Ozark QRP Banner

The Official Newsletter of the Four State QRP Group
WQ5RP

February 2021 Edition

In This Edition: **OzarkCon Announcements**, Re-visit The W3EDP Antenna, Antenna Shorts, Picnic Table Portable, Perfboard Construction, The Te-Ne-Ke, Bayou Builders Comments

OzarkCon coming soon: **Due to Covid-19, OzarkCon will become Virtual OzarkCon on Saturday, April 10, 2021.** The proceeds from kit sales will fund the virtual conference, making it free to registered attendees.

Ham Nation: For those who watch Ham Nation there has been some changes. First it is no longer on Twit TV. You can find it on the YouTube channel Ham Radio Crash Course by KI6NAZ. Go to You Tube on Wednesday evenings at 8:00 CST and type in Ham Nation or Ham Radio Crash Course and it should pop up. Other changes, Bob Heil will no longer be a regular but will appear from time to time. Goerge Thomas will also be a guest from time to time. There are some new faces including Joe Eisenberg, KØNEB. One additional change, the episodes will now be bi-weekly (every two weeks). So tune in and see what's coming next.

Thanks to all who provided articles and information for this edition of the QRP Banner!
As always articles are very welcome and make every issue a success. Please keep writing and sending pictures. *editor…*

Virtual OzarkCon Registration – Agenda https://ocon.rleepotter.com/agenda.html
When: **Saturday April 10**
Where: **Zoom Internet Conferencing**

Registration this year will only be available online. No mail-in registrations will be accepted. Proceeds from kit sales will fund Virtual OzarkCon so there will be no charge to register this year. Door Prize Winners will be notified by email and item shipped to the addresses you provide here so double check that what you enter in the fields below are correct.
https://ocon.rleepotter.com/register.html

I am pleased to announce the Opening of **Ozarkcon Virtual 2021** registration.

Due to your exceptional support of our kit sales efforts for the last year, the 4SQRP Board of Directors has decided that the Conference will be Free of charge.

The event will take place on April 10th at 8:30 am CDT.

We will be broadcasting via Zoom and are limited to 500 participants, so please sign up early.

You can register in several ways, from the main website Ozarkcon Radio button, or direct at www.ozarkcon.com,

The conference will be an open meeting platform so you can come and go as you like.

The closing date for registration will be March 26th or until all seats are filled.

We have a great lineup of speakers with a variety of topics.

Some of the highlights are:

- Special event station KØN will be on the air all week beginning April 4th.
- The Wackey Key and Homebrew contests will take place prior to the conference.
- Prize Drawings will be held throughout the day of the conference with the results being posted on the Ozarkcon web page.

Details for all of these events and how to register for them will be announced at a later date.

Updates to the conference will be posted on the 4sqrp groups.io email reflector.

If your not a member feel free to join at this link: https://4sqrp.groups.io/g/main

If you have any questions or need assistance with registration please drop us a note at this email: registration@ozarkCon.com

We are looking forward to you joining us for an Educational and satisfying day.

72
Johnny AC0BQ

QRP....."More smiles per Watt"
72
JOHNNY AC0BQ ..

Check out the 4SQRP website at 4sqrp.com

OzarkCon Wacky Key Contest

Here's your opportunity to show off your creative skills. Build a crazy key and enter it into the wacky key contest. The idea is to build a working key or paddle from anything (like a toaster). Use your imagination and come up with something off-the-wall. The crazier the better!

To enter the 2021 Virtual OzarkCon contest, send an email describing your entry to wackykey@ozarkcon.com.

Check out this link for some ideas: OH6DC - Strange Keys

WA0ITP's wacky key page with OzarkCon 2008 photos

There are only two contest rules:

1. You can't use any parts from a "real" key.

2. You must demonstrate the key or paddle by sending some CW. Use a code oscillator demonstrating usability. A picture and a short (15 seconds or so) video will give your project a good chance in the event.

This year's judges are Rick - KCØPET, Bryan - KØEMT, and Larry - NØSA and they will select the wackiest key.
Wacky Key Coordinator is Walter K5EST
Prizes will be awarded!

Due to OzarkCon becoming Virtual OzarkCon, Ocon-U will be integrated into the Zoom program. Separate registration is not required.

OzarkCon University 2021

Dave Cripe NMØS - Dean
Ron Potter AG1P - Registrar

Since its inception, Four States QRP Group has been focused on information sharing and education of low power, highly portable communications.

OzarkCon has been our vehicle to accomplish our mission. After considerable discussion and planning, 4SQRP is proud to offer OzarkCon University to all interested individuals. Each year we will offer selected classes that provide knowledge and insight into QRP radio concepts, design, building and operating both at home and in the field. It is our hope that in doing so, our members and supporters reach a higher level of enjoyment of the hobby through better understanding and experimentation.

Review of The W3EDP End Fed Antenna

de KCØPP

Some of you may have worked or met Dave NFØR. Dave loves to run low power even milliwatts. For the past several years he has been using the W3EDP antenna and has had a lot of success. As we know there is no magic antenna but this one seems to perform well. So let's review.

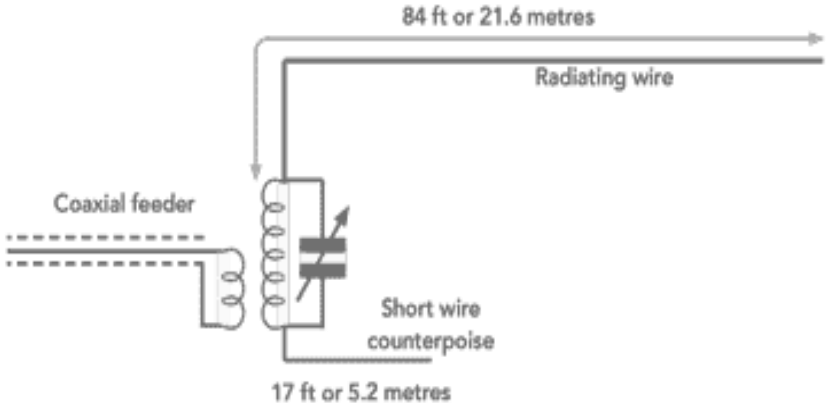
The antenna was designed by W3EDP and made famous by his friend Yardley Beers, W3AWH who had an article in the May 1936 QST, titled "The Unorthodox Antenna".

The operation of this antenna in 1936 was designed by trial and error. W3EDP took a long length of wire, tabulating results and progressively cutting lengths off until the best performance as obtained. A similar process was undertaken for the counterpoise.

The antenna was designed for the ham radio bands of the day: 160, 80, 40, 20 and 10 meters.
Details for the W3EDP antenna are quite straightforward, and it is basically another version of an end fed wire antenna.

The antenna is fed via coaxial cable and passes through a tuned matching transformer. It was stated in the original QST that a low value of capacitance in the antenna circuit gave by far the best efficiency.

The radiating elements consist of an 84 foot wire and this is fed against a 17 foot counterpoise. Although the 84 foot radiating element remained the same for all bands, W3EDP found that although the 17 foot counterpoise worked well on most bands, on 20 meters, a length of 6 ½ feet "seemed to outshine all the others."



The W3EDP antenna is particularly useful when the station is in a room above ground. Other antennas like a simple end fed wire often called a long wire antenna would need a good earth connection for the antenna to operate correctly. The counterpoise for this antenna enables it to operate effectively without the need for a good ground connected via a short lead.

Matching / Feeding W3EDP Today:

Today, the way in which final amplifiers are designed requires that a good impedance match is seen by the final amplifier in the transmitter or transceiver. This is often achieved by ensuring that the correct impedance match is provided by the transformer at the base of the radiating element. This normally includes a tuning capacitor as in the original diagrams for the antenna.

It is also possible to feed the antenna using an unun (and RF transformer that transforms the impedance and is unbalanced on the input and output - hence the name unun rather than the more familiar balun which converts from balanced to unbalanced. Commercially made 4:1 and 9:1 versions are available and these could be used.

When using this antenna, it is most likely that an antenna tuner close to the transmitter will be needed to ensure that the level of SWR seen by the transmitter is sufficiently low, otherwise the PA protection circuits may see a high SWR and reduce the output power.

User Comments:

- Another version uses 17 feet of 450 ohm balanced line and a 67 foot radiator as an end fed, with a 4:1 balun and a tuner.

- The counterpoise actually radiates and should not be placed on the ground. Three to five feet above ground seems to work well and help with tuning.

- Some have replaced the 17 foot counterpoise with a 6.5 foot counterpoise to help with tuning on the 20 meter band. Others have had issues with tuning 80 meters and have used a 66 foot counterpoise. The 66 foot counterpoise will help tuning on 160 meters also. The lesson here is to start with an elevated 17 foot counterpoise and if there are problems tuning certain bands try other lengths.

- Still today one of the recommended lengths by balun manufacturers for end fed non-resonant antennas is 84 feet.

If you want to read more on this antenna just Google, W3EDP Antenna. You can spend a lot of time reading up and figuring out what will work best for you.

Here are some good links to start with:

http://webclass.org/k5ijb/antennas/End-fed-multiband-antenna-W3EDP.htm
https://nonstopsystems.com/radio/pdf-ant/w3edp-4fba.pdf
https://thewakesileave.wordpress.com/2016/05/22/a-flimsy-w3edp-portable-antenna-la-manquita/

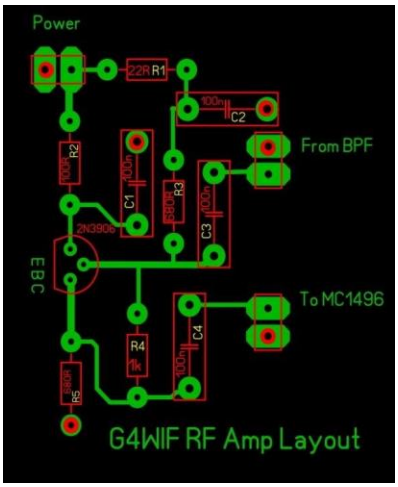
Home construction using Perfboard – Tony G4WIF

Over the years I have used most building methods:

- Manhattan methods (ugly when I do it, but look up the beautiful work of Jim K8IQY).
- Etching my own PCB's (using the toner transfer method).

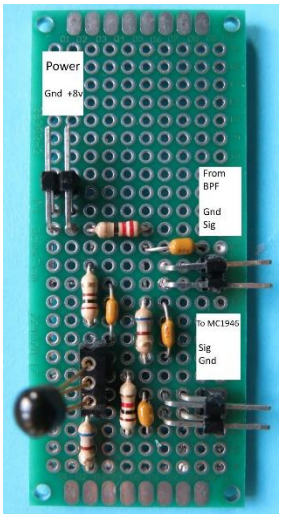
... are two methods. But just lately, I've been using the really inexpensive green coloured perfboard which comes in various sizes. The holes are plated through and are excellent for one off builds.

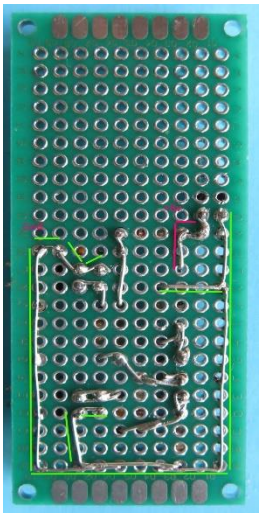
I have the tendency to get a bit messy with the interconnections - so the method that I describe here avoids that problem. It isn't rocket science though. I just "plan ahead" and I do it using PCB design software. I use "Sprint Layout" from Abacom just because I like it. Really, you can use any software that's available and you can get on well with.



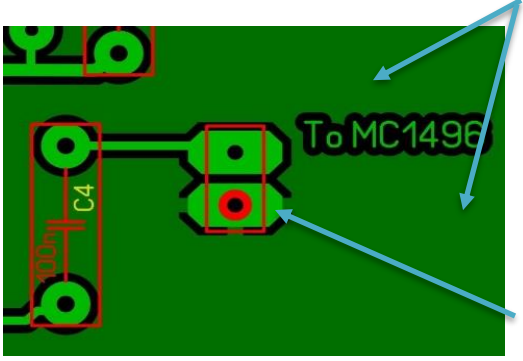
The method is that from the circuit diagram, I design the layout as if it were going to be etched. The red dots that you see are reminders to me that these are ground connections that I have to wire together and I can do that either above or below the board.

In the two pictures to the right you can see the finished board and on the underneath picture I have added some green and red lines so you can see the power and ground connections.





It takes a little extra time, but with more complex boards, I have found that if I "make it up as I go along" I get in real trouble and fault finding afterwards is difficult.



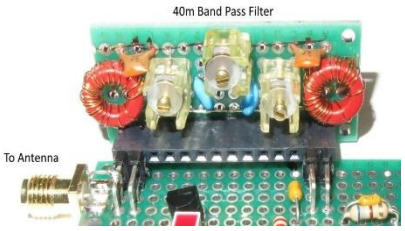
Ground Plane

The real beauty is that with a single press of a button in my PCB software I get the ground plane with thermal pads for ground connection. That means that I can prototype using perfboard and then subsequently order a bunch of printed circuit boards for a club project.

Thermal Pad

Just to the right you can see a small plug-in band pass filter made on perfboard.

de G4WIF



A Dual Time Zone Clock For The Shack

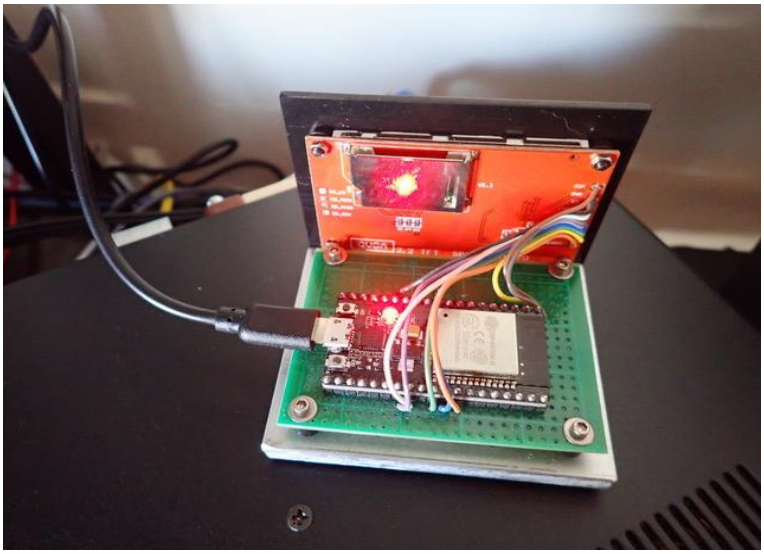
Larry Naumann nØsa

I have been wanting a nice small dual time zone clock for the shack for a while now. I wanted it to be accurate, as in Atomic clock accurate. I just could not find anything that satisfied me and did not cost an arm and a leg. Last week on the Software Controlled Ham Radio IO group there was a discussion that caught my eye. It was about a project by Bruce Hall W8BH, in it he describes how to build such an animal. If you do a web search for "W8BH", you will find he has a website with a whole bunch of cool articles and a few on clocks. The one I chose is internet connected and uses NTP time.
http://w8bh.net/index.htm

I won't go into all the details but Bruce's sight is top notch. The clock I built uses a 2.3" color TFT screen and an ESP32 card. Each can easily be found on Ebay but I paid a bit more and got mine from Amazon which has much faster shipping. The wiring consists of 9 wires from the ESP32 to the display. I chose to crudely mount mine as shown in the pictures. It sets right on top of my rig.

Bruce takes you step by step through the program design and explains everything in detail of how it all works. You could just skip to the end and put the final code in but you would miss a few tweaks you most likely would want to make to set your time zone. You can also change from 12 to 24 hour displays, colors and texts etc. I left it all the same but for the time zone change.

The ESP 32 cards can be programmed in the Arduino IDE but some files need to be downloaded first. It is all explained on the web page. What Bruce does not go into is the basic Arduino IDE usage, so you need to know this beforehand or learn it. I had e few do overs getting the card to connect to my WiFi. The only other issue I had was when I tried to use a cheap buck-boost power supply board to change 12 volts to 5 volts DC the ESP32 would not connect to my WiFi. I tried adding a filter cap to the output of the supply, this helped a little but as the buck-boost got closer to the ESP32 it stopped connecting. The buck-boost converter is a noisy little beast. Rather than chase the issue down I just use an extra wallwart I had that has a USB connector on it and run a USB cable to the ESP32 card.



The ESP 32 has a fast dual processor along with WiFi and Bluetooth capabilities. It is a bit of overkill for such a simple program but the cost is minimal. All in all, it was a fun project with a great outcome. Bruce does a great job of explaining the code and takes you through it step by step. I programmed each step in order, which helps understand the code plus correct any problems you may run into along the way.

http://w8bh.net/wwvb_clock.pdf

Locating Power Line RFI

de NØSA

About two months or more back I started to notice a sizzling sound on my radios. It was a steady S6 to S7 signal. The only time it went away was when it rained. My neighborhood is fed underground but about a block away is a two lane road with power poles and lines along the road. A few years ago I found a transformer on a pole next to the house behind me that was causing issues. Ameren came out and fixed it after I complained and told them an approximate location. I found it with an AM -FM radio. This time it was more difficult to find the problem.

First off, I tried my small handheld mag loop that I use to track down RFI inside the house. I could not get a decent bearing on the noise either inside or outside my house. So, I did a bit of research on the web. Basically, Wideband RFI on HF can get into the power lines and be all over the place as the power lines radiate it. Also, at HF it is hard to get an exact location. When you get close you need to use VHF or even better UHF.

With this information at hand I built a quick and dirty 6 element 440Mhz yagi. Then I stuck a 2 meter mag mount antenna on my car and using my IC-705 went for a drive with the radio tuned to 50Mhz. When I drove up and down the road with the power poles I could use the RF gain and get an approximate location of the problem. I narrowed it down to 3 power poles in a row. The interesting thing is I could pick up the standing waves on the power lines as I drove, the signal would fluctuate a bit up and down each 50Mhz wavelength.

Now that I had an approximate location it was time to go for a walk with my IC-705 tuned to 440Mhz and my 6 element yagi. At 440Mhz the interference is only able to be picked up when in pretty close proximity to the noise source. With it I could easily narrow it down to one pole.

I next called Ameren and filed a complaint. I gave them the number on the pole and described my issue. It took about three weeks and a guy showed up at the house with a bucket truck. He asked about the problem and said the pole number that I gave him was located in Webster Groves. I live in South County. So I walked him over to the pole I had identified. I told him I was a Ham and how I had located the problem pole. He told me that the Hams he had dealt with knew more about this type of thing than the RFI techs at Ameren. He said it was probably a bad insulator or lightning arrestor. He drove over to the pole, located and fixed the issue in about 30 minutes. I thanked him for the service and was again a happy camper.

With the S-7 noise level I was very limited to only working very strong stations. Even with the NB on my IC-7300 it was still hard to work weak stations. The NB really helped but was not perfect.

The service guy from Ameren said they were running a bit behind and he usually would have been by sooner. The steps I followed to track down the problem was a text book procedure. I was amazed at how well the simple 440Mhz yagi worked in pinpointing the pole.

Larry,
nØsa

Pic of my high tech 440Mhz yagi.

Bayou Jumper Builders Comments

Bayou Jumper Rev B Project N5MZX

When I heard that the Bayou Jumper was going to be resurrected, I became excited. Having sold my Bayou Jumper white face and other radio equipment to tide us over. I very quickly had buyers remorse. The new Bayou Jumper was to be my Christmas present. Even though a little late it was exciting to see it in the mail.

I want to thank the 4SQRP group for bringing this kit back. Also special thanks to David Cripe, NM0S and Jim Giammanco , N5IB for their hard work. The kitters deserve much thanks as they are volunteers who perform a great service to the group.

Started building the kit yesterday. The manual is excellently written and easy to follow. I installed all the pots, switch, and BNC connector. It will be put away until Friday and when my ESD soldering pencil, and my resistor/capacitor lead bender arrives. Reason for the bender is when I built my first BJ I bent the L4 choke lead and I separated the lead from the body. It did not completely brake off and caused great grief in troubleshooting. The bender should give me a nice gentle bend with no breaks.

As much as I would like to participate in the London calling Bayou Jumper event, time will be taken to build this radio correctly. There will be plenty of operating events to come. Many of the questions we might have can be answered in the forums and by the Files section. If you can't find an answer just ask one of our club members.

72
Ev Catlin N5MZX
Agent 038

My package arrived from Steve NØSM after about a week delay due to the Christmas mail rush. Needless to say, it was in good shape and had not been stomped or ran over by a fork truck! It was well packed and Steve had everything organized into groups with a suggested build guide of what parts were in different bags and a suggested installation order. His main goal was to be sure that all of the parts were complete so that when we began shipping, we wouldn't have any OH NO moments!

I printed a copy of the build manual that was to be posted to the web page and dug in, diet coke in hand. The build proceeded very smooth as I installed the different groups of components. I said to myself "nice job Steve, no parts missing"!

I wrangled with the power wires that connected the jack to the board and finally threw them away and opted for a smaller gauge more flexible wire, other than that everything looked great. A quick scan of the board with a lighted magnifier did not reveal any missed solder joints or solder bridges.
Time to power the little Jumper up.

I brought it to life with a 9 volt battery and a milliamp meter in line. Things were looking good, No smoke, and the current looked ok according to the manual. I swapped out the battery for a full 12.5 volts from my bench supply and still no smoke, so I connected headphones, key and a dummy load with a watt meter. I switched to transmit and keyed up, All Right, almost 6 watts, nice. I monitored the tone on a bench radio and the tone sounded great. I switched back to receive and attempted to test the regen function, hmmm no thump as I increased the regen control.

Not to worry, Jim described in the manual the steps to go through to add capacitance to the regen circuit if this happened. I installed the extra cap and still no regen. What did I do wrong? I pulled up the schematic and checked my parts placements for the receiver, everything looked good. Next, I went to the troubleshooting section and looked at the suggested voltage readings. Ah ha, the voltage on Q2 wasn't right. I had voltage where it was supposed to be Zero. A quick email to Jim N5IB and following the advice of his excellent wisdom, I took the cutters to Q2 and replaced it with one I had in my junk Box, OK, now I have regen but where is it oscillating. I couldn't hear the oscillation signals on my test radio?

I hooked a scope up loosely coupled with a piece of magnet wire slipped under the main Regen toroid and found my signal just below the 40 meter band. A few more adjustments later and walla, I was hearing CW signals!

Thinking I was finished except for putting everything in the case, I decided to hook up an external speaker, well this was a bad idea. I still don't know what happened, it was either the stereo plug in a Mono jack, but after I had finished recording a CW qso, I went back to a set of cheap Walkman headphones to see if I could dig up a QSQ on a freshly built Bayou Jumper.

Oh no, Murphy had struck again! I had a scratchy noise in my headphones that wasn't there before. Here I went again, checking voltages looking for a bad reading but there was none to be found? I scanned my solder joints looking for a cold one, none found but I touched up some anyway.

I thought it must be local QRM for a LED light or power supply in the shop, so I switched to battery and killed the power to the bench and lights. No help. I gave up for a day or so and went back to try again, but I still had this qrm in my headphones. Where is it coming from? I must have wounded something so I replaced the amplifier chip, no help.

I could still heat signals thru the static so I moved the Bayou jumper up to my main operating Station. I hooked it up with a T1 Elecraft tuner in line and wow, no noise! The signals were clear as a bell!

I stopped and thought to myself, what is different, same antenna, same tuner, no external key, must be my location, but wait I am using different ear phones. I had my Heil "big Rig" earphones connected. I made a flying trip back to the bench grabbed the old Walkman Earphones and headed back upstairs, plugged them in and guess what, my audio was scratchy again.

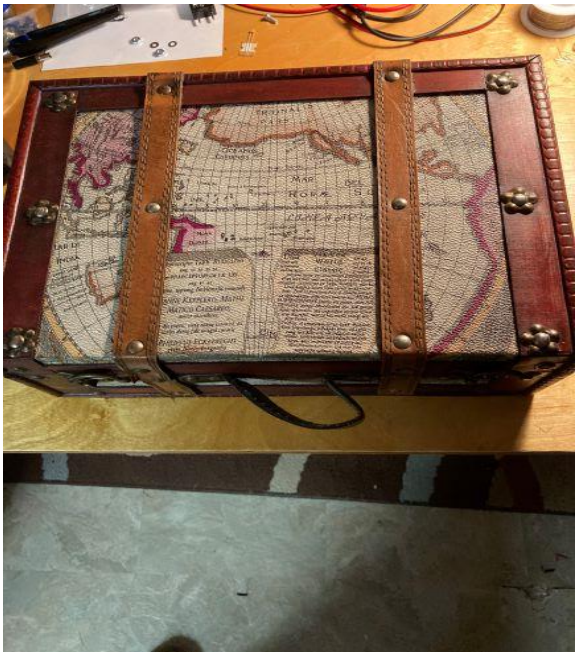
Long story short, don't look at the forest when all you need to find is one tree. I have had the little rig on the air about a week and have worked three stations on it.

It was an experience trying to dodge QRM during the SSS while being rock bound, but thanks to one patient operator, John K4BAI I logged one qso.

Even After all of my issues that I encountered; it was still a fun build.
This is actually a true Story; I couldn't make all this up!

Hope to work one of you soon on BJ-to-BJ qso.
72
Johnny ACØBQ

Here are some pics of my Bayou Jumper build and the wooden case for it. I got the case from Amazon and made partitions to fit everything. The world map on the outside was a nice touch.



Mark, WAØRXR

The Te-Ne-Ke

Designed and patented by Boyd Mason, NE8KE - built by NØ ARC

http://www.w8cso.org/teneke.php

As featured in QST (February 2001, p. 107) and CQ magazine

Boyd, NE8KE

Looking for an affordable, portable CW paddle? You've found it!
The Te-Ne-Ke *("teeny key")* is an iambic paddle built in West Michigan by members of the North Ottawa Amateur Radio Club. The contacts are made from beryllium copper springs and brass pins, attached to a stainless steel head. The key connects to your rig or keyer with a standard 3.5mm audio patch cable.

A note on variations
Several variations of the Te-Ne-Ke currently exist. The head used to be made from CNC-machined aluminum channel stock with a plastic jewel on the front. Current production units are made from laser-cut stainless steel, without the jewel.

Pricing (US $)
Finished unit (includes 3ft cable): $65.00
Black wrinkle painted steel base: $25.00

Shipping:

- United States: $8.00
- Canada, Europe and Australia: $25.00
- Other countries: *please e-mail* ***the NOARC treasurer for a shipping quote***

Ordering
To order, send a PayPal payment (as a purchase) to the NOARC treasurer, John, N8YQD, or send an email to arrange another method. Orders received by PayPal are shipped within 72 hours provided we have keys in stock.

https://youtu.be/2PZantLJRwc

Antenna Shorts

Directional Vertical Antenna

Does the placement of your radials really effect the direction of the signal? Antenna books all tell us to lay out the radials equally 360 degrees. Put down as many as you can. So what if you lay out 2 or 3 in one direction? Will that effect the signal?

Some time ago AKØB of the St. Louis QRP Society asked this question. He had a HyGain 14AVQ in his yard. Stan installed 2 or 3 radials and pointed them in one direction. He built a small low power CW transmitter and set it up as a beacon. Then connected it to the vertical antenna and asked for signal reports. This was before the Reverse Beacon Network. It was on the air for one week. Reports came back with almost all of them from the direction of the radial placement. So in order to prove his theory, after another week he ran the same test. But the radials were now placed in another direction. After one week reports came in. Yes you guessed it, they came from the direction of the radials once again.

So why would you want to direct the signal. Gain? Usually when an antenna directs the signal more in one direction the result is some amount of gain. Well not to claim you will gain xxDB, there are other reasons. Being in the Midwest we receive signals from all directions. So lets say that North Carolina has their QSO party. You could put up your vertical, lay out 2 or 3 radials, space them about 2 to 3 feet apart at the ends. This should help to direct most of your signal in the direction of the radials. One would expect the signals from other directions may be somewhat attenuated which would help reduce interference.

So just for fun and to experiment give a try sometime and see how it works out for you.

How Low Can You Go?

While on vacation in Colorado this year we arrived at our motel in early afternoon. Due to the virus the pool was closed and there was not much to do. So I hooked up the KX3 to make a few contacts. My mag loop antenna was dead inside the room with all of the metal and concrete around me. So I got out my 66 foot EFHW antenna. We were on the first floor and there was not much to run a wire to. So I opened the screen at the top and dropped the wire out of the window. The wire ran from about eight feet high, sloped about 15 feet to some bushes along the sidewalk. The remainder of the antenna wire then turned 90 degrees and ran along the top of the bushes for about fifty-one feet. The bushes were only <u>two feet</u> high.

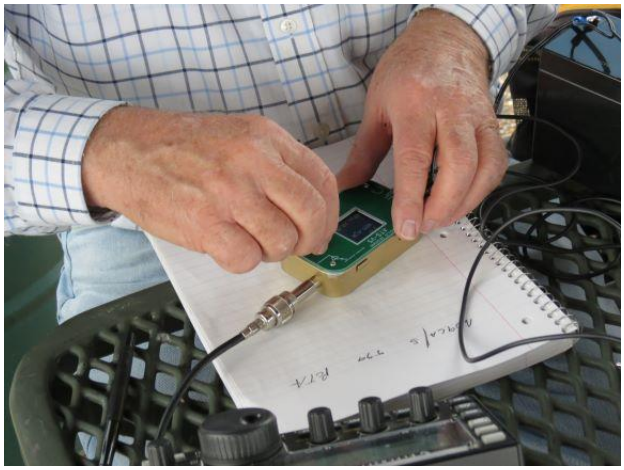
Connecting the radio through the SLQS 49:1 balun, the bands came alive. I tried to work back to St. Louis but wasn't heard. The Ohio QSO party was in progress and the signals were loud. Apparently the band conditions stretched over St. Louis to Ohio. I worked several stations and received good reports. About this time my wife said uh oh you're in trouble. The motel workers found my wire. I thought well I will just need to take it down. As expected about fifteen minutes later the phone rang. Yes, it was the Owner. He said you have a wire out of your window. I said yes, it is for my shortwave radio. He then laughed and said oh shortwave ha ha ha, no problem. Boy, that was a surprise! I worked a few more stations and it was getting dark so I took the antenna down.

By the way, the antenna was on the west side of a three story building and I was working east. So how low will the antenna work? I suppose the lesson here is if you are limited with your antenna installation, live in a condo or apartment don't despair. Experiment and try different options. You will be able to get on the air and make contacts.

de KCØPP

The St. Louis QRP Society takes advantage of good weather.

It was hard to pass up a nice day in November so the SLQS took to the field with a PTP – Picnic Table Portable. A few, mostly retired, headed to Fox Hill Park for some field operating. A dipole was set up along with a couple of Mag Loop antennas. We made a few contacts, visited and of course we had lunch (eating is what Ham's do best).



KØFHG with the ATS-5

NFØR – 817 & Bicycle Rim Loop Antenna

So, what has you or your group done lately? Send the editor some pictures and a short story for the BANNER.

Four State QRP Comfortable Nets

Meet each Wednesday night beginning at 20:00 Central Time. Add anything to the exchange that you wish, temp, rig, ant, etc.
Checking into all sessions is encouraged. We call it the "Clean Sweep".

8:00 pm Central time - 40 Meter Net on 7.122 +/- QRM ACØBQ/NCS

8:30 PM Central time - 80 Meter Net on 3.564 +- QRM ACØBQ/NCS

9:00 pm Central time - DMR Net on Talk Group 31654 NØYJ/NCS

NO dIGITAL Net at this time.

All are welcome!

DMR Voice Net

Wednesday evening DMR Voice Net will be at (Thursday) 0300 UTC (9:00PM Central Time Wednesday/) Four States QRP has a Brandmeister DMR Talk Group (TG31654). Join us to discuss QRP, ask questions, or just ragchew. The Wednesday net is a directed net but any other time you may use the Talk Group to chat with other QRPers. Net Control operator is Bert NØYJ.

For information and help, check out the DMR subgoup on 4sqrp.groups.io
https://4sqrp.groups.io/g/DigitalFM

Second Sunday Sprint

Occurs on the second Sunday of each month, 7 to 9 PM Central
Any mode, any band (except WARC & 60 mtrs) -

- **Suggested frequencies: standard calling freq. plus 7122 and 3564 (CW), and 3985, 7285, and 14285 (SSB).**
  as well as the usual QRP watering holes.

QSO's with the same station on different bands are allowed. CW and SSB portions of a band count as two bands.

- **Calling CQ is suggested to be "CQ 4S"**
- **Exchange is "RST, SPC, member number (power if non-member)"**
- **5 Watts max CW, 10 Watts PEP max SSB.**

The station with the most contacts each month will be emailed a certificate. Furthermore, the top three stations with the most SSS contacts during the year will also receive certificates via email.
Scores are submitted via the qrpcontest.com/4sqrp website (compliments of W8DIZ).
For full details, please download the complete rules (PDF) here.
For questions, please contact John (AAØVE): SecondSundaySprint@4sqrp.com

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Thursday Morning

The Four State morning net has been convened for members who like to start the day on the air.
We meet each Thursday morning at 8:00 AM Central on 7122 kc.
7122 has become the Four State 40M hangout frequency, and often members can be found there on any morning.

Editor's Note:

Articles are needed to make every Banner issue successful. If you have something of interest please send it to the editor at the email address below. You do not need to send a finished article. You can send some comments, notes, etc. and I can put it all together for you. Pictures are always of interest. Some of the items of interest would be outings and /or operating events by yourself or a group, construction whether equipment, antennas, accessories, QRP Field Day, SOTA, etc. Anything QRP is welcome.
de KCØPP

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