QRP Quarterly

Journal of the QRP Amateur Radio Club, International

January 1987 Volume XXV Number 1

QRP Quarterly

The WHD-40: An evolving Homebrew Project

QRP ARCI News

President's Message

by Les Shattuck, President

Let me thank all who have written me, and apologize for being slow in responding. I appreciate your suggestions and encourgement, as do the other club officers and directors.

The QRP ARCI, like most clubs is composed of ordinary people who serve the club by taking time from personal lives and from their families to help us all. We have our strengths and weaknesses like everybody else, but we are motivated by our belief in the club's ideals and by the opportunity of getting to know you all.

Times arise when personal matters get in the way, and may not allow an officer to perform to his or her fullest in regard to club matters. In my case, and in the case of our editor and others, that's what happened in an unexpected way this summer. I changed jobs, moving eventually from New York to Virginia. The editor also changed jobs, finding his time completely taken up by the change for the summer months.

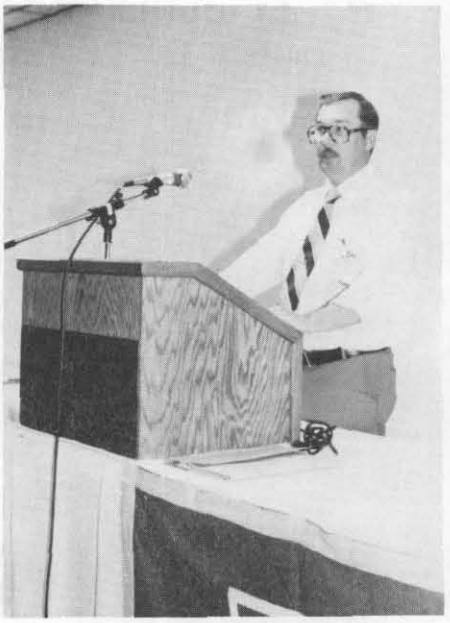
While we are both back at our tasks now, some changes are underway to spread the load better and provide for more back-up. By-law changes are just around the corner and new people have stepped forward to shoulder part of the responsibility.

My new address is 11673 North Shore Drive #2A, Reston, VA. 22090. I'm now settled in and my word processor is ready to go. You can also reach me via the twisted pair at (703)481-0769.

The club has urgent need of volunteers in several areas mentioned below. Call or write me if you would like to help out.

73 and QRP DX!

Les Shattuck, WB2IPX



WB2IPX, L. Shattuck

Needed: QRP Lawyer

The club needs the volunteer help of a lawyer who can help us with the new by-laws and revive our application for tax exempt status. Call or write Les Shattuck.

Urgent Call for Dayton QRP-fest Volunteers

Thus far, Jim Fitton, W1FMR has taken charge of reserving the block of QRP hotel rooms and organizing conference and hospitality facilities. Les Shattuck, WB2IPX is in charge of the forum and the club organizational meetings. Dave Cornell, WB2VXI, has accepted the charge of preparing a QRP transmitter or transceiver kit for sale at our booth.

We urgently need someone to obtain a commercial booth and two flea market spaces for the club. This volunteer would need to organize a team to decorate and staff the booth also. Call Les (703)481-0769 or Jim (617)374-3594. Time is of essence for this project.

Bob Brown, NM7M becomes Club Treasurer

To lighten the load, Bill Harding, K4AHK, has turned over Treasury responsibility to Bob Brown. Bill will now have more time for keeping membership lists up to date, a time consuming labor of love for which we are all grateful. Thanks to Bob's help, Bill has had the time to prepare the complete QRP ARCI Membership Directory which is now available at $6 post paid. Order direct from Bill.

Congrats to Michael Bryce, WB8VGE

We note with pleasure that Michael has become the QRP editor for *73 Magazine,* a fact which will certainly increase its readership among QRPers. Mike invites you all to write him with news or articles for *73.*

This appointment has certainly not slowed down Michael's continued contributions to the Quarterly and the ARCI, as the current editor attests. Michael has also just finished producing the second edition of the *Hotwater Handbook*, now published by the club. It is expanded and updated from the original, and is available in limited quantities from Mike for $5 post paid in the U.S., or $7 foreign.

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Editor's Word

This issue of the *Quarterly* reflects many contributions of our consulting editors and publisher, plus an increasing share of member contributions. The magazine begins to look like what we had envisioned: There is plenty of food for thought to keep our minds thinking and our hands tinkering till the next *Quarterly.*

You will be pleased to learn that **the Board of Directors has voted to extend all member subscriptions by one month because of the combined July/October 1986 issue.**

The amount of work involved in a publication of this size is staggering. Beyond the time invested by authors, the editors have put more than 200 hours into assembling and rationalizing the material. The publishing process adds nearly another 100 hours. Most of this comes at a cost to family and operative time, so we take this occasion to salute all who have had a part. And we invite you to write to the various editors and managers to provide the dialog that gives life to the whole enterprise.

73,

Jim Stevens, KK7C

The QRP ARCI is a non-profit organization dedicated to increasing world-wide enjoyment of QRP operation and experimentation. QRP, as defined by the club, is 5 watts output CW, and 10 watts output PEP.

Contents

Experimenter's Corner

Get on 160 meters this winter with a Transvertor from the KN1H workbench Receiver.

by John T. Collins, KN1H [1]

Although quite well populated with QRPers in England and Europe, the 160M band doesn't see much low-power activity on this side of the pond. Perhaps the antennas are too big or the distances too great, but I suspect the reason to be that most available QRP rigs just don't have it on the bandswitch. The following simple transvertor was my answer to that problem (see schematic diagram).

How it works

To receive, the 160M antenna is connected to the bandpass filter made up of L1, L2, etc., via S1, a miniature toggle switch. The SRA-1 Double-Balanced Mixer converts 1.8 Mhz to 14 Mhz so it can be received on any 20 M receiver. To transmit, S1 is thrown the other way and about 10-20 Milliwatts at 14 Mhz is applied to the SRA-1. This energy is converted to 1.8 Mhz, cleaned up by the bandpass filter, and boosted to about 1.5 Watts by Q1 and Q2. Basically, it makes your 20M transceiver into a 160 M transceiver without making any modifications.

Construction

My unit took two evenings to complete including design time (all of the circuits come from Solid State Design for the Radio Amateur). The construction method probably doesn't matter at 1.8 Mhz, I used the 'ugly' method with a piece of single-sided PC board as a ground foil. The result was mounted in a small cast aluminum box to keep it all together. A check with a Tektronix 7L12 Spectrum Analyzer showed the output to be quite clean with one 'Birdie' at 26 Mhz which was 38db below the carrier level.

Using it

It is most important that the SBL-1 is not over-driven; a burned out mixer will be the result. With a wattmeter in the transvertor output, advance your transceiver drive level until the wattmeter reads about one watt. This should correspond to about 10 mW of 20 Meter drive and is perfectly safe.

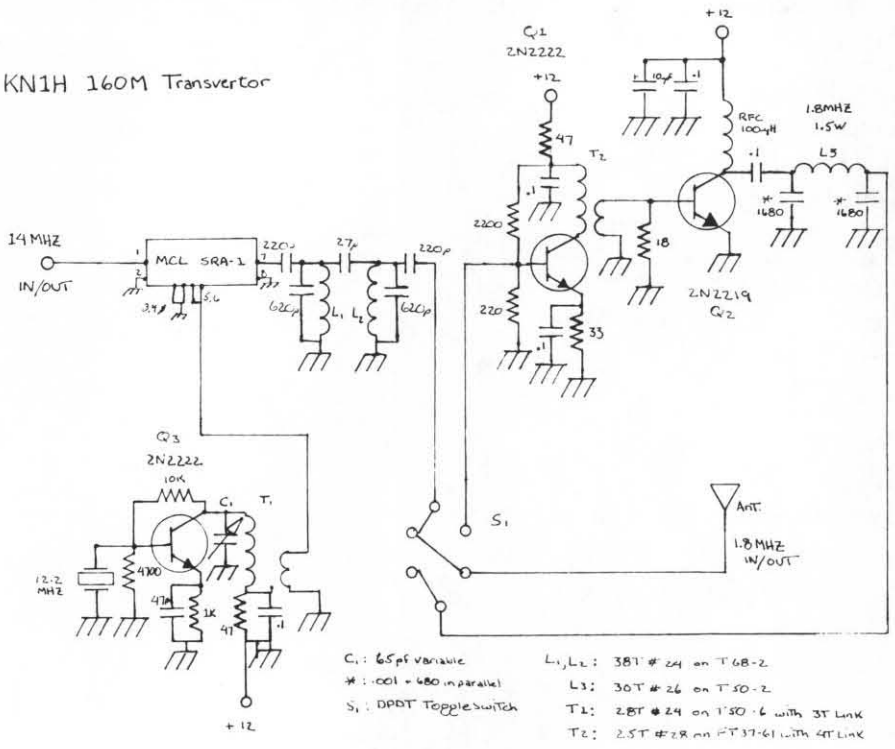
My first contact on 160M was with WB1GMH in Vermont who gave me a 229 report and my first lesson in the use of the 160M band: it takes more than a 40M dipole at 25' to make an effective Top Band antenna! I'm looking forward to trying the transvertor on a full-size

KN1H, J. Collins

160M antenna.

The transvertor was a lot of fun to build and is very simple to operate, there are no adjustments to make except to peak the LO trimmer. It's an easy and economical way to add another band to a transceiver. Similar units have been built for both 30M and 6M with good results and plans are on the board for a *linear* transvertor along the same line for SSB.

[1] RR2, Box 427
Cornish, NH 03745



We Need Your Field Day Plans for the April *Quarterly*

The April *Quarterly* will again feature Field Day preparations. **Write to tell us what you have learned from Field Day and what you plan to do in '87.**

What has Field Day taught you

- about emergency operation?
- station design?
- strategies for maximum QSO's?
- Antenna choice and installation?
- Site selection?
- Equipment?
- Power levels & sources?
- Organization and management?
- Fun?

What do you want to do differently in '87?

What do you want to try out out test this year?

Send your letters by January 25 to the *Quarterly* editor.

Solar Activity: Gearing up for Cycle 22

by Robert R. Brown, NM7M [1]

Well friends, It's about time we got down to talking about solar activity. I saw that as there are real signs that cycle 22 may be underway OFFICIALLY in the near future and that means a whole new ball game, not more of those recurring geomagnetic storms that we've been having at the end of Cycle 21 but a change to sporadic eruptions on the sun and all that goes with them. I'm sure you've seen pictures of those events on TV specials on PBS like Nova, flare outbursts or sudden flashes or light over sunspots and other towering eruptions from the solar disk. They can send bursts of light, x-rays and energetic particles out into space and some reach our earth, producing effects of considerable magnitude, particularly on the HF bands. They're going to bring us such jobs as SID's or SWF's and PCA's and will involve a whole new jargon so we'd better tool up now while we have the time to think these things through. So onward and upward!

First, we already heard mention of solar and geomagnetic activity, the WWV broadcasts using terms like "very low" for solar activity and "unsettled" for magnetic activity.Those simple phrases involve a lot more than you think and so, for openers, let's see how the pros go about categorizing solar and geomagnetic activity. We're going to need that jargon, if you will, as some new terms will be flying about and you don't want to be puzzling about them when you should be sitting at the rig, DX'ing when conditions are ripe. So once we have that behind us, we can then talk about what to expect for a given set of solar-terrestrial circumstances. Okay? Good! So let's begin with the easy part – dealing with geomagnetic conditions.

When you tune in WWV at 18 minutes after the hour, you hear six different things: the solar flux on 10.7 cm wavelength, the Boulder A-and K- indices, then followed by statements about solar and geomagnetic activity and finally a forecast for the next 24 hours. The A- and K- indices are derived from the records of the Boulder magnetometer, the K-index being logarithmic in nature and announced every three hours while the A-index is a daily average of the magnetic variations recorded at Boulder and essentially given on a linear scale. Thus, K runs from 0 to a maximum of 9 while A can range from 0 to several hundred, depending on the level of activity. So when WWV summarizes the level of geomagnetic activity by a word or two, they're really using the A- and K- indices and the following definitions:

Quiet = A = 7, usually no K-indices 2.
Unsettled = A = 15, usually no K-indices 3.
Active = 15 A = 30, a few K-indices of 4.
Minor Storm = 30 A =50, K-indices mostly 4 and 5
Major Storm = A 50, some K-indices 6 or greater.

So that's it in a nutshell. Now if you take those A values and the solar flux, then the QRP'ers Propagation Predictor in the April '86 *Quarterly* will help you see what to expect from the bands. But the question remains: how is all that related to solar activity, that other part of the hourly Boulder report?

When it comes to solar activity, the classification scheme depends on measures of the activity in the optical and x-ray regions as well as at radio frequencies. As you can imagine, the optical method is based on observations from widely scattered solar observatories and the degree of completeness of covereage on a given day depends on the weather around the globe. On the other hand, x-ray measurements come from satellite altitudes, free of earthly problems of weather and such. Radio noise observations are made on terra firma and also not bothered by cloud cover. So with those techniques, the onset of solar activity can be detected and measures of its duration and intensity developed.

Let's start with the optical part of the spectrum as that's used to describe the level of flare activity, those outburst on the sun which erupt from above sunspots. The description of flare activity in the visible portion of the spectrum is based on the solar area involved in the flare outbursts. These are taken from photographs, reduced to the area the flare would occupy at the center of the sun and expressed in square degrees of the solar disk. Each flare is given an importance, as follows:

S = Subflare, involving a solar area of = 2.0 sq. degrees
1 = Importance 1, involving 2.1 = area = 5.1 sq. degrees
2 = Importance 2, involving 5.2 = area = 12.4 sq. degrees
3 = Importance 3, involving 12.5 = area = 24.7 sq. degrees
4 = Importance 4, involving = 24.8 sq. degrees

In addition to indications of the area involved, brightness qualifiers F, N, B are appended to the importance figures of flares to indicate faint, normal or brilliant, respectively.

As you might expect, subflares are rather common in the vicinity of sunspots and don't give rise to much in the way of solar-terrestrial disturbances. And by the same token, large flares like class 3 or 4 are rather infrequent but can wreak havoc in many ways, giving rise to huge, long-lasting magnetic storms as well as ionospheric disturbances on the HF bands, But there's another factor to consider besides the area of a flare when it comes to talking about effects on earth; we should also look to see where it was located on the sun. In that regard, experience shows that flares near the central meridian of the sun give rise to strong terrestrial effects. In essence, flares in that region are aimed right at us! We'll have more to say about that another time.

And another factor to consider when it comes to terrrestrial effects is the energy output of the flare. While the energy of a flare outburst

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Solar . . .

shows up in may forms, one way that it can be monitored is the x-ray flux at satellite altitudes. The wavelengths here are very short, in the 1-8 Angstrom range (one Angstrom = 1/100,000,000 cm). But NASA and NOAA have sensors up there and measure the energy flux (watt/sq mtr) from solar flares. On that basis, solar x-ray events are classified as follows:

Class		Flux (w/sq mtr)
C		Peak 1/100,000
M	1/100,000	Peak 1/10,000
X		Peak 1/10,000

for descriptive purposes, a one digit number from 1 to 9 may be appended to the letter designations; thus, a X5 event is one with a peak flux of 5/10,000 watts/sq mtr.

X-ray bursts from solar flares can disrupt HF communications if the x-rays are energetic enough to penetrate the D-region. The typical event of that type disturbs radio paths on the sunlit hemisphere of the earth but because it usually lasts only 10 minutes or so, it is called a Sudden Ionospheric Disturbance (SID) or Short Wave Fadeout (SWF). But there are other disturbances in the radio range of frequencies which can be recorded on earth: indeed, they can even show up on ham bands as radio noise, bursts, sort of a "whooshing" sound that comes and goes. But normally, they're found in the centimeter range of wavelengths and can be monitored from earth without concern about weather conditions which hamper optical observations.

And that brings us back to the classification scheme that's used in describing solar activity on the WWV broadcasts. Thus, the terms you'll hear have the following meanings:

Very low - usually only quiet regions on the solar disk and no more than five of these; fewer than ten C-class subflares without important centrimetric radio bursts or sudden ionospheric disturbances (SID) in a 24-hour period.

Low - usually more than five but less than 10 quiet regions on the solar disk; only C-class subflares without any important centrimetric radio bursts or SID's during a 24-hour period.

Moderate - eruptive regions on the solar disk; fewer than five M-class x-ray events with important centrimetric radio bursts or SID's during a 24-hour period.

High - active regions on the solar disk; several M-class x-ray events with important centrimetric radio bursts and strong SID's and/or one or two importance 2 solar flares or X-class x-ray events during a 24-hour period.

Very high - one or more regions on the solar disk capable of producing proton events; one or more solar flares of importance 2 or greater with outstanding centimetric radio bursts, X-class x-ray events, and major SID's observed or expected within a 24-hour period.

Now that's a lot of information behind a word or two but that's what they mean when you hear those phrases on WWV. So now you know all about it and can tell your friends just what is meant by an "M4/2B flare." But we'd better get to what you can expect from a given level of solar activity. That'll help you make efficient use of your time on the air and save many hours of chasing DX when the odds are totally against you being found on the bands.

We now have to turn to the actual physical events which lie behind those phrases: geomagnetic storm, x-ray bursts and solar proton events. Each, in its own way, can appear on the scene and affect the electron density up there in the F-layer, making it depart from the fairly steady level which goes with the sunspot count at the time. That sunspot count, as you know, has been correlated with the solar flux in the 10.7 cm range. But more importantly, both those quantities are really related to the flux of solar radiation in the ultra-violet and x-ray range that actually produces the ionization in the F-region. The frustrating thing for us is that the correlation is a statistical one; that's a way of saying there are statistical fluctuations between the ionizing flux and those labels we use, solar flux at 10.7 c.m. or the sunspot number. Thus, don't get caught in the trap of thinking there's a tight one-to-one connection in all this; you have to be prepared for surprises because, after all, that 10.7 c.m. radiation couldn't harm a fly while the real solar radiation that gives us the F-layer could give you a real sunburn or even mutate a gene or two. So be grateful for whatever handle you have on solar activity, solar flux or sunspot count, but just don't expect too much from it or else you could be disappointed.

Having said that, you understand that the solar radiation which produces our F-layer can change as the number of active regions or sunspots changes. But more dramatically, if the situation over a sunspot becomes energetically unstable, there can be a large release of energy from the sun, a solar flare and all that goes with it. The first thing we see if we happen to be monitoring the right sunspot is a sudden flash of light and it takes about 500 sec. between the time of the flare on the sun and the light showing up in our solar telescope. Being visible light, however, it really doesn't effect our ionosphere as the radiation is just not energetic enough. But it is is accompanied by a burst of radiation in the x-ray region; if that's energetic enough or if the flux is large enough, it could penetrate to the D-region and increase the density of the electrons in the region of the ionosphere where our HF signals are absorbed. Fortunately, the x-ray emission is but a flash-phase of the flare process and our ionosphere recovers in some tens of minutes.

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Software Exchange for QRPers

Newly elected QRP ARCI director and *Quarterly* consulting editor, Michael Bryce, WB8VGE, has volunteered to facilitate the exchange of software for QRPers who are using the IBM PC, Apple *II* + *IIe* and *IIc*, Commodore C-64, and Radio Shack Color Computers. If there is sufficient interest a similar system for Macintosh software exchange will also be organized.

Unlike earlier software exchanges, Michael will furnish software on diskette (or tape if required) ready to load and run without rekeying. Only non copyrighted software that is in the public domain can be handled.

Future issues of the *Quarterly* will carry a list of available programs. Meanwhile, those of you who have something to share with other QRPers are invited to contact Michael to work out the details.

QRP Means *Quick* Reduce *Power*

Editor's Note: Norm Fleming, W8PJ, was bitten by the QRP bug several years ago, and he has been spreading the word ever since then. Among his achievements is the construction of several versions of the VFO-transmitter duo described here. Although the original VFO was a multi-band unit, Norm made this single band 20 meter version for a simple club construction project.

by Norman Fleming, W8PJ [1]

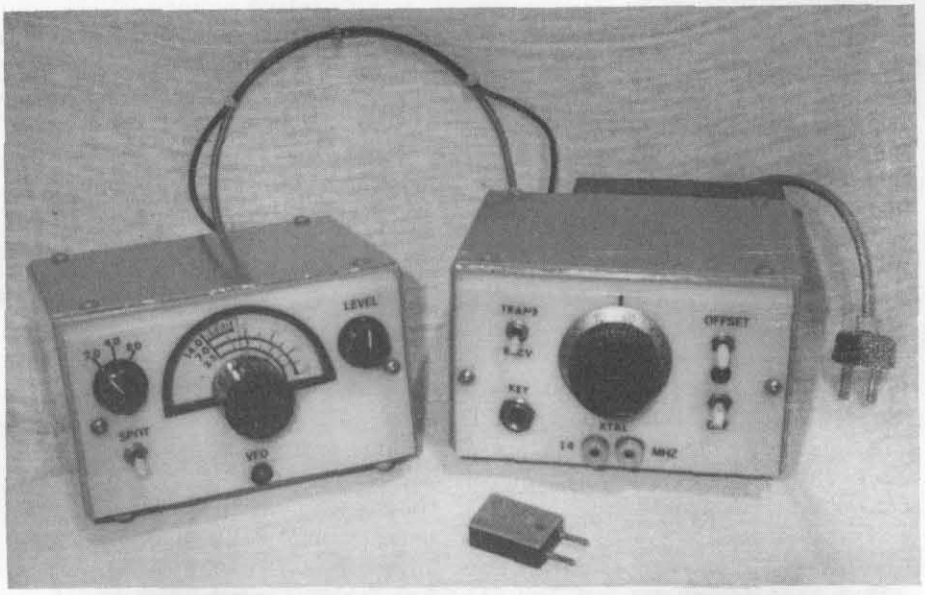
A few years ago I was deeply immersed in that old ham myth, that in order to work DX, you must use a KW linear with a full-blown speech processor on the front end and bellow like an old hound in the moonlight.

I purchased a brand new transceiver which had all the bells and whistles, that I thought almost guaranteed me a place on the DXCC Honor Roll.

Alas, my joy was short lived, as I found out that my new rig was a most prolific RFI generator throughout my neighborhood.

Weeks of working on the RFI problem showed only slight improvement. As I struggled to elimate it the horrible thought occured to me, "try lower power!"

I frantically searched through all the ham magazines and books for anything on low power equipment. The term "QRP" hadn't become a part of my vocabulary yet.

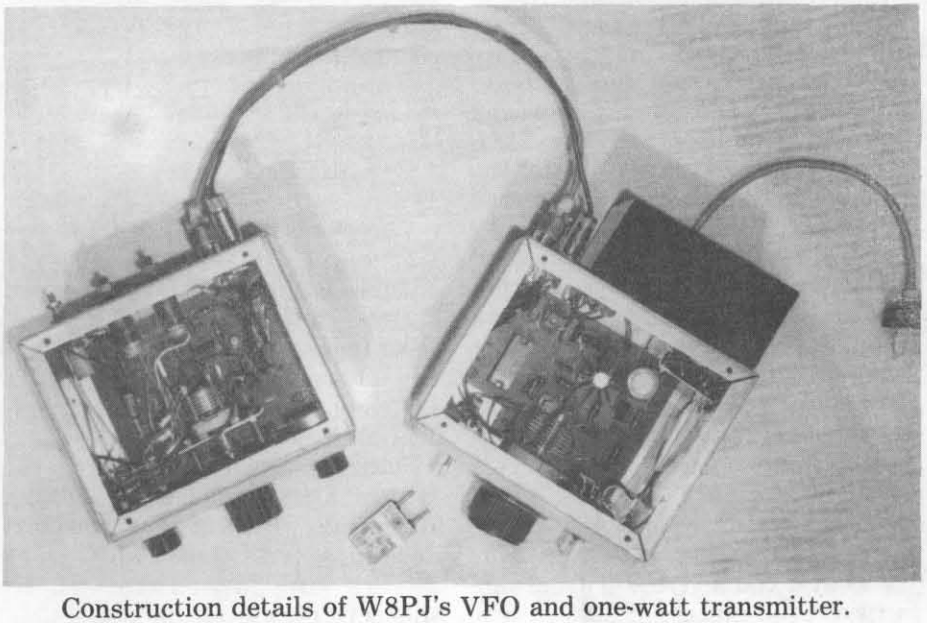


One watt transmitter and VFO by Norm Fleming, W8PJ.

Fortunately, I ran across two articles: "Experimenting for the Beginner" By Doug DeMaw, W1FB, *QST*, September, 1981, and "A Beginner's 3-Band VFO" by DeMaw and Bob Shriner, WA0UZO, *QST*, January, 1980.

By combining the transmitter with the VFO, plus a few modifications, a neat little one-watt, 20 meter CW rig evolved.

Wait, did I say CW rig? At that point in my life, "CW" meant Crazy Whistles pounding in my eardrums with a stream of jibberish. Up to that time, I had never been too keen on CW operating.



Construction details of W8PJ's VFO and one-watt transmitter.

But thanks to this little homebrew project things changed for me. With one watt, I have worked all states, all continents and 81 countries. Best of all in the process, I have actually learned to enjoy CW, now preferring it to SSB.

Since I hate a CW signal which drifts or sounds like a whooping crane when keyed, the following steps were incorporated into the units.

(1) The VFO is built in a separate aluminum box to reduce any drift due to heat from the transmitter output section and power supply.

(2) The VFO runs continuously to stabilize the temperature, so a frequency-offset circuit is necessary to prevent hearing the oscillator during receive. A marked improvement in stability was made in the offset circuit by using an Erie ceramicon, 22pf, NPO capacitor at C2, rather than a silver mica.

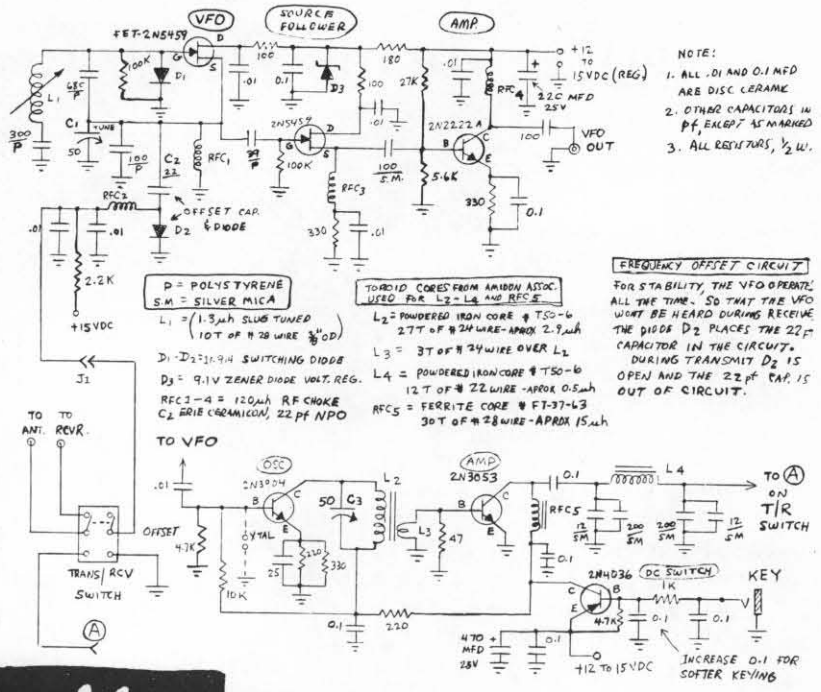
(3) The shaft of the VFO tuning capacitor C1, is coupled to a 4:1 ratio vernier drive to provide smooth tuning. You can't creep on that rare DX without one.

(4) To calibrate the VFO, adjust C1, so that the plates are fully meshed. Tune a calibrated receiver to 14.0 Mhz. Adjust the slug in coil L1 until the VFO signal is heard in the receiver, then zero beat it.

(5) If sharp key clicks are observ-

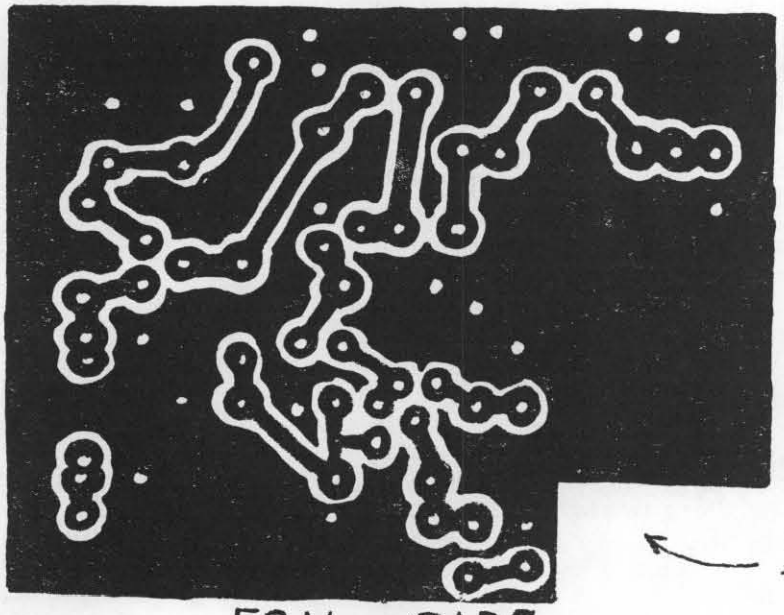
See QRP . . . . . next page

J8PJ ... 28 NOV 81 ... ONE WATT 14 MHZ - XMITTER / VFO



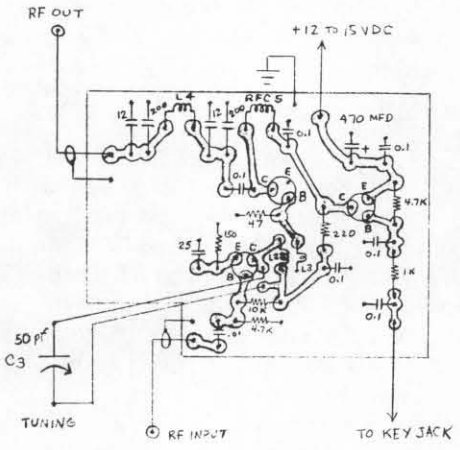
14 MHz one watter

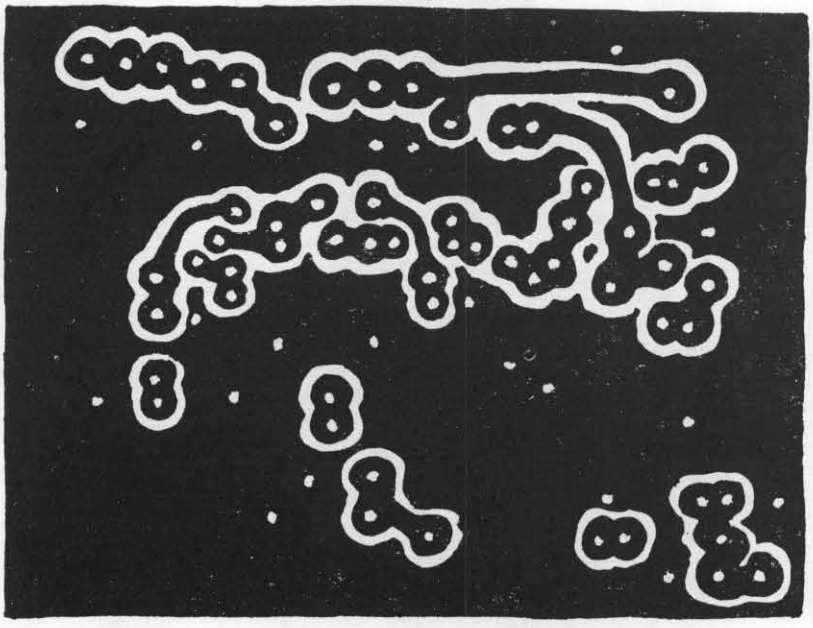
Circuit board layouts actual size

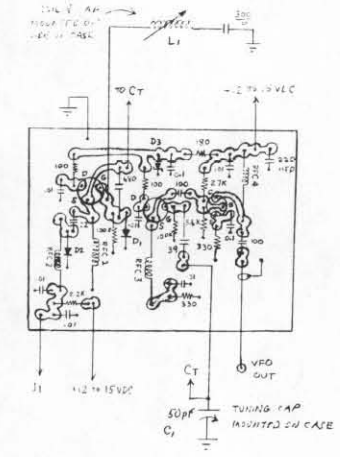


FOIL SIDE

CUT OUT FOR KEY JACK







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News . . .

Help, Back Issues Needed

Back issues for January and April 1986 are available from Joe Sullivan, WA1WLU. But the QRP *Quarterly* has been published for 24 years, and none of the present officers knows anyone who has the back issues. We get letters constantly requesting prior years' copies, but we don't know where to turn. The club needs a volunteer who can track down the back issues and assemble a complete set. Once that is done, the club will set up a system to make back issues available. If you know the whereabouts of or can provide copies of issues prior to January 1986, please contact Jim Stevens, KK7C.

Election Results

We are pleased to announce that Danny Gingell, K3TKS; Bill Harding, K4AHK; Terry Young, K4KJP; and Fred Turpin, K6MDJ have been elected to three year terms on the QRP ACRI Board of Directors. Our thanks to retiring board members Ed Lappi, WD4LOO, and Bill Welsh, W6DDB, for their years of service.

Solar . . .

At the time of a flare, particularly large ones, the sun may even accelerate some of the protons in its environment up to energies in the cosmic ray range. If they happen to head off in our direction, they could enter our polar regions and produce ionization in the D-region, just like those solar x-rays. The nasty thing about those protons is that they tend to show up at polar latitudes, just where our HF paths head off for DX to the East of us. But what is even worse is that they seem to keep coming and coming, the effects lasting for days and days! The problem is not at the sun; the solar protons are accelerated over a short interval of time, something like the duration of the flare, but they are injected into the magnetic field which pervades interplanetary space. In a way something like the Van Allen Radiation here near earth, they become trapped in those field lines and wander about aimlessly. So if our earth happens to be in their way, we get zapped and DX suffers accordingly.

With the flare process, there is usually a puff of solar smoke or solar wind, if you will. That amounts to a cloud of ionized material, say low energy protons and electrons, called solar plasma and it heads out into interplanetary space at about 1000-2000 km/sec. That's right, I said KILOMETERS PER SECOND! But even at that rate, it takes a day or two for the solar plasma to reach the position of the earth's orbit. If we happen to be at the wrong place and at the right time, the plasma envelopes our geomagnetic field and gives rise to a geomagnetic storm. Now you're a veteran of all those recurring geomagnetic storms of Cycle 21. With flare activity, the solar-terrestrial interaction mechanism is essentially the same; the real difference is that the plasma comes in bursts or clouds with flares instead of a steady stream as with the quiet sun.

Now I am the first one to admit this has been a big dose of solar physics but given the circumstances, namely essentially the onset of Cycle 22, that's the prescription the Doctor feels is appropriate. All points raised here are worthy of considerable amplification and I'll try to do the right thing, depending on what messages Old Sol is sending us. In any event, stay tuned to WWV, do your homework and certainly keep that flux/A-index chart up to date. You certainly want to be there, going for DXCC/QRP when the flux is up over 100 and the A-index is down around 2. More importantly, you don't want to be shown the fool by calling "CQ DX" when there's a big solar proton event in process, wiping out the bands, or the A-index is over 50. So hang in there, QRP DX'ers!

[1] 504 Channel View Dr.
Anacortes, WA 98221

QRP . . .

ed, softer keying can be obtained by increasing the value of the 0.1 capacitors in the base lead of the 2N4036, d.c. switch.

(6) The transmitter's 2N2222 was changed to a 2N3409. The transmitter output power was adjusted to one watt by changing the 2N3409 oscillator emitter resistor from 220 to 130 ohms (parallel 220 with 330 ohms).

(7) For easier tuning, the tuning capacitor C3 in the 2N3409 collector circuit of the transmitter oscillator was changed from a mica trimmer to a 50pf air variable. Remember: both rotor and stator must be above ground.

(8) A miniture DPDT toggle switch was used for a T/R switch with only one watt, the receiver is not muted; it serves as an excellent keying monitor.

In addition to all the fun and freedom from TVI/RFI when using low power, one other major benefit came as a bonus for me. I now have very little use for a big, power-hungry, linear amplifier, so with the money I save on my electric bill, I take my XYL out more often for a nice dinner. Believe me a happy YL ensures me of more operating time for my hobby.

If any of you are still skeptical, but think you would like to get in on some of the fun and benefits, I can only say, *Quick Reduce Power.*

[1] 15,684 Galemore Drive
Middleburg Heights, Ohio 44130

Much of the credit for my operating success goes to the 2-element delta loop antenna I have been using with it.

I had trouble keeping quads and loops up in the air, due to high winds at my locaton. After I began spending more time repairing antennas than operating, I sat down and designed a system that has worked pretty good, my delta loop has been up in the air for the past 14 years.

For those interested, my delta loop design is in the *QST,* June 1973 issue.

I can almost hear the wailing and gnashing of teeth of some of the readers who don't have a beam or are unable to put up even a short length of wire. Cheer up, let me tell you a little tale of encouragement.

After seeing all the fun I was having with my little one-watter, my good friend Leo, K8HNX, decided to build one for himself. Having no tower and only a small backyard, he put up a simple vertical stick on the ground with a few buried radial wires. Guess he doesn't believe in doing things the hard way, one of his first contacts was with VK6HQ in Perth, Australia.

Needless to say, he is a confirmed QRPer now. Remember, all it takes is more patience, not more power.

The WHD-40

An Evolving Homebrew Project
by Michael Bryce, WB8VGE [1]

The WHD 40 piled up a good score for WB8VGE in the Spring QRP QSO Party.

Perhaps the best word to describe this project is "versatile." With the building blocks shown in figure 1, you can go from mild to wild.

Start Simple For simplicity crystal control is used, with Q1 being the oscillator. It is followed by an amplifier-buffer Q2, and the driver, Q3. Both are keyed, while the oscillator runs all the time.

Output of the driver is applied to the final transistor, Q4, whose output is then run through the three-pole filter to the 50-ohm antenna. With 12.5 volts, the output is about 1.5 watts. The final is operated Class C, and power is applied all the time.

Q5 is a switch enabling the transmitter to work with most keyers. Applying a ground to the base of Q5 applies 12 volts to the buffer-driver. During receive, the supply to the oscillator is removed to allow the incoming signal to be heard.

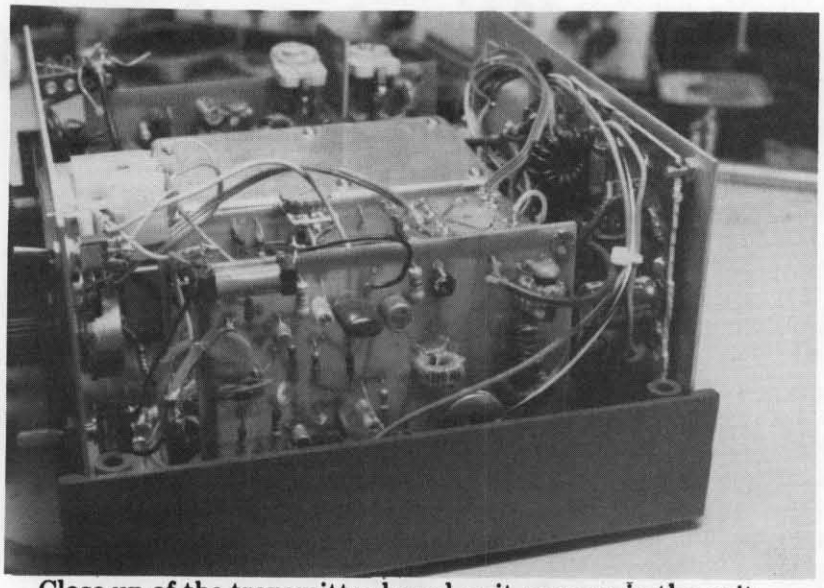
Construction can be done in different ways. Perf-board is fine, and Wes Hayward's "ugly construction" (*QST*, August 1981) will work. But I designed a 3"x4" G-4 glass one-sided printed circuit board. If you want to use two-sided board, etch the top side copper away from the oscillator components to prevent the extra capacitiance from causing trouble.

Mount all but Q3 and Q4 on the board. Apply power, and with a frequency counter or the station receiver, listen for the signal of the oscillator. The counter should show the crystal frequency.

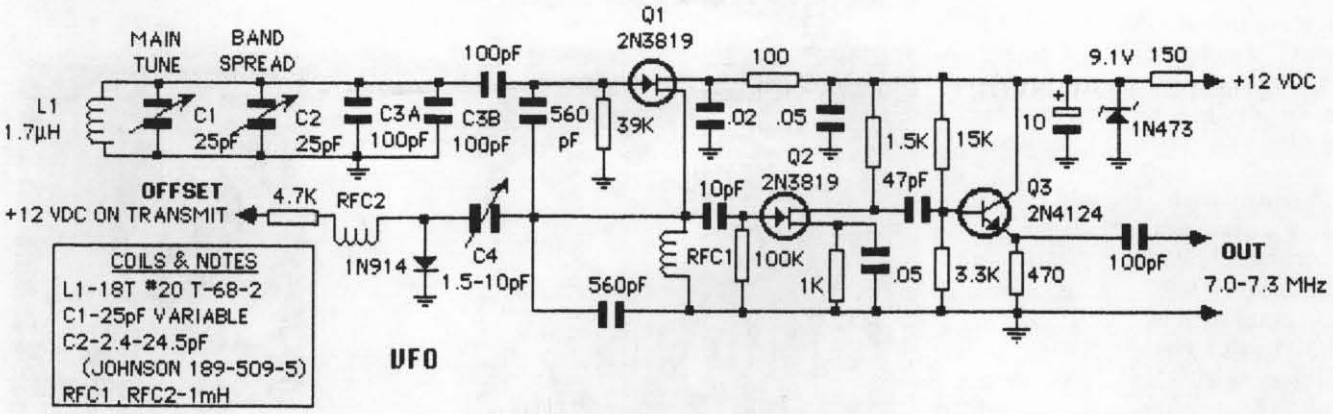
Remove power and install C3 and C4. With the output into a watt meter and a 50-ohm dummy load, again apply power to the board. Listening with the station receiver, ground the key line and adjust trimmer C13 for the best tone with good power out. Don't just go for all the power you can get, but turn it down to get the best sounding tone as well.

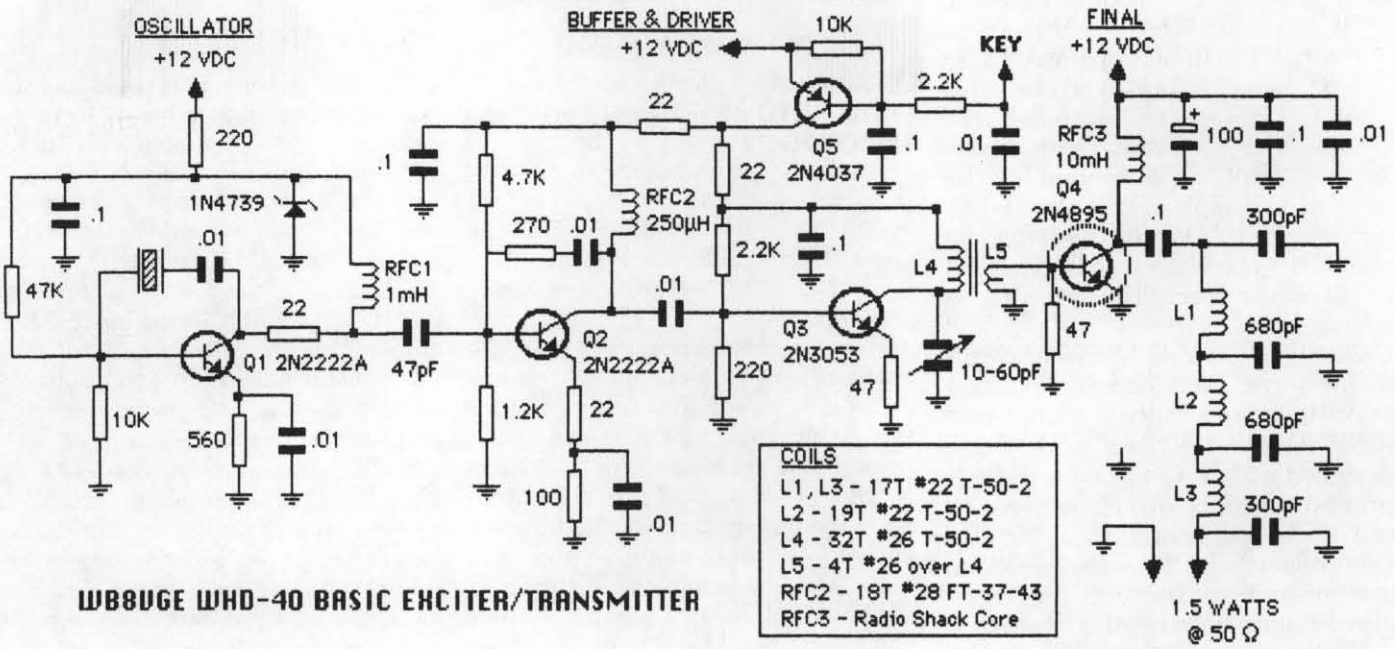
If everything is OK, then you should see about 1.5 watts into your load. If you stop right here you will have a fine little crystal-controlled

See WHD . . . . . page 12

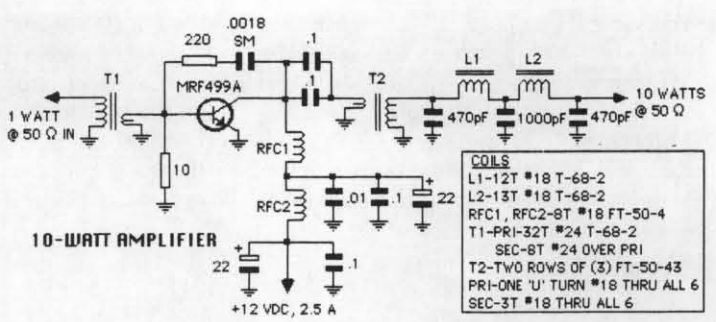


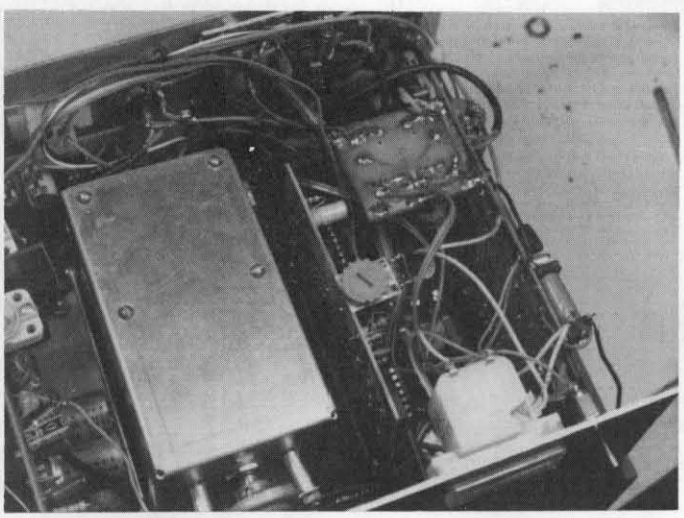
Close up of the transmitter board as it appears in the unit. Small relay on the top left is for the QSK circuit.





WB8UGE WHD-40 BASIC EXCITER/TRANSMITTER





Interior view of the unit. Left to right: direct conversion receiver board, VFO, in metal box, center. Behind the VFO is active filter (audio), next over is the QSK -break in board, then the transmitter board. On top of the transmitter board is the SWR meter circuit, then behind that is the high power amplifier.

See WHD . . . . . next page

QRP transmitter. But, if you are like me, a VFO makes the difference between QSOs and an empty log book.

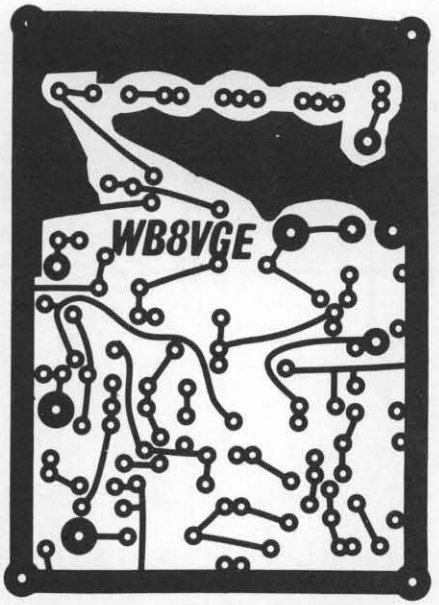
Now a VFO - Like most builders, I have one VFO circuit I'm very happy with (see figure 2). The circuit, originating with Donald Nesbitt, K4BGF, appeared in *Ham Radio* (December 1971). With some modifications I used it as shown in the original article.

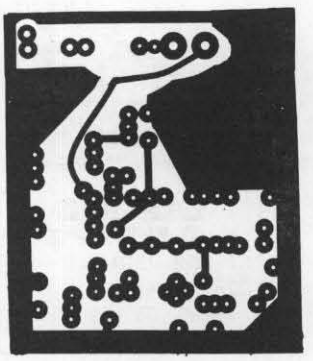
The basic circuit is a Seiler oscillator, with L1, C1, C2 and C3 setting the tuning range. I added the offset circuit so I could hear the other station coming back. Notice the trimmer capacitor – it will be explained later. If you are only building a transmitter, then a small, fixed-value capacitor about 15pf can be used.

A printed circuit board comes in handy for the VFO circuit. Don't use double-sided board here. After the board is stuffed, the circuit is checked with the frequency counter. Capacitor C2 sets the bandspread. If you apply 12 volts to the offset, the frequency should drop several kilohertz, depending on the value of capacitor in the offset circuit.

Now that each board is checked, the entire circuit should be placed in a metal box for sheilding. Double-sided pc board will work just fine for the box. I used a small aluminum box that holds the board and the tuning capacitor. Before tightening up the box, I squeezed in a large amount of silicone sealant to hold the components in place. Generally speaking, mechanical construction of the finished product will spell the difference between a warbler and crystal controlled stability.

Getting It Together - To match the VFO with the transmitter, remove the crystal and the capacitor





1.5 watt transmitter - VFO. This is 75% actual size

connected to it, then apply the output of the VFO to the base of the transistor, Q1. With the crystal removed, the former crystal oscillator becomes an amplifier; 12 volts must still be applied all the time. If we stop now, we end up with a VFO-controlled, 1.5-watt transmitter.

Now an Afterburner - There are times when I think that the memory keyer will blow a fuse calling CQ for me. After using all the tricks in the book, if the log is still empty, a little bit more steam going into the antenna helps out quite a bit. So figure 3 shows a ten-watt amplifier that will mate with the transmitter shown.

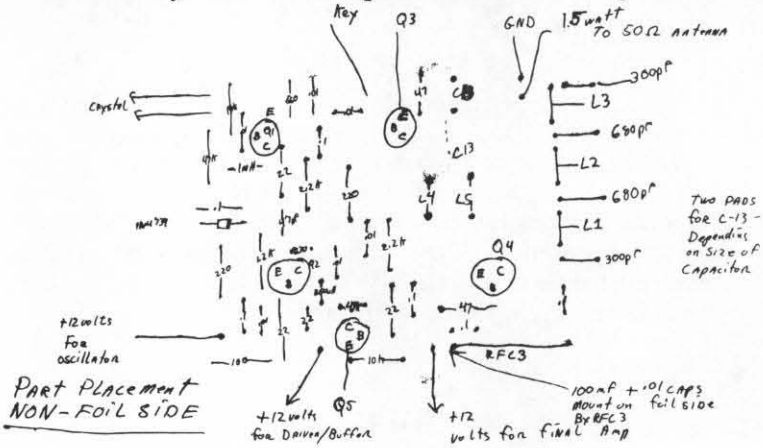
This amplifier is a modification of one described by Doug DeMaw, W1FB, in the August 1978 *QST*. I placed a transformer in the input line so the base impedance would match the output of the 1.5-watt transmitter, and I changed the output filters a bit too. This circuit is built on a piece of double-sided pc board with pads made by grinding with a motor tool. You could use the layout shown in *QST* with slight modifications. I installed a switch to go from high to low power.

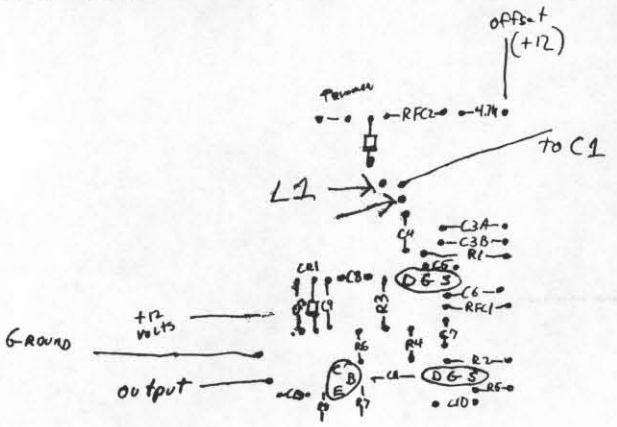
If the amplifier were wired in all the time, the input coils and the output network of the basic transmitter would not be needed. The input of the 10-watt amplifier being about 5 ohms, the output circuit of the transmitter would have to be changed to match the input of the amplifier base transistor.

SWR Measurement Too - As an afterthought, I installed the SWR meter circuit shown in the same magazine. It is really handy when taking the rig into the field. The meter came out of a junked CB radio and has a movement of about 200 micro amps. So if we stop at this point, we have a ten-watt, switchable, VFO-controlled transmitter. So is this the end? Well no not really.

Finally a transceiver - Since the

See WHD . . . . . next page





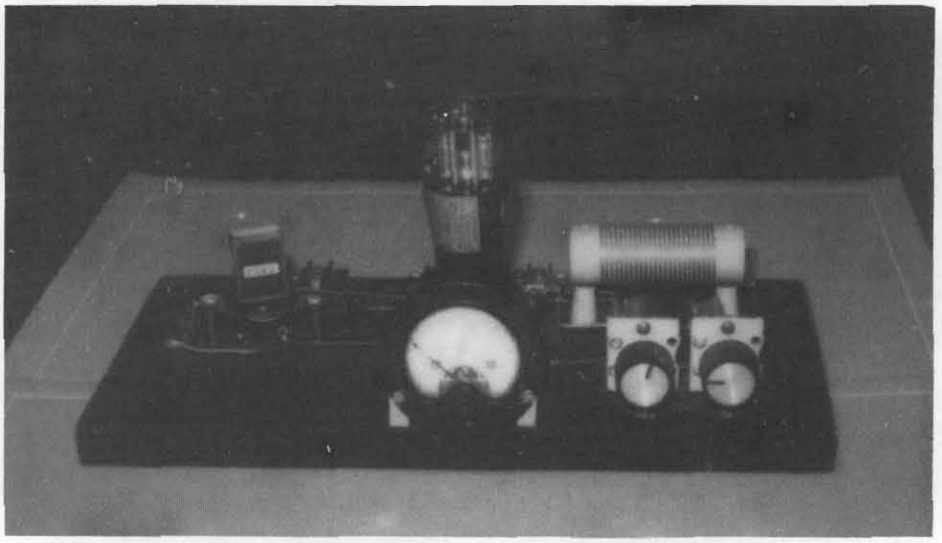
Build a Tuber to Warm the Cold Winter Nights

by Bob Brown, NM7M [1]

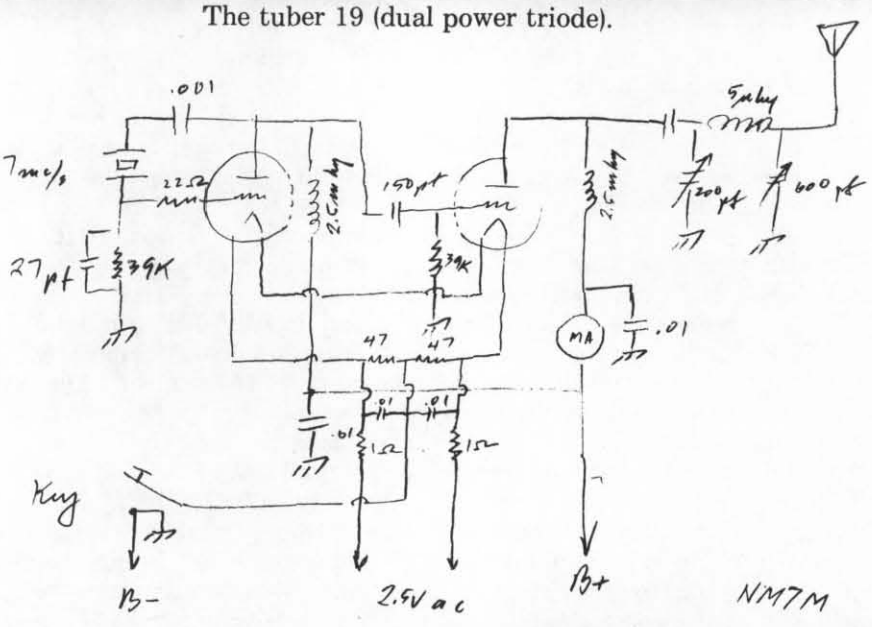
I was delighted to see an article about the antique 40 meter rig by AC6G. Since such topics seem to be of interest to the QRP *Quarterly* as well as *SPRAT*, I thought I'd tell you a bit about one of my antique rigs.

This one had its start in the winter 1984 when my friend, WA7YRR, cleaned out his garage and bestowed four boxes of tubes, new and old, on me. Being an inveterate pack-rat, I went through them with some enthusiasm. I pushed past all the 7- and 9- pin miniatures, even the octal bases and got to the hard-core items that would bring a tear to an OT's eye. Well, I struck pay-dirt, finding a couple of 2.0 volt filament tubes, a 30 and a 19! The 30 was a medium-mu triode and the only tube in my first (regenerative) receiver back in '35 or '36. I had never seen a 19 before but I knew it was a dual power triode as some legendary ZL had one as his push-pull final back in the days before WW2.

Having done my share of home-brewing from time to time, I decided to see what I could do with those ancient "jugs." My first plan was to put the 30 in as a crystal oscillator and see if I could repeat history by putting the 19 in as a push-pull final. Alas, it became apparent that the filament on the 30 was open so I had to settle for just using one half of the 19 for the oscillator and the other as the final. I debated what circuit to use in all this and finally settled on something modern, using



The tuber 19 (dual power triode).



See Tuber . . . . . next page

WHD . . .

VFO operates at the received and transmitted frequency, then how about including a direct-conversion receiver? I am sure you have one lying around the shack. If not, use KN1H's neat little circuit from the last *Quarterly*.

All that has to be done to install the receiver is to capacitance couple it to the base of C1 on the transmitter board. The fixed capacitor that we intially placed in the VFO is now replaced by a small trimmer. With the VFO connected to the frequency counter, measure its frequency. Apply 12 volts to the offset circuit, adjust the trimmer for a 750 cycle lower frequency.

This will provide the CW offset needed in transceiver operation. Finally, to finish it off, I used a switch and a relay to connect the proper wires to effect the antenna changeover.

So what do we end up with? How about a VFO-controlled, ten-watt transceiver for 40 meters with built in SWR meter?

A License to Learn - But you say you're not a 40-meter man? No trouble. The VFO can be made to work up to the 14 Mhz range. The transmitter and amplifier tuned circuits and filters will, of course, have to be changed. If I were to do it, I would operate the VFO at half frequency and then use a push-push doubler to get the needed output. For 30 meters, I would run the VFO at 5 Mhz and double it to 10 Mhz.

There can be a lot of fun playing with these circuits shown here. Give it a shot. Match what you have lying around and in the junk box with some of these ideas, and make something. When you get right down to it, that ham ticket is but a license to learn.

Notes:

1. The final transistor can be 2N4895, 2N3866, 2SC799, etc. Use what you have.
2. The 220 ohm resistor on the base of transmitter Q3 may not be needed, depending on transistor type used. Don't install it unless needed.
3. All parts available from Circuit Specialists, Box 3047, Scottsdale, AZ 85281.

[1] 2225 Mayflower N.W. Massillon, Ohio 44646

The Lower Limits of QRP and LERP

The Low Frequency Experimental Band

by Brice Anderson, W9PNE[1]

The low frequency band of 160 to 190 KHz is available to experimenters for communication and experimentation. The use of these frequencies is covered by FCC Part 15 regulations, a summary of which is given below.

1. One watt input maximum to final stage.

2. Maximum antenna length, including the transmission line, is 15 meters. (approx. 50 ft.)

3. All emmissions outside the band must be 20 dB below the carrier.

4. No license is required. Any identifying can be used, but no FCC assigned call can be used.

The most common mode used is CW, but AM and DSB Suppressed carrier are also used. Teletype is permitted. Wideband modes are not practical.

Experimenters on this band are called LOWFERS, for Low Frequency Experimental Radio. Most LOWFERS build a transmitter and an automatic keying device to transmit their call repeatedly. This setup is known as a beacon. Many LOWFERS use their initials as their call. I use "BA" as my call.

I became interested in the band because of the one watt input limitation and the antenna restriction. I was fascinated by the challenge of establishing communication with another LOWFER under those requirements. A 50 ft. antenna on 180 KHz is the same portion of a wavelength as a five ft. antenna is on 1,800 KHz. This corresponds to a 7½ inch whip antenna on 14 MHz. Try breaking a pileup on 14,060 KHz with one-half watt output into a 7½ inch whip with 7½ inch radials.

Transmitting antennas are always vertical, since a good ground wave is needed. Extensive ground radial systems are required to improve antenna efficiency. Because of the transmission line clause, most LOWFERs place their final amplifier at the base of their antenna, in a weatherproof box.

LOWFERS do get out in spite of the very low efficiency of their antennas. I have heard East Coast LOWFER beacons many times during the useful season, roughly from early November through April. During this period, QRN levels are lower and propagation conditions are better. I have had several 2-way QSO's with a LOWFER in Indiana, about 166 air miles distance and with a LOWFER in Ohio, about 205 air miles distance.

LOWFERS normally keep their beacons on the air 24 hours a day, seven days a week, except during local thunderstorms and during listening periods. On weekends, LOWFERS usually turn their beacons off and listen for any calls at 8 a.m., 10:30 a.m., noon and 4 p.m. local time.

Many amateur transceivers include a general coverage receiver. My IC-720A covers 100 KHz to 1,000 KHz on its lowest band. I use it for LF reception, with a preamplifier between the antenna and the receiver. My receiving antenna is a 390 ft. wire 10 ft. above the ground. This is the best of many antennas tried.

Many LOWFERS use a LF converter ahead of their communication receiver or transceiver. These LF converters usually have output in the 3600 or 3690 KHz range, to cover the LOWFER band.

Most LOWFERS build their own transmitters, usually crystal controlled, since exact frequency is important. Most transmitter designs divide the frequency of a HF crystal down and use a filter to provide a sine wave output to the amplifiers. I beat two HF crystal oscillators together and amplify the difference frequency.

A blanket of noise makes it difficult to hear signals in the 160 to 190 KHz band. QRN levels are usually high, and various noises related to power lines add to the problem. It is necessary to locate receiving antennas so that they pick up the least possible interference from power lines.

Light dimmers cause extreme interference. I had to replace my dimmers with ordinary switches before I could hear a signal. If you have close neighbors with light dimmers, you are out of luck.

TV sets radiate LF signals. At times, I cannot copy any beacons until my neighbors turn off their TV sets. I plan to try a loop receiving antenna to null some of these TV birdies.

A noise blanker is invaluable as a receiving aid. Usually, I cannot copy the weak beacon signals unless the noise blanker is turned on. The LF preamplifier boosts the signals at the receiver's input to the level that the noise blanker is able to operate more effectively.

Many LOWFERS use Active antennas, which are short whips with pre-amplifiers built into the base support. The active whips are moved about until the best receiving is found.

There are several publications that are required reading for anyone making a determined LOWFER effort. The *ARRL Handbook* covers the fundamentals and basic circuits so that you can design almost any type of transmitter and receiver.

See Lowfer . . . . . next page

Tuber . . .

a Pierce oscillator and a final with a pi-network output to dress up the old tube. In fact, what I ended up with was essentially an all-triode version of the novice transmitter on p. 146 of the 1977 version of "Understanding Amateur Radio" by the A.R.R.L.

There are some differences in the circuit, though. With a Pierce oscillator and only one tuned circuit, neutralization was not necessary even though the final used a triode. Then, using 2.5 Vac on the filament, it was necessary to put 1 ohm resistors in each side of the filament circuit to bring the voltage down to 2.0 v at the tube. Also, since the 19 lacked a cathode, two 47 ohm resistors, each by-passed with 0.01 mfd, were connected across the filament and the center tap used as the return to B-.

The 19 is rated to handle something like 135 volts B+ and a maximum plate current of 50 ma. Having only one tube to play with, I have been on the conservative side and tried to limit my power output to less than one watt. I've had a few QSO's with it but keep it in the shack primarily for "show."

[1] 504 Channel View Dr.,
Anacortes, WA 98221

Lowfer . . .

More specifically oriented to LF is the *Low and Medium Frequency Radio Scrap Book*, by Ken Cornell, 225 Baltimore Ave., Point Pleasant Beach, NJ 08742. I have both the 3rd and 4th editions of this book and find them invaluable. Cornell is in the process of writing a 5th edition.

A monthly publication of The Longwave Club of America is *The Lowdown*. Membership in the LWCA and a one-year subscription to *The Lowdown* is $10. This publication is highly recommended reading for all LOWFERS. The address is Longwave Club of America, 45 Wildflower Road, Levittown, PA 19057.

LOWFERS in the Midwest and East read the *Lowfer Letter*, published by Hal Murken, 19 Hobby Lane, Oakland, NJ 07436. This is available to anyone furnishing SASEs and a donation to help cover publishing costs. The *Lowfer Letter* lists all the Midwest and Eastern LOWFER beacons with their exact frequencies and schedule of operation. Listeners reports, QSOs, operating news and LOWFER circuits are featured, making the *Lowfer Letter* a must.

LOWFERS in the West read the *Western Update*, published by Jim Ericson, 226 Charles St., Sunnyvale, CA 94086. SASEs and a donation will get you on the mailing. The format is similar to the *Lowfer Letter*. Although I am not in the West, I subscribe to the *Western Update* and find it a valuable source of information.

LF converters can be purchased from the following:

Burhans Electronics, 161 Grosvenor St., Athens, OH 45701

LF Engineering Co, 17 Jeffry Road, East Haven, CT 06512

Palomar Engineers, P.O. Box 455, Escondido, CA 92025.

Active whips and preamplifiers can be purchased from Burhans Electronics and LF Engineering.

LOWFERS select a frequency in the band that is not used by other LOWFERS and is free of power line carriers, caused by the carrier current links used by utilities. Selective audio filters are used to provide 80 Hz or sharper bandwidth, to minimize the QRM and QRN effects on reception. Listen for my beacon, sending my "BA" LOWFER call.

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[1] Box 14
Lancaster, IL 62855

[2] LERP stand for "Low Effective Radiated Power"

QRPer in the News

"The Whidbey Island Radio Club recently heard a talk by the Western Washington DX Club Pied Piper of QRP DXing, Bob Brown, NM7M, who outlined the varous contests and awards open to the disciples of E.F. Schumaker who believe that *'Small is Beautiful.'*

"A retired physics professor from 7-land, Bob had many enlightening things to say about getting precious watts from point A to point B through the inosphere. As a formidible competitor, Bob knows how to overcome the heartbreak of S1-itis.

"Other club members have ridden their Argonauts to glory. Who can forget Danny, K7SS, nonchlantly tail-ending into a Tromelin pile-up or chit-chatting with Ulan Bator on 20 CW?

"When you've fought your way to the top of the charts with a smoking SB-220, trying doing it again with an HW-8. You'll find that even JA and DL QSOs are a real thrill. Listen around 7040 and 14060 to get a feel for the action." *Totem Tabloid.*

New Member / Renewal Data Sheet

Call Handle Recommended by

Age Occupation

License Class Held since Other calls

Rig TX RX Ant

Bands most used (rank in order of use:

160 80

40 30 20 15 12 10

6 2 VHF/UHF

Please circle your interests and elaborate if desired on separate sheet. Thanks!

Rag Chewing DXing Contests Traffic Award
Homebrew Experimenting CW SSB RTTY
ATV Packet VHF/UHF Satellite Other:_____

Do you plan to participate in club activities? Y/N

Would you like to be a club officer/director? Y/N

Do you have access to duplication equipment? Y/N

Are you interested in our award program? Y/N

Have you applied for any of the club awards? Y/N

Are you in favor of QRP calling frequencies? Y/N

Are you in favor of member QSO parties? Y/N

Would you help write for the *Quarterly?* *Y/N*

What subjects?

What awards/achievements have you won with QRP?

Why do you run low power?

QRP# ____ Inc Rec ____ Apl Rec ____
List File ___ MCert ___ Rep Cpy ___
p23

[ ] Renew for _____ years. (U.S. $5, DX $6)
[ ] New Member _____ years. (U.S. $6, DX $7)
[ ] Change of Address
[ ] Change of Call/New Call _____

Name: _____ Address: _____

City: _____ State/Country: _____ Postal Code: _____

Amount enclosed_____QRP ARCI #_____Call_____

PLEASE MAKE YOUR CHECK OR MONEY ORDER PAYABLE TO:

QRP Amateur Radio Club, International

* * * * * PLEASE DO NOT SEND CASH * * * * *

Propagation & DX

conducted by Bob Brown, NM7M
504 Channel View DR., Anacortes, WA 98221

If you're a serious student of the electronic medium, following such TV series as "Nova" and "Cosmos," it comes as no surprise to you that we're in the "Age of Relativity." Indeed, we've been there since the days of Newton and are now into the era ushered in by Einstein with the Special Therory of Relativity. So it's not just a matter of being glib to say "everything is relative", it's really true. OK, lets take that idea over to ham radio, look at a couple of contacts I had with Jim Fitton, W1FMR, in Ward Hill, MA., and see what the comparision tells us about propagation. I think you'll find it informative.

I remember a contact with Jim on 20 meters at 1627 UTC on April 20, back during the Spring CW QSO Party, and an earlier one on 80 meters at 0425 UTC on March 15 when he checked into the Western States Net (WSN). Now aside from the obvious fact that our operating frequencies differed by a factor of 4, a comparision of those QSO's might follow the lines of the last article. Thus, it could dwell on the MUF's of those two occasions, how the reflection losses differed as well as the D-region absorption during those QSO's. Of necessity, that would require knowing the separation of our two QTH's, close to 4000 km. and the need for two F-hops at an angle of about 11 degrees.

Going on with the comparision of those two contacts, one might bring up the matter of our antenna patterns. We haven't gotten into antennas very much as yet but obviously they do bear on what we can accomplish with a given set of propagation conditions. Further, there is a bit of "relativity" (notice the small "r") along that line to be considered, comparisions involving the height of our antennas with the wavelengths in question. I don't know about Jim's antenna farm, but my 20 meter Quad is up there 38 ft. or 0.54 wavelengths above ground. My 80 meter antenna is an inverted Vee and that's a different story, with the apex at 37 ft. or 0.13 wavelengths above ground. If you're any kind of student of antennas, you know my inverted Vee doesn't have much rf heading off in Jim's direction on 80 meters. The Quad is another matter. But I digress.

The other thing we could compare is signal spreading, the main reason for signal loss as mentioned in the last article. While it was not stated at the time, it does depend on wavelength. Thus, while the distance between our QTH's is obviously the same for both the QSO's, the loss due to signal spreading is not the same. When you get right down to it, the rf power transferred from my happy island to Jim's QTH depends on the path length but it has to be expressed in wavelengths, not km. Indeed, the losses from that source are 122 and 110 dB, respectively, for the 20 and 80 meter QSO's. Given the wavelengths, the shorter electrical path is on 80 meters. Okay?

So far, everything I've written is pretty conventional, especially if you have what I'd call a "high-band" mentality. And that's not all bad as QRP'ers know that's where the real DX is to be found, 20 meters and down. But a lot of folks are into the low bands nowadays when the sunspot number is low, and they face other problems than just the horrendous amounts of D-region absorption. Thus, to be successful, they have the problem of getting their rf up to the F-region or, putting it another way, getting it past the E-region. Now that's something QRP'ers don't normally think about. So let's talk about the E-region.

As you know, the E-region is produced by solar UV light and x-rays but it is lower down in the inosphere, at about 115 km altitude. And just like the F-layer, signals can be returned by the E-layer so there's a critical frequency foE to think about when trying to get through the E-region. Indeed, the highest values of the foE are found at the sub-solar point and the contours of the foE are circles about that point, shifting in latitude with the seasons. The actual value of foE depends on the zenith angle of the sun and, to a certain extent, on the sunspot number. As for magnitudes, around noon foE can be as high as 4.4 MHz and it falls to about 1 MHz around sunrise or sunset. For propagation purposes, however, the critical frequency increases with oblique angles of incidence, just like the F-region. In any event, with those numbers in mind, you can see what those of the low-band persuasion have to be concerned. So while my rf at 14 MHz rf was able to zip right through the E-region to W1FMR's QTH during the day, that QRP QSO with Jim on 80 meters really was not possible until the E-layer had disappeared and the D-region had called it quits for the day too.

While we haven't discussed ionospheric modes as yet, you may be aware of their existence. For that 80 meter QSO with W1FMR, the E-layer was gone and the QSO involved a "2F 0E" mode, meaning there were two F-layer hops and none off the E-layer. But that 2F 0E type of opening is not all there is to the picture. Before it existed on the path, it was possible to make contact via a "1F 1E" mode, at least if you had enough power! That mode would involve an E-hop here in the West where the sun was at a low elevation and then a F-hop toward the East where the sun had already set. Then later, when the 2F 0E opening shut down, there was still the possibility of a 1F 1E mode, this time the E-hop is back East as the sun starts to rise and the F-hop out here in the West where the sun is still below the E-layer's horizon. However, that takes QRO, enough to overcome another 25-30 dB of D-layer absorption due to the daylight at the time.

It should come as no surprise to learn that one can put together a computer program which does "hop-testing" to see just how rf will go from point A to point B. Indeed, for longer paths down on the low bands, you can get some interesting mixed modes. Then the next challenge is to calculate how much rf power actually survives, not so much from signal spreading but from attenuation due to all the encounters with the

See Propagation . . . . . page 19

Propagation . . .

D-region and reflecting surfaces along the way. And if theory doesn't give you enough variety, you can always go back to what else Mother Nature has to offer in the way of ionospheric modes. Thus, it is possible to encounter situations where scattered patches of ionization show up at E-layer heights; this gives rise to a so-called "M-mode" where rf coming down from the F-layer bounces off the sporadic E-layer and goes back toward the F-layer without a ground reflection. There's even a similar mode involving ionospheric tilts, usually found in going across the geomagnetic equator. This so-called "trans-equatorial" mode of propagation is a source of joy to the VHF operators.

Since we've digressed this far in discussing propagation modes, we would be remiss not to give some mention of multipath propagation. To give a simple example which you can re-create in your mind's eye, consider rf going from point A to point B, only this time don't restrict your thinking to just one radiation angle but consider several. After all, that's just what your antenna does for you, sending out rf over a wide range of angles. Anyway, with that in mind and starting with low radiation angles and going upward, it is possible to connect A and B by several modes, perhaps 1E 0F, 1F 0E or even 2F 0E at higher angels. While the horizontal distance from A to B is the same in all three modes, the actual path lengths will differ and that makes for phase differences which may lead to interference between the various signals when they combine at point B. So we can have some multipath fading, particularly if the E and F layers are undergoing any changes in the course of time.

All this talk about modes and such may seem to be far removed from the theme we started up in this discussion, the idea of "relativity," but if you think about it you'll come to the conclusion that it's all part of the same game. The problem is that we don't always consciously make those comparisons, say our operating frequency compared to the MUF or the E-layer critical frequency or whether our DX QSO was by a 2F 0E or 3F 0E mode. And it's not that choices are made for us; all the modes exist at a given time but some are more important than others for the goals we have. So if you want to move the odds in your favor when it comes to DX'ing and try to have some control of the game, it pays to know just how things work, especially out there between point A and point B. In that regard, QRP QSO's usually end with "GL OM es FB DX"; all I can say at this point is good luck is there for those who are prepared to enjoy it. So let's get ready!

Parlez-vous Francais?-

Every so often, when the propagation is better than the usual abysmal level, I make it into Europe with my trusty 5-watts. Among the contacts that I've made, there are a number of French hams. But getting a QSL out of them has been something else; well until recently, that is. The last French QSO I had was during the FB period around the third week in January when I contacted Alain, FD1HPY. Getting desperate, sometimes known as close to DX-CC/QRP, I tried a different tactic with his QSL, writing my note in "school boy" French, as gleaned from the XYL's college text on *Basic Conversational French.* Okay, given about three weeks time and there it was, his QSL in my mail box. And guess what? There was a chatty note in French! That tells me something!

While my supply of language materials is reasonable (French, German, Spanish and Japanese and a Russian dictionary), I have the feeling I'm under-equipped when it comes to the chores of DX QSL'ing. In that connection, I keep seeing ads in *Worldradio* for "The Radio Amateur's Conservation Guide," maybe that's worth looking into! Any comments from your end? Respondex, s'il vous plait! Bitte! Por favor! Dozo! Okay, how do you write "Please" in Russian? Anybody know?

Hunt and Pounce

Correct me if I'm wrong but I think QRP'ers have perfected the technique of "hunt and pounce," albeit out of necessity, I know at this QTH we'd be absolutely lost without it and a lot of good contacts missed for the lack of seeking out and tail-ending DX. Anyhow, in my struggles toward a NAANY Award, I've stumbled on a new twist. Let me explain.

QRP'ing being what it, basically a way of collecting a pile of miserable 349's, I slowed down my keyer to 18-20 WPM so I send a bit of fluff, say "QRP", just to get a feel of the code speed. Guess what? On occasion I hear "GA" (go ahead) coming back at me. As a result, I've come to the conclusion that there are a bunch of "Knights in Shining Armor" out there, willing to give the QRP'er a first shot at a DX station. Now having become emboldened, I dive in and send "QRP HR" and still get the "GA" coming back at me from time to time. So give it a try, you might just clear a hole in the QRM that way. Okay?

Speaking of Propagation

How about those band conditions during the QRP QSO party! Things started moving upward around Oct. 16 and peaked with a solar flux of 99 on Oct. 23. And would you believe an A-index of 2? It happened twice in that period. All of this augurs well for the start of Cycle 22. According to the KH6BZF Report, the regions responsible for those conditions were at mid-latitudes on the sun, not down around the equator where old cycle spots hang out. So *if you haven't started your solar flux/A-index chart as yet, now is the time to do it. Otherwise, you won't have a reference point that starts at the beginning of Cycle 22!*

Membership

The initial QRP ARCI membership fee of $6 ($7 for DX) covers lifetime membership plus the first four issues of *The Quarterly.* The membership and renewal form is on the mailing cover.

Subscription Renewal

Subscription renewal is $5 ($6 for DX) for four issues. The renewal date appears on the mailing label following the QRP membership number, i.e. 4174-3/86, means that member number 4174's subscription will expire with the 3rd (July) *Quarterly* in 1986. Renewals and new member applications must be received by the 1st of the month prior to the next publication to receive that issue, otherwise service will not begin until publication of the following issue.

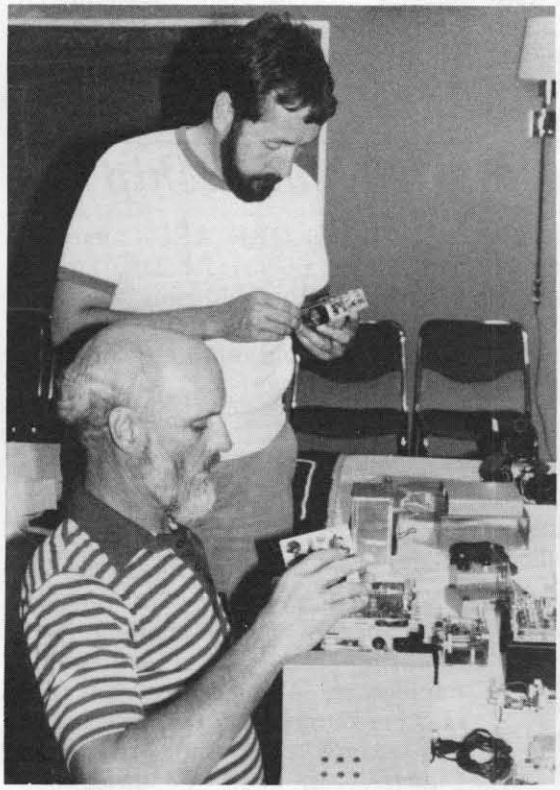
EYEBALL TO EYE

It's been a long time since anyone remembers seeing so many QRPers in one place. OA8V and G4BUE may have taken top honors for coming the farthest, but none had more fun than Danny Gingell, K3TKS, who met more QRPers than anyone else by manning the sign up booth.

QRPers are fun to be around. They're clever, quick-witted, inventive and modest. There is always a circuit, an antenna, a trick to learn or discuss. Perhaps because our tiny signals are so much at the mercy of the cosmos, we have but fleeting contact over the airwaves. Eyeball to eyeball at last, we discover the joy of saying and asking all we wished we could, but couldn't over our tenuous ionospheric circuits.

If you can come to Dayton, come.

Jason Short, KA8YLY, the newest member of the QRP ARCI receives congratulations from Chris, G4BUE; Jim KK7C; and Jim, W1FMR, after passing his general license exam.



Fred Turpin, K6MOJ, and Leo Delaney, KC5EV, study the homebrew handiwork on display nightly in the QRP hospitality suite.

The hospitality suite in full swing on Saturday night.

Photo credit: Dave Cornell, WB2UXI

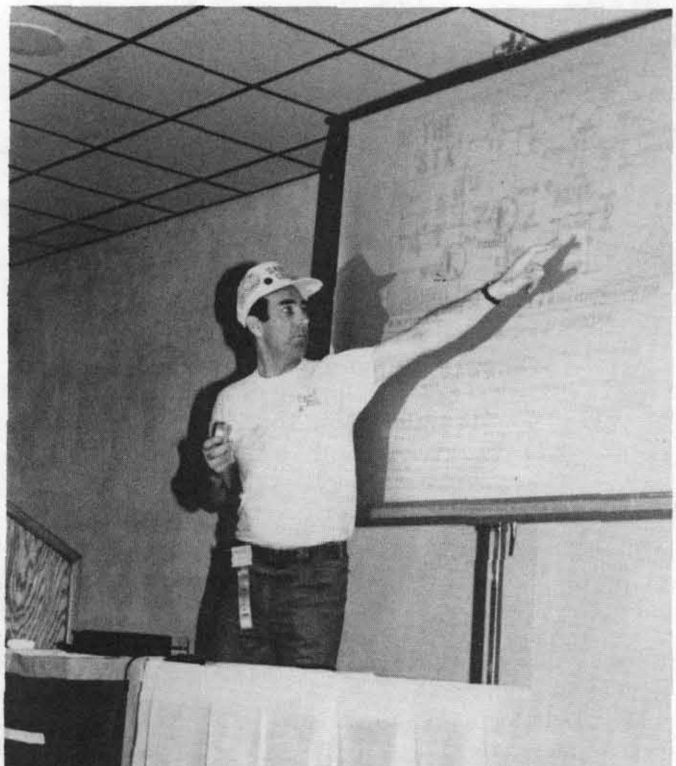
BALL AT DAYTON

Last year Jim Fitton reserved a block of twenty double rooms and a hospitality suite for the QRP ARCI. Those that stayed were John, KN1H; Red K5VOL; Brice, W9PNE; Les, WB2IPX; Joe, WA1WLU, Dave WB1CMG; Danny, K3TKS; Chris, G4BUE, Mike and XYL, WB8VGE; Dave, WB2UXI; Ray, KD2PO; Jack, K2RS; Chuck, WB2IJM; Tom, WB8UUJ; Andy, K8JRO; Ray and XYL AI2S; Fred, K6MDJ, Bob, W6SKQ, Leo, KCJEV; Ade, W0RSP; Jim, KK7C; Ben KA7GIO, John, W8IZF; Helen, KA8UET; Pete, KD2OQ, John, N2FBP; Anthony, KA8NRC, Linda, KA8ODP; Len, WA7ZXZ; and Ed, W5TTE.

This year we have more rooms reserved, but there are only 15 slots left.

Volunteers are needed to take responsibility for acquiring and managing a commercial booth and two flea market spaces with displays. Call Jim Fitton at (617)374-3594 to see how you can help.

Half the QRP forum crowd.



At the forum, Chris G4BUE, tells about the magical little STX rig created by CM3OXX and passes around copies of the miniature homebrew gear so popular in the UK.

QRP FORUM - SIGN UP - DAYTON 27 APR 86

K3TKS - Danny Gingell
WB8UUJ - Tom Root (M-QRP)
K8JRO - Jerry Totten (M-QRP)
W9PNE - Brice Anderson
KK7C - Jim Stevens
K5VOL - Rod Reynolds
K9NG - Steve Goode
KN1H John T Collins
G4BUE Chris Page *
WD8JCR Jim
K2RS Jack
W1FMR Jim Fitton
WB8ZWW Wayne
WD8PCV
WB8IEK Jim Elias
N4LH Bill Latta
KA8ODP Linda
KA8NRC Anthony Luscre
NFØQ Eric Koch
K2UD Howard Kraus
W4ILE Regis Kramer
NF5Y Herb Spivey
KD2OQ Peter Kitt
WB8UZT John W Johnston
WB8YUU Jeff
WØDVZ Dave Carpenter
K9VCM Rollie Crider
K3BZ Rob't Roth

* WB8VGE - Mike Brice
W3AEC Tom Kelly
KAØDQZ Eric Jackson
WB8CWE Mike Dryer
N8ATZ Terry Riss
WD8AYE Dave Beltz
WA1WLU - Joe Sullivan
WB1CMG
N9DYP Howard
KA8JJN Allen Koch
W8KYZ Porter
N9FFP Amzy Banning
N4AFX Rich Richmond #5738
KA9PMZ Robert Nelson
WB4KLI Larry T Johnson
WB9EUU Claude Paluski
KC9EJ Mike Dorr
KA1MKJ Karen Hart
VE3GAM
KC8UR Tony Spiegel
WB8CTC
KMØY Brian Zdan
* WB2IPX - Les Shattuck

TOT 58

About two thirds of those counted, present at the forum got their calls and names in the log. Don't miss the chance to log in this year.

Net News

conducted by Danny Gingell, K3TKS
QRP ARCI Nets Manager

QRP NET SCHEDULE WINTER 1986

NET	QRG	NCS	DAY/ HR	UTC
TCN*	14060	W5LXS	Sun	2300
SEN**	7030	K3TKS	•Wed	0100
GSN	3560	OPEN	•Thur	0200
GLN	3560	K2JT	•Thur	0200
WSN-80	3558	NM7M W6RCP	•Sat	0400
NEN	7040	W1FMR	Sat	1300
WSN-40	7040	NM7M W6RCP	Sat	1700

*On weekends of major contests will meet one hour later.

**If conditions on 7030KHz are poor, QSY to 3535KHz at 0130 UTC.

Please note that 3535 is the Michigan QRP Club Net Freq. at 0200 UTC.

• Evening of day before of W/VE.

Why do we have the QRP nets? Who are they for? Are they for TFC or what?

Have you ever asked these questions? Do you ever wonder about the nets? Do you participate in the net activities? Why? I would like to hear from both those that do and those that don't. Maybe we can find the answers together.

I am often asked why I QNI the NETS week after week. Well I suppose we are each driven by our desires and goals of one sort or another. I always wanted to be on the top of the list on one thing or another. A while back, I set myself a goal to get QNI 100. Once I got going, I met so many great QRPers I didn't want to stop. I am presently at QNI 583, plus 82 more on the Michigan QRP Net. Maybe that's some sort of world's record but more important it's a measure of QRP fun. I now see each net QNI as one more opportunity to meet with friends who have the same interests.

Let me invite each of you to give the nets a try, if you are after WAS QRP, KM/W, or other, we can help. We have some hard to get states QNI the nets. How many of you need Wyoming? Try NEN some Saturday morning. W7BQY just might pop in and fill the order. I just received a letter requesting a schedule for that rare state of Maryland. My reply, a very simple CU ON NET.

No we don't pass much formal traffic on the QRP nets, but we can help you get the word to another QRP pal and we can find telephone numbers, newsletter info., schedules or whatever.

Just remember one thing, just because you don't hear from us, doesn't mean we aren't here listening for you. The QRP ARCI would especially like to extend thanks to each of the NET managers and all those of you who have taken a shot at NCS this year. We have an even better year ahead in 1987. CU ON NET.

	TCN	NEN	SEN	GLN	WSN80	WSN40	Monthly Totals
Jan	38	20	26	19	27	36	166
Feb	35	28	27	16	20	39	165
Mar	49	36	29	9	39	50	212
Apr	53	13	21	10	20	12	129
May	47	27	14	20	--	40	148
Jun	49	17	17	16	--	27	126
Jul	26	24	8	14	--	33	105
Aug	43	29	9	17	--	41	139
Sep	37	10	14	23	--	28	112
Oct	39	24	21	*13	--	37	*134
Nov	*	*24	*11	*	--	*	*35
Dec							
1986 Tot.						*1471	(11/23/86)

Those items maked * are partial figures, pending receipt of NCS reports. No activity on GSN this year. WWN-80 is seasonal net.

Summary of Net Activity

Between January 1st and November 23rd more than 201 stations have checked into the QRP ARCI regional nets this year for a total QNI of 1471. Above is a brief summary of activity for each net, with the Transcontinental net leading the pack by a narrow margin over the Western States group.

Net QNI Contest Update

As you all may remember, our previous club Network Manager, W6RCP, Jim Holmes, recommended that the club sponsor a QRP QNI Contest to run from January 1, 1986 until December 31, 1986.

This memo is to bring everyone up to date on the progress of that contest. The following list is current as of November 23, 1986. Final figures will be computed when all net reports are received in the first week of January 1987, and the results will appear in the April *Quarterly*. It has been an interesting competition and there is still time to change the outcome, so keep checking-in to the nets.

The following listing gives the current check-in totals to all the nets. I am especially pleased to see western stations QNI on Eastern regional nets and vice versa.

106	K3TKS
81	NM7M
72	K6MDJ
66	W1FMR
63	NJ7M
60	WB8ZWW
51	W6RCP
48	W6JHQ
47	W3TS
42	NW6F/XE2IOF
40	VE1BF

See Net . . . . . page 26

Telling the World

conducted by Joe Sullivan, WA2WW
QRP ARCI Publicity Manager

Telling the world about QRP is one of the things we all do, and I have been learning how creative our QRP ARCI members are in getting the word out. I want to thank those who have been sending me ideas and experiences, and I invite all of you to write with ideas you would like to share.

Ham Club Pesentations

With winter weather, the building bug bites again. We QRPers are often invited to tell about ourselves and our QRP homebrew projects at the local ham club. Rock, W9SCH writes to report a recent presentation he made.

"The other night I gave a little talk at the Green County Amateur Radio Association in Monroe (Green County) Wisconsin, in which county I live. I handed out this sheet and discussed it briefly with the gang, it seemed to stimulate quite a bit of interest. I also discussed the outstanding low power work of Wes Hayward, W7ZOI, G4BUE and others, particularly that of Brice Anderson, W9PNE who, in my opinion, is the "grand old master" out here in the ninth call area (I have never met Brice but have had considerable correspondence with him and have the most sincere respect for his work). Alongside of this master-work, my own QRP effort is "kid stuff" by comparision, as I freely admitted. Actual amateur experience confirms the theory.

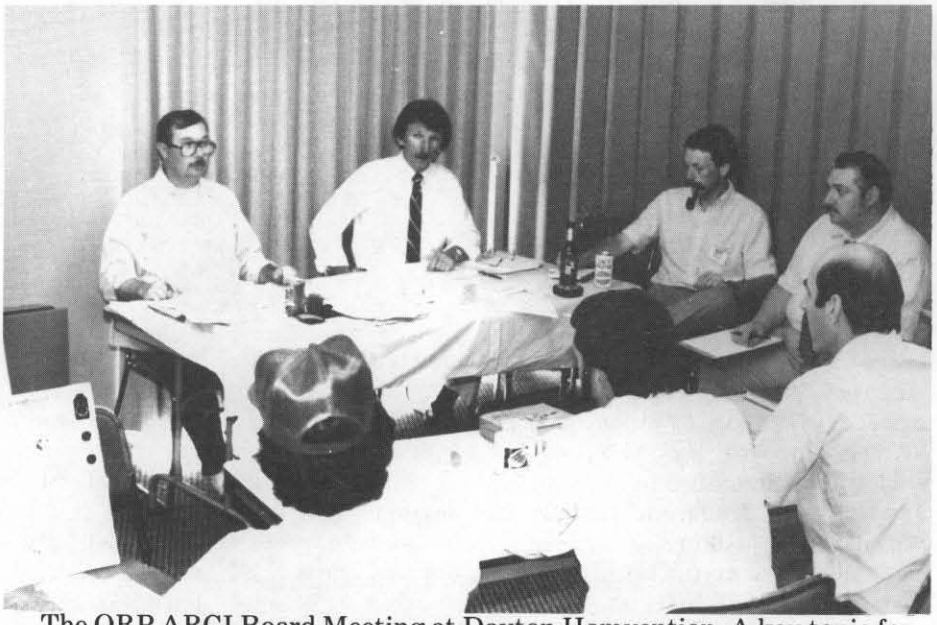
I also considered a "way of life" (if you want to call it that) which I call "low-key amateur radio," which a number of us espouse. In this we:

1. Tend to eschew the current empasis upon capital-intensiveness in amateur radio. We dislike the current "bally-hoo."

2. Are essentially noncompetitive, especially avoiding the pressure of the large amateur contests, as basically brutal and inhumane as actually experienced today.

3. Believe that *amateur radio is something you* **do**, *not something you buy.*

To these ends we practice both QRP operation and home construction of gear as appropriate.



The QRP ARCI Board Meeting at Dayton Hamvention. A key topic for the group is how to help QRPers tell the world about the excitement of low power operation. Seated around the table are Les Shattuck, WA2IPX; Jim Fitton, W1FMR; John Collins, KN1H; Joe Sullivan, WA1WLU, Chris Page, G4BUE; Leo Delaney, KC5EV; and Ade Weiss, W0RSP.

The attempt was made to show that there is nothing either mysterious or tricky about successful low power operation. Rather, radio amateurs as a group have been highly over-sold on the necessity for both power and sophistication. The amount of output power actually needed for good communication is far less than usually supposed (as all practicing QRP'ers know). Anyone willing to make an honest effort can find the greatest personal satisfaction in QRP operation, especially if "home-brew" gear is used.

I also showed the gang some of my gear, all born in my "junk box." This was both surprising and edifying to some of the younger gang who have literally seen nothing but "rice boxes."

It was a lot of fun, and maybe some of the boys learned something – I hope."

Rock, W9SCH (Box 171, Albany) WI53502

Red Reynolds, an old hat at making club presentations, sends us a first class outline, which might be of help to others in planning such a meeting. Here is the plan Red has been following.

QRP: Work the World With Milliwatts

1. Introduce speaker and topic, why speaker is qualified to talk
   - A. Years in QRP
   - B . Awards
   - C . Offices Held
   - D . Current Involvement
   - E . Invite Questions at any time
   - F . Ask for Other QRPers

   Note - Do not 'put-down' killowatts

   (Include Personal Experiences as each topic is covered)
2. QRP - Definitions (Applies Primarily to HF, not 2 FM)
   - A . Power Levels
   - B . Brief History
     1. Evolvement of QRP-ARCI
     2 . Evolvement of Other Clubs

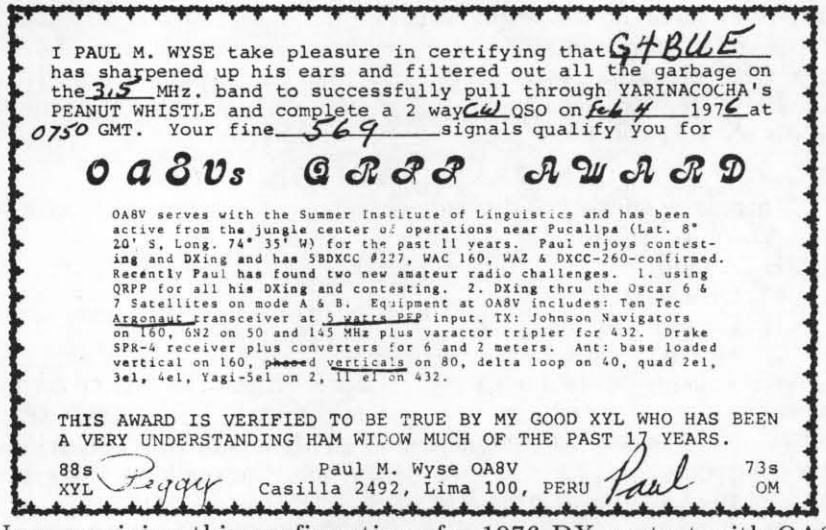
See World . . . . . next page

World . . .

3. QRP - Operators
   A . Tend Toward CW
   B . Tend Toward Homebrew (Parts Procurement)
4. QRP - Equipment (Have Examples on Hand)
   A . Commercial
   B . Homebrew - Special Applications
   C . Modifications and 'Big' Rig Drive Controls
   D . Antennas
   E . Power Supplies - Options (Battery and Solar)
5. QRP - Operating
   A . Power vs Skill
   B . Day-to-day
      1 . Calling Frequencies (List)
      2 . State Side
      3 . DX
   C . Contesting
      1 . Field Day
      2 . DX Contests & QRP Sections
      3 . QRP QSO Party & Sprints
   D . Portable
      1 . Vacation w/AC or Recharge
      2 . Hiking & Camping
6. QRP - Accomplishments (Awards, Certificates)
   A . WAS
   B . DXCC, WAC
   C. Micro-Watting, KM/W
   D. Contests, also Parties
7. QRP - Organizations (Have Publications and Apps. on Hand)
   A . QRP ARCI
   B . G-QRP Club
   C . Michigan QRP
   D . DX Clubs
   E . World QRP Federation
   F . Publications and Additional Information
8. Questions and Thanks

Courtesy Red Reynolds, K5VOL
835 Surryse Rd.
Lake Zurich, Il 60047

Paul Wyse, OA8V, tells the world about QRP with this unforgetable QSL card.



I PAUL M. WYSE take pleasure in certifying that G4BUE has sharpened up his ears and filtered out all the garbage on the 3.5 MHz. band to successfully pull through YARINACOCHA's PEANUT WHISTLE and complete a 2 way CW QSO on Feb 4 1976 at 0750 GMT. Your fine 569 signals qualify you for

OA8V's QRPP AWARD

OA8V serves with the Summer Institute of Linguistics and has been active from the jungle center of operations near Pucallpa (Lat. 8° 20' S, Long. 74° 35' W) for the past 11 years. Paul enjoys contesting and DXing and has 5BDXCC #227, WAC 160, WAZ & DXCC-260-confirmed. Recently Paul has found two new amateur radio challenges. 1. using QRPP for all his DXing and contesting. 2. DXing thru the Oscar 6 & 7 Satellites on mode A & B. Equipment at OA8V includes: Ten Tec Argonaut transceiver at 5 watts PEP input. TX: Johnson Navigators on 160, 6N2 on 50 and 145 MHz plus varactor tripler for 432. Drake SPR-4 receiver plus converters for 6 and 2 meters. Ant: base loaded vertical on 160, ~~phased~~ verticals on 80, delta loop on 40, quad 2el, 3el, 4el, Yagi-5el on 2, 11 el on 432.

THIS AWARD IS VERIFIED TO BE TRUE BY MY GOOD XYL WHO HAS BEEN A VERY UNDERSTANDING HAM WIDOW MUCH OF THE PAST 17 YEARS.

88s XYL Peggy — Paul M. Wyse OA8V, Casilla 2492, Lima 100, PERU — Paul 73s OM

Upon receiving this confirmation of a 1976 DX contact with OA8V, Chris Page, G4BUE, decided to "turn down the drive" and try QRP himself. The *Quarterly* salutes Paul Wyse for his exemplary way of spreading the QRP message.

If you are preparing a presentation, I have handouts, application blanks, and other items that may be of use to you. Just drop me a note and I'll be pleased to help you. And be sure to send in ideas of things that work for you so we can pass along the good word.

It's in the Cards

Last *Quarterly* we featured a wonderful QRP QSL card created by Alan Pike, W8MGF. Chris Page, G4BUE, has nominated another outstanding card, the one that got him interested in QRP ten years ago. Our congratulations to Paul Wyse, OA8V, who keeps telling the world about QRP from his corner of the earth. The card Chris nominated is displayed in the note box.

I know that many QRPers tell the world with distinctive QSL cards. If you receive one that you would like to nominate in recognition, send me a copy and I'll feature the cards that suggest original ways of spreading the word about QRP.

On the Air

Of course ham radio is practiced mainly "on the air," and we have many good chances for spreading the news of QRP when we're in QSO. Bill Unger, VE3EFC, wrote to tell how he gets others interested in QRP over the air. "When I hook up with QRO stations and tell them I'm running 3 watts with an HW-8, they are always amazed. Then I tell them, *'Turn down the drive'* to reduce their output. If they do it, they are still more amazed I can still copy them at 5 watts out. I really don't know if any of them go on to become real QRPers, but I think that's the sort of experience many people need in order to discover what can be done with QRP. Hope springs eternal!"

Bill Unger, VE3EFC
R.R. No. 11
Thunder Bay, Ontario P7B 5E2

Write with Ideas

There are so many ways to raise interest in QRP and I'm sure I only know a few of them. Let us know what success you have had by writing to me. I'll pass the word along.

73 and tell it like it is!

Joe, WA1WLU

Contesting

conducted by Gene Smith, KA5NLY
P.O. Box 55010, Little Rock, Arkansas 72225

1987 Annual QRP Contest Calendar

We have a full slate of contests and operating events for QRPers in 1987. To help you plan I have prepared the list below. Details will appear in the *Quarterly* as the dates approach.

With the growing interest in homebrew, the QRP ARCI is sponsoring a special Homebrew Sprint for the month of July. On other occasions we will be giving homebrew bonus points and mulitipliers also, so now is the time to heat up that soldering iron and make that rig you have been dreaming of. If you haven't picked one out, give a good look to the club's 'Two-fer' transceiver featured in the last *Quarterly*. Get inspired and do it!

In addition to the QRP ARCI events, there are many events organized for QRPers by other organizations. These provide a great opportunity to work DX, meet other low power buffs, and compete in the big time contests that recognize QRP achievement. We encourage all to pitch in and show the world what can be done with wits instead of watts.

1987 QRP ARCI Operating Events

Day (USA)	Event	Mode	Date/Time UTC
Jan 16	Winter Fireside Sprint	SSB	17 Jan 0000-0400z
Apr 11-12	Spring QSO party	CW	11 Apr 1200 to 12 Apr 2400z
May 29	Hootowl Sprint	CW	30 May 0200 to 0600z
Jun 27-28	QRP Field Day	SSB/CW	same as ARRL Field Day
July 11	Homebrew Sprint	CW	2000 to 2400z
Aug 16	Summer Daze Sprint	SSB	2000 to 2400z
Oct 17-18	Fall QSO Party	CW	17 Oct 1200 to 18 Oct 2400z
Monthly	1st Sunday Meetings	CW/SSB/Novice	give a call on QRP QRGs

Other QRP Operating Events

Day (USA)	Event	Details
Jan 10-11	Michigan QRP QSO Party	CW, 10 Jan 1500z to 11 Jan 1500z QRP GRGs
Jan 17-18	AGCW-DL Winter QRP Test	CW, 17 Jan 1500z to 18 Jan 1500z, QRP QRGs
Jan 31-Feb 1	OK/G-QRP Weekend	CW/SSB, 0800 to 2400z daily, QRP GRGs
Feb 20-21	ARRL Int'l DX, QRP section	CW all HF bands
Mar 7-8	ARRL Int'l DX, QRP section	SSB, all HF bands
Mar 27-28	CQ WPX, QRP section	SSB, all HF bands
May 29-30	CQ WPX, QRP section	CW, all HF bands
June 17	World QRP day	CW/SSB, 17 Jun 0000 to 2400z, QRP QRGs
July 11-12	IARU Radiosport, QRP section	CW/SSB all HF bands
July 18-19	AGCW-DL Summer QRP Test	CW, QRP QRGs
Summer	G-QRP Summer Ramble Week	CW/SSB, QRP QRGs
Oct 3-4	Radiosport Champ, QRP section	CW/SSB, all HF bands
Oct 24-25	CQ WW DX Contest, QRP section	SSB, all HF bands
Nov 14-15	VK/ZL/Oceania QRP Test	CW,QRP QRGs
Nov 28-29	CQ WW DX Contest, QRP section	CW, all HF bands
Dec 26-Jan 1	G-QRP Winter Sports Week	CW/SSB, QRP QRGs

1986 Summer Daze Results

State	Call	Score	Bands	Power	Source	Rig
Arizona	KE7JA/KX7P	6934	1	5w	AC	
Arkansas	KA5NLY	126	1	5w	Bat	TT515
California	WA6IET	15644	1	5w	Bat	FS-15
Florida	K4KJA	5616	1	5w	Nat	Omni-D
Massachusetts	KA9HAO	100	1	2w	Nat	TT515
Michigan	K8DD	7050	2	2w	Bat	TTArgo
Missouri	KC0PP	4200	2	2w	Bat	FT757

Doing the Summer Daze From the Black Hole

0100Z - Push everything back on the desk to make room for the Argo, processor, wattmeter, battery pack and mike. The battery, an old computer ni-cad pack, seems to be fairly well charged.

0130Z - Everything ready to go. Coffee, log sheets, dupe sheets, pencils, etc. This is the best I have ever been prepared.

0200Z - Listen on 20 meters. Where is everyone?

0210Z - 14287 khz has a great AM QSO.

0217Z - hear a CQ QRP and a call ending in "A," but can't pull him out.

0230Z - Pass through the broadcast on 40m and go to 80m.

0234Z - Hear NS8V/QRP on 3983.

0234Z-Finally - first QSO with an S9+ QRN level - NS8V. Gave me a 33. Hmm - he really is 55 here. Ah well, a QSO is a QSO!

0236 - 0250Z - Go to 40 - 20 - 80 - 20 - etc.

0257Z - A net opens up about 3984

See Daze . . . . . next page

Daze . . .

KHz.

0258Z - Hear VOA, Washington, D.C. on 3990 KHz. Turn on Omni and hear it on there too.

0303Z - AM still on 14287. Louder

0306Z - N5BTY CQ'ing on 14286. No answer

0307Z - Decide to CQ on 14283 KHz, fully expecting to get told I'm QRMing a net, phone patch or a maritime net!

0315Z - None of the above happen. Back to tuning around.

0316Z - N4JWI CQ'ing. No answer.

0318Z - Nothing on 40M.

03217Z - NS8V still on 3983.

0325Z - Back to 20M.

0328Z - Hear WA6IET (4W) work WA0RIO

0401Z - QSO number 2! N6GA. Wow, I'm 55 into CA.

0402Z - QSO number 3! WA6IET. Still 55 into CA. Got a run going -two in a row.

0403 - End of run.

0414Z - KA5NLY at 55 has S9 noise level. Can't hear me.

0419Z - QSO number 4; K4KJP! 55 into FL. At least I'm consistent.

0422Z - Hear FO0LOS (?). Hmm, maybe some Pacific prop.

0425Z - Hear ZL1BYB. He calls CQ, I call him, he calls CQ, Pattern develops - he calls, I answer, etc.

0430Z - Call VK3EQ. See above pattern.

0440Z - Hear several more ZL and VK stations. Decide against pain of above pattern. Sample an Old Milwaukee. Decide to wait for the Novice Sprint, or the Fall contest, or . . .

0450Z - Sit back with Old Milwaukee, thinking "wait till next time . . ."

Encouraging QRP Use in Stateside Contests

By Paul Schallenberger [1]

I have written to the ARRL on several occasions regarding the wasteful overkill that is occurring during ARRL Stateside Contests. In light of today's receivers, transmitters and antennas, it is totally ludicrous to authorize power outputs of up to 1500 watts on contests where distances involved are generally 2000 miles or less. It's wasteful and if not illegal, it runs counter to amateur radio regulations since power levels are far in excess of what is required for reliable communications.

I never realized the full impact of the ARRL's Stateside Contest Policy until I recently moved to Okinawa Japan. The excessive power levels not only affect amateur operations in the United States, but these high power levels degrade amateur service world-wide. I happened to be tuning the bands here in JR6 land and heard loads of W5's and W6's calling CQ SS on 40 and 20 meters. This generally would have aroused me, as sweepstakes is one of my favorite contests. I was not so excited, however, about my fellow Japanese hams losing at least 25-30 KHz of their spectrum to a contest limited to stateside participants (incidently, many Class A (150w) stations were coming through loud and clear, proving how wasteful it is to use high power).

One of the principles that the QRP ARCI is founded upon is that reduced power levels increase operator skill, while reducing needless interference. Further, we believe that the challenge of QRP is rewarding. Our efforts make amateur radio better for the worldwide ham population at large. We should make ourselves heard both on the air and via cards and letters to encourage reduced power-level competition in stateside contests.

Here are a few ideas that I have to improve the quality of competition in stateside contests while better serving the interests of the world wide amateur radio community:

1. Immediately reduce power output on all stateside contests to 100 watts maximum.

2. Add QRP classes of 10W and 1W to all stateside contests.

3. Encourage listening rather than transmitting by offering double points for all contacts with 1 watt stations and one and a half points for contacts with 10 watt stations.

4. Add bonus points for solar and battery contacts.

Anyone who has participated in QRP Field Day knows the joys of contesting when only a handful of stations use more than 100 watts and fully 10 percent of all stations use QRP power. I invite all QRPers to join me in petitioning the ARRL to lower power on stateside contests and I would also suggest that QRP ARCI place a formal petition before the ARRL to eliminate the present wasteful use of power in stateside contests.

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[1] PSC #1 Box 20272, APO San Francisco, CA 96230

Michigan QRP CW Test Jan 10-11

Date: It's a CW only, all bands 160-10 meters (excluding WARC bands) QRP Contest from 1500Z Saturday, January 10 to 1500Z Sunday, January 11, 1987. Contest is open to all amateurs; all are eligible for awards. SUGGESTED FREQUENCIES: 1810, 3560, 7040, 14060, 21060, 28060 KHz. Novice 3710, 7710, 2110, 28110 KHz.

EXCHANGES: RST, QTH (state, province for W/VE stations; DX country name for others) and MI QRP # (non-members send Output Power). Stations may be worked once per band for QSO Points. CALL CQ QRP.

SCORING: Each station will be competing within own State (W), Province (VE) or Country in one of the following categories.

1. One (1) Watt or less output power.

2. Five (5) Watts or less of output power.

3. Over five (5) watts of output power.

Each member contact is 5 QSO points.

Each non-member contact is 1 QSO point.

Multiply total QSO points (ALL BANDS) by the number of States/Provinces and countries worked per band for total points.

See CW Test . . . . . next page

1986 Novice Sprint Results

State	Call	Score	Bands	Power	Source	Rig
Arkansas	KA5NLY	360	3	1	Bat	HW-8
California	NX6M	660	1	2.5	Bat	HW-8
	W6XIY	408	1	3.9	AC	Omni-D
	W6PRI	72	1	5	AC	TS520SE
Washington	NM7M	1610	1	5	AC	Corsair II

CW Test . . .

Bonus multiplier for emergency power (100% natural or 100% battery) is 1.5 × total.

QRP AWARD CERTIFICATES: Certificates will be awarded to the highest scoring station in each state, province or country. Log information must include: Full Log Data with a separate log for each band, Name, address, equipment used and power output. Logs must be received no later than six (6) weeks after the end of the contest by the contest manager. W & VE please send a S.A.S.E. and all others please send (2) IRC's if contest results are desired. Send all logs to : Chris Hethorn, KM8X, 6818 Meese Dr., Lansing, MI 48911.

Winter Fireside Sprint

DATE: Friday evening January 16, 1987 (UTC 17 Jan 0000 to 0400z)

EXCHANGES: Members give R/S, state, province or country and QRP ARCI membership number. Non-members give R/S, state, province or country and power output. Stations may be worked once per band for QSO points – each member contact counting five points, each non-member contact two points. Call CQ QRP Contest. Suggested calling frequencies are 1.810, 3.985, 7.285, 14.285, 21.285, 28.885, 50.385 KHz. No 30 meter (10 MHz) or 12 meter (24 MHz) contacts will be counted.

MULTIPLIERS: A state, province, country may be worked once per band for SPC multiplier credit. Add SPCs separately for each band, one point each, then add SPC totals for all bands to arrive at total SPC multiplier.

POWER MULTIPLIERS: The highest power used for any contact, any band will determine the power multiplier used to score the log. Eight to 10 watts PEP output x2; 6 to 8 watts PEP output x4; 4 to 6 watts PEP output x6, 2 to 4 watts PEP output x8, less than two watts PEP output x10. More than 10 watts PEP output counted as check logs only.

BONUS MULTIPLIERS: Battery or Natural power x 1.5. No other source of power may be used during the contest to qualify for this multiplier. Antenna Bonus - single element, non-rotatable antenna (dipole, vertical, inverted vee, etc) x 1.5. Double Whammy - if qualified for both of above then do no use them. Instead, multiply score once by 2.5 (NOTE: this produces a higher score than two multipliers of 1.5).

BONUS POINTS: Work all 10 US call districts - add 200 points. Work five Canadian provinces add 200 points. Work five non-US/Canada countries - add 200 points.

SCORING: QSO points (total all bands) times s/p/c multiplier (remember, an s/p/c may be worked on more than one band and counts once on each band for s/p/c multiplier points) times power multiplier times bonus multipliers (if none, use 1), than add bonus points to equal claimed score. Use of the scoring summary sheet will help avoid errors; summary sheets may be obtained by sending a large S.A.S.E. or 1 IRC to the contest chairman.

LOGS: Separate log sheets for each band are suggested for ease of scoring. Send full log data plus summary sheet and your comments. No log copies will be returned. All entrants desiring results and score please include a large S.A.S.E. or 1 IRC. It is a condition of entry that the decision of the QRP ARCI contest chairman is final in case of dispute. AWARDS: Certificates to the highest scoring station in each s/p/c with two or more entries. Logs must be received by September 9, 1986. Logs received after that date or missing information will be used as check logs. Send logs to QRP Contest Chairman Eugene Smith, KA5NLY, P.O. Box 55010, Little Rock, AR, 72225-0010.

1987 Spring CW Contest

DATES: 1200 UTC Saturday, April 11, 1987 to 2400 UTC Sunday, April 12, 1987. Participants may operate a maximum of 24 hours. Hey guys, you gotta sleep a little!

EXCHANGES: Members give RST, state, province, country and QRP ARCI membership number. Non-members give RST, state, province, country and power output. Stations may be worked once per band for QSO points. Each member contact five points, regardless of location. Non-member contact, same continent, 2 points. Each non-member contact, different continent, 4 points.

MULTIPLIERS: States, provinces and countries. The U.S. and Canada do not count as countries (count states and provinces only for W/VE). An spc may be worked once per band for spc multiplier credit. Add spc's separately for each band, one point each, then add up spc points for all bands to arrive at total spc multiplier.

POWER: Four to five watts output x 2; 3 to 4 watts output x 4; 2 to 3 watts output x 6; 1 to 2 watts output x 8; less than 1 watt x 10; over 5 watts output counted as check logs only. The highest power used for any contact, any band, will determine the multiplier used for scoring the whole log.

BONUS MULTIPLIERS: Natural power (solar, wind, etc.) with or without storage x 2. With storage, storage cells must be charged by the natural power source within 48 hours preceeding the start of and/or during the contest. Battery power x 1.5. No other source of power may be used at any time during the contest to qualify for these multipliers.

SUGGESTED FREQUENCIES: 1810, 3560, 7040, 14060, 21060, 28060, 50360 KHz: Novice and Technicians 3710, 7710, 21110, and 28110 KHz. No 30-meter (10 MHz) or 12-meter (24 MHz) contacts will be counted.

CALLING METHOD: CQ CQ QRP DE (Call Sign)

SCORING: QSO points (total all bands) times spc multiplier (remember, a spc may be worked on more than one band and counts once on each band for spc multiplier points) times power multiplier times bonus multiplier (if none, use 1) equals claimed score. Use of scoring summary sheet will help avoid errors; summary sheets may be obtained by sending a large S.A.S.E. or 2 IRC's to the contest chairman.

LOGS: Separate log sheets for each band suggested for ease of scoring. Send full log data plus separate worksheet showing details and time(s) off the air. No log copies will be returned. All entrants desiring results and scores please include a large S.A.S.E. or 2 IRC's. It is a condition of entry that the decision of the QRP ARCI contest chairman is final in case of dispute.

AWARDS: Certificates to sta-

See Spring CW . . . . . next page

Net . . .From page 20

40	W5LXS
32	W6SIY
31	K2JT
31	WB7BIV
23	KH6CP/1
23	N7FEG
21	W5TTE
21	KA7QNZ
19	N6GA
16	K4KJP
16	WF6D
16	KK7C
14	KD2JC
14	W6SKQ
14	NF9X
12	KZ3I
12	K5BOT
12	KA6SOC
12	WD8JCR
11	K8JRO
11	KR0U
10	NO7V
8	KI4IO
8	NF5Y
8	N7IS
7	WA6FLN
6	AA4CO
6	N4EL
6	WN6F
6	WA7NZN
6	KV7X
6	W0RE
5	WB1ESN
5	W2KJ
5	WA3GYW
5	WA3SLN
4	W1CFI
4	KA4LKH
4	W5QJM
4	WB6PUM
4	VE7FOU
4	K3DD
3	K4AHK
3	KZ9H
3	W9OA
2	K5VOL
2	NW6A
2	NM7N
2	N8CQA
2	W8LCU
2	KE8P

Plus 139 other single QNI's.
FROM HERE IT LOOKS LIKE AT LEAST 68 WINNERS.
73 es cu on Net!

73,
Danny, K3TKS

Spring CW . . .

tions scoring in the top 5% overall and the high scoring station in each spc which has two or more entries.

In addition, Adrian Weiss, W0RSP, is sponsoring a special MILLIWATT certificate to the highest scoring station in the less-than-1-watt category, provided there are two or more entries in that category.

DEADLINE: Logs must be received by May 20, 1987. Logs received after that date or lacking information will be used as check logs.

SEND LOGS TO QRP ARCI Contest Chairman.

QRP DX Test Jan 17-18

The DL Activity Group sponsors its CW QRP event each year on the 3rd weekend of January, running from Saturday 1500z to Sunday 1500z on or near the international QRP calling frequencies, on all HF bands. Classes are A - less than 3.5 input (2 W out), single operator; B -less than 10 W input (5 W out), single operator; C - less than 10 W input (5 W out), multioperator; D -QRO stations, more than 10 W input (5 W out), to contact QRP stations; E -SWL. Class C stations may operate full time; classes A, B, D and E must break for 9 hours which can be taken in two segments. Exchange RST, QSO number and input, adding x if crystal controlled. QRO stations add /QRO. Operation is limited to one class per band. VFO or crystal controlled. No more than 3 cyrstals may be used on one band. Contact each station once per band. Count 1 point for QSO with own county, 2 points for QSO with own continent, 3 points for QSO with DX (outside own continent) per DXCC lists. JA, PY, VE, W and ZS call areas count as seperate counties. Count 1 multiplier for each country and 1 for each DX QSO. Multiply points by multipliers on each band, then add band results. Crystal-controlled stations double total result. Submit a separate log for each band. Logs must be received within 6 weeks of the contest. Send logs (include 1 IRC for results) to Siegfried Hari, DK9FN, Spessartstrasse 80, D-6453 Seligenstadt, Fed Rep of Germany.

OK/G-QRP Weekend
Jan. 31 - Feb. 1

Meet G-QRP and OK-QRP friends on the air if conditions permit calling CQ QRP and listening for activity around international QRP frequencies. Here are the scheduled times and frequences for each day: 0800-0900z 7.030, 0900-1100z 10.106, 1100-1200z 14.060, 1200-1300z 21.060, 1300-1430z 14.060, 1430-1600z 10.106, 1600-1700z 7.030, 1700-1900z rest period, 1900-2100z 3560 or 3570-80 overflow, 2100-2300z 1.810. There are awards for the best logs. Send yours to Gus. G8PG.

For Sale

The *Quarterly* will accept short "classified" ads from its members who desire to sell equipment and other items of interest. They will be printed on a space-available basis.

Send information to publisher, labeled "*QRP Quarterly* classified."

For Sale: Complete ARCI Membership list. $6/P.O. available from Bill Harding, K4AHK, Membership Chairman.

Wanted: Drake 2NT Transmitter, must be in good condition. Contact Les Shattuck, WB2IPX.

Now Available: the second edition of the *HW-8 Handbook*. Bigger and better than ever. Copies are available for $5 postpaid domestic, $7 foreign. Michael Bryce, WB8VGE, 2225 Mayflower N.W., Massillon, Ohio 44646.

I have a tech manual for anyone who can use it. The Multimeter TS-352B/u was stolen. The manual is available for postage. If anyone sends postage, please write "postage" on the envelope. If I get more than one, I'll return to sender. Cal Waterbury, WB5TDE, 817-754-0043.

I wish to purchase all *Quarterly* back issues back to 1980. Mark Hunt, N6IXL, Box 729, Tuba City, AZ 86045.

Have HW-8 w/p.s. New driver and final. All manuals. Rig has W0RSP, modifications. Contact Eric Jackson KA0DQZ, PWS 3094, Lyons, CO 80540 (303)823-6015 N, (303)939-6067 D. ARCI 5812.

Natural Power

The editor is solicting articles for the *Quarterly* on the use of natural power sources for emergency, portable or normal operation. Send articles and reports by May 1.

Idea Exchange

conducted by D.A. "Mike" Michael, W3TS
Box 593 Church Lane, Halifax, PA. 17032-0593

More on Inductors

The 10 uh Radio Shack RF Choke Chart generated some interest among *Quarterly* readers, among whom, KY9Y asked for info on the 100 uh RF chokes. So I ran some tests. See below for the chart.

Inductance Chart
For Radio Shack #273-102A
100 uh R.F. Choke by W3TS

Full(No Turns Removed)	L 88.8uH	Q at 1MHz 43
Turns Removed =		
1	87.3	49
2	85.1	50
3	83.0	51
4	80.8	52
5	78.7	53
6	76.3	54
7	74.2	55
8	71.7	55
9	69.5	56
10	67.1	56
11	65.0	57
12	62.5	58
13	60.3	59
14	57.9	59
15	55.8	60
16	53.3	60
17	51.3	62
18	48.9	61
19	46.9	62
20	44.6	62
21	42.6	63
22	40.3	63
23	38.5	64
24	36.2	63
25	34.5	66
26	32.3	65
27	30.6	66
28	28.6	65
29	26.8	67
30	25.0	66
31	23.5	68
32	21.6	66
33	20.0	67
34	18.5	66
35	17.0	69
36	15.5	68
37	14.2	69
38	12.7	68
39	11.6	69
Note use 10uh Radio Shack R.F.C. in this "L" Range For Improved Q.		
40	10.3	69
41	9.1	71
42	8.0	69
43	7.0	69
44	5.9	69
45	5.2	69
46	4.3	70
47	3.5	71
48	2.8	69
49	2.3	69
50	1.8	69
51	(NOT MEASURED	
↓	56 TURNS	
56	REMAINING)	

Ideas in the Wind

Wes Hayward, W7ZOI, writes with good news on several fronts. Contrary to earlier rumor, *Solid State Design* is indeed being reprinted by ARRL. You can now order it from the league or pick it up at local ham outlets. There is a possibility that Wes and Doug DeMaw, W1FB, will do a follow-on.

Several of us have corresponded with Wes about cyrstal filter construction since his Experimenters Corner article a year ago. He now has written a short paper on the topic, which is scheduled for publication in *QST* in 1987. If you are working on a crystal filter, drop a note to Wes with a large S.A.S.E. or wait for the good news to come out in print.

We're eager to hear from all who have been working with homebrew filters. One of the first to write, Steve Finch, AI0W, has put one together using three Radio Shack colorburst cyrstals to get 50dB attenuation of the unwanted sideband. His article is expected in time for the April *Quarterly.*

Wes' main experimental activity lately has been to see what sort of power output can be obtained from the inexpensive FETs that are now available. He says it has been a productive study, so we hope to get a few hints shortly.

Homebrew Panel Marking

A quick look at W8PJ's neat panels, suggests a new wrinkle -beautifully cut plastic hides the ordinary metal box. Hopefully Norm will write to tell us his tricks.

It's hard to beat the sturdiness and beauty of Michael Bryce's panel work. That's another story that needs to be told, hopefully we'll hear from him too.

In the meantime, I'll share a few of my ideas. I tend to less sturdy/finished work since I get so many ideas that nothing stays the way it was first. And I've found that if the equipment looks too commercial no one will believe it's homebrew. I like rub-ons, but they cost so much and are hard to get nice.

So I have been using a Pilot SC-UF extra fine point permanent marker (cost about $1), and I hand label my gear. After I label it, I give it a light coating of Krylon Krystal Klear. My markings have not rubbed off yet. One nice feature of this approach is that if you make a mistake or want to modify the label, you can wipe it off with alcohol or tuner cleaner, then try again.

The same trick works great for labeling circuit boards with notes about trim caps, trim pots and alignment. Since I prefer ugly construction, I have not tried this trick to produce hand drawn PC Boards, but I think it might work.

How About the ZN414

Bill Latter, N4LH, writes, "How about a light weight single chip receiver using the Ferranti ZN414 I-C? This chip is a complete AM receiver in one chip and a real power miser, requiring only .5ma at 1.5 volts. It seems to work allright to 3 MHz. I was able to copy 160m signals by retuning the loopstick antenna coil and using a signal generator as VFO. Possibly such a receiver could be used with converters for higher bands. With such low power drain and small size it might be the key element of a backpack transceiver. Is there anyone out there who would like to help me carry this project further?" Go for it, guys. This may be a real interesting idea.

Mac Gyvers of the World, Unite!

Writing in the December *Ham Radio,* Bill Orr, W6SAI, asks if the "make-do" spirit still exists in Amateur Radio. It sure does, and

See Ideas . . . . . next page

many are the "Mac Gyvers" reading this *Quarterly*. Bill suggests a hamfest "make-do" event where teams set out to put a signal on the air and have a QSO in the fastest time, given only a scrapped TV and two old BC radios to start with.

The goal is to build, literally from junk, a radio transmitter and receiver, and to use them to comminicate with each other on the amateur bands.

How about that idea QRPers? Can you pick up this challenge? That means creating transmitter, receiver, antenna matching, and antenna–the whole turkey dinner–out of those three items of junk!

Pick up on this! And write in about how you have done it or how you would go about it. I'll pass your ideas on in the next and future *Quarterly*. And at Dayton, we'll have a "Wild Mac Gyver" party where we put our ideas to the test. By the way, be sure to read Bill Orr's report as to how W7DIZ saved coastal shipping from disaster by doing just what we're talking about.

Novice Station Contest

The Honolulu ARC is planning to sponsor a design contest for a low-cost (under $75) Novice station. Competitors will be required to submit a working station, schematics, parts list, source and price. Heading this project is Norman Furnamura, KH6R.

The general idea is a low-cost 40-meter set up in the neighborhood of 3 watts or better, made of readily available parts. It must be a system that can be repeated, construction wise–not a one-shot deal. If you're anxious to get started, get in touch with Norman. We'll be rooting for you!

"Fast Draw" Resonant Circuits

One requirement of any radio Mac Gyver is to be able to produce a resonant coil as fast as the storied "Make-do" artist can draw his pistol and fire.

Here's a trick picked up from some of the real old timers. It might serve you well in more than one tight spot.

Take the wavelength in meters of the frequency where you want resonance and divide by two. This gives an "L" in micronenries and a "C" in picofarads. Then scale to give more useful values. Example: 7MHz = 40 mtrs; 40÷2 = 20uH and 20pF which by the way means an $X_L = X_C$ = 1000 ohms. Now scale this by a factor of ten and you get 200 pF and 2uH (X_L or X_C = 100 ohms) which is much more useful.

Are there any other old tricks out there? I know Brice Anderson, W9PNE, has a way of measuring off a piece of wire and winding a resonant coil on his thumb as a former. Can anyone top that? How do you do it, Brice.

Still Saving Tuna Tins?

Remember the tuna tin 2N2222 rig in the May 1976 *QST*? Bob Joiner, WB7BIV, writes he has worked five countries and 37 states with his in the last eyar. His best DX is 800 km, which isn't bad for a tuna.

Terry Young, K4KJP writes, "I put my 40 meter tuna tin rig on 30 meters by simply plugging in a 10.015 MHz crystal and loading a 30m dipole. The final tank is adequately broadbanded and the oscillator starts clearly. Powered with a 9V battery it puts out 100 mW on both 40m and 30m." However you do it guys, get on 30m soon. It's a QRPers haven.

Got a Drifter for a VFO?

The HW7 gave us all a lot of problems, but it had a lot going for it too. Its drifting VFO invited a number of fixes, and the ways of dealing with the drift suggest ways you might be able to tame other drifters. Jerry Bartachek, KD0CA, writes in with this simple trick that should be in everybody's bag.

"My HW-7 would drift so rapidly that I had great difficulty maintaining contact once a QSO was initiated. I tried every remedy I could think of with no results. Studying *Solid State Design* by DeMaw and Hayward, I noticed that nearly all of the FET VFO circuits in the book included a diode across the gate bias resistor, but Heathkit HW-7 lacks said diode. So just to see what the effect would be, I soldered a 1N914 on the foil side of the PCB accross the 47K resistor numbered R21 (See schematic). Now the rig is nearly as stable as my old Tempo One: drift is detectable over long periods of time by is slow enough to be tolerable."

Sign up for SBL-1's

Fred Bonavita, W5QJM, writes, "I'd like to hear from other homebrewers who are interested in pooling resources to buy mini-circuits labs SBL-1 doubly balanced mixers. They are too expensive unless purchased in lots of tens, at which point they drop to $4.50 each. I can't use ten, but if I find enough homebrewers who want to go in with me, I'll order ten, then mail them to the others. Send $5 per mixer to cover cost and shipping to me at Box 12072, Capitol Station, Austin, TX 78111." This is a great idea, go for it!

Check Out Those Toroids

At the Dayton meeting, Brice Anderson talked about tests comparing air wound and ferrite baluns and coils in antenna matching. He said he could gain 2dB eliminating ferrite coils and air winding instead.

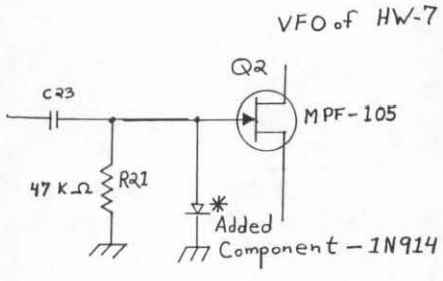
John Collins, KN1H, followed up and did some experiments of his own. He writes, "I have wound several different baluns, both ferrite loaded and air wound, and built several tuners with ferrite or iron core inductors and air wound inductors.

I took power, voltage, current and field strength readings on everything. By eliminating all ferrite cores and using only air cores, my field strength measurement went up considerably. The difference seemed so large that I questioned it, till in QSO with W3TS, he measured a two S-unit difference in favor of air wound stuff. I'm now checking all my measurements and compiling the data. When they are solid, I'll send an article for the *Quarterly*.

Has anyone else got something to add to this? How about checking out those ferrites in your antenna line and giving us a report of what you find.

QRP means using our wits, so

See Ideas . . . . . next page



Ideas . . .

keep those ideas coming, and if you can, pick up on some of the ideas I'm passing along. And write back fast, so I can get your response into the next *Quarterly.*

73 & Good Thinking,
Mike Michaels, W3TS

Corrections

Denton, KJ0WJ, calls our attention to errors which unfortunately crept into his article in the Experimenter's Corner, July-October *Quarterly.* On page 9, first column, last paragraph, the capacitor values should be "1mF" and ".047mF." On the same page, third column, last paragraph, the middle sentence should read, "Initially output was about 25mW, so using diagonal cutters . . . until output was 20mW." Also in the same column, first paragraph, last line, the oscillator output should read "+ 13dBm."

'Two-fer' Mania

John Collins, KN1H [1], has been deluged with calls from builders, and has written to report that 'Two-fer' signals are beginning to be heard on the air. I'm pleased to see how much interest there is in the club's homebrew project.

For all who haven't yet contacted him, John has written a few hints and comments that I want to pass on.

1. "The gain of the LM 386 is 200 in this configuration, not '20' as it was printed in the *Quarterly.* Many of you caught the error already, since 20dB would not possibly be enough gain to provide an audible signal.
2. "Related to that is the possibility of the LM 386 not working well at 12 volts. The first three receivers I built worked fine, but the fourth one had an oscillation in the LM 386. If that happens, you will hear noise and possibly the oscillation itself. The fix is to drop the voltage to 8 or 9 volts with a small value series resistor or a 3 terminal regulator.
3. "T 1 is wound on a FT-37-61 core, 25 turns on the primary and 5 turns on the secondary."

I am pleased to hear from all you builders out there, and I'll be passing on any suggestions or modifications that come up. It's a real kick to hear the 'Two-fers' on the air, so check into the nets when you are up and running. I'll be listening for you!"

[1] RR 2 Box 427, Cornish, N.H. 03745
(802) 674-6200 work; (603) 542-2057 home

DXing with a Half Sloper

by Brice Anderson, W9PNE [1]

I have been a long-wire enthusiast for several decades, believing that, except for a yagi beam, the long-wire was the best DX antenna. Most of the countries for my QRP DXCC were worked with long wires, the most effective being a 90-degree-apex V-beam oriented NE/SW, with 160 feet of wire in each leg. I fed it with 50 ft. of open wire line.

I began to have second thoughts on the subject while trying to complete DXCCs on 40, 80, and 160 meters. Many of the stations that were outgunning me were using big verticals or half-slopers.

A half-sloper is half as long as a sloper, which is just a sloping center-fed dipole. The half-slopper is therefore one-quarter wavelength long, fed at the top with 50 ohm coax. The coax sheild is connected to the tower at the top.

I started reading all I could find on slopers. It seemed that half-sloppers were very successful when suspended from a tower which had a big beam on top. To my thinking, the beam had a ground plane effect, creating the equivalent of an inverted vertical with the ground plane on top. Since the sloping portion was fed at the top, the maximum current was at the highest point of the wire, producing good radiation.

By this time, I had a TH5DX tribander on top of a 50 ft. tower in my back yard. If my reasoning was right, that beam was just what I needed for a good half-sloper.

There was a lot of No. 20 vinyl-covered wire in my garage, so I cut a quarter wave piece for 80 meters. Using nylon cord to support the weight of the wire at the top, I soldered the center conductor of the coax to the wire and clamped the shield to the tower with a hose clamp. A 225 ft. length of RG8U ran down the tower and along the ground to the shack. I put a good insulator on the lower end of the sloping wire and tied it to a three ft. rod stuck in the ground.

I soon found, by running a few SWR vs freq. readings, that my 65 ft. length of wire was too short. After a few splices, I got the resonance down to 3530 KHz. The wire was not 75 ft. long. This corresponded with the articles I had read, where the length of wire needed varied from installation to installation.

Brice Anderson, W9PNE, in his shack.

Sloping antennas favor the direction toward which they slope. I sloped mine to the northeast, since I wanted to favor Europe. New England stations reported that the half-sloper had about one S unit advantage over the V. Using QRO in order to get S-meter readings in Europe, I found the half-sloper better by one to two S-units. Elated, I started working Europeans, with the Argonaut, something I had not been able to do before on 80 meters.

Although, it was best to the northeast, the half-sloper worked well in other directions, never taking second place to the V. In all directions, the half sloper showed a better signal-to-noise ratio than my V. I could copy weak DX signals that were not readable on the V.

I was so pleased with the 80 meter

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Half Sloper . . .

sloper's performance that I cut another wire for 40 meters and attached it to the same feed point, sloping it toward the west. SWR of the 80 meter wire was scarcely affected, and the SWR of the 40 meter wire was very low. To obtain resonance at 7,050 KHz, the wire length came to 35 feet. I inclined the 40 meter wire at an angle of 45 degrees to the tower, leaving the lower end fairly high in the air.

Weekly schedules on 40 CW with my son in Albuquerque, NM, gave me a good chance to compare sloper, V, and Hustler 4BTV trap vertical. The V was better than the vertical more than half the time, but the half-sloper was always on S-unit better than either. I also worked well in other directions, being very good for European DX.

I had already worked more than 100 countries each on 14, 21, & 28 MHz, mostly with QRP, but I needed many countries on the lower bands. Using mainly QRP (and QRO when impatient), I worked over 100 countries on 80 and 40 in two months of evening operation. During those 60 days I worked more countries on 3.5 MHz than I had worked in the preceding 50 years.

Perhaps my experiences will inspire some of you to try a sloper. If you do, write up your experiences for the *Quarterly* so we can learn how it works for you.

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[1] Box 14, Lancaster, Il. 62855

A Half-Sloper for 80 and 160 Meters

Brice Anderson, W9PNE Feb. '86

An inverted L Antenna, W1BB type, has been my 160 meter antenna for the past several years. It is a very good antenna, but has a narrow bandwidth, having a reasonable SWR only about plus/minus 20 KHz from its resonant frequency.

The signal to noise ratio of the antenna seemed to be poor compared to my 80 meter half-sloper. I found that I sometimes had to switch from the inverted L to 80 meter half-sloper on reception in order to pull a weak signal out of the noise. Even though the received signal was weaker, it stood out from the noise.

I decided to add some wire to the end of my half-sloper for 80 meters to see if it could be used as a transmitting antenna as well as receiving on 160 meters. I added some #20 vinyl covered wire to the end until the resonance dropped to 1,950 KHz. This required 21 feet of wire, which I terminated with an alligator clip to permit easy attachment to the 80 meter wire. The SWR was low from 1,900 to 2,000 KHz, for coverage of the upper half of the band. I then added four additional feet of wire, with a clip, to obtain resonance at 1,850 KHz. The SWR was low from 1,800 to 1,900 KHz, for coverage of the lower half of the band.

Reception on 160 meters was greatly improved over the 80 meter half-sloper on 160. I compared signal reception on the low end of the band with the inverted L antenna. The inverted L gave S meter readings about one point greater, but the signal to noise ratio was much better on the half-sloper. This difference may be due entirely to the particular location of the two antennas at my station, but the fact remains that I could copy weak signals on the half-sloper that were not readable on the inverted L.

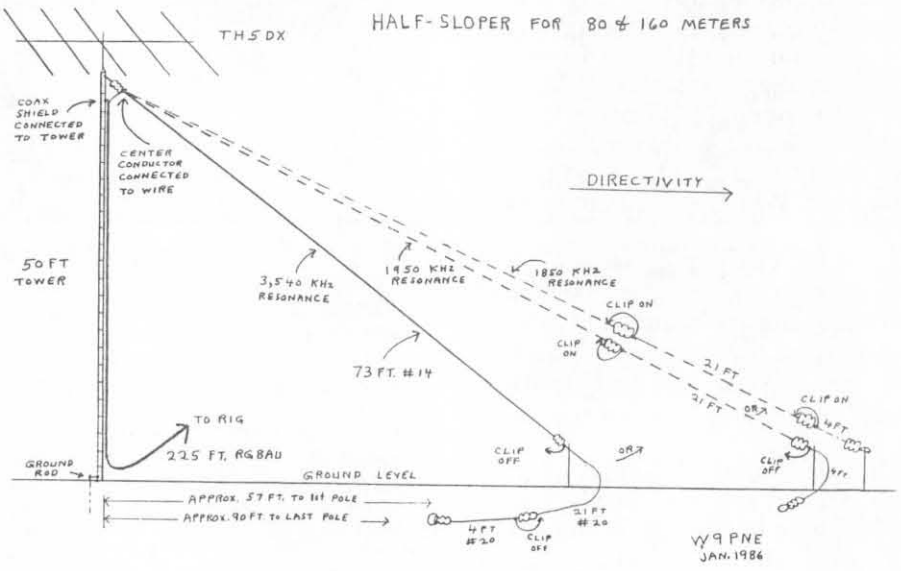
Comparison on transmit showed that the inverted L had an advantage of two or three dB over the half-sloper in the direction favored by the inverted L. The wire of the inverted L runs to the east, and the half-sloper slopes to the northeast, so both have essentially the same directivity. However, in other directions, the half-sloper was generally better than the inverted L, especially to the side directions. In my installation, the height of the tower supporting the half-sloper is very good for an 80 meter half-sloper, but is too short for best performance on 160 meters. I am sure that performance would be much better with a higher tower.

I have 1,300 feet of ground radials under and around the inverted L. I have no radials for the half-sloper antennas, using only a ground rod for lightning protection. Half-sloper experts tell me that, although not necessary, a system of ground radials will improve performance.

The half-sloper proved to be a great DX antenna on 160 meters. The first night that I tried it, from 10:30 p.m. to 12:30 a.m CST, I worked 10 countries in four continents and heard the other two continents. I was using QRO, but was astounded at these results. Using QRP, I found that I could make contacts without difficulty all over the country.

The construction on the half-sloper is shown in the sketch. The clips permit me to use the antenna on 80 meters, the high end of 160 meters, or the low end of 160 meters, with just a trip out to the back yard. Three posts driven into the ground permit me to keep the antenna taut for each length used. The unused wire is allowed to fall to the ground. Good insulators are used at the end of each wire length.

If you want a 160 meter antenna that works and doesn't take up too much yard space, consider the half-sloper. It's performance will surprise you.



Activity and Awards

conducted by Fred Turpin, K6MDJ
Box 145, Cedarpines Park, CA 92322

Before I get into the details of Field Day 1987, I would like to broach the subject of safety. Several unfortunate incidents this year prompt me to touch down upon it. Throughout the weekend we find ourselves engaging in a variety of potentially dangerous activities, such as climbing trees, chopping wood, dealing with lanterns and stoves and in QRO situations, generators and high voltage and in our case, knee deep in rattlesnake country. The levity of the situation envarably finds many otherwise safety-conscious people with their guard down and this is where we fail. Safety is a full time job and should be given the highest priority. Red Reynolds, K5VOL reports that one of their operators was to make a bicycle trip to Alaska this summer. Early in the trip he left at 4 a.m. to avoid traffic and was hit and killed by a drunk driver, no name or call was given, but we regret the loss of any life. The disgusting part is the drunk driver. Anyone who thinks their reactions etc., are normal while drinking is sick, (give this some thought the next time you try to build a 40 meter vertical with beer cans during Field Day). If you've taken one too many, sleep it off before you hit the road or someone else. The second less serious incident but of no small concern to the receiptient or participants was an accidential blow to the face with an ax during the Missillon Field Day effort. Mike Bryce, WB8BGE reports that it took some 30 stitches to repair and that the recipient will be fine, I'm sure none of them will ever forget it. So let's build upon this and make safety our number one priority next year. Winning is fun but living is better.

Now for the lighter side. Should you end up with the scribe duties next year, please include me in your distribution. Regretably, I failed to ask for this in the last column, nevertheless we had a few reporting in.

Bob Brown, NM7M did a mini IE Field Day at home while Mary Lou, NM7N took to the hills in the family RV with the only other charter member of the Mountain High Gorge Low DX Club, Fred, K9DOG. An unannounced electrical storm engulfed Red Top mountain so Mary Lou and Fred headed it up for the safer hill top of Goldendale observatory, some 150 miles out of the storm's path, only to run into the law of the land, "no over night parking." With few options left, the duo beat a hasty retreat for a state park in the Colombia River Gorge. Arriving just after the contest started, their first 1B contact with the Argosy and vertical was at 1830Z. Fred reneged on his operating responsibilities after the ordeal of the previous night, prefering to "dupe" and deal with camp security.

By 1700Z the following morning the QRN was so bad that they once again had to QSY to a roadside rest area west of Lyle. Fred didn't even wake up for the move, electing to keep himself well rested and razor sharp for the home stretch. When all of the smoke had settled, Mary Lou tallied up 167 contacts on two bands and traveled half the state to do it. Fred on the other hand, just yawned and rolled over to have his belly scratched, knowing full well she could not have done it without him. Meanwhile back at the ranch, her old man, Bob, had been up to his ears in the 15 meter melee of Sunday morning and had pulled down 32 of his 263 contacts in just over an hour. Bob laments that the only way he gets to use the quad is by running ML out of the house.

An interesting note here is that few QRPers crossed signals during the test. Many of us heard each other but no two-ways resulted. This was understandable from our point of view due to the directive arrays in use as well as the "hunt and pounce" technique of good QRPing as pointed out by John Collins, KN1H in his report. John and Leo Delaney, KC5EV, joined forces on Mt. Ascutney in Vermont this year. Lacking a key ingredient, the wit, charm and style of Jim Fitton, W1FMR, who was off persuing the feminine forms of happiness, the duo fell short of last year's mark. Leo, being a Texan, probably gets a little squeamish at anything higher than high tide (out of his comfort zone) the whole thing become understandable. Nevertheless, the team turned in a high score in the "fun"column and that's where it counts the most. John had a terrific idea for next year, suggesting that we set one or more times and frequencies during the contest to connect with other QRPers. For openers, he suggests 2200Z on 14060. Let me know your ideas on this and we'll publish a schedule in the next Field Day issue.

Reporting in for the "Great Salt Lake Island Milliwatters" was Jim Stevens, KK7C, he and Bob Joiner, WB7BJV operated from 600 feet above the edge of Stansbury Island in the Great Salt Lake of Utah, likely the best ground plane on the continent. Because of time factors and human endurance, only one antenna was put up and what a cannon it was! A sloping V-beam with 560' in each leg and running down towards the lake bed, with an apex angle of 60 degrees and aimed right at the "Big Apple." Jim says it took some power like a dummy load and was silky-quiet on reception. With their 950mw, both felt the beam gave them the long game but they lost on

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Fragmentary Field Day Reports

	Watts	80m	40m	20m	15m	10m	Total QSO's
NM7M	5	–	–	184	25	–	263
NM7N	5	–	73	101	–	–	174
W6SKQ	2.5	90	203	256	163	–	712
K9NG	.950	81	203	221	24	–	533
KK7C(WB7BIV)	.950	11	35	158	32	–	236
WB8VGE	5	(No Details)					716
NJ7M	3.5	(No Details)					236
DL2HCB	5	(No Details)					400
W3TS	–	(No Details)					509
KO7V	1.0	(No Details)					19

the short one as propagation shifted out of the eye of the beam and they were unable to cash in on the close-in 80 and 40 meter activity.

As is the case with most small groups who take to the difficult terrain, it's hard to play antenna engineer, mantain the camp and still have the energy to deal with the long hours of operating. I suspect that had Jim and Bill gotten their other antenna up, a low sloping loop, they would have added considerably to the 236 contacts of their 1B effort.

Many of you may recall the torrential rains in the Ohio area during Field Day. To spite the "flood, the mud and the blood" the Mad Men of Missillon over-came it all. Mike Byrce, WB8VGE was the warden in the novice tent and reports they had a terrible time getting the hang of their Century 22's direct conversion. Unlike other groups, their big enigma was administrative. Not believing their 400 or so logged contacts, they sifted through the rubble after the storm and came up with the lost, soggy dupe sheets which brought their total up to 716. Sort of makes you wonder what this group could do on a sunny day!

The "Cast Iron Baloon Boys" of the Harper Air Hawks ran into some manpower problems during antenna lofting time but still managed to get up a tri-bander, two long wires, a vertical and two 40 meter button beams. Running two Argonauts on solar/battery power at just under one watt, the group turned in 533 contacts. Apparently running scared, hot air specialist Red Reynolds, K5VOL had the gang forsake levity due to the threat/challenge of their Zuni loopers at Dayton last year. It was dead-serious contesting, wire-to-wire. This team likes to win, something they have become proficient at but Red wants to put the fun back into it next year and has suggested an all home brew event. This idea is currently under study out west.

As for the Zuni-Loop Mountain Expeditionary Force, our motto this year was "to win and have all the fun we could stand." Well we did not win but we sure had a lot of fun. Our founding father, General of Strategy and Scribe, Bob Spidell, W6SKZ has written up the event in detail for *CQ*, *SPRAT* and *Lo-Key*. The Force Consisted of Keith, W6SIY; Brian WN6F, Eric, NX6M; Bob, W6SKQ, Cam, N6GA; Bill, WF6D; Charles, N6GII; Rob, N7FEG; Wayne a prospect and myself. Running two solar/battery powered Argonauts at 2.5 watts and an HW-9, we fed a 15 m "ZL Special," a 20m "Sixshooter," a 40 m, three element delta loop array, an 80m "Button beam" and a 80m reference dipole. Our antenna farm was the talk of the mountain, with no less than four of the largest clubs in the area on the 7100' Table mountain that weekend, it was an endless parade of lookers marveling at our aerial tapestry.

Our approach was low-key this year, with numerous breaks and a big Saturday evening BBQ. No one burned-out and everyone got all the sleep they needed. We even had a "Radio-Kit" noise-bridge as a door prize, which was won by Rob, N7FEG. Truly a memorable weekend. But, alas, all did not end on a joyous note. Confirming the old adage, "if you play you pay" I'll turn the surrender desription over to the the very glib Bob Brown as it hurts me too much to talk about it. From Bob's WSN Notes, "The actual surrender ceremony between ZLEF and HAH was carried out with the aid of the twisted-pair. Ray Reynolds, K5VOL, the hit-man of the HAH, called Fred, K6MDJ, and conduted a cautious interrogation, searching for clues on the score run up by ZLEF. I gather from Fred's account there were a lot of thrusts and artful probes in the parrying that went on. But time took its toll and the two scores were blurted out almost at once, to the dismay of both. It took a bit longer though before the two power levels were put on the table along with the scores. Until that time, Red thought that HAH had lost. Crafty old Fred, let him suffer, as it just put off the time of concession when ZLEF would have to own up to its higher power level. Eventually, Fred had to concede defeat and face up to the boasts made at Dayton in '86, to say nothing of the case of beer he had agreed to buy the HAH crew. The ugly part of the whole affair is that HAH has insisted on the right to shred a ZLEF T-shirt at Dayton next year; I don't know if they plan to display the remains publicly at the QRP Booth put I wouldn't put it past them; I'm told they're that kind of people."

Our final Field Day comes from Bert Matthies, DL2HCB of Hamburg, West Germany. Bert and company used his Argosy, a TH3 Jr. and two loops for 40 and 80 meters. Weather was the pits, cold and rainy, but they still managed to crank-out 400 contacts. After these little snatches of Field Day information, I'm eager to read Ad Weiss's full report in the April *Quarterly*.

The last time I spoke with you I mentioned the new look of the WAS award. Our previous procedure called for a small ½" blue star to be placed over the progressive steps i.e., 20, 30, 40, etc., with the final 50th seal being our 1 7/8" gold sun-burst with red and blue ribbons and struck with the club seal. Special endorsements were also the 1 7/8" gold sun-burst. I felt that the final product was nice but lacked artistic balance, especially if endorsements were used, pretty soon, borders, certificate number and issuing information were covered up and the document looked cluttered. So, all future WAS awards will be issued using a new 1¼" gold sun-burst and silk-screened numbers and struck with the club seal. This will also apply to all endorsements on this award as well as the rest of the clubs awards. The final 50th seal will remain the same, as will the original issuing seals on our other awards, i.e., large sun-burst with ribbons, etc. I think you'll like it.

As my workload grows in this "Activities" column endeavor it becomes imperative that I streamline my operation. Shortly, my volume of mail will preclude my answering each of your letters personally, so I will answer these letters via this column. I will however, always try to answer personal letters. Expanding upon this thought, let us use this column to answer your questions by using the membership as a resource. For example, if you would like some first hand feed-back from those that have used a certain antenna, or if you're looking for a solution to a problem or just want to connect with others who have similar interests, this column will be your medium. This will give you the first-hand input you require and hopefully bring us closer, the latter being one of the reasons we belong to the the QRP

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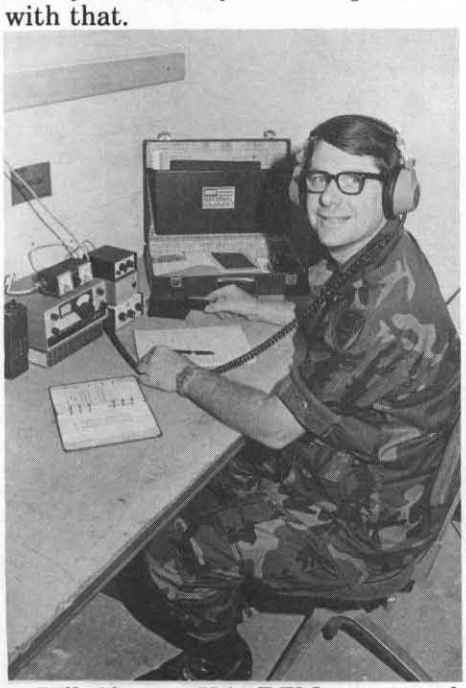
Awards . . .

ARCI.

Congratulations and good luck to Mike Bryce on his undertaking as QRP Editor for *73* magazine. This is no casual task and deserves all of our support. Mike also suggests that we use the various ARRL Inspection centers for QSL valadation, etc., towards our club awards. This could save League members a lot of time in front of a copier as well as money. I certainly have no problem with that.



Bill Shortz, KA9BZM, on guard with QRP.

As a civilian, Bill Shortz, KA9BZM, is a communications officer for the Pulaski County Sheriff's Dept. at Winamac, Indiana.

As a member of the Indiana Army National Guard, he's a broadcast journalist for the 120th Public Affairs Detachment at Indianapolis.

During the summer, when his unit spends two weeks training at Camp Grayling, Michigan, Bill finds the time in the evenings to pursue his interest in amateur Radio.

His portable QRP operation includes a Heathkit HW-8 transceiver, an MFJ tuner and keyer, long wire and a 40 meter dipole.

Interesting letter from Dan, WG5G. After confirming his 50th state for WAS he went to work on his DXCC, running an HW-9 and 5 band vertical he has brought his total up to 81/64. Just prior to the WPX CW contest he added a new HQ-1 Mini-Quad and nailed down eight more including a YC8 on 15m. His key appears to be vigilant attention to solar flux and A index as well as the usual "can-do" QRP attitude. Well done Dan, you might be interested in adding a third element to the HQ-1 per Aug. 82 *CQ*.

I have a DXCC certificate for Keith, W6WIY. As of last June he was 115/84 and by September he reported on the WSN net that he had 104 confirmed. Keith runs a Ten-Tec Delta cranked down to QRP, a Mini-Quad and dipole, both low by prescribed standards yet he gets the job done.

I recently processed a KM/W award for Herb, NF5Y and Phil, N4KEZ, both put up the green for a comparable award for the fellow on the other end and I thought that showed a lot of class. Herb pulled it off with his HW-9 at three watts to a loop, working VK7W down under, who incidently, can be found frequently around 0530Z near 14055. Phil on the other hand used a "Tuna Tin II" at 350 mw and a sloping dipole to work VE3NTO in Toronto.

I see Terry, K4KJP and Gene, W4ODW are at it again, this time applying for the first 13cm KM/W award. Terry was running .6mw to a 16 element non-resonant 432 mhz quagi while Gene ran two watts to a four foot dish with a 13cm feed. Word has it that their next attempt will be on the 10ghz band running micro-wave ovens.

Another builder out there is Bruce, N7CEE, having built the "Micro Mountaineer" 40 meter Vxo by W7ZOI and the "Viking 3/5" by W0RSP. Bruce is into backpacking and serious home brewing. How about an article for the *Quarterly*, Bruce?

Thanks to Bob and Mary Lou Brown, NM7M and NM7N (How do you suppose they worked that out?) for the donation of a mint condition HW-8 to be used as a club award. I'm not sure if the BOD has decided upon its application yet but I'm sure it will be a worthy one.

A letter from Roy Philip, K8NQQ, was forwarded from W5GJM. Roy has been running an Argo 515 mobile for several years, and has worked 40 countries and 40 states as he drives to and from work. Roy's an old timer, being licensed since '46. Roy, you've got to write more about the QRP mobile set up you have. There must be a hundred of us who would like to hear how you do it.

Inveterate homebrewer Bob Joiner, WB7BIV, has built his own style of one cubic inch rig for 40 meters. For batteries he has had very good luck with the flat aluminum foil Polaroid batteries from spent film packs. How about that for an idea. Anyone else having any experience along that line ought to write to Luke Michael, W3TS, and get an exchange going.

We congratulate Mike Bryce, WB8VGE, again on his appointment as QRP editor for *73* magazine. Write to him with ideas and reports of activity and homebrewing. He has green light to put out a monthly column if he can get enough to fill it. So go to it guys. Mike will be getting a lot of exposure for QRP if we back him up. His address is on the QRP *Quarterly* masthead.

Van Nielsen, KA7WXW, writes about his first QSO with QRPer, KA6HGT, on 40 cw. Van said he was dumbfounded to learn that HGT was running only three watts out of a Los Angeles apartment with a clandestine antenna. Now Van is going to crank his 530 down a ways and see what he can do. Listen for him and drop him a note, cause he's at home recuperating from a crippling auto accident. Address is 2507 South 450 East, Bountiful, UT 84010.

John Hancock, WD4NBA, in Mobile, AL, heard a lot of activity during the QSO party but couldn't press the key. His rig, a Viking QRPer went into thermal runaway and left him smoked, but he logged all four corners of the country and VE's too. He'll be back with a new final next time.

Another giver in our midst is Fred Bonavita, W5QJM, having turned over all rights to his "Hot Water Handbook" to the club, and still another giver, Mike Bryce, WB8VGE has published an expanded version for the club. I'm beginning to get the impression that all we have to do for this guy is fan him and feed him.

Speaking of money. The new expanded *Quarterly* costs bucks and we're going to have to look for ways to generate this money. If any of you have some ideas on generating this money, let me know and I'll pass them along to the BOD for consideration. With a properly or-

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Awards . . .

chestrated drive like the handbook for example, or logo T-shirts, we can generate the funds necessary to supplement our own inner talent and make the QRP ARCI the club we all envision.

Let's welcome Dennis, WB7SNH, back into the fold. Dennis dropped out of radio for a few years, a malady that affects a lot of us from time to time. Dennis goes way back in QRP ARCI to the early 60's (his number is in the 600's). He dusted off the old HW-8, hung a sloper for 40 and 80 meters, resurrected his TA33 and is anxious to fill out the few remaining for his QRP 300.

Reading Duane's letter, KA2YKZ, really brought back memories, having lived in apartments for years some time back I can relate to his antenna ingenuity. Living on a sec floor he hides his antennas in the attic and often uses a 200' rain gutter for a radiator. He does quite well judging from the QSL's I processed. An Argosy and HW-8 fill out his clandestine station.

Joe, KD2JC, packed up the old HW-8 and a trap dipole for a camping trip to W3 land this summer and cashed in on one of the real joys of QRP. Camping and QRP were just made for each other. Good luck on the rest of that WAS Joe.

Another fella who is getting a lot of BANG for his QRP BUCK is Gene, AL7GQ, down in Jackson, Miss. Gene apparently has a real antenna farm with room to try just about anything. Early this year he put up my favorite sky-hook, the Skelton cone and found it to be superior to his dipole, loop and TH-2 on 15 and 20 meters, with his 122' dipole being superior on 40 and 80 in it's favored direction. Thanks Gene for all the valuable feed-back you've given me.

Right on the heels of the near grand-slam by K9EIJ came the application of Robert, K3IIZ. Bob applied for WAS, WAC, DXCC and KM/W. I spent hours reviewing his cards in near disbelief, but it was all there, right down to the comments about his power and antenna. Virtually everyone who applies for DXCC has a beam of some sort, but not this guy. Bob included a copy of an undated article from *73* about his secret weapon, the "German Quad," this is the same antenna written up in the Nov. 85 issue of *QST* under the name of "Loop Skywire." All of Robert's contacts were made from late 82 through early 86 using an HW-8 and were opportunistic. Aside from 20 countries and 35 states which were worked with a dipole, the balance were garnered with his loop. Needless to say, this antenna is on the drawing board for this QTH.

John, W8YNA sent me a lot of good reading material on antennas and is apparently having second thoughts as are a lot of us about toroid baluns in tuners and antennas. Another Skelton Cone fan, I look forward to some good feed-back based upon his deep background and will share this with you as it comes in. Many of you are adopting the "dual coax feed" system on dipoles, G5RV's and Cones and John sent along a sample of the 75 ohm duel coax used in the cable TV industry and available at Radio Shack. It would appear to be a little on the lossy side, but for a short run at a low SWR application in a stationary environment (solid conductor) it might be worth a try as the price is right. Has anyone out there used it?

By the time you read this, the September North American Sprint will be history and unless I miss my guess, so will the Harper Air Hawks team headed up by Red, K5VOL as well as the "Eat-their-lunch-Bunch" fielded by Fred, W5QJM and Roger, W5LXS. The WSN region gang fed up with all the bragging from east of the Rockies issued a challenge to the other regions and really got out in force. Led by Cam, N6GA, the WSN team threw themselves into the boiling fray and came out looking great. The early results are above.

Congratulations to Brian, WN6F on his "AA" degree, you'll recall Brian was the NCS for the WSN-80 net last year and he is now a control room operator of an uplink/downlink satellite site in Culver City. Between linking, girls, radio and more schooling, he's kept pretty busy.

CQ Morse Buffs

If you are into QRP, you are almost certainly into Morse. If you are into Morse, you will be interested in a new venture involving QRP ARCI member Tony Smith, G4FAI.

Two Dutch amateurs, PA0BFN and PA3ALM publish *Morsum Magnificat,* a quarterly journal dedicated to the worldwide traditions and practices of Morse, past and present, the only snag being that its in Dutch!

Now, Tony has joined with the Dutchmen to produce an English language, international edition of *Morsum Magnificat,* the first issue of which is due out this autumn (fall). Material will be used relating to all aspects of Morse telegraphy, wire, wireless, and others, and while there's a definite historical slant, today's Morse scene will not be overlooked.

Apart from Tony, Dick PA3ALM, is also a QRPer, so we can be fairly sure that QRP CW will find its place somewhere in the magazine! Annual subscription, for four issues, is $10, sent to M. Hellemons, PA0BFN, Holleweg 187, 4623 XD Bergen Op Zoom, Holland. Banknotes will be appreciated as there are difficulties and high charges involved in clearing foreign checks in Holland.

Dale, WA7TUX reports that QRP has changed him from a casual rag chewer to a serious certificate chaser and contester as his results attest, WAS 48, WAS (6m) 24, DXCC 25, WAD 5, WPX 170 and VUCC (6m) 78. His most memorable are a double hop six meter shot into Florida and a 10, 15 and 20 meter contact with the FO0XX 86 DXpedition which took him a week. His future plans include a Six-shooter for six

See Awards . . . . . next page

WSN North American Sprinters

Call	Name	20m	40m	80m	TOT	SPC.	Points	Power
N6GA	Cam	39	41	1	81	26	2106	5W
WB7OJV	Buck	–	–	1	83	21	1743	5W
KR0U/P	Tim	20	29	19	68	24	1632	4.5W
W6SIY	Keith	26	35	7	68	20	1360	3.8W
K7WA	Jim	29	23	12	64	20	1280	5W
XE2IOF	Jake	–	–	–	51	20	1020	3W(solar)

Jake also worked 5W1FT in Samoa and two stations from Costa Rica when he took time out from swatting mosquitos.

meters and some two meter DX work.

Cam, N6GA has replaced his home brew quad with a Cushcraft A-4 along with a new and already modified HW-9. Should the Zuni-Loop Field Day efforts go the home brew route per K5VOL's suggestion, we most likely will press Cam's tiny W7EL txcr into service. The night before Field Day, Cam tied the little palm sized rig into our monster three element delta array on 40 meters and promptly worked just about all call areas in a matter of minutes, including the big apple with a 559 report. Not too bad for 950mw!

Chris, G4BUE, reports that 42 QRPers attended his annual Summer QRP Party this year, including Ade, W0RSP and JI6EKP, with three continents represented, A WAC party is right around the corner. Those of you who do not subscribe to *SPRAT* might want to consider it. With a membership nearing 4000, this is a very exciting group and publication. *SPRAT* is chuck-full of super QRP building projects and articles. Send $10 US via International money order (no IRC's) to: G-QRP Club, St. Aidan's Vicarage, 498 Manchester Rd., Rochdale , Lancs. 0L11 3HE. Rochdale (0706)-31812, England. While I'm speaking of *SPRAT* and Chris, quite a few of you have asked me about the "oner" Tx that appeared in *SPRAT* and was offered by Chris at the QRP booth last year (briefly, as they went fast). Chris informs me that the G-group has some, as yet, unanounced plans for this little rig and all inquires should be directed to him, Christopher Page G4BUE, 'Alamosa' The Paddocks, Upper Breeding, Steyning, West Sussex, BN4 3JW, England.

Those of you who worked Jake, NW61/MM down in Baja, Mexico please note his new call, XE2IOF. Until his new QTH is complete, he gets around in an old '62 Dodge school bus. Jake experienced the QRO burn-out syndrome and feels reborn in QRP. He is active in both the TCN and WSN nets with his Argo 505 and Butternut vertical, he hangs around the QRP frequencies mostly during the day as night light brings in bugs big enough to haul the Argo off! His new address is R.C. Jacobs, XE2IOF, APDO 72, Mulege Baja, CFA. Sur, Mexico.

There was a signal missing on the WSN net for several months, that of Jim W6RCP, our past Nets manager. Jim and Phyllis moved to W7 land and now live in a condomimium with limited antenna space, but Jim is again on the air with some sort of clandestine antenna. You might give some thought to those ultra small loops that W9PNE talks about, Jim. We played with one at Dayton and it really works. KK7C has used one to check into the WSN on 40 meters and he said it was less than eight feet across and hung on a closet door to rotate it.

Sure glad to hear that the power company finally got Bob's noise problem cured, W6SKI. Bob did a good job of documenting the problem and kept the pressure on. Good to hear your signals again Bob.

You will recall the club building project announced last quarter. Wow! the wheels are turning! Take a look at the Two-fer that John Collins recommends. I like the Txcr design and see it as something we might press into service for that All Home-Brew Field Day K5VOL was talking about. We've asked for this sort of thing for a long time so let's get

See Awards . . . . . next page

QRP ARCI Awards Summary

Call	Date	Basic	Endors.-Miles-Notes	Power	Mode	Band
DXCC						
KT1H	5-5-86	72C			Mix	Mix
NM7M	5-3-86	73C			Mix	Mix
K3IIZ	5-31-86	74C			CW	Mix
K9EIJ	6-14-86	75C			Mix	Mix
WAC						
K6ZH	5-25-86	454C			Mix	Mix
K3IIZ	5-31-86	455C			CW	Mix
K9EIJ	6-14-86	456C		2W	CW	Mix
WAS						
KD2JC	4-3-86	237C	30-40 States	2.0	CW	Mix
KA2YKZ	4-3-86	238C	50 States Novice	5.0	CW	Mix
W6RCP	4-3-86	239C	50 States	5.0	CW	Mix
K3IIZ	5-31-86	240C	50 States	3.5	CW	Mix
K9EIJ	6-14-86	241C	30 States 2xQRP	2.0	CW	Mix
KS7R	7-6-86	242C	50 States	2-3	CW	Mix
KY9Y	7-6-86	243C	30 States	1-3	CW	Mix
QRP-25						
K9EIJ	6-14-86		25 Members			
QNI						
WA3PTT/KL7	5-26-86	29	TCN Cert.			
W3TS	5-25-86	30	GLN-40 Cert.			
W6SIY	5-26-86	31	SWN-40 Cert.			
WB7BIV	5-26-86	32	NWN-40 Cert.			
NW6F	5-26-86	33	TCN Cert.			
NJ7M	5-26-86	34	WSN-40 Cert.			
K3TKS	5-26-86	35	NWN			
KM/W						
SN9GOM	7-5-86	941	To JA7AHO 2585.67m/w	3.0	CW	20M
DL2HCB	7-5-86	942	To VE1ZZ 1232.5 m/w	2.0	CW	40M
N7CEE	7-5-86	943	To NL7ZZ 2720.0 m/w	.375	CW	40M
K9EIJ	7-5-86	944	To 3B8CF 5016.5 m/w	2.0	CW	15M
KD9NT	7-5-86	945	To 3B8CF 2006.6 m/w	5.0	CW	15M
KA2YKZ	7-6-86	946	To EA8AJS 1687.0 m/w	2.0	CW	15M
KA2YKZ	7-6-86	947	To F6HWV 2049.5 m/w	2.0	CW	15M
KA2YKZ	7-6-86	948	To IK3AFW 2107.0 m/w	2.0	CW	15M
KY9Y	7-6-86	949	To ON4APO 3590.1 m/w	1.2	CW	15M
NF5Y	7-6-86	950	To VK7ZZ 3121.67 m/w	3.0	CW	20M
VK7ZZ	7-6-86	951	To NFSY 3121.67 m/w	3.0	CW	20M
KA8NRC	7-6-86	952	To JH1WIX 3449.47 m/w	1.9	CW	15M
JR3ELR	7-6-86	953	To JRSJV0 2060.0 m/w	.2	SSB	2M
JG1BPY	7-6-86	954	To JF2EGV 2200.0 m/w	.8	AM	6M
N4KEZ	7-6-86	955	To VE3NTO 1365.1 m/w	.35	CW	40M
WA7TUX	7-6-86	957	To VK[illegible]AI 1612.8 m/w	5.0	SSB	40M

Awards . . .

behind these guys, build it, test it and provide some feedback. Write to Mike Michael's idea exchange or to me and we'll get your ideas and experiences into the *Quarterly.*

As for my own activities, I'm still checking into all the nets as time will allow, working up an article on my 40 meter three element delta loop array, putting finishing touches on a product review of the new TEC-200 etch resist by Meadowlake that may be just the ticket to go along with the club building project and building the FOXX *(SPRAT)* while doing my best to make QRP the best it can be.

If you're still with me this far along, let me impart a final thought. The first thing most of us do when we receive the *Quarterly* is scan through it for all the nifty projects, etc., with precious little thought as to where they come from. Fortunately, creative people work against all odds, but even they may burn-out sometime for lack of fuel and that fuel is you. Without your feed-back, these people, may in time, simply go away and take their talent elsewhere. Take a good hard look at the names that are missing in the *Quarterly,* authors, editors, contributors, officers and directors. Sure, others step forward, but what a loss! Just think how rich our club, our hobby and indeed our lives would be with everyone pulling together and being supportive? The key is you. Write these people, it needn't be an ongoing dialogue, just a note will do, let them know they are being read and appreciated and tell them about your experiences. Along that line, send me your comments, questions and photographs by February 1 for the April column.

73 and CU on the nets,

Fred, K6MDJ

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