article, the semi-kit is available for $15.00, which includes all hardware and a 20 plus page illustrated manual. The manual has complete cutting, drilling and assembly instructions with drawings to show you how to do the job right. Not included is material you can buy from your local hardware store for about $15.00. As a bonus, 100 feet of wire is included along with construction details for the perfect companion to the mast, the **PVC Gusher** antenna.

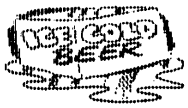
To order, send your check or money order made out to *New England QRP Club* to Bob Baker - N1BKL at P.O. Box 6498, Nashua, NH 03061. Sorry, but postal rates force us to charge our Canadian friends $20.00 US. Kits will be shippped starting in May 1996. Remember—*The Excitement is Building!*

New England QRP Club Meeting

MAY 11,
Saturday at 10 AM
BOXBOROUGH,
MA

Mark your calendar...Saturday, May 11, a meeting will be held at the Holiday Inn in Boxborough, MA beginning at 10 AM. While the heavy-hitters are having their QRP meetings in Dayton, the NE QRP Club will have their special get together in Boxborough. Bring your newest gear, or bring your old QRP rigs for a show and tell plus a chance to operate in the adjacent filed next to the Holiday Inn. Bring what you need to set up your stations.

Meet in the lobby of the motel or in the front parking lot and join your friends. Talk-in will be 146.520 MHz. A brief meeting will be held in the restaurant and lunch will follow. Stay as long as you like and have the chance to swarp stories as well as gather new information on what's hot in QRP country. As the day progresses into evening, it has been forecast that the Dayton crew will be listening on the bands for the New England cland, so get ready to make contact with the "Four Days In May" clique. Let the NE QRP movers and groovers show their stuff and be heard across the country. GET READY...!



QRP Cost Antenna

(Recycling When Recycling Wasn't Cool)

Joe Everhart - N2CX
Brooklawn, NJ

One dimension that really identifies a ham from his neighbors is his antennas. When that sweet young thing you're dating sees those stainless steel porcupine quills radiating from your automobile's roof, she knows you're a ham. When the neighbors see a 60 foot aluminum Christmas tree towering in your back yard, they know you're a ham. And, when you invade the local county park, setting up your skywires for QRP Afield, EVERYBODY knows you're a ham!

Hams have been known to make antennas out of nearly anything conductive and even some semi-insulators. Kite and balloon-borne antennas are old hat, but fun. Shunt feeding a water tower for 160 meters is only moderately out of the mainstream. One particularly clever antenna scheme in a hidden transmitter hunt was to feed the guard rail on a bridge as a long wire. Not only was the antenna concealed in plain sight, but being a number of wavelengths long, it had potent directional characteristics. But my absolute favorite off-beat antenna is the one I built as a teen-ager.

Back in the 60s, as an ambitious new teen-aged ham, I cast about looking for a cheap, effective DX antenna for 40 meters. Some research told me that a quarter wave vertical antenna was good candidate. But, because I was short on funds, I looked for the least costly alternative. The answer was in the back issues of *QST*.

W. Pete Czerwinski, W2JTJ had an article in the November 1955 *QST* entitled *Budget 7-Mc Vertical Antenna*. His solution----beer cans! Now let me digress for a moment. Back in the old days before pop-top aluminum cans, brewed beer came in the so-called tin cans. The cans were basically the same construction as today's soup containers and vegetable cans, which were made of plated steel and had rolled-edge tops and bottoms. With the paint removed, they were easily soldered. And old W. Pete described how to solder together 82 of them to make a vertical antenna!

Now the raw materials were literally just laying around, but not something that a 16 year old could gather without some difficulty. I innocently rode my bike around town carefully attempting what today is called recycling. Many folks were less than enthusiastic about these pursuits. They would complain about my picking through their trash, and were strangely skeptical when informed of the intended usage. Just picture a pimple-faced youth riding around with 20 or 30 empty but odoriferous beer cans rattling around in the basket of his bike. Man, people are soooo suspicious....

Under the cover of darkness, carefully packing a cardboard box for transport and the help of several brew-enjoying older hams, I gathered the requisite amount. The usual beer cans were augmented a couple of ways. First, soda-pop cans were the same size and construction and infinitely easier to justify. And secondly, I found a local gent who enjoyed Ballantine beer in extra-long cans. About fifty percent longer.

The first step was to carefully wash and remove any objectionable stale contents from the can and to clean away the surface contamination (garbage). Then, at assembly time, the rims of each can were sanded to remove paint and oxidation. To ensure a good solder joint, a thin coating of rosin flux was applied to the rims. Yup, rosin core----don't want that acid stuff corroding my cans!

To begin my kludge, two cans were lined up end-to-end and tack-soldered at three spots around the periphery using my handy dandy Weller 100 watt iron soldering gun. Finally, a bead of solder was run all the way around the rims while slowly turning the cans and heating them with the iron. It sounds as though you need three hands, but it wasn't all that tough.

Building becomes increasingly difficult to manage as more and more cans were added. You need a long (at least 32 feet!) flat surface and lots of patience. I found it easiest to make sections about 11 feet long and then join the sections together just prior to putting the whole vertical up. With a little practice you can very easily make a very straight structure. Total height needs to be about 32 feet to cover the 40 meter band. This is a tad short of the usual 234/*F* value, but the higher width to length ratio of the cans shortens dimensions a bit. The fat cans also reduce *Q*, so the length isn't nearly as critical as when you use wire for an antenna.

After all of the cans are joined, it is most important, particularly if you are a minor, to hide the identity of the building materials by painting the vertical antenna. I chose aluminum spray paint which was silver in color. Of course spray paint back in the days when a youngster with a can of Krylon in hand wasn't a reason for concern.

Puting the vertical up takes a little care because the solder joints don't really have a lot of strength. The bottom section of the lowest can is opened with (what else) a can opener. Considering the clumsiness of a 32 foot vertical of cans, maybe you better do prepare the mounting hole BEFORE you start soldering.... The base support and insulator was a quart size soda bottle held in place on the ground. I used some wooden stakes, however, they eventually rotted.

Since the antenna is flimsy, you have to guy it. The original article called for guys at the 38 can level from the bottom and again at the 29 can level beyond that. Plastic covered nylon clothesline worked well. You need something strong and weatherproof that won't stretch over time. When you erect the structure, you need several other helpers to maintain tension on the guys to prevent center buckling while raising the whole thing. Once the vertical is up, and the guys are tied off, it's surprisingly stable.

Alas, when I put mine up, I didn't have any skilled help with me, but just some local neighborhood kids who didn't know any more than I did. As might be expected, they didn't maintain tension during the inaugural 'barn-raising,' and the whole farrago came crashing down, having buckled in the middle. I eventually rebuilt the vertical and stopped at the 20 foot level. This was rigid enough to put up myself and I needed only one set of guys. The additional 12 feet needed to complete the electrical quarter wave was added in the form of a horizontal wire. Instead of being a pure vertical, it was an inverted L.

It really did work pretty well, in spite of its odd construction. And I very quickly learned the value of lots of buried ground radials. Starting off with only four, the antenna

lived up to the old adage "A vertical antenna radiates equally poor in all directions." When I accumulated up to 16 radials, it really became a DX performer, even with only 35 watts (input) crystal controlled. Adding two more conventional verticals the next year, I made a super phased array, but that's another story....

Learning from some of my CB buddies, I added something extra to the top end of the antenna—a neon bulb. Whenever I keyed the transmitter, it lit up. Somehow my folks weren't pleased when the neighbors call to report, "That thing in your back yard is on fire."

I recently taught an antenna class where I work, and during the last class session, I described some out-of-the ordinary antennas. I mentioned the ELF antennas the Navy has used that are really forty mile loops using conductive earth to radiate 40 to 80 Hz as RF. They were somewhat skeptical, but accepted the facts. I had earlier presented traditional Beverage antennas used for LF and MF reception, and to end my lesson plan, I informed them about a different kind of beverage antenna for HF—the beer can vertical. Nobody believed me until I showed them the *QST* article—go figure! Then, since they are of the current generation, asked how you soldered aluminum cans together and how could you make a 32 foot long rod out of something that flimsy. Fortunately none of them thought to ask just WHY anybody would do that.

Joe Everhart - N2CX
Brooklawn, NJ

GREETINGS FROM THE RENEWAL CHAIRMAN

Bill Studley - AA1OC
Renewal Chairman
Merrimack, NH

Just a note to say thanks to all of the members that have sent their renewals this past winter. You're the reason this newsletter is one of the best around! I'd also like to say thanks to those who responded to the questions on the renewal application about who you are and what you like about being a QRPer. We QRPers are a very diversified group of amateurs, and one thing we seem to have in common is that we like to build our own rigs. Here's some of what you had to say:

I love the challenge of milliwatting and enjoy reading the QRP-L reflector...N2MNN, building and using my own gear...K1DX, homebrewing...N1HFX, QRP antenna design...KA9HAD, using it (QRP) to introduce young newcomers to amateur radio...KB2URF, I enjoy building more than operating...WN1A, doing more with less...KI2L, Building! N1IPT, homebrewing and operating Afield...N2KTY, building and experimenting...N4ED, working on the phase '3D' bird and running AMTOR DX QRP!...W4AT, homebewing... KA1JML, traveling with QRP rigs...N5PXA, designing and building my own gear...AG5P.

That's just a sampling of what your interests are. I hope to hear from more of you in the future. A special thanks to Jim Cates for sending his renewal made out on a NORCAL renewal form and to Margaret McCarron and Roy Crosier for the unique envelopes they used to send their renewals. It made going to the mailbox a joy, rather than a chore. Again, thanks to all that contributed; your input to the newsletter is appreciated. I hope my message finds you well.

Bill, AA1OC
Merrimack, NH

VERTICAL ANTENNA CLASSICS
Book Review

Fred Bonavita - W5QJM
PO Box 2764
San Antonio, Texas 78299

Vertical Antenna Classics, Edited by Robert Schetgen, KU7G. ARRL, Newington, CT - 1995. 123pp $12 paperback.

This is the second time the ARRL has trotted out a collection of articles about "Classics," and it makes one wonder whether the editors there understand the word yet.

The first time was in 1990 when the ARRL published **QRP Classics**, a book of articles from the pages of *QST* (some of them 25 years old).

Many will remember how a red-faced ARRL had to rush out a second edition after the QRP community pointed out that the most classic article—the W7EL *Optimized QRP Transceiver*—was nowhere to be found in the first edition.

It is difficult to see how one could call any of these antenna designs *classic* as the word is defined. Good? Yes. Informative? Mostly. But classic...?

Think of it this way, whether you are a fan of verticals (as I am) or not: Is there one article about a vertical that truly stands out above the others in your mind? Is there one that qualifies as the definitive work to which one and all point whenever the subject is the vertical antenna? In other words: Is there a vertical antenna piece that merits being called a classic in the same sense as the W7EL transceiver, which was published in *QST* for August 1980?

The editors admit at the outset this is a collection of reprints from various ARRL publications, some pushing 20 years of age, so there is no pretense that we are getting new stuff here.

This bunch has been copied from the four volumes of the successful **ARRL Antenna Compendium** series, which first appeared in 1985 and about every four years thereafter. The editors even brought along errors from the originals.

Wouldn't it be refreshing if the ARRL were to put out a call for original pieces on verticals for a book? The response would be good, I'd wager. The articles could be mixed with these reprinted pieces, a fresh title—minus the *classics* tag, thank you—could be found and the thing offered to the public. And it would sell. The risk is that it might hurt sales of the compendium series.

But if the ARRL is going to persist in this short-cut approach to grinding out books, perhaps it ought to change its name to something like DEJA VU PRESS in the interest of truth in labeling. There's such a thing as carrying recycling too far, and the ARRL is turning out some classic examples.

Fred Bonavita - W5QJM
San Antonio, Texas

THE PERFECT QRP FIELD DAY STATION... WELL, SORTA.

Bill Acito, KC1GS - NEQRP#260
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acito@asdg.enet.dec.com

Field Day 1995 - minus 75 days

In retrospect, I'm not sure when Mark Swartwout - NX1K first mentioned putting together a Field Day station for the W1FMR/QRP effort, but I think it was as we scrounged through several flea market tables one Saturday afternoon, hunting for those little gems that QRPers hunt for. We had bumped into each other by chance.

"You know, there's a guy over there selling ten-turn pot dials for a buck each; the nice big ones." I whispered under my breath, as if it might set off a stampede to match the running of the bulls at Palermo.

"Really? where?" a smile came to his face, as his eyes darted to the aisle I was discreetly pointing to.

"On the end, last table." I said again.

"Great! Thanks. Hey, I forgot to mention...were you still interested in being a band captain this year for Field Day?" I asked with enthusiasm.

I thought back to last year's Field Day; I had shown up as the 'hired gun,' three months into re-kindling my interest in ham radio, and especially QRP. By some twist of fate, that June I had located the HW-9 station I had built as a college student and sold years before. My interest in ham radio had been diluted because I was out on my own and was wrapped up into a new career. Now radio was back and fate had brought back that rig to me.

Thinking back, I realized that day was not the first time he had mentioned field day. He **had** mentioned field day that previous June, noting my interest in the simple, efficient rigs and a group called the New England QRP Club. I had told him I was interested that previous June.

"Sure, Mark. Just let me know what band you need me. By the way, did you see anyone who has RG-174 cheap?"

FD - 43 Days

It was the middle of May, and the Internet QRP-L mailing list was buzzing with Field Day tips: slingshots and bows and arrows, battery chargers, kites and balloons, keyers and tuners, etc. I haven't heard from Mark as of yet and wondered am I still on the hook? Could I put a station together today if he asked me? Let's see...the Index Labs **QRP+** is on order, and you have the HW9 as a backup. Antenna? Nope. But that should be easy...a dipole, or a loop, like last year. Yeah, a loop...you worked KH6 on the 20 meter loop last year and it seemed to work fine then.

A rig and an antenna; you should be fine. Don't sweat it.

FD -28 Days

Mark dropped me a message over the company e-mail system. "Sorry for getting with you guys so late. Are you all still in?" he wrote.

"Yes, of course I'm in. I have already planned it", I type keyed into my computer.

As I hit 'Return' key, I wondered if he really was going to believe that me.

FD -27 Days

I sat in the lunchroom at work, with a large coffee and an empty note pad, tapping the pen on an empty sheet. What did I need? There can't be that much. I thought back to the year before; Bruce (WT1M) had put together a nice station. What did he bring? I scribbled as I thought...rig, antenna, keyer (...that was a nice keyer; what was that?) batteries (gel cells I think) loop antenna (...what was that he had between the antenna and the tuner? Coax? Twinlead? I think it was twin lead.) Cables Connectors...hmmm. Wow, he had an entire station that fit on a card table. Oh yeah...card, table, chairs, tent, lamp, paper, pencils, dupe sheets.

I starred back at the flurry of items I had just listed. I don't have half the stuff I needed. And how did we get those antennas up in the air? Was that a slingshot, or was it the tennis ball with the string?

Rule #1: A Field Day station is as much housing, comfort, and staying dry as it is rigs and antennas.

FD -20 Days

Antennas. I thought about the loops that went up last year. How did we get those up there? It seemed simple; get a weight up high with a light string. The tennis ball hadn't worked. The trees were too high; 20 wpm code does well for the lower arm, but not much for the upper.

A quick run through the Internet discussions yielded a possibility...a casting reel. Hmmm...I'm going back to my parent's next week, and I can pick up one of my old fishing reels. The Index Labs QRP+ still hasn't arrived yet.

Rule #2: Always plan with what you have, and not what you expect to have.

FD -17 days

The QRP+ arrived. Great! It arrived at work (safer address), and it arrived about 11:00 AM. No work gets done from 11 AM until 5 PM.

Mark sent another e-mail message. I will have 40 meters this year, the "bread and butter" of any Field Day operation. I feel the weight of responsibility double.

FD - 10 days

The items I thought were no-brainers have mushroomed. Any item on the list I thought was simple has now multiplied into many items with multiple trips to different locations and stores. Okay, okay, maybe I'm going overboard, but it is a whole weekend, and if the station doesn't work, it could be an even longer one. Example: Fishing rod. Do I have enough line to clear the tree and reach the ground? Do I have a heavy enough sinker? Do I have orange paint to make the sinker more visible in the trees?...and so on.

Rule #3 Take care of the details, and the big stuff will take care of itself.

Addendum: *Men plan, God laughs.*

After a trip to the local hardware store to pick up a spool of wire, the loop gets cut to the 40 meter length. Curiously, they know me by name in the check-out line by now. The matching section of ¼ wave 75 ohm coax is now 'cut.' I will leave one end of the loop unattached and can tune the loop using the SWR/Antenna analyzer... The analyzer...put that on the list also, dummy.

Do I have enough cables? Connectors? Adapters? Could I match anything to just about anything? Bring the whole bag, just to make sure.

What tools should I bring? Needle-nose, diagonals... hmmm. Oh, just bring the whole toolbox. You have the car; you're not hiking it in.

FD 5 days

The batteries start to take their charge. The borrowed tent get is picked up. A trip to Walmart's yields a couple of $8 lawn chairs.

The list is multiplying quickly; every time I think of something to bring, I include five other things to bring with it. The pile that's forming in the basement made up of batteries, sleeping bags, wire, and cables, leads me to believe I'm at least making some headway.

A few practice casts in the back yard and I start to think this antenna might just might get up into the tree-line after all.

FD -2 days

I wander the aisles of the local grocery store. Chips, soda, breakfast bars...bug spray? Where's the bug spray?

FD -1 day

I awoke Friday and prepared for work, but a quick look at the my FD list highlights that I'm really not ready. I called my boss, I won't be in. Field Day for me will start a day early, with a vacation day from work.

FD -3 hours

An another anxious, sleepless night. It's now Saturday morning, and the pile is moved from the basement to the back of my Corolla. It takes twice as long as I had planned to move everything. I raised Mark on the repeater and let him know I was running a bit late. He asked me to pick up some D-cells on the way to the site. Now, I don't feel so bad.

I ask him if the access road is still as treacherous as it was last year. My Corolla sits pretty low to the ground, and the rocks sit pretty high, plus with two-hundred pounds of equipment that I didn't need last year are in my car.

"Still the same", Mark snickers. "NX1K clear."

The site is 'Under the windmills.' The small town of Princeton, Massachusetts operates eight windmills to subsidize their electric power usage. The windmills are located on the south-west slope of Wachusett Mountain, in north-central Massachusetts. Besides being a central location for the New England QRP group, the location provides a high, clear set-up, and the mountain acts as a reflector to the southwest. There is a high tree line running northwest to southeast adjacent to the clearing and with a little help from my reel will provide an excellent loop or wire antenna support system.

Before you even think it, we're not allowed to connect or use the windmill structures in any way. As the previous year, though, I know there was a lot of discussion of how to phase those 75 foot towers during the course of the weekend.

FD -1 hour

At the site, the brush is higher than last year. I ask Mark if they ever mow up here. "Yes, once every five years or so," he replies. As Mark disappeared into the eight foot high foliage, snickering at his last comment. It's obviously year three or four, and Mark will be grabbing the sinker on the downward path. Jim Fitton W1FMR, who's call will emanate from this site in a matter of hours, watches me take a few practice casts. He comments that if this works well, we can bring the 20 meter loop up the same way. I'm trying to look as if I know what I'm doing, and thinking I should have done more fishing with my dad than playing with the radios.

The reel seemed to work well on the first cast, placing a nylon line over a fifty foot ash tree. I heard Mark comment that he saw the sinker, and I heard him thrash his way toward it. Suddenly, there was the sound of rocks on rocks, granite on slate, a thrashing of brush and a dull thud. -"Mark, you okay?", I ask.

"No." He's serious!

An old rock wall ran the length of the tree-line, and in his pursuit of the sinker, Mark had climbed the wall and it had given way, enabling his ankle a nasty twist. The expanded list I had worked on, and everyone else's list as well, had not included an Ace bandage. Mark wrapped his ankle in a handkerchief, and forces a smile.

FD +1 hour

The tents and antennas are up, and I put the 40 meter loop through its final tune with the analyzer. The crew is late, but we commented on how good the station looks. For many, this is their first look at the Index Lab QRP+, and there's some excitement in getting the rig up and running.

One 7 Amp/hour gel cell will have to run the rig. I have a few back-ups in the wings. A Vectronics mobile tuner/power meter and Idiom Press CMOS II memory keyer fill out the station.

FD, +1 to +24 hours, and then some

I had come up with a custom duping sheet that everyone seemed to like at the 40 meter station, and as others had said on the Internet, getting the solid antenna match seemed to make the difference with signal performance. To be honest with, after that morning adventure, I was a bit tired to really get into any serious operating Saturday night, so I turned over the helm to the 'hired guns'.

Rule #4: The hams who provide—stations will expend most of their—energy pulling a station together,—and hooking it up. Don't feel—bad if you show up empty handed. Relief operators are not just handy, they are required.

We operated into the night, and on 40 meters we worked eighty percent of what we heard. The loop was a bit deaf to the south, and we missed some of the local propagation (Where were the NY sections?), but in the evening the low angle worked like gangbusters. I can't speak for the rest of the operators, but I rarely called CQ; I usually started at the bottom of the band, dropped the SCAF filter on the QRP+ down to 10 or 200 Hz bandwidth, and worked my way up the frequency. I tried four or five calls max., slightly adjusting my frequency to theirs, and if I didn't work them, I moved on.

The 40 meter loop turned out to be configured more like a squashed rectangle (+/ 40x30 feet) due to the short height of the trees. Mark's swollen ankle was not for naught, as it performed extremely well. During set-up, a few checks with the antenna analyzer and a few small snips brought the resonant frequency up to 7.038 MHz. The crew "busted" me about going back into the thickets to snip a few more inches and get it up to 7.040 MHz. I smiled at Mark, and declined.

My research in the **ARRL Antenna Book**, the **ARRL Handbook**, and few other sources had loops fed with everything from just coax to balanced line, torroid transformers, and coax transformers. I chose the latter, cutting an old length of RG-13, 75 ohm coax to a ¼ wavelength, connecting it to the center of the bottom leg, and then running RG-8x from the other end back to the rig. It came in at 1:1.2 as it stood, and the tuner took the rest of the mismatch out.

The reel worked well, too. I cast over a branch, grab the sinker, removed it, and tied it to a length of nylon string. I then reeled the line back in over the branch, tied the antenna to the string, and then hoisted it.

On the other end of the access road, Jim W1FMR had set up the 20/80 meter station, an Argonaut 509, with a Zepp for 80 and another loop (delta configuration) for 20 meters. A Pixie, actively discussed at Dayton and over the Internet QRP-L list before Field Day, got some activity on 80, too. Ten meters was operated from a mobile set up in a truck, and packed in among the HF gear. I managed to bring a 2 meter, all-mode, rig with an eleven element beam, placed on a camera tripod on the Corolla roof. Southern NJ worked with a 5 watt all-mode. Greg Algieri - WA1JXR, rounded out the set-up with a 160 and 15 meter station from his van and a Zepp strung between the trees.

Saturday night was quiet, except for the sound of the wind mills kicking on every couple of hours, or so. I tried to sleep in the reclining seat of the Corolla.

On Sunday morning, Jim gave me a nice lesson on 'filter sweet spots on his Argonaut and the 20 meter morning propagation. It was incredible how a few hundred hertz seemed to make all the difference between empty calling and working the station. Once we figured out the right tone, the QSOs seemed to flow.

The weather was hazy and humid on Saturday; it rained around dawn on Sunday, and then poured Sunday afternoon while Jim and I took down our stations. I had everything packed except the antenna and tent when the sky opened up on us.

The operators included Dave Benson - NN1G and his son (a new novice); Howie Cahn - WB2CPU, Jim Fiton - W1FMR, Mark Swartwout - NX1K, Walt Yatzook - N1CJB, Greg Algieri - WA1JXR, and myself. Dave Benson made pasta like he designs radios, by-the-way, and the Saturday night dinner was great.

I had serious scrapes and bug bites, and it took me and the gear several days to dry out from the Sunday rain. We didn't have enough operators to cover the night shift, but the QSOs were respectable. The final score was in the middle of the 2A battery group, and on the high end of the QRP group in that category. Northwest QRP beat us by 85 points.

Our score was fifty percent of the preceding year, not a surprise considering one less transmitter class and a lower number of time-on and operators. Despite the bites, rain, and scrapes, I still had a ball.

Forgetting the score, the view, the silence (no generators), the sharing of knowledge and operating tricks, the humor, the location under the windmills, and the propagation, made it worth our while.

This year, join us. Stay an hour or stay the night; the grave yard shift always has openings, and what better time to work those new states on 40 and 80 meters. Try some of the classic QRP rigs. Compare tuners or rigs, keyers or keys. Bring that kit you just completed and put it through its paces or try someone else's and see what all the fuss is about. Raise your code speed in one weekend. Stop by just to have an eye-ball and meet some of the other members of the club, or roll up your sleeves and get into the thick of operating. There is plenty of room for all. Be as competitive or as relaxed as you want. Field Day 1996 is less than three months away, and I'm already working on the next 'perfect' station.

Bill Acito - KC1GS - NEQRP#260

Attention QRPers! ARCI Banquet

Announcing the 1996 ARCI QRP Banquet. This annual Dayton Hamvention event will be held on Friday, May 17, 1996, 7:00 PM at the Days Inn of Miamisburg, Ohio. An appetizing sit down dinner will be followed by a special guest speaker and awarding of lots of exciting door prizes. Advance tickets required at a 'true QRP' cost of $13.00. Tickets will be available starting February 1, 1996 from Pete Meier WK8S. Check or Money Orders including a SASE should be made out to Pete Meier, 4181 Rural, Waterford, Michigan 48329. See you there. Door Prize donations needed please contact Pete Meier WK8S

HEY...!

NEW ENGLAND QRP - net is CLN on Wednesday evenings on 3.560 MHz at 9 PM. (Great Lakes Net) Run by W1CFL Paul Kranz.

A LETTER FROM ONE OF OUR READERS

If you really want to enjoy ham radio again, and also start reading books again, call or write Kenwood, Icom and Yaesu. Tell them to please stop turning out more 2 meter junk and start up production of the 007! Stop the Dumbing Down of Amateur Radio!

007: A state-of-the-art transceiver designed to be primarily your base station. After that last QSO, put it away and put a book on your table and start reading again. At 5-7.5 watts with its own internal gel-cell, a complete station in a box, with no accessories needed.

A complete station in a box. No accessories needed. "With 15 watts output, this is a nifty DX machine. And no RFI to worry about!"; "This one beats those military surplus leftovers by a mile. Its gel-cell, SWR meter, keyer and speech processor make it real state-of-the-art."

"What a great HF this portable 007 is! It's the answer to all that 2 meter crap that's causing the dumbing down of amateur radio!"; "Yes and it's the reason why I'm gonna up-grade and learn the code! It's not just field day. It's gonna be my base station because after a few QSOs, I can "close-up" my station and put a book on my desk and start reading again! Haven't done that since I was kicked out of school when I was 12. I need to improve my mind, and not keep dumping more electronic junk on my desk."; "Computers started out real big and today we've got laptops. Weird that transceivers got smaller but nobody wanted to put all the accessories into one small lapton transceiver. Throw everything into a canvas bag! No way!"; "I thought we have come out for the 50th anniversary of the end of *World War II*, but the big three radio companies did not want to do it. Go Figure."; "I can't understand why all those QRP companies and QRP guys did not follow through and make an integrated system that went into a small case? This was long over due."; "I think it has to do with something the economists call, 'Profit maximizing.' You know, keep 'em buying accessories for big rokes--and little boxes too."; "They should have made this twenty years ago."

UNIQUE KEYER TRANSLATES AND DISPLAYS MORSE CODE

Need to pass that code test? Wonder what those guys are saying in the extra portion of the CW band? Want to improve your CW accuracy and speed? If you say yes to any of these questions, read on. This unique keyer may be just the thing for you.

There are several commercial programs that you can use with your computer to copy CW and even to send it with your keyboard, but I find it awkward to use my computer when I am on the radio and I do CW with a keyer not a keyboard. A couple of years ago I decided to build my own CW machine that would let me see what I was sending so I could improve my fist. I wanted it to be small, portable and have the following features:

1. Iambic keyer (2 to 40 wpm)
2. Translate my CW and display it as characters on an LCD screen as it is sent
3. Set and display my exact speeds digitally

This original keyer[1] was based on an 87c51 microcontroller and, the code I wrote for it worked well. During the following year I received many suggestions for additions and improvements, so I went to work again to see if I could implement those good ideas. The features I added are:

4. Copy and display incoming CW characters from your receiver
5. Built in random code practice generator
   5a. CHR mode- sends random characters
   5c. WORD mode-sends random words
   5d. SIGN mode-sends random call signs
6. Three message memories (63, 43 15 characters)
7. Built-in clock and calendar with an alarm
8. Built-in side-tone oscillator with an adjustable frequency (600 to 900 Hz)
9. On-board audio amplifier for code practice which can drive a small speaker
10. A tuning LED to "zero beat" the other station
11. Sleep mode to save memory data when not in use
12. An 80 character display mode to store and display the last 80 characters of code so you can review your copy and sending accuracy
13. Battery back-up to preserve all memory if a power failure occurs

The finished product, THE SUPER CW STATION. is a 40 character by 2 line LCD display which will display the menu page when you first turn on the station. If you put the station into the CODE mode, you can do several different functions. If you wish to practice copying characters, it will display a menu of characters. From this menu you can select only those characters you wish to practice. You can also set the character speed and spacing length between characters. This allows practicing Farnsworth style code which is commonly used on CW tests. In the CODE mode, you can also choose to have the station send over 300 common CW words or have it send random US call signs. It will randomly include the difficult slant bar as well, such as N4UAU/AE, which the tests seem to love to put in to confuse you!

If you select the TONE mode, a digital clock is displayed with time and date. You can set an alarm that will alert you in CW. You key-in the alarm message of up to 15 characters! This mode also let's you send a constant tone for tuning up.

When you enter the KEY mode, you will be asked if you want to store a message. You can store up to 3 messages which you will see displayed as you enter them. If you make an error as you are storing the message, you can backspace to correct it. In the KEY mode, you use the S and R buttons to set your sending and receiving speed. The top line of the LCD display will show the characters you are sending or receiving and they scroll across the screen from your right to left. The bottom line shows the speeds you have set. The keyer will also calculate and display the actual speed of the code. This can be different from what you set because if you pause too long between elements, or words your actual speed will not be as fast as the element speed. You're sending Farnsworth style! You will never have to guess how fast you can send or copy again!

How does the CW STATION work? The heart of the station is an 87c52 microcontroller. This is an 8 bit micro computer with all the memory, clocks and ports built into it. The code I wrote determines what happens. In the KEY mode, it will monitor the dot and dash lines. If you press a paddle, it will send the correct dot or dash and corresponding space (iambic keyer). It saves that element in memory and waits for the next dot or dash. When you finally pause long enough, it will determine that you are at the end of a character and will look up in a table what character you just sent. If you sent a dot and dash, it displays the letter A. If you do not pause long enough after the A and continue to send, it will add those dots and dashes to its memory and when you finally pause it might have dot, dash, dash, dot, dash in memory. You had thought you were sending AK but you did not pause long enough between the A and K so you actually sent dot, dash, dash, dot, dash. Because there is no character like that, the keyer will display & and you instantly know you are running your characters together. This feedback will quickly help you send both faster and better.

To copy incoming code from your receiver, the station uses a comparator and a tone decoder. The code you hear on your receiver is a series of audio tones. Most rigs are set for a tone about 750 Hertz. The station's tone decoder is set to respond to the correct tone but not others. Every time that tone is on, it will notify the microcontroller which will determine if a dot or dash is being sent and will process it in a fashion similar to when you are sending. The tone decoder acts as a filter by rejecting out of band noise so it is important to tune correctly. An LED will light up when you are properly tuned. This feature also lets you zero beat the other station so you know you are on his exact frequency. People have told me that the receiver func-

tion is as good or better than the commmercial ones on the market. I think it is because my code allows a bit of leeway in code speed reception. If you set the receive speed at 20 wpm for instance, it can copy code from about 13 to 27 wpm. This makes it more flexible for copying non-machine sent code. I once tuned in a station that was sending so fast I could not even tell the dots from the dashes (He must have been doing over 50 wpm). The CW STATION was able to get most of what he was sending even though it can only be set to 40 wpm.

Because the ICs perform many complex functions, there are not a lot of parts used in the CW STATION which makes it easy to build if you have done any soldering before. All the electronics parts, including a pre-drilled PC board, a programmed 87c52, an LCD display and complete instructions are available from the author for $95. Box system parts (pre bent lexan top, speaker, volume pot, wall transformer and standoffs) cost $10. If you already have most of the parts, you can get just the 87c52 microcontroller and PC board for $45. Prices include shipping in the US. Florida residents please add sales tax. A smaller battery operated convertible version, which is ideally suited for portable or QRP operation, is also available [3].

For more information SASE or to order:

SAM ULBING - N4UAU
5200 NW 43 RD STREET
SUITE 102-177
GAINESVILLE, FL 32606
E-MAIL: n4uau@freenet.ufl.edu

Footnotes:

1. **QST** Jan 1994 *UNCLE ALBERT'S UNIQUE KEYER*
2. **73 MAGAZINE** June 1995 *THE SUPER CW STATION*
3. **ARRL 1996 Handbook** *IMPROVED UNCLE ALBERT'S KEYER*

QRP ARCI 1996 NET SCHEDULE

NET	QRG	NCS	DAY	Time
TCN	14060	W5LXS	SUNDAY	UTC2300
ANCS		K2LGJ		

TCN remains at 2300 UTC Sunday Night year-round, except on night of QRP Contest when it meets at 2400 UTC

SEN	7030	K3TKS	WEDNESDAY	0100
NCS	3535	AA1OC ANCS	Tuesday Always 9 P.M. on Night [illegible]	0130
GSN	3560	W5TTE	THURSDAY	0200
GLN	3560	W1CFI	THURSDAY	0200
NEN	7040-41	K3TKS	SATURDAY	1300
WSN-80	3560	WA6ARA	THURSDAY	0300
WSN-40	7040	W6SIY	SATURDAY	1700

ANCS-W6JHQ-W6RCP-W6SIY-NJ7M (Always 9 AM on Saturday morning PST/PDT)
On weekends of major contests TCN will meet one hour later. If conditions on 7030 KHz are poor, QSY to 3535 KHz at 0130 UTC, (0030 UTC Spring/Summer). Adjust all UTC times to 1 hour earlier when local time switches to daylight savings time this month, April, unless otherwise noted.

Note that 3535 KHz is the Michigan QRP Club Net Frequency at 0200 UTC. (Always 9 PM on Tuesday night----check also 3536 KHz. MI QRP welcomes all who are interested in QRP to QNI on the net. Jerry - K8JRO is Net Control Station for Michigan QRP Club.

OTHER QRP NETS

BC Group (SSB)	3.729 MHz		Every Evening	0300/0530 UTC
MI-QRP	3.535 MHz	K8JRO Tuesday	+WEDNESDAY	0200 UTC
NE-QRP [SSB]	3.855 MHz	WA1JXR Monday	MONDAY	2100 EST
NEIQS (NE Illinois)	3.560 MHz	Thursday		0200 UTC
OK QRP Group	7060 or 3560 MHz	Sunday		1330 UTC
NW-QRP	10.123 MHz	N7MFB Monday	+TUESDAY	0200 UTC
NW-QRP Ragchew	7.035 MHz		Saturday	0730 WST
N.C.QRP ASSOC.	3.710 MHz	WA4NID-AA4XX Sunday	KNIGHTLITES	"2200 EST
VE-QRP	14060 MHz	VE6BLY Sunday	SUNDAY	1800 UTC

WARNING! QRP NETS have been proven to be addictive. Permission is Granted to Freely Copy and Distribute this Schedule. TNX - K3TKS

(*73* **does not guarantee the previous listing are absolutely correct. Please let the editor know of any changes.)**