

IOWA QRP JOURNAL

NEWSLETTER OF THE IOWA QRP CLUB

Welcome to the Winter 1999 - 2000 issue of the Iowa QRP Journal. We start this issue with sad news of the passing of Dale 'Ping' Newman W0VMN. Ping was member #69 and became an SK in December 1999. I met Ping at the Spring 1999 hamfest in Des Moines and he spent a half hour with me talking about QRP and some of his experiences. Jim (WA0NOV) told me that he always looked forward to seeing Ping at the hamfests because he usually had a project tucked away in his pocket. At the Des Moines hamfest he had a 49'er tucked away which he proudly showed me and the others at the table. Fred (W0FMS) also posted on the IAQRP list that Ping was very active in MARS and he always enjoyed his contributions there. The IAQRP club sends its condolences to his family and we dedicate this issue of our newsletter to him.

Doug Hendricks (KI6DS) of NorCal and IAQRP #49 is recovering from a heart attack and is doing very well. This is great news for the QRP community as Doug is one of QRP's biggest supporters (and promoters). Doug and Dave Gaulding (NF0R) came up with the original suggestion of a multi-club sponsored milliwatt event which led to the Milliwatt Triple Crown (details later).

The last few months have been very busy and rewarding for the QRP enthusiast. The club sponsored a REGEN rally operating event. Everyone who has built one over the past few months had an opportunity to get on the air using these classic receivers. We may try it again later this year so don't put off soldering one of these beauties together. Mike (N0MF) pointed me to a QEX article by Charles Kitchen

for a REGEN design. I built it punch pad (Manhattan) style and it has provided many hours of entertainment.

The Iowa QRP Club is also co-sponsoring the Milliwatt Triple Crown (which may be boasting a new name) along with the Knightlites and the Ft. Smith QRP Club. Each club will host a milliwatt operating event with separate winners. But the Milliwatt Triple Crown winner will be based on the cumulative score from the three events. The Knightlites Holiday Milliwatt Contest kicked off this competition last December and the Ft. Smith event will be held this spring. Our leg will be held sometime in the summer. Mark (KQ0I) and I activated the club call KQ0RP during the Knightlite event. Conditions were not ideal but we did manage a few contacts and a lot of fun. It is amazing what milliwatt levels can achieve.

We were honored just before Thanksgiving with a visit from Wayne Burdick (N6KR) IAQRP #100. Wayne was visiting family in the area and was able to meet with several members of the club in Ames. Wayne is one of the co-designers of the K2 and he is also one of the principals at Elecraft.

Y2K commitments at work (was yours as uneventful as mine) kept operating at a minimum but I did manage to squeeze in a couple of operating events. The Fractal Wing Loop is performing very well indeed! I snagged over 40 countries during the CQWW CW contest using my NC-20 and the FWL (spot operating). Highlights were KH7, KL7, CN8, CX, and a JA. Not bad for 5 watts into an indoor/shortened loop.

The club is considering putting together several kits for sale to members. There have been several great projects in previous issues of this newsletter. Let me know your thoughts and if there is enough interest then we will proceed.

As you know last year we had a theme of 'planting the seeds of QRP'. This year I would like to continue this idea but direct it towards attracting youth into the hobby as well as encouraging them to experience the joy of building (and QRP naturally). There have been related threads on QRP-L as well as many comments from our membership.

Last fall I requested information about any middle or high school ham clubs. We have been working with Fred Haberer (NOVXY) trustee of the Waco school club Station KB0SAL. IAQRP donated St. Louis Audio Amp kits to all the members. Boards for the kits were donated by Dave Gaulding (NFOR) and the St. Louis QRP Society. Jeff Woods (WOODS) and I donated all of the board mounted parts.



Members of the Waco School Ham Club displaying their St. Louis Audio Amp projects (in progress).

My goal is to get a simple receiver design that can be kitted and donated to clubs (like the Waco

school club), young hams who have an interest (but not experience in building), and children who have an interest in the hobby. With your help we can accomplish this but to start we need a design. If you are interested in helping a kid get started in ham radio or building please let me know. The club is blessed with a wide pool of talent so I can't wait to see some of your designs. After a design is selected then we will need sources for parts and Elmers to help with construction of the projects. Larry (WB0RMT) already has a head start with his Altoids Xcvr project which he discusses elsewhere in this issue.

As many of you know by now the FCC has announced it's long awaited restructuring plan. The number of license classes will shrink down to three. The only CW requirement will be 5 WPM. I have heard pro and con arguments but will wait to see what the real impact (if any) will be to the hobby.

Let's hope the winter stays mild but don't let the warm weather keep you away from the soldering iron. The building contest judging will be in February and the contest eligibility period was extended to the day of the judging. So any project completed after the January 1999 judging but before the February 2000 judging will be eligible for entry. The judging will be held at the upcoming February meeting in Sioux City. I hope to see you there!

72, de John NU0V
burnleyia@home.com

Member Profile

By Mabel Huldeen N0EUM

Amateur radio has been a constant in the lives of my husband and I since 1980 (when we attended Novice classes in Sioux City, Iowa). We

tried to learn with a book from the library about 10 years before that, but gave up. Local hams in the Siouxland Amateur Radio Association are so helpful to new members, and we soon progressed to General after a trip to Minneapolis for the test. Our youngest son went with us and got his Tech plus license. He communicated with us in code while he attended the University of Iowa by using a fine wire antenna attached to a tree near his window; fine so that the landlord wouldn't notice it. We have 2 sons and a daughter who are grown and gone. We are retired instrumental music teachers who met while attending Morningside College here, and never dreamed we would move back to Sioux City someday. One of our local repeaters is installed in the Science bldg. at Morningside College, so we still have college ties! We spent happy years teaching students grades 5-12 in Band in IA. I still play clarinet in a local community band, the Siouxland All-America Band of 65 adult members; and do piano accompanying for students for recitals at Morningside College.

For 3 years, I helped Jerry manage the slow code portion of the 3900 Club Sunday morning net. I am also a member of the ARRL, IA QRP, and serve as secretary for the Siouxland Amateur Radio Association. For the Hamboree XXII next June here at South Sioux City, NE, I will serve as treasurer. Jerry and I have taught code to Novices and any hams who wished to progress to 13 wpm or 20 wpm, which will no longer be a requirement as of Dec. 30, 1999.

My interest in ham radio lies in making contacts and being of service to help, but I have not been actively doing it enough. Hope to pass the test for Extra before April 15 as my Advanced license does not exist as of Dec. 30, 1999, either. Low power and code is joy, and to be able to serve in an

emergency or disaster is a privilege. That's all from here for now.

72, de Mabel NOEUM

Classic QRP Transmitter TT2

By Walt Holling N9MZP

Being new to HF radio and CW and having just received my General Class License in September 99, I decided to get involved with QRP radio operations.

Background: I received my Tech + license in April 99 and wanted to continue practicing CW. Code tapes and W1AW code practice were good learning tools for CW, but I wanted to start trying on-the-air QSO's for additional practice--in my opinion, much more exciting and challenging than tapes.

My first HF rig was a Mark II XCRV to which I added the Freq Mite. This was my first venture into HF radio, CW operating, and QRP operation all at the same time. I put this rig on the air in July 99 and quickly learned that copying 100% from a code tape at 5 wpm is quite different from on-the-air copying. From July to September, I worked with this rig whenever I had a free moment in the 40-meter novice band. Then in September, I passed the 13-wpm test on my first attempt and received my general class license.

My confidence in CW was increasing and I wanted to try a CW contest. I had been following the details of the zombie shuffle on the QRP-L postings and also read about the Black Cat special event on 30-31 October sponsored by the ARRL which featured WIAW operating the Tuna Tin 2 on the air.

After researching the history of the TT2, I thought this would make a great project. Doug DeMaw, W1FB,

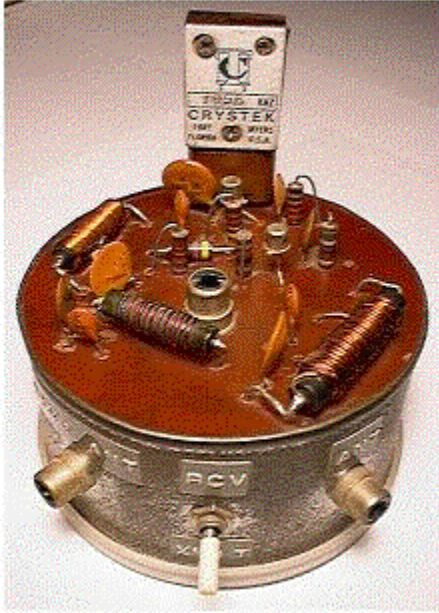


Fig 1: Original TT2

originally designed the Tuna Tin 2 in 1976 from locally obtainable components. The original TT2 design appeared in QST and has been built by hundreds (maybe thousands) of QRPers because of its design simplicity. W1FB was one of the founding fathers of QRP building and design, and I have several of his books on radio project design. The TT2 is a two-transistor crystal controlled 40-meter milliwatt transmitter built in a tuna fish can and has truly achieved QRP classic status. Having a free weekend before Halloween, I thought it would be exciting to construct the TT2 and bring its design back to life amongst the zombies on the Halloween weekend contest.

Design Goals: My first goal was to build a classic QRP transmitter for my QRP collection. Another goal of this project was to build with only readily available parts, preferably parts already in my shop, thereby keeping with the original theme of the TT2's simplicity.

Construction: A web search of the TT2 led me to an updated version of the W1FB TT2 by Dave Meachan,

W6EMD, at the following website: <http://www.fix.net/~jparker/norcal/tunatin2/tunatin.htm> This site also details constructing a circuit board layout and gives a parts list. Far Radio also sells a circuit board for this project.

The metal chassis of the original TT2, as its name implies, was constructed from a round tuna can. However, not having a tuna can available and not wanting to run to the store, feed the tuna to the cat and then clean the can, I looked for other alternatives within my workshop. I remembered someone giving me a box of round metal film cans to use as storage containers. These containers are approximately 4 inches in diameter and would work perfectly for this project. The film container diameter is slightly larger than the tuna tin cans and the commercially available circuit boards for the TT2.

The next step was getting a board to lay out the components. Since Halloween weekend was only one week away when I started this project, I didn't have time to order a commercially constructed TT2 circuit board. A perf-board would have worked, but I didn't like that appearance for this project. Again, another search of my workshop turned up an old plastic AM broadcast radio that was in the trash. I removed the chassis and cut a 4-inch-diameter circle from the top of the case. I used a bandsaw for the initial cutting, and then touched up the edges with a disk sander and hand filed/sanded the edge for a better finish.

I used the layout drawing from the website to drill the holes in the plastic board. I adjusted the size of the layout in a computer graphics editor to enlarge the drawing to fit the film container. A printout of the drawing can be checked against the enclosure to ensure that the drawing is the proper size, then adjust the

drawing until the size matches. The printout now became the drilling template for the plastic board. All the components were placed on the boards via the layout drawing, without trimming their leads. Next, all that was required was bending each of the component leads over to the next component based on the schematic diagram. These leads then formed the connections in similar design, as would the printed circuit traces of the PCB.

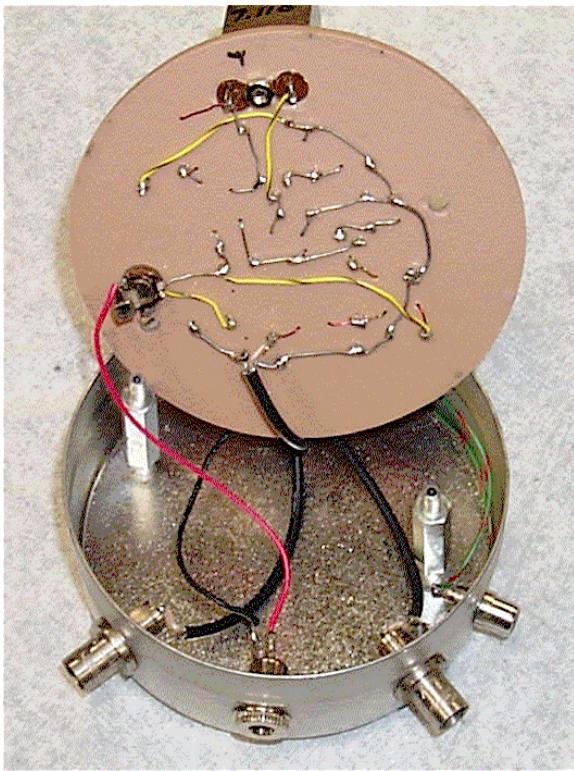


Fig 2: Inside Wiring of TT2

I decided to utilize an FT-243 crystal holder like the original design. The only crystal I had in my shop at this time was a 7.110 MHz crystal in an HC-49U Case. Having several blank FT-243 holders, I milled out the inside of the FT-243 holder to allow placing the HC-49U crystal inside. Once I had connected all the components on the plastic board, the metal chassis needed to be constructed. I opted to mount the power and

antenna connectors on the back of the metal container and the antenna switch on the front, as did W6EMD. Also, I added an additional phono jack on the back for a receiving mute connection. By changing the SPDT antenna switch to a DPDT, you can accommodate the muting circuit. The updated design for the TT2 by Dave Meacham, W6EMD, provides for substituting the choke coils with T37-6 and FT37-43 cores. The last step is to mount the plastic component board to the chassis with stand offs. Once everything is assembled, the transmitter is ready for testing.

Testing: I connected the TT2 to a dummy load and power to the antenna jack meter for testing. Then I added the power and straight key. The TT2 came to life on the first power up and was transmitting just over 300 milliwatts. The wave shape on the oscilloscope showed a very clean sine wave.

Special Note: I must mention one item of caution. Since the complete power supply voltage goes through the key connections, I recommend using the relay output or adding a relay to key this transmitter if using a keyer.

Summary: The only disappointment I had in building the TT2 was that during the zombie contest an SW broadcast station was sitting on top of 7.110 MHz and I was not able to transmit using the TT2 during this contest. I plan to procure additional 40-meter crystals including 7.040 MHz for next year's event. Then next Halloween I will be among the zombies once again for a night of ghostly fun calling CQ Boo from my Tuna Tin 2.

The weekend was not a total disappointment; I was able to work W1AW during the Black Cat special event who was using the TT2 on 20 meters. Also, besides having a lot of QRP fun, I received enough zombies, grand zombies, and Elviis

to qualify for a zombie certificate and pin.

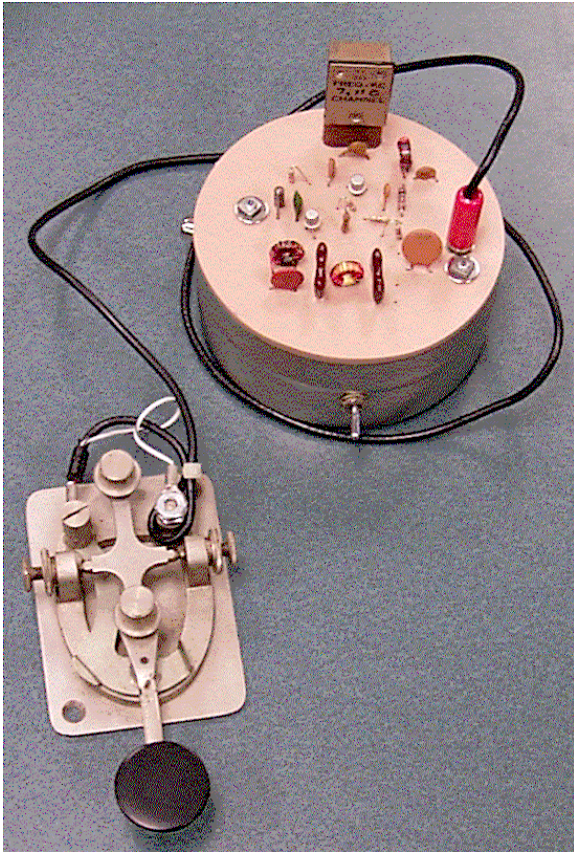


Fig 3: Completed TT2

Summary: The TT2 can be a great homebrewing learning experience. It is also fun to be able to construct a nostalgic and classic transmitter for all QRPers to use. Whether it is built from point-to-point wiring or utilizing a printed circuit board or kit, it is fun to build and use. For additional details on the TT2 kit, contact the NJ QRP Club at their website: www.njqrp.org/tuna/tuna.html. Also a website that features a collection of TT2 photos can be found at <http://electronicsusa.com/tunatin2.html>.

72, de Walt N9MZP
hollingw@geneseo.net

MFJ-9420 Travel Radio

by Ray Dennis W0DQ

Back in October, I attended Hamfest Iowa at the Iowa State Fairgrounds and the MFJ Travel Radio caught my eye. The rig comes in a 20 or 40 meter version and runs about 10 watts PEP output SSB. The purist would consider this power slightly out of the QRP range, at least for CW, but for 20 meter SSB purposes, I consider it QRP. A CW adapter is also offered, which I purchased along with the 20 meter version of the rig at the hamfest from Steve Zahos, of Amateur Accessories, Kansas City.

I purchased the rig for portable operation, but couldn't wait to put it on the air at my home station. I plugged it into my 12 volt gel cell pack, hooked it up to the beam and was immediately working a station in California. I proceeded to work a half dozen stations in the first sitting and DX in Europe and Africa during the next few days. Two common comments were "I can't believe that's only 10 watts" and "Your audio is superb." The audio chain has built-in processing (not adjustable) that gives the signal a full, crisp sound. The only operating inconvenience I have encountered is the lack of RIT. I've had stations comment about me shifting frequency, cause by me trying to clarify their signals.

The next weekend I took the rig with me to Wichita, Kansas. For an antenna, I used a random wire strung up to the rain gutter from a deck, tuned with my little home brew L-network and a 16 foot counterpoise for a ground, strung along the floor. I worked several stations on the east coast, Texas and the Rockwell/Collins radio club station in Cedar Rapids. Most of them commented on the excellent audio.

I've since installed the CW module. It is a very easy installation,

requiring no solder, but it's necessary to do some minor alignment of the VFO as the CW module causes some stray capacitance. A minor complaint. When I attempted to remove the cover to install the CW module, I found the screws very tight. One refused to budge. I stripped the Phillips head and ended up drilling it out. This didn't make me very happy! Fortunately, my drilling didn't harm the machine threads on the case and I was able to replace the screw. To date, I've only tried the rig on CW once, but made an instant contact. Switching in the CW adapter changes the mode and shifts the frequency. A CW scale is provided for the analog dial.

A word of caution. Don't leave a microphone plugged in while running CW if the push to talk switch on your mike doesn't kill the audio. If you do that, you may transmit room noise or worse along with your CW. The unit I purchased came with a mike and it works properly.

For a power supply, I am using a "Power Source" unit purchased at Target. It is a neat little gel cell pack. I also tried a laptop computer switching power supply (smaller and lighter weight), and it worked fine while on the beam at home, but during portable operation, I had noise all over the band emanating from the power supply.

All in all, I think it's a great little portable rig. Now, I need to get that Emtech 30 meter kit built that has been sitting here for almost 2 years.

72, de Ray W0DQ
Realtor@RayDennis.com

The Iowa QRP Club celebrates its second anniversary in February 2000.

Altoids Superhet Tranceiver Update

By Larry Stambaugh WB0RMT

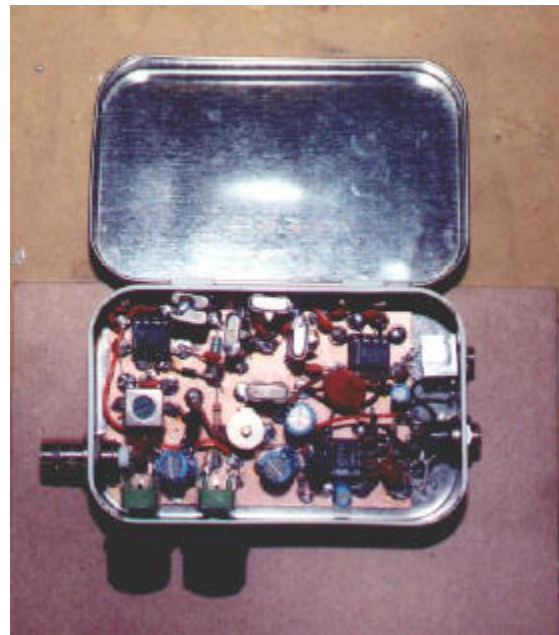


Photo 1. The Prototype CSS Receiver

After kicking around ideas for about 6 months a prototype receiver was built using punch pad construction. I called this prototype the CSS (Curiously Strong Superhet). This type of construction did not allow enough room to build the transmitter as well so that it could be a transceiver. However it proves out the design and a circuit board layout is being done so that a transmit mixer, amplifier, low pass filter, and receiver muting can be included. The power output will be only several hundred milliwatts. The prototype used all conventional parts, however if room becomes a problem, surface mount parts will be considered.

The other alternative is to stack boards and I am not fond of that. The superhet receiver has a varactor tuned 11 MHz. vxo with a 4 MHz i.f. frequency. A 10.7 MHz miniture i.f. can as a front end tuned circuit gives the front end a bandpass filter. NE602s are used as

a mixer and then as a product detector. A 3 pole ladder filter is used at the i.f. for selectivity . A LM386 is used in its high gain mode for the audio amplifier with a feedback network to cut high frequency noise down. The design is not anything special or original. The receiver tunes +- about 5 khz from 7.040 and can detect a .2 microvolt signal. Granted that signal is barely there and requires good hearing. Selectivity is good but not great. Very strong signals can be heard very weakly on the oposite side of zero beat. No audio gain control is used just a r.f. gain control. I am hoping that the prototype transceiver will have room for the 9v battery inside the altoids tin. The punch pad receiver does not have the room though. If the prototype transceiver works out there is a possibility of boards and or parts kits being offered sometime in the future. Look for future updates on the subject.

72,de Larry WB0RMT
lstamba@attglobal.net

The 1999 CQ WW DX Test, A Learning Experience

By Peter E. Beedlow, NN9K

After operating in the 1999 CQ WW DX contest (CW) and posting my score to the Iowa QRP reflector I received a number of congratulatory messages. One from John Burnley, NU0V, asked if I would write something for the next newsletter. So here is my response to John's request, it's not so much a chronology of the contest but more the why, the how and the results.

I haven't seriously operated a CQ WW DX contest for several years. In 1996 I operated as LU4FM in the single operator, single band, high power class, thanks to the generosity of the Radio Club de Rosario. They gave me free run of their contest station site located

on the outskirts of Rosario. Since all I had with me was an MFJ 9020, and portable antenna they loaned me a Kenwood TS-850S and Drake L4B. A 5 element 15 meter monobander on a 22 meter tower completed my needs.

That contest was truly an eye-opening experience for me. Even though I had to leave the contest early to catch a flight back to the States, it was a personal best for number of QSO's and if I remember correctly I placed 13th in the world in my class. But worth even more than the satisfaction I got from my score was the knowledge I gained about myself during the contest. I can still remember being totally exhausted, both mentally and physically on Saturday night and Sunday afternoon. Total concentration was required from the first CQ until I turned off the radio. There was always someone to work and usually several stations to sort out, definitely a different situation than operating from home with a tri-bander and 5 or even 100 watts. The mental effort was much more rigorous than I had realized and that alone opened my eyes to my abilities and liabilities.

I was also physically drained. Even though I had used a laptop for logging which would allow me to stand up occasionally, my body was still stiff and sore. I usually don't sleep very well on airplanes but this time on the flight home I did. All in all a tremendous learning experience.

In October 1998 for the SSB portion of the CQ WW contest I had the good fortune to be in China and participate as part of a multi-operator, low power effort from BY2HIT. I had first visited the BY2HIT station a few years earlier, in fact I was the first American to visit and operate the station. BY2HIT is a club station at the Harben Institute of Technology and is an organization of students that are very interested in, and excited

about amateur radio and contesting. When I realized I could easily arrange my China itinerary to be in Harbin for the contest I contacted the club and asked if I could be part of their effort and of course the answer was "yes".

Operating as part of a multi-op group is obviously not as strenuous as a single-op effort and this contest was even less demanding since BY2HIT only has one transmitter. Although I did spend some time operating, I spent more time mentoring, either with the operator or with a group in a classroom just outside the station area. I don't even remember where BY2HIT placed in 1998, however for me it was a very rewarding experience to be able to watch and listen, coach, and then see the results of my suggestions.

So back to the present--I had several goals in mind for the 1999 CQ WW (CW) contest even though I wasn't planning a really serious effort:

- * I have a relatively new Icom IC-746 that was untested in a CW contest environment. I had used the 746 during the 1999 Field Day but only on 6 meters and it's difficult to find much CW on 6 meters during Field Day to easily evaluate rig performance.

- * I wanted to use the contest to get a feel for what 10 meter propagation might be like for the ARRL 10 Meter contest. It has been several years since I had operated from home in that contest and this year I want to put forth a serious QRP effort.

- * I also wanted reevaluate my single-op skills. Lately all of my serious contesting efforts have been as part of a club multi-op team and I hadn't done any serious single-op contesting. Have my skills suffered and what was my physical condition?

Those were the goals, but preparation for the contest took a little longer than determining the goals. The operating area had to be rearranged, the latest version of NA had to be downloaded, installed and configured and the 746 interfaced to the computer. The primary antenna would be a Mosley WARC-JR installed at 50 feet on one tower. A second antenna, a vintage 3 element Cushcraft was installed at about 30 feet on a second tower. No standoff, rotor, or anything fancy, just bolt the antenna to the tower pointed at about 150 degrees and run the coax.

If you are familiar with the older Cushcraft designs you'll remember that staggered spacing was almost unheard of, so the three elements were evenly spaced on the boom. Not an optimum design but I wanted something fixed to the Southeast for all the Caribbean and South American stations that should be active for the contest. The 746 does have two HF coax connectors and a built-in antenna switch so no extra hardware was required for antenna switching, just add a Bird wattmeter and adjust the power output to 4.5 watts and I was set to go.

At 0000 UTC on Friday I started the contest. JA's were all that I was hearing so I worked them until they couldn't hear my QRP signal. On Saturday morning the 10 meter band was filled from 28.0 to 28.2 with signals, mostly Europeans and some big-gun US East coast stations. Search and pounce time was the mode of operation. Occasionally I would find clear spot and call CQ but if I didn't have any response after a few tries it was back to S & P. Conditions were excellent both Saturday and Sunday so the MUF must have stayed above 200 both days. One highlight was being called by a KL7 after I had found a clear spot and was calling CQ. After the difficulties I had years ago in getting a KL7 QRP contact for my

QRP WAS, it was fun to be called by an Alaskan station.

Results of my endeavors: 302 QSO's, 70 countries and 24 zones, but what did I learn?

* My QSO goal was 300 Q's which I met, however I felt I should have made more contacts.

* My S & P skills need working on.

* I need to become more familiar with the DX countries call structures, 4M for Venezuela? 3E1 for Panama?

* I need more contesting practice! In the past year I have not operated as many contests as usual and it shows.

* I need to work harder on keeping in good physical condition. Even with the much longer off times due to 10 meter propagation I found I need to be in better physical condition.

* But I did have fun!

Since there are only two weeks between the CQ WW DX contest and the ARRL 10 Meter contest, I doubt that I'll be able to make a lot of progress in improving the areas of concern. But now I have a set of goals for the year 2000.

Good luck, and I hope to see you in a contest.

72, de Pete NN9K

nn9k@worldnet.att.net

IAQRP Next Meeting in Sioux City

By Jerry Huldeen WB0T

(Editors note: The following was originally posted to IAQRP-L.)

Hi Gang-

We are planning a meeting of IA QRP Club in Sioux City, IA on Feb. 26 at the American Red Cross, beginning at 1:00 pm CST.

The builder's contest (judging) will be held at that time. If you

have any piece of gear built since the last contest, please bring it along. You may win a prize! And, we all like to see any projects that are homebuilt. This includes kits, homebrew projects, surface mount, etc.

If any of you feel inadequate in this area (as I do!), bring it anyway. You will get lots of ideas for improvement, and lots of answers to those "How do I" questions we all have.

We're hoping for a big turnout, and sincerely hope you are one of those who can make it.

The American Red Cross has relocated to 4200 War Eagle Drive in Sioux City. Driving directions are: If you are arriving on Interstate 29, go to exit 151, Riverside Blvd - IA Hwy 12 North and proceed north for one block to War Eagle Dr. Turn right (east) for a short distance, and you will see American Red Cross building on your right. This exit is almost all of the way through Sioux City, so don't get anxious!! If you see a sign that welcomes you to South Dakota, you went one exit too far, just exit at first opportunity and come back. Besides, you can work cw qrp mobile from SD that way Hi Hi.

If you are coming from the east on US 20, take the IA HWY 12 North exit, and you will wind up on I - 29 going North and take the 151 exit. (See above). Or you can continue on US 20 until you come to I-29 North and go that way, same directions. A little farther, but lots less stop and go traffic.

Let me know if you need clarification. See you on the IA QRP CW net Wednesdays at 7:00 pm CST (Thursday at 0100 UTC). The frequency at or near 7.110 MHz and later (7:20 or so) at 3.715 MHz, on or near depending on QRM.

Don't forget to mark your calendars for IA QRP State Convention June 2 & 3, 2000 at the Marina Inn in conjunction with Hamboree XXII, and possibly

a dual division (Midwest & Dakota) meet.

72, de Jerry WB0T

Worked All Continents (and then some) with 0.1 Watt

By John Stanford (NN0F)

After an earlier 12 meter CW QSO to Europe using 0.1 W, I decided to try the November 1999 CW DX Contest, and the December 1999 10 Meter DX Contest with this power, to see what I could do. It turned out to be very interesting!

I eventually worked 40 countries! The bands were in good condition, obviously. I found that I could raise most stations that were S8 or stronger here (by my ear, since my S-meter is not very accurate!). I also worked LU8EE (who was QRP and 579 here in Iowa) from Argentina, on 10 m.

At one point I realized that I had worked all continents except Oceania and Asia, using 0.1 W. I then aimed for those regions. I worked Hawaii and after some trying, was able to work JH7XGN in Japan on 10 m, to complete my 0.1 Watt WAC!

All of my contacts used my Ten Tec Omni 6+ turned all the way down to (almost) zilch. With the power control all the way down, I measured 0.1 Watt output. My mighty DX-zapper antenna is an 80 meter wire dipole, 25-30 feet high, fed with ladder line and using a homemade link tuner from the ARRL Handbook.

My 0.1 W contacts included:

**On 20 meters:

SP2FAX Poland
CN8WW Morocco

**On 15 meters:

NH7A Hawaii
ZP6T Paraguay
9G5AA Ghana

**On 10 meters:

EA8EA Canary Islands
G3ZEM England
S53R Slovakia
EI5DI Ireland
OT9T Belgium
IK4MTF Italy
PI4COM Netherlands
KH7R Hawaii
JH7XGN Japan (for WAC!)
JF1SQC Japan
VK4EMM Australia (!)
CE8SFG southern-most Chile
VK4UC Australia again (!)
V73CW Marshall Islands (Pacific)
VK5GN a bit farther than VK4s.
CE3BFG Chile again

Plus others, to total 40 DX country entries.

The most thrilling to me were the two Japanese and three Australian QSOs. The latter are in the range of 80,000 or 90,000 miles per watt.

Overview: My experience these two weekends (a few hours at most) was under excellent band conditions and working superb operators who were using high quality equipment and antennas. I do not expect this to happen all the time. Nevertheless, I do not have a rotary beam, and I was using 0.1 W output. Later when I used 5W, it seemed like QRO! Perhaps my experience will encourage others to try milliwattting.

72, de John NN0F
stanford@iastate.edu

**The Milliwatt Triple Crown
Join in the fun!**

The Knightlites, Ft. Smith QRP Club, and the Iowa QRP Club are sponsoring the great Milliwatt Triple Crown. Earlier this fall the noble Knights announced their Holiday Milliwatt contest. At the same time the Ft. Smith QRP Club and the Iowa QRP Club were planning similar contests. It just seemed natural to get the three together in yet another contest! Here are some of the details.

Each individual contest is independent and run by the respective club. Each individual contest will have a winner and the results will be posted to QRP-L. The Milliwatt Triple Crown winner will be determined by combining scores from all three events (the same scoring methods will be used for each independent contest). The cumulative score should prove to be a lot of fun and establish serious bragging rights on just how low you can go.

The first leg of the Milliwatt Triple Crown was in December with the Knightlites Holiday Milliwatt Contest. The Ft. Smith event will be in the March/April timeframe and the Iowa QRP event will follow in the July/August timeframe.

72, de Bob Kellogg AE4IC
(Knightlite QRP Association)

Jay Bromley W5JAY (Ft. Smith
QRP Club)

John Burnley NU0V (Iowa QRP
Club)

N6KR's Trip to Iowa
By Wayne Burdick N6KR

(The following is a combination of two posts to QRP-L and is reprinted with permission).

We were on the 7th floor of the Holiday Inn for our trip to Iowa this year, and this elevation

seemed to help when I rigged for "stealth" operation (i.e., Lillian and baby were off visiting grandma). We were so loaded down with baby-related gear, I was only able to bring a K2, mic, and a very tiny 15-meter Mizuho telescoping whip. I'll have to try Vern Wright's neat little sliding-coil whip antenna on the Christmas trip to San Diego.

I had no way to get the whip outside, so I simply connected it to the back of the rig and hoped for the best. Since I had an internal auto-tuner, getting a 1:1 match was painless. However, I experimented with several different ground radial configurations, and confirmed what I'd learned from previous field operations: with a poor antenna, the ground system is the deciding factor! Here are the configurations I tried:

- (1) No radials: forget it! Poor match, and you can feel RF on the mic.
- (2) One 25' (untuned) radial: better match, but still some RF tingle.
- (3) Two tuned (11') radials: great match, no RF problems.

In case (3), the radials were deployed at 90-degree angles along two walls, with the operating position in one corner.

Fortunately, an "RF tingle" at 5 watts is unlikely to be fatal, except for the microscopic dust-mites hitch-hiking on your lip. But it *is* disconcerting and should be avoided. It probably indicates that the rig is part of the antenna, a situation that could lead to RF feedback into the mic or other circuitry. I think this issue has received too little attention, but that is likely to change as QRP SSB operation becomes more popular. (A mic is much more sensitive to RF problems than a key!)

To eliminate the RF on the chassis and mic in case (2) above, I inserted an RF isolation choke between the rig and the antenna/ground system. This completely cured the RF problem, and as a bonus allowed me to match the whip on 40-10 meters despite the radial being nonresonant on every band. The RF isolation choke was made using a binocular core with a few turns of #24 enamel wire (twisted pair), although this could be improved upon by using RG174 coax and a larger core. (I'm working on an isolation choke of this type and will post complete construction details.)

Of course the whip had less than exciting performance on the lower bands, but on 15 meters I managed to bag Argentina and Uruguay, each on one call using 5 watts. Not bad for an indoor whip!

One last comment on operating: Connecting a whip directly to the back of the rig should only be done in a pinch. (Exception: Eric Swartz, WA6HHQ does most of his operating from Chinese restaurant tables and has no choice ;) The weight of the whip puts excessive stress on the BNC connector, especially if the tilt-stand is used.



Photo 1. The QRPizza in Ames.

(Shown are Wayne (N6KR) demonstrating use of the K2 to John

NNOF with Mike NOMF in the background.)

My annual trip to Iowa to see the YL's family included the usual great home cooking, etc. But it was even better this year because I got a chance to hang out with the Iowa QRP Club folks.

We had a nice turnout for a NorCal-style Pizza/homebrew event in Ames, organized by Dan Case KB0JUL and John Burnley, NU0V. Dan has put together a website www1.iastate.edu/~drcase/iowaqrp.html and John edits the newsletter for the club. The Fall 1999 newsletter has a great collection of well-written articles, including a DDS primer by Jeff Woods, WOODS, and John's own experimental results with "fractal" antennas (!). The 32-page, 8.5x11" effort is impressive given the club's small size--just over 100 members. (Somehow I stumbled into IAQRP #100. Good timing, I guess.

Among the interesting homebrew gear to be seen was perhaps the world's only 10-meter SST, built by Mike Fitzgibbon, NOMF (mjfitz@uswest.net). Mike's SST is based on the Wilderness Radio design but uses several small "alternative construction" PC boards and some extra RF stages to boost sensitivity. A full write-up on this rig appears in the same IAQRP newsletter.

The highlight of the evening was our visit to the Iowa State radio club station. We even had one ISU student with us, adding a certain amount of legitimacy to the operation. Having struck out in trying to make contacts from the basement of the Pizza Hut using the 15 m whip, we were now able to connect my K2 to a serious antenna (a three-element beam on the roof of the hall--so what if it was stuck pointing NW?). This gave the younger members of the QRP club a chance to try their hand at QRP SSB. We also worked ZD8Z off the

back of the beam using CW/split. All contacts were made using internal battery.

If you find yourself in the heartland, do stop by for some IAQRP hospitality!

72, de Wayne N6KR
n6kr@elecraft.com

An Antenna for All Occasions

By Jeff Woods WOODS

This article describes an easy to construct multiband antenna offering good performance on all bands 160 through 6 meters. This type of antenna has been in use at the WOODS QTH for two years now and has proven to be the best all-around antenna in the farm. The basic design has been published for years in the ARRL handbook, and several well-known HF radio companies have produced designs similar to mine. It is unfortunate that the broadband antenna has been given a poor reputation in some circles, as its performance is quite good in comparison to other

antennas of similar size.

The Sloping V

The 16th edition of the ARRL Antenna Book describes this antenna on page 13-9. Regrettably, the Antenna Book attempts to classify this antenna as a directional antenna suitable only for point-to-point links. While it is true that this antenna can be installed in a directional configuration, it is equally useful when installed in an omnidirectional configuration.

An apex height of 60 feet and side length of 100 feet each is recommended for 14-30 MHz optimal performance. The terminating resistors are 300 ohms.

The Kachina Communications AT-250 uses this basic design, substituting a balanced transmission line transformer at the feedpoint for the 600 Ohm feedline. This antenna is quite popular in the commercial market for several reasons:

* It provides a constant match for any HF transceiver

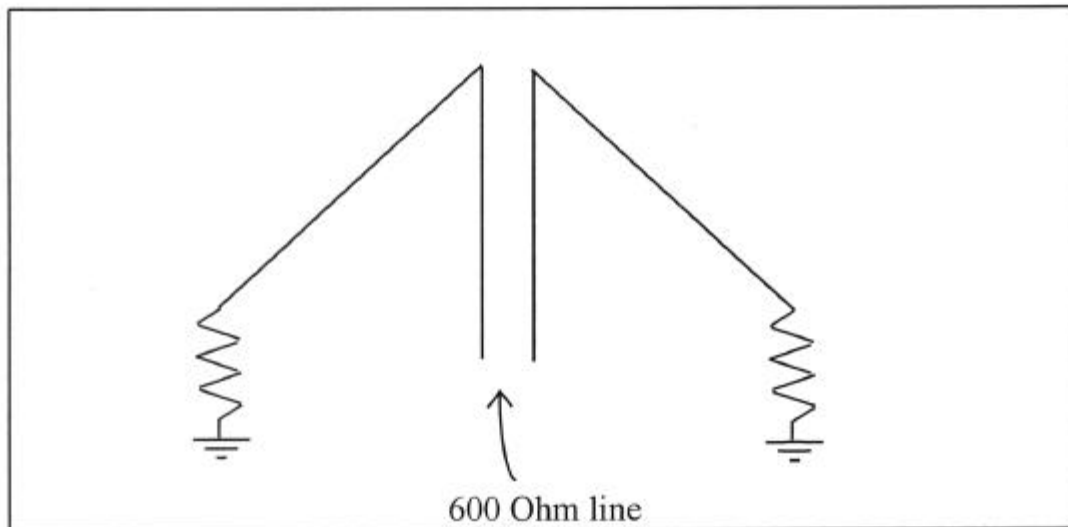


Figure 1 - The Sloping V

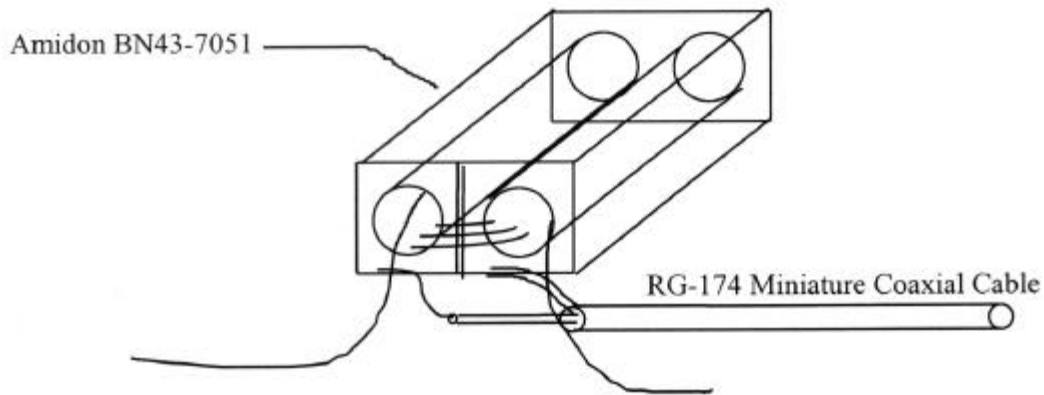


Figure 2 - The Matching Transformer

- * Eliminates the need for an expensive Autotuner or multiple dipoles
- * It is tolerant of changes to leg length or other geometry changes
- * Reduces damage to equipment caused by improper antenna selection

The chief disadvantage of the AT-250 is its selling cost: approximately \$250. The cost is driven primarily by the transmission-line transformer balun. I wanted to use this antenna, but could not afford the market price. I did what any enterprising ham would do: I reverse-engineered the thing.

The WOODS/WOFMS design uses a conventional binocular ferrite core as the transformer. Using a conventional transformer vs. a transmission line transformer greatly reduces the cost and complexity of the design. Of course, one doesn't get something for nothing. This design matches to an 800-ohm feedpoint impedance, not the optimal 600 ohm. The mismatch is not significant to cause any problems thus far. In addition, there is a slight

unbalance in the output of this design. This will skew the antenna pattern slightly. It is of the same significance as using a dipole without a center balun.

The Transformer

A sketch of the matching transformer is given below. The primary consists of one turn, formed by 1/4" brass tubing through the holes and PC board material on the ends. The secondary is 4 turns of 20 gauge Teflon insulated wire. This configuration is often used in the final stage of an HF transistor amplifier to match the collector impedance to 50 Ohms. Should you have a discarded HF PA floating around your junk box, most of your work is already done. Simply rewind the secondary to the proper turns ratio and you have it.

The brass tubing is soldered to PC board material at the far end to complete the one turn primary winding. Note the cut in the board on the near end. This prevents a direct short across the co-ax. That's really all there is to it. Solder the brass tubing to the PC board, wind the secondary and

solder the co-ax to the primary side. I usually wind the secondary such that the end wires come out the opposite side as the co-ax. This makes for easier use, but it's easier to see the detail when drawn as in figure 2.

Mount the transformer inside two 3" PVC endcaps. You'll have to add 3 eye-hooks, one for each leg plus a top support to hang the antenna from. Use a standard SO-239 connector on the bottom, attached to the co-ax from the transformer. Seal tightly with PVC cement.

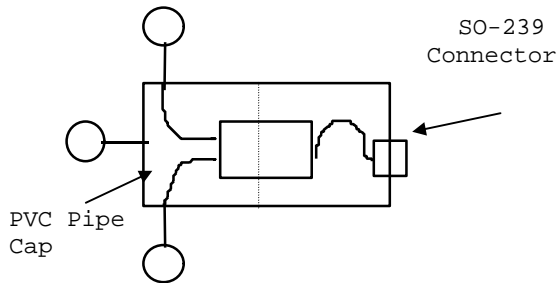


Figure 3 - Transformer Mounting

The Amidon BN43-7051 ferrite core is available from Bytemark.com for about \$3. Ready made transformers can be purchased from Communication Concepts (<http://www.communication-concepts.com/hf.htm>) part number RF800-16 at \$4.35 each. For one or two, purchase of the assembled transformer is recommended. It may be necessary to extend the lead length of the purchased transformer for connection to the eye bolts in the transformer enclosure.

Either of the above transformers will safely handle a 100 watt HF transceiver. For QRP, smaller cores may be chosen. For the 2w or lower power levels, a T-50-43 torroid should prove satisfactory. There are two factors to consider when designing a transformer: Inductance at minimum frequency and saturation flux density. Flux densities are high for a step-up transformer of this nature, and will limit maximum power handling.

Smaller cores tend to have less inductance per turn, limiting the low-frequency response. By winding more turns (say 2:8), the low frequency response is extended at the expense of power handling capability. More information is available in several transmission line transformer books available from Jerry Sevik or the ARRL. Remember, it doesn't hurt to experiment. Try it out. The results may be surprising.

The Terminations

Call up Arnold-- We need Terminators! The Antenna Book suggests using 300 ohms as a terminating value for this antenna. Experimentation has shown that the optimum value for my particular installation is slightly less than this, around 270 ohms, but the difference is so slight that I would not be able to detect it without a spectrum analyzer and sweep generator. The termination must be able to handle half the transmitter's power output. For QRP this is quite easily done. At the 100w level, some care must be taken.

An array of resistors is the best way to distribute the load without using a large non-inductive resistor. 25 7.5k resistors in parallel will get you a nice 300 ohm load. I use 2w Carbon Film resistors from Allied (SKU 840-8498). A pack of 200 of these sells for \$14.75 and will build 4 antennas. These resistors aren't quite "non-inductive" but they work. More on this in the "Testing" section.

The array can be assembled using perfboard ends or by using braid. The latter method has worked the best for me. Cut two lengths of braid or stranded wire, about 18 inches long, and lay them out parallel to each other, about 1-1/2 inches apart. Lay the resistors across the two braids to form

something that looks like a ladder, with the resistors as rungs. Solder 25 resistors to the braid, spaced about 1/4 inch apart. by rolling up the ladder into a cylinder, the termination can be made to fit into a standard 2 inch PVC pipe or cap. Use eye hooks through the end caps to make the electrical connection.

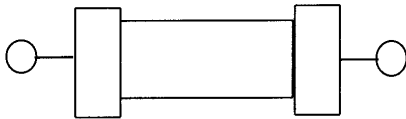


Figure 4 - Termination

Testing

The antenna can be tested before installation to ensure that all is well before it's up in the tree and rather inaccessible. Connect your equipment as shown in figure 5.

You should have good VSWR (less than 1.5:1) from about 1.6 to 12 MHz. The low end is limited by the maximum inductance available in the transformer. The upper end is limited by the inductance of the terminations. When the antenna is actually installed, this parasitic inductance becomes part of the antenna leg length and has

virtually no effect! For once the imperfections in real parts is not a disadvantage.

Installation

Install as shown in Figure 6.

Note that the ground connections have been replaced with simple radials extending from the terminations back toward the feedpoint. These ground radials should be at least as long as the antenna legs. Use of additional ground radials is recommended. I use two per leg, extending the wire as far as my lot will allow.

You'll note the absence of specified lengths for the legs. This antenna is tolerant of quite a bit of variation. My antenna uses about 60 feet on one leg and 85 feet on the other. You see, this is really no more than a leaky, terminated transmission line. So long as the impedance balance is kept, the length is of little consequence to the impedance. So my apparently unbalanced setup runs just fine.

The efficiency of this antenna is dependent on the leg length. Ideally, you should have about half a wavelength per leg for best results. Good results can be obtained with shorter lengths, though. My smallish antenna works

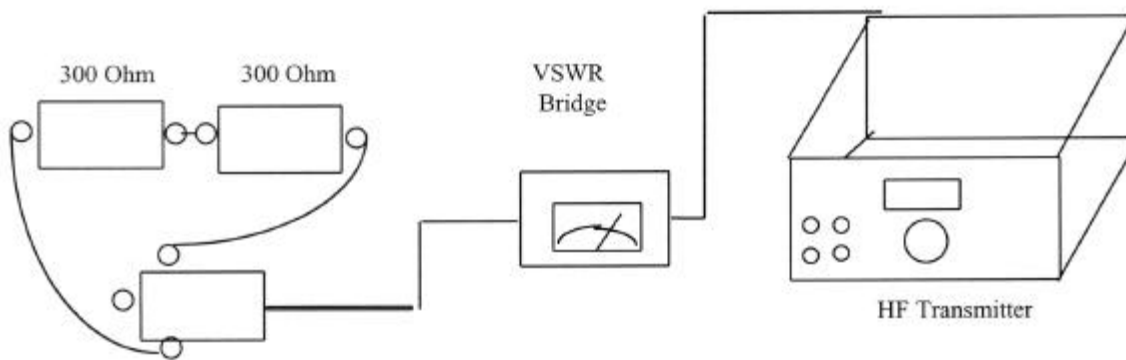


Figure 5 - Test Setup

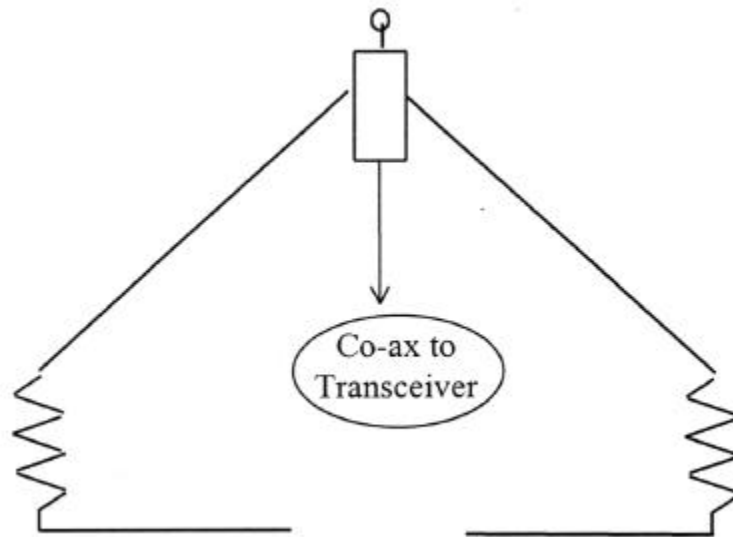


Figure 6 - Test Setup

on 160m with reduced efficiency. That's the trade off - Length for low end inefficiency.

This antenna is ideally suited for Field Day or portable operations, as installation is a virtual "no-brainer." It has proven itself to be the most versatile antenna at my disposal, and a good all-around performer.

72, de Jeff WOODS
mycrocomm@plutonium.net

Kit Review: Small Wonder Labs DSWxx
 By Larry Stambauch WBORMT

Small Wonder Labs has produced a very special blend of high tech and simplicity in the DSW series QRP transceivers. The use of a PIC and DDS (Direct Digital Synthesis) has made available to the QRP community a CW transceiver that covers the whole band, is full featured and still retains small size and simplicity. The receiver is elegant in performance while uncluttered with unnecessary items. Sensitivity and selectivity are quite good as are the QSK and transmitter keying.

Power requirements are low for a DDS design due to the use of low power consumption voltage regulators and running the DDS on 4 V.D.C. rather than 5. This can be a true battery operated rig with its 2 watt transmitter and compact size. The DSW I built is in a 3 X 5 X 2 inch cabinet with a slopping front panel. Finally it also includes R.I.T., morse frequency audible readout and built in keyer that operates similar to a TIC keyer. For those who want it a premade cabinet is also available.

Assembly is in stages with no special test equipment required. Only 2 larger surface mount inductors are required to be mounted. So don't worry about the surface mount DDS section. It is already done and tested by Small Wonder Labs. You do have to wind 4 toroids, but all except one are single winding. Winding instructions are clear to the point. An experienced beginner should find this kit easy and fun to assemble. All connections to external controls are on cables the plug into headers on the board. Ribbon cables eliminate the jumble of wires hooking things up to the real

world controls. Only 2 alignments are required to be made. Peak the front end coil for maximum receive and set the side tone pitch with a trimmer.



Photo 1: The kit 'out of the box'.

Group 1 assembly is the PIC and DDS area on the board. Group 2 is the audio section which can be tested after completion. Group 3 is the receiver product detector and I.F. filter. Group 4 is the receiver front end filter and mixer. After this group you can test the receiver if you wish. Group 5 includes all the low level transmitter stages. There is no mixer in the transmitter as direct DDS output is used. Group 6 completes the transmitter with a power amplifier, lowpass filter and some components for QSK with the receiver.

None of the groups will probably take more than an hour or two. Before you start you should sort out and identify all the parts! This may take some time, but is very important. Doing all the ribbon cable wiring to controls and jacks is the last step before alignment and packaging. Alignment involves just 2 steps. Peak the front end coil in the receiver for maximum signal and set side tone pitch. Setting the side tone is done by using a built in test routine. You set a trimmer to make the side tone match a tone made by the PIC for alignment. My DSW is in

a cabinet from Mouser Electronics stock number 537-MDC642-01. It has a sloping front panel and presents the controls at a convenient angle. Mike Fitzgibbon N0MF showed me the DSW he put in a cabinet like that and I was smitten with its utility.

On the air the DSW is simple and fun to use. You switch between 200hz and 50 hz steps by pushing on the encoder knob and holding it a moment. To find out what frequency you are on you just tap the encoder knob and get the morse readout. The keyer has a push button to go through a menu of functions. R.I.T. is activated with a toggle switch and has an unlimited range within the band. It is great to be able to have full band coverage with all the bells and whistles that I want built into the rig. No add ons for readout R.I.T. and keyer required.

Selectivity is quite nice for a 3 pole filter owing to the 800 hz shaped response of the audio section. It may not be a FT-1000D receiver but it works well even in a crowded band. Two watts with the transmitter has been enough to check into the IAQRP net using an inverted vee antenna.

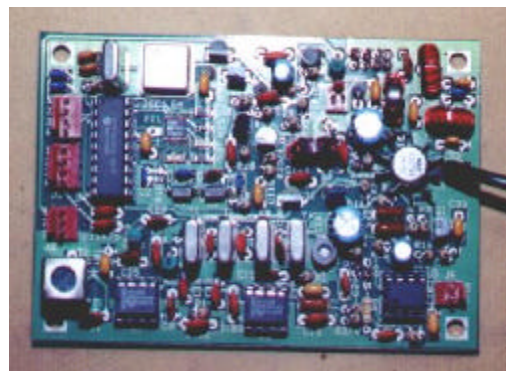


Photo 2: The completed board.

The only thing I can find fault with at all is the 50 Hz tuning steps. The 200 Hz fast steps are fine, but at 50hz you sometimes can't get exactly where you want to



Photo 3: Case used for mounting.

be. That is a pretty nit picky thing to complain about so I will stress that it really is not a big deal. It's a review and you have to complain about something. This rig fits nicely with Small Wonder Labs SW series of kits. The DSW is like an optioned out SW, it has all the goodies and full band coverage built in. This rig has got to be a classic and will bring DDS into mainstream QRP design. What more can I say except I will be looking for Dave Benson's next design to be innovative also.

72, de Larry WB0RMT
lstamba@attglobal.net

Mini-paddle Design By Jim Rhodes KCOXU

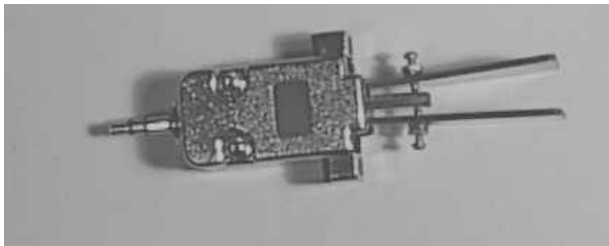


Photo 1: The Completed Paddles

(Editors note: I saw these paddles at the Sioux City meeting last year and at the Hamboree in Sioux City last summer. A great little project especially for the portable operators.)

The latest project at station KCOXU is a mini-paddle with no compromise on the smoothness and crispness of the action. They will easily fit right in your shirt pocket and weigh well under an ounce. The paddles are constructed out of that time tested ham building material, printed circuit board. The housing for the prototype is a DB9 computer connector hood and it was designed to plug right into my Tick-EMB keyer.

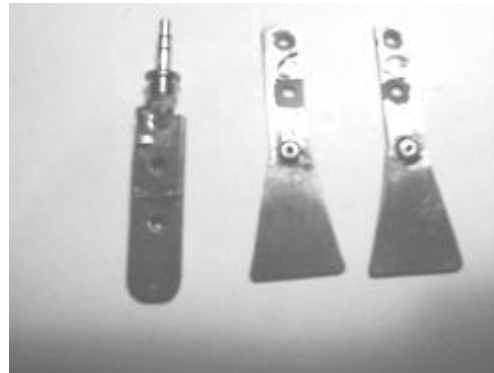


Photo 2: The Paddle Elements

The paddle elements themselves are cut out of single sided PC board. The center, common contacts are cut either out of double-sided PC board or, for increased stiffness, out of a double thickness of single sided board with the copper to the outside.

Once cut to size, the paddles and the center element are clamped together and drilled for the first two screws. The screws used are #2 size so drill the holes very slightly larger for clearance. Not too much or the action will get sloppy.

After drilling the two holes through the whole assembly, clamp or bolt together just the two paddles and drill the hole for the contact screws. The pivots for the paddles are small gauge wire (20-18). They are carefully soldered onto the center element mid-way

between the first 2 holes. Make sure they are perpendicular to the length of the element, straight (clipped off component leads work well) and flat to the element to assure proper action.

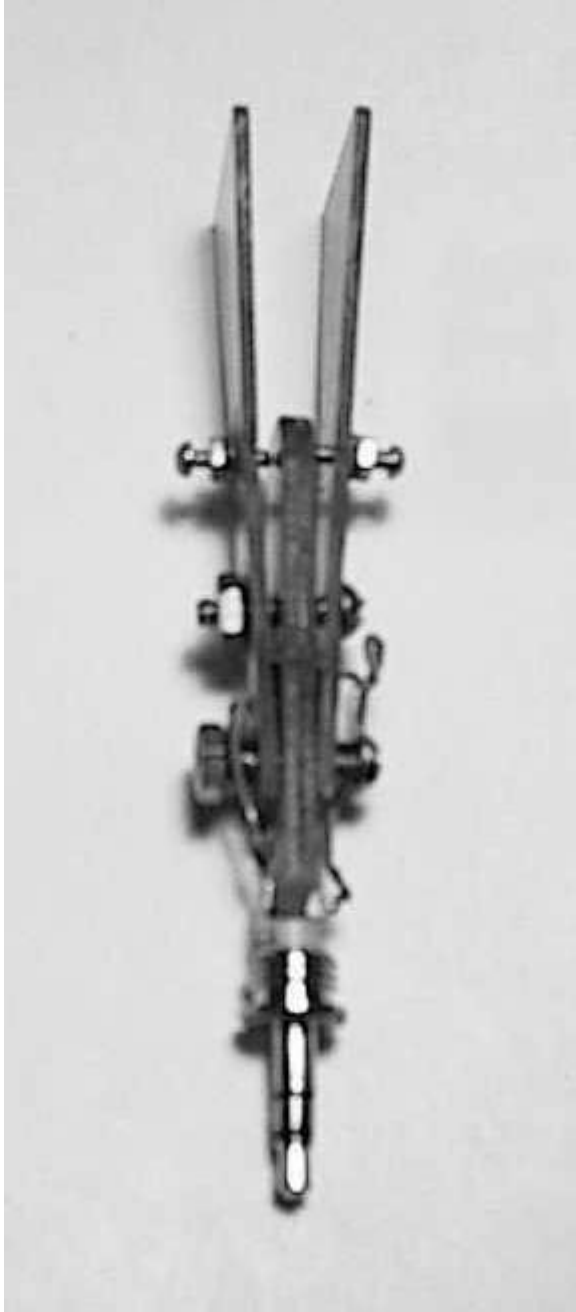


Photo 3: The Assembly

The paddle contacts are each fashioned from a #2 screw and 2 #2 burrs. One burr is soldered to the

copper side, centered over the third hole, it can be held in place with a screw from the opposite side for ease of soldering. The contact is then assembled by using the second burr as a jam nut to hold the final setting. The springs are cut from a ball point pen spring, cut 2 equal length pieces.

Next the housing is prepared for the paddles. The lip at the connection end of the hood is notched to just hold the center element. The hole at the cable end of the housing is relieved to fit the threaded part of a stereo 1/8 inch plug. The common connector of the plug is bent to follow the inside of the housing and the center element is soldered to the connector common. Make sure that both sides are soldered securely to the terminal, but that the ears of the cable clamp do not interfere with the action. The paddles are assembled by threading onto one of the #2 nylon screws: a washer, a spring, a paddle (first hole with copper side out), the center element, the other paddle, a spring, a washer and a burr. Before tightening the spring, thread the other nylon screw through the second hole of the whole assembly.

The paddles are then connected to the terminals of the tip & ring with loops of small gauge wire so as not to place any stress on the connections. After writing all of this it is easy to understand the old saw about how "a picture is worth a thousand words".

To get the most mileage out of your new paddle, put the paddle jack of your new QRP project right on the front panel. Then all you need to do is hook up the power and antenna, plug in the paddles and fire away.

72, Jim KC0XU
kc0xu@arrl.net

Iowa QRP Building Contest

By John Burnley NU0V

Time is running out to get your entries completed for the 2nd annual Iowa QRP building contest. Any project completed after the last contest judging (January 1999) and before the current judging (February 26, 2000 at the Sioux City meeting).

There will be three classes: homebrew, kit, and combination (of both kit and homebrewing). Prizes will be awarded but I'm sure will pale in comparison to the excellent projects being judged (after all bragging rights are more important hi). Paul Sipes has again volunteered to judge the contest (thanks Paul!).

All entries must have a written description of the project (which maybe used in an upcoming newsletter).

It is time to get busy and start melting solder! I hope to see you in Sioux City.

72, de John NU0V
burnleyia@home.com

Notes On Using Slinky Dipoles Portable

By Larry Stambaugh WB0RMT

Everyone who travels and likes to operate HF sooner or later will want to operate portable. The big thing is an antenna, especially operating in a motel room. After I saw KBJIT's slinky antenna at Souix City and read about it in the Summer 99 Ia. QRP Journal I decided to try building one and see how it worked. Walmart has metal slinkies on the shelf so all that you need to make one besides that is a few wire ties, something for a center insulator and some string or fishing line.



Photo 1: Larry's portable setup using the slinky dipole.

To use a slinky dipole with coax it is best to make the antenna resonant. Stretching the slinkies out lowers the resonant frequency. However I found in my motel room it was resonating much higher than 7 mhz when stretched out as far as I could. I used aligator clips to hold the ends and an MFJ SWR analyzer to check resonant frequency. To get the slinkies resonant on 40 meters I used some clip lead jumpers from my tool kit and was able to get it resonant almost exactly on 7.040. This proved to be effective for receiving and I have managed a few contacts with it. However an inside antenna in a reinforced concrete

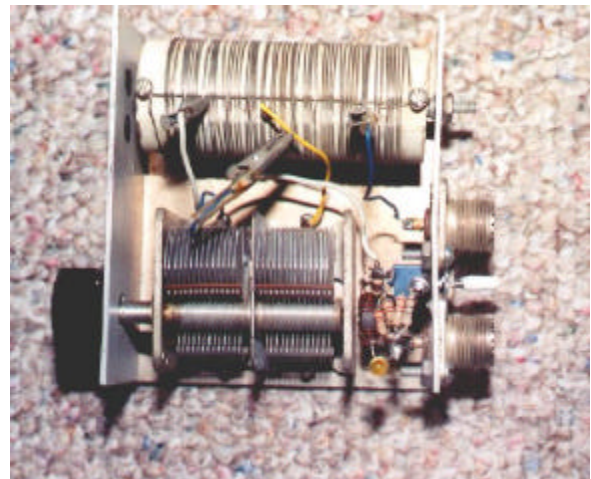


Photo 2: Larry's homebuilt tuner with the ScQRPion Visual SWR Indicator).

building leaves a bit to be desired. Back to dreaming about an outside antenna for a motel room.

As a foot note I built a homebrew tuner long ago and decided to use it portable if I could because of its small size. The problem was it had no SWR indicator as I used it with an Argonaut 509 years ago that had one built in. The SVCI (ScQRPIon Visual SWR Indicator) uses a resistive bridge and an LED to indicate a match to 50 ohms. The led dims or goes out when a match is achieved. One was built into the tuner using junk box stuff and it worked well. The Arizona QRP group has plans for it on their website.

72, de Larry WB0RMT
lstamba@attglobal.net

100 mw to the English Channel

By John Stanford NN0F

It was Thanksgiving Day 1999, just before noon in Iowa. I had my Ten Tec Omni Six's wick turned down to 5 W on 12 meter CW. On 24893 kHz I heard GU3MBS on Guernsey Island, in the English Channel off the coast of France. I called in a crowd of 2 or 3 other stations and he came back to my first call. I was pretty pleased. Then Steve said I was 589. I was even more pleased.

Steve's computer showed that he and I had worked before (with me also QRP) on several other bands. He then asked me to decrease power. I went 1 W, and he said "559, go to QRPP". I went to as low as my Omni 6+ goes. He said "439 with almost solid copy". Steve then went to 5W, as low as his rig would allow, and he was still copiable here, about 459 or so. At higher power, probably 100 W, he was 589 to 599 to my ear, the Omni 6 S-meter being notoriously scotch.

I had calibrated my Omni 6+ at 5 W and 1 W. But I had never tried much lower than that. I later determined with my WM1 power meter that I was running 0.1 W output at the lowest power in my QSO with Steve.

My antenna is a 120-ft center-fed zepp, with a combination of homebred open-line and commercial ladder line. It's at 25-30 feet high. I use a link tuner built from the ARRL Handbook, designed so it loads my cf zepp on all bands, 160 m to 10 m.

72, de John NN0F
stanford@iastate.edu

Upcoming Operating Events

By Mark Milburn KQ0I

Here are some QRP operating events that will be coming up. Turn your power down and join in...they are fun events and the people you meet will be some of the best hams on the air.

The 4th Annual FYBO (Freeze Your B___ Off) Winter QRP Field Day

Sponsored by the AZ ScQRPIons.

*** SAFETY FIRST! PLEASE RESPECT THE WX AND YOUR OWN LIMITATIONS! ***

1400Z Feb 5 to 0200Z Feb 6 (Operate all 12 hours).

QRP HF Only. CW (5W max). Near QRP calling freqs (no WARC bands).
 Categories: Single Op (Home/Field),
 Multi Op (Home/Field),
 Novice/Tech+.
 Work stations once per band. Score 1 point per QSO.

Exchange RST, State/Province/DXCC
 Country, first name, power out, and
 temperature (Fahrenheit) at
 OPERATOR'S POSITION. Indoor
 stations must

report INDOOR temperature.

Example: 579 AZ Frosty 2W
40F

Multipliers:

SPCs (each counts only once overall),
Field Location: x4 (Field per ARRL FD definition),

Alternative Power: x2,
QRPP (less than 1W): x2,
Lowest Operating Temp (at OP'S POSITION):

65+ F = x1;
50-64 F = x2;
40-49 F = x3;
30-39 F = x4;
20-29 F = x5;
Below 20 F = x6.

Final Score: QSOs x SPCs x Temp
Multi (x Field) (x Alt Pwr) (x QRPP).

Mail logs by March 5 to: Roger Hightower (N7KT), 1265 W Kiowa Cir, Mesa, AZ 85202. Include station description, category, op(s), and max power out. For more info, send email to n7kt@earthlink.net or visit <www.extremezone.com/~ki7mn>.

Adventure Radio Society Spartan Sprint

February 7, 2000
March 6, 2000
April 3, 2000
May 1, 2000
June 5, 2000
July 3, 2000
August 7, 2000
September 4, 2000
October 2, 2000
November 6, 2000
December 4, 2000

1. Start at 9:00 PM EST, 8:00 CST, 7:00 MST and 6:00 PST. Finish at 11:00 PM EST, 10:00 CST, 9:00 MST and 8:00 PST.

2. The frequencies will be 3560 kHz+/-, 7040 kHz+/- and 14060 kHz+/-.

(You may operate one, two or three bands--your choice.)

3. Exchange RST, SPC (state, province or country) and power output.

4. If you choose to call CQ, use the format "CQ SP," or "CQ SP TEST."

5. You can take credit for working the same station on a second band.

After the contest, we invite you to use our autolog, which is part of the ARS Sojourner. Just go to www.natworld.com/ars and follow the link for "Direct access to autologs". Or you can speed things up by going directly to the Spartan Sprint autolog page at www.natworld.com/ars/ss_log.html.

If you don't have access to the web, send Russ Carpenter, AA7QU, an e-mail with your total QSOs and the total weight of your station (i.e. the combined weight of all transmitters, receivers, keys, keyers and batteries used during the Sprint). You may also include your comments from the soapbox. Russ' email address is russ@natworld.com.

We publish results for each Spartan Sprint on the Thursday following the Sprint. This may be the world's quickest contest reporting! Please send us your log as soon as possible, but in no event later than Wednesday afternoon.

Winter Fireside SSB Sprint 2000 2000Z - 2400Z

Rules

Work station once per band.

Categories

All-band
Single band
High bands
Low bands
Multi-Op

DX
 Exchange
 RS
 S/P/C
 ARCI number (non-members
 send power)
 QSO Points
 Member = 5 pts
 Non-member different
 continent = 4 pts.
 Non-member same continent
 = 2 pts
 Multipliers
 S/P/C total for all bands
 S/P/C's count once per
 band
 Power
 >5W = X1
 1-5W = X7
 250mW - 1W = X10
 <250mW = X15
 Final Score
 QSO points X total SPCs X
 Power Multi
 Suggested Frequencies (kHz)
 3865
 7285
 14285
 21385
 28385

Use the ASCII Form for help scoring
 your log.

Use the on-line reporting form to
 send your score and soapbox
 comments.

Send QRP ARCI contest entries
 within 30 days of contest date to:
 Randy Foltz, K7TQ
 ATTN: Fireside SSB
 809 Leith St,
 Moscow, ID 83843,
 or email ASCII-text entries to
 <rfoltz@turbonet.com>

Enjoy....

72, de Mark KQ0I

**NOMF's Shocking Introduction
 To Electronics**

By Mike Fitzgibbon NOMF

(Editors note: Mike is well know
 for his technical abilities but
 here is a chance for you to see the
 lighter side of Mike hi).

Grandpa's garage was always an
 interesting place to visit. He was
 what you might call a "collector".
 After a stint at the beginning of
 the century in the Dakotas as a
 freight driver, he returned home to
 Iowa and settled down to work for
 the local county's highway
 department, mowing the roadside
 grass in summer and running a
 snowplow in winter. While doing
 these duties he would often come
 upon objects along the roadside
 which had been lost or discarded
 from passing vehicles. If he could
 envision any use, or even any
 possibility of use, he would carry
 these things home and store them in
 the back of his garage. After a
 number of years and many roadside
 miles, it was quite a collection.

One of these objects, which I
 discovered on one of my frequent
 forays through this magnificent
 assembly, has become the focal
 point for an event that has never
 been forgotten by the family. It
 has long since become some sort of
 saga that must be too-often recited
 at family gatherings and such, and
 the recollection of it invariably
 makes me feel a little uneasy, even
 now, some thirty-five years later.
 One lazy afternoon while rummaging
 through this menagerie of metal and
 wood I came upon a device which
 immediately seized my attention.
 It was a rusted-red shoebox-sized
 enclosure upon which sprouted and
 large evil-looking white porcelain-
 insulated terminal, an amber-
 colored protruding egg-shaped
 "eye", and two insulated wires, one
 a faded red and the other black,
 each ending in a large rusty claw-
 style clip. It looked as though it
 could very well serve as a prop in
 some black-and-white Frankenstein
 movie. I was captivated.

When grandpa returned from work that evening I pulled the contraption out of the garage and asked him if I could have it? He shrugged, and not giving it a second thought, nodded yes, undoubtedly assuming it would simply end up as a pile of mangled metal, as the great majority of things did after my usual investigations.

I drug the thing over to my workshop, the old empty chicken coop which leaned slightly against the old pin oak at the back corner of the garden, and mused upon my new acquisition. I wasn't sure what it was, but somehow, slowly, after an examination of the internals, the concept that this must be an old fence-charger began to emerge. The storm clouds were invisibly beginning to gather just over the horizon.

A few days, or even possibly a few weeks later, after watching an old drama on TV portraying the spark-and-smoke-laden electrocution of some poor soul, a great idea popped into my little head... I was somewhat acquainted with electric "fencers". My dad used one to keep the cattle contained when he turned them out into the cornfield after the harvest. I knew that the jolt from such a device was, although moderately painful, never severely injurious or fatal, even to humans... I could make a "fake" electric chair!

The work soon commenced in my chicken coop workshop. An old ragged aluminum-framed lawn chair with nylon webbing would serve as the platform. I pounded down the sharp edge of a three-pound tin coffee can lid, made a hole in it and connected a long piece of wire. The flattened lid was positioned between the seat webbing. This was to serve as the "center electrode". I also scrounged-up a discarded 12 volt car battery for the power source. When I connected the red

and black wires to the battery the charger immediately started "ticking" and the big yellow light ominously flashed in unison with this sound. The smell of success was ripe in the air! It was, however, some time later that I realized the 12 volt battery was rather an unfortunate choice, for this ancient apparatus was most certainly designed to operate on but six volts.

Just as I was about to position the chair outside the coop in the shade of the oak, a figure appeared in the doorway. It was Curtis, a neighborhood kid, with whom I frequently played. I quickly realized he would make a passable assistant, and, if necessary, and excellent scapegoat.

I figured grandpa, who was working in the garden, would make a good first test subject. Heck, he chewed big gobs of tobacco, held firecrackers in his fingertips and let them go off, and didn't let very much at all get under his skin. He would most likely think it was a great "joke", even if it was on him!

I called him over and told him to sit in the chair because I had a big surprise for him. He did as I asked, settling into the chair with a bit of amusement and curiosity. I nodded to Curtis, who was positioned just around the edge of the doorway with the battery and he "threw the switch", so to speak...

Nothing happened. Grandpa just sat there waiting and wondering. He didn't jump. He didn't even budge. Realizing that we were experiencing equipment failure after Curtis stuck his head from the doorway and shrugged his shoulders, I made up some excuse and told grandpa that he would have to wait a little while longer for his surprise.

We went back to the drawing board. Recalling all I knew about fence

chargers, it occurred to me that we probably needed to complete the circuit somehow and connect that unused terminal on the side of the box to a ground rod, just like dad did with the charger in the field. This was a rather grand concept for me at the time, but it did come to me after a few minutes. Since we didn't have a ground rod, I figured we could try it this time by connecting the ground wire to the metal leg of the chair, so we did. Now we could continue the experiment. Unfortunately, Gramps had gone elsewhere and we had no test subject available. With enthusiasm running in the red zone I decided to find another unsuspecting volunteer.

Grandpa did not live alone. In addition to my grandmother, my grandmother's sister, Great Aunt May, lived with them. She had moved in a few years earlier after her husband had passed away, and was just like an additional third grandmother to me. I believe that Grandpa was less appreciative of her presence though, for he now had the opinions of two women to confront. I just called her Aunt May, because Grandma said I didn't need to remind her that she was great.

I went into the house, poured a glass of lemonade from a pitcher in fridge, and took it outside to the execution position and placed it on a small table next to the chair. I then went back into the house and asked Aunt May to come out, and told her that I had a nice cool drink for her in the shade under the tree.

I think that she must have been touched by my sudden unwarranted attention and generosity. She gladly accepted the invitation and followed me out into the back yard. She sat down and smiled sweetly at me, certainly realizing what a fine young lad was I... I smiled back and handed her the glass. Then,

with a step backward, I nodded slowly to Curtis.

At this point you must allow me to digress for a moment, for it must be said that Aunt May was always, at least up to that moment, a very good-natured and pleasant woman. It was certainly the thoughtless trauma which I inflicted upon her in the next moment which caused the tremendous, albeit temporary, change in her attitude toward me. I must give her credit where it is due.

Anyway, Curtis threw the switch, just as she was taking the first swig of lemonade. She blinked violently and wrenched her eyes up at me, obviously horribly startled. Her left arm was resting on the armrest, and it most certainly made good contact. She very visibly jerked on the next charge, and rose in the air slightly. The glass, which was had been held in her right hand, was flung skyward. When I reflect back upon the even, it was probably not a good idea to use the "center electrode".

She screamed. Well, actually she let out a howl like a small dog that had just been dipped and held in boiling oil. She bounced up and down a couple of times, trying to get out, but every time she tried to propel herself from the chair by pushing off from the armrests she was, no doubt, shocked even more intensely. She was getting a lot more excited than even the time that my pet raccoon tried to crawl up her leg because he wanted to play.

Very quickly I realized that this was probably not good. It was working far better than I had expected, or hoped. Too much better. It didn't take Curtis long to realize that ALL THAT SCREAMING was highly undesirable. He bolted from the chicken coop door and disappeared through the back gate. I didn't see him until

the next day. Unfortunately, he had not removed the clip from the battery terminal and the current continued to flow, along with the stream of curses and screams from dear old Aunt May. I ran around and through the door, jerking the clipped wire from the battery post. Then I just stood there, too afraid to emerge and face the wrath of Aunt May. I knew I was in very, very deep this time.

A few moments after the current was interrupted she struggled to her feet and hobbled into the house, muttering and shaking her fist. I went home and hid in my room, expecting a posse to show up on the doorstep at any moment. That never happened, but I did get a four star butt-chewing from my grandmother the next day, and it was several weeks before Aunt May would speak to me.

Afterwards I could tell Grandpa thought it was funny, but he had just lucked out... Somebody took my fence charger. I never saw it again.

Not too long after that Grandpa took me to visit Charlie Hanaman. He was the local TV/radio repair guy and a good friend of Gramps. He helped me build the two-tuber in the Cub Scout handbook. It used a 90 volt battery, but I'll wait for another time to tell you about daring the local bully to put his tongue across its terminals.

72, de Mike N0MF
mjfitz@uswest.net

Copyright Notice

The Iowa QRP Journal is published four times per year (Spring, Summer, Fall, and Winter). Copyright of materials appearing in the Iowa QRP Journal remains with the author(s). Articles or materials may NOT be reprinted

without permission of the author(s). Iowa QRP Journal requests that reprints of the materials or articles acknowledge previous publication in the Iowa QRP Journal. The articles contained within this newsletter have not been tested and no guarantees of success are expressed or implied. If you build any projects from the Iowa QRP Journal, you should maintain safe practices at all times and know that you assume all risks.

The Iowa QRP Club was formed to promote amateur radio low power operations, to hone operating skills, improve building skills, and introduce the hobby to perspective new amateurs.

Membership is limited to current Iowans, former Iowans, those with strong Iowa ties, border states (border counties), and in some cases by invitation. To join, email a request to:

IowaQRPClub@juno.com

or surface mail to:

John Burnley NU0V
 8204 Sutton Drive
 Urbandale, IA 50322

Iowa QRP Journal
 Interim Editor:
 John Burnley NU0V
 Officers:
 President:
 John Burnley NU0V
 Vice President:
 Larry Stambaugh WB0RMT
 Secretary:
 Jerry Huldeen WB0T
 Treasurer:
 Mark Milburn KQ0I
 Club Station:
 KQ0RP