QRP Quarterly

April, 1984 - Volume XXII - Number 2

Journal of the QRP Amateur Radio Club, International

QRP ARCI IS FIRST!
THE ALL NEW HEATHKIT HW-9

See page 3 for a complete table of contents.

QRP Quarterly is the official journal of the QRP Amateur Radio Club, International, Inc., and is published four times a year: January, April, July and October. 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). Current Club membership is 5408, and QRP Quarterly circulation is 689.

MEMBERSHIP The initial membership fee of $6.00 ($7.00 for DX) covers lifetime membership plus the first four issues of the Quarterly. Membership information is available from the Secretary/Treasurer.

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TECHNICAL ARTICLES Submit all technical articles to the Technical Editor. They should be typed, double-spaced and all circuit diagrams should be clear and include a complete list of parts and their values. The Technical Editor and the Club are not responsible for testing projects that are published in the Quarterly.

LETTERS TO THE EDITOR Letters to the Editor, articles of general interest and announcements should be sent to the Publisher. Not every letter can be published and the Publisher reserves the right to edit letters to conform to space limitations. Photographs of your station, construction projects, antennas, etc. are welcome. Black and white photos at least 3" by 3" are preferred.

Requests for the return of materials submitted for publication must be accompanied by a self-addressed, stamped envelope. If you write to one of the Officers and request an answer, please include a self-addressed, stamped envelope. Please include your name, call, address and a telephone number on all material submitted for publication and general correspondence as it may be necessary to contact you for additional information.

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FROM THE EDITOR

FRED BONAVITA, W5QJM

Editor's Note: Readers' response to the revamped QRP Quarterly has been gratifying and overwhelmingly positive.

Special thanks go to the new editing team of Bert Zitek, N5ELM, the managing editor, and Ed Manuel, N5EM, the technical editor. Their efforts and inspired work are the leading factors in the new Quarterly.

This issue of The Quarterly marks a first for your club: A super issue. Its increased size is due in part to the fact we had to leave out too much material from our January issue, and we are making up for that.

Even more important, however, is the fact we have a considerable amount of fresh technical articles, club news, contest information and the like. Rather than leave out articles which would be out of date by the July issue, we have included everything in this one.

We would like to think we could produce a super-sized issue of The Quarterly each time, but we cannot. A major ingredient -- technical articles from you, the members and readers -- is in short supply. We also need high-quality, glossy black and white photographs of members' ham shacks, Field Day operations or QRP-related events.

In short, we need your support if we are to continue the momentum we have gained in the past two issues. Send articles (preferably typed, double-spaced) to me, please. June 1 is the deadline for the July issue, and my address is on Page 2 of this issue. If we can get enough articles on one subject (i.e., antennas), we'll try for a "theme" issue.

Shower down your offerings and comments, please.

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THERE IS A NEW KID ON THE BLOCK
THE HW-9

BY FRED BONAVITA, W5QJM

The HW-8 is going to be a tough act to follow.

But the Heath Company is attempting just that with the HW-9, the third generation of a QRP CW-only transceiver that is expected to be made public around the time this appears in print.

Heath is betting a bundle that -- despite the flood of commercially made gear with an incredible assortment of gongs, whistles and bells -- there remains a healthy segment of the Amateur Radio populace still backing the build-it-yourself tradition of which the company is a major force.

Although the first HW-9s have yet to be shipped (that is expected around mid-April) and none is available at this writing for testing and evaluation, it appears Heath has another winner on its hands.

Indeed, rumors about a new, commercially made QRP rig were so widespread last year that many low-power buffs haunted the Ten-Tec, Heath and Kenwood booths at the ARRL National Convention in Houston, hoping to pick up word about it. But nothing happened.

Heath was a logical target of the rumors, since Ten-Tec had dropped its popular Argonaut series a year earlier and had brought out the Argosy, and Kenwood was then in the early stages of discontinuing sale of its TS-130v. The HW-8 had been on the market eight years and, although still a popular rig with builders and modifiers, the fact its pricetag was up to $190 per copy, was beginning to lag in sales.

There was a vacuum in QRP transceivers in the five-watts-and-under category, and no one seemed in a hurry to fill it.

Earlier in 1983, Heath introduced two new QRP-related kits -- the HM-9 SWR/wattmeter bridge and the HW-9 antenna tuner. Those '9' rigs were out in a new, dark-colored finish instead of the familiar two-tone green paint job which adorned the HW-8 and its predecessor, HW-7. That move only added to the speculation.

Late in January, leaks emerged from Benton Harbor about a new QRP rig being on the way. The rumors were fuled when Heath began returning checks to those trying to buy the HW-8 and accompanying them with word the venerable rig had been discontinued. Watch for the HW-9, they added.

David Poplewski, KC8IV, Heath's production manager for communications, says the company began getting scores of inquiries about the new rig

"Quite frankly, it feels real good to have a tiger by the tail," he adds.

David says the HW-9 essentially is a stripped-down version of Heath's Model 5400 QRO transceiver incorporating some of its best features with the low-power output. It will be tucked in the same-size cabinet as the HW-7 and HW-8 but with the darker finish.

The innards will feature two printed-circuit boards instead of the one provided for the earlier models. As can be seen from the photograph, the redesigned front panel shows the familiar push-button bandswitching also is a victim of change.

Other new features of the HW-9 include: a single-conversion receiver with a 9 MHz i.f. and a four-pole crystal filter instead of the often-cursed, direct-conversion receiver of the HW-7 and HW-9; an RIT; an improved active audio filter; five watts output (three watts out on 10 meters); and full break-in keying.

The basic rig comes with 80, 40, 20 and 15 meters, but there is an optional band package that will add 30, 17, 12 and 10 meters, all switchable from the front panel.

In addition to performance, the major unanswered question is the pricetag. Heath's advance material on the HW-9, accessory band package and matching PSA-9 power supply lists no dollar figures. They will be announced in the company's new catalog.

However, reports say the starting price for the basic HW-9 will be in the $250 range with a top price of around $300 when the extra bands are added.

Cost, of course, will be a crucial point in whether the HW-9 succeeds. If the pricetag is much more than those figures and the performance fails to justify the higher cost, then Heath is going to have problems selling the new model.

For one thing, Ten-Tec's Argonaut model 509 can be found on the used market in good condition for around $200, while the improved 515 model can be had for $300 or less. Both are known performers and offer ssb.

But Heath has a good reputation and is respected among QRPers worldwide. While its HW-7, which sold 10,000 units between 1972 and 1975, was something of a dog because of poor receiver design, the HW-8 did much better. It sold more than 15,000 units before being discontinued early this year, and it remains a popular rig. Both early versions will be around for a long while to come.

The success of the HW-9 will answer whether there is room in Amateur Radio today for a simple, straightforward, pure-vanilla, CW-only, low-powered transceiver in kit form.

Heath is betting there is.

OCTOBER QSO PARTY COMMENTS

"Working KL7XA and KH6H for two new WAS two-way QRP and two new DXCC two-way QRP was super!. . .I now have a broken 'S' meter from too many 599+40 'QRP' signals. XYL said I looked terrible when I stopped. I was signing QLF at the end." KA1GPG

"I was all ears for the boys over in G land, but the openings were to South America on 10m early Saturday morning, while the East Coast was working across the pond to G land." W6SKQ

"This is the best I've ever done, no thanks to poor band conditions on 40 and competition from the PA QSO Party." KX4V

"Enjoyed the contest. Didn't understand what was going on at first. Very surprised by strength of signals." W5USJ

"This time I ran in the less-than-one-watt category -- anywhere from 100 mW to 800 mW output. I was amazed at how many stations came right back to me while I was running 100 mW. G4EBO answered my CQ while I was running about 200 mW, and he was off the back of my beam!" KN1H

"It's a pity that I haven't a good antenna, but living in the town center, it's just not possible to have a tower and beam in the garden, so I have to make do with an indoor ZL Special." G4EBO

"There appears to be plenty of novice members and novices with an interest in this area. . Almost all my novice operating was done with under 5 watts out, and I was probably just as successful as most, considering antenna and location." KA9NZI

QRP Experimenter's Corner

by Wes Hayward, W7ZOI

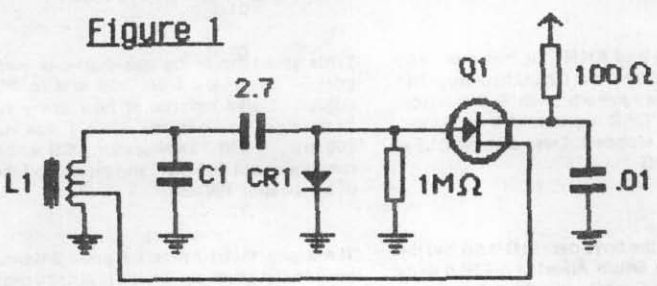
The second edition of this column finds us with spring approaching, the time when we all begin to plan the summer QRP expeditions. Now is the time to finish construction of those new portable rigs, providing plenty of time for testing in the shack

The previous installment presented a (hopefully) foolproof design for a small transmitter power amplifier, the GPPA. This time we'll discuss VFO design and present a circuit suitable for use on 40 meters with the GPPA. The combination could be the basis for that new portable rig.

An often-asked question is: "Which VFO design is best?" I've built many circuits and have concluded that the exact circuit topology makes little difference. Both thermal stability and noise spectral density have been measured. The circuit must be designed for high loaded tuned circuit Q, and the best components must be used. Then, a Hartley, Colpitts or a Clapp are identical so far as warm-up drift and overall stability. Low noise results are obtained as well is the stored energy in the tank is maximum.

Perhaps the simplest VFO is the non-critical Hartley shown in Fig. 1. The low value coupling capacitor from tank to FET gate ensures high resonator Q. The 2.7 pF value shown may be replaced with a small air variable cap. The diode shown provides automatic gain control to help establish clean amplitude limiting. The internal FET diode may conduct if the external diode of Fig. 1 is omitted, resulting in thermal instability and high noise. FET type is not critical, although low I-dss types such as some (but not all) MPF-102s should be avoided, for output amplitude may then be low. Motorola 2N5485 is a good, inexpensive choice. The 2N4416 is also great.

Figure 1

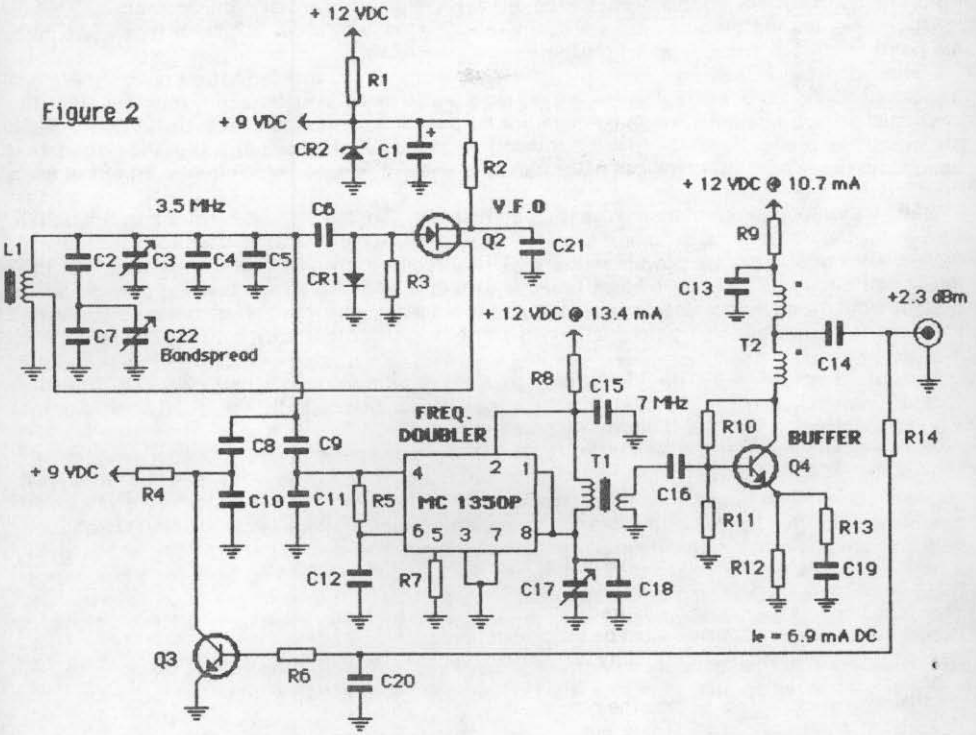


Exact inductor value is not critical. A good starting point is a coil with reactance of 100 ohms, about 2 microhenrys at 7 MHz. Tap position is also not critical. It should be at about 20 percent of the total number of turns from ground.

Coil construction is somewhat critical. The best inductors I've found are wound on Amidon -6 toroids. The -6 matrial has a temperature coefficient of +30 ppm/deg.C, lower than most ceramic forms, especially those with a tuning slug. The core should be wound with the wire tight against the toroid. Air gaps can degrade thermal stability. Wire size is not critical, but lean toward the larger sizes.

Capacitors can be very critical. The best stability I have obseved is with NPO ceramic caps. Herein lies a problem for the amateur experimenter: Good quality NPO caps. are not readily available. I recently purchased some inexpensive imported NPO caps. from a mail-order source.

Figure 2



PARTS LIST

R1 - 1K	C1 - 22 uf	C15 - .01 uf	CR1 - 1N914
2 - 100	2 - 22 pf NPO	16 - .01 uf	CR2 - 9 V Zener
3 - 1M	3 - 19 pf Air	17 - 100 pf Trimmer	
4 - 100K	4 - 470 pf NPO	18 - 200 pf	Q1, Q2 - 2N5485 or 2N4416
5 - 1K	5 - 100 pf NPO	19 - .01 uf	(cf. Text)
6 - 2.7K	6 - 2.7 pf NPO	20 - .01 uf	Q3, Q4 - 2N3904
7 - 10K	7 - 22 pf NPO	21 - .01 uf	
8 - 100	8 - 5.6 pf NPO	22 - 19 pf Air	L1 - 3.6 uH: 27 T. #26 wire
9 - 100	9 - 22 pf NPO		Wound on T - 50 core
10 - 2.2K	10 - 200 pf NPO		T1 - Primary: 26 T.
11 - 680	11 - 1000 pf		Secondary: 6 T.
12 - 270	12 - .01 uf		Wound on T - 37-6 core
13 - 22	13 - .01 uf		T2 - 10 T. Bifilar
14 - 2.7K	14 - .01 uf		Wound on FT - 37-4 core

They were used in the VFO shown in Fig. 2, producing a large warm-up drift of 700 Hz. Replacement of the 470 pF cap. in that circuit with a high-quality, domestic unit reduced the warm-up drift to 100 Hz. Measurements were made at 7 MHz.

If good NPOs are not available, an alternative is the polystyrene cap. They have a rated temp. coef. of -150 ppm/deg.C. The poly caps. may work very well with Amidon -2 cores which have a positive TC of similar magnitude. Has anyone out there done measurements on this? Incidently, the poly caps. work very well as temperature compensation elements for tuned circuits using -6 cores, air variables, and NPO ceramic capacitors, yielding exceptionally stable oscillators. Poly caps are readily available.

Circuit board layout is not critical, but a single-sided board is prefered. The capacitance of a double-sided board is thermally unstable and has a low Q. Ugly construction (QST, Aug, 81) also works well.

An output voltage may be obtained from the FET source. A better method is to extract the signal from the resonator via a capacitive voltage divider, yielding lower harmonic content.

All comments regarding component quality apply equally to other oscillator forms (Colpitts, etc.) and to circuits using bipolar transistors.

Some rigs use VFOs operating at the same frequency as the transmitter output. Others use frequency doublers. Either method will work. However, if there is no frequency multiplication, the VFO must be well shielded from the transmitter output. Stray coupling back to the VFO can cause the output frequency to shift when the transmitter is keyed. Any signal within the 3db loaded bandwidth of the oscillator tank can have dramatic, and usually undesired effects. Shield, or use a doubler!

The best frequency doublers are those using balance. See the discussion of this in Solid State Design for the Radio Amateur, page 42. The two-diode doubler works very well and is simple. It does take moderate drive power, though. The doubler shown in Fig. 2 uses an MC-1350P integrated circuit. This type is cheap, readily available and offers high gain. It may be drvien directly from the oscillator tank through a capacitive divider. The input drive should be confirmed to about 0.3 volts peak-to-peak. Otherwise, the output power may actually decrease with increasing drive.

The output from the '1350 doubler is low, so gain is required to reach the 1 mw (0 dbm) level. A 2N3940 feedback amplifier is included in the circuit of Fig. 2. Incidently, the '1350 works well into the vhf spectrum. I've used them up to 2 meters.

The VFO shown in Fig. 2 was built for use with a portable 40 meter transceiver (shown in Houston, Oct. 83). The rig is like the "Micromountaineer" (QST, Aug. 73) with a built-in crystal. However, it will also operate with the external VFO. The basic VFO operates at 3.5 MHz. The circuit is configured for use with a direct-conversion portable transceiver with a 800 Hz frequency shift activated by a dc voltage in parallel with the VFO output signal. The 5.6 pF cap. shown in Fig. 2 may be increased if a larger shift is desired. A 22 pF value could be used for a stand-alone transmitter. The VFO should run continuously rather than be turned off during receive periods. The VFO of Fig. 2 will easily drive a 7 MHz version of a transmitter based on the GPPA. It may be scaled to other bands using the guidelines presented.

This is about all the space we have for this issue, so we'll wrap it up. Many thanks for all the comments received about the column. Please let me know what you want to see treated in future issues.

73, W7ZOI

Editor's note: The accompanying schematic diagram was done on the new MacIntosh computer by Apple. Thanks go to David E. Knodel, WD5BNE, for his time in designing the symbols and generating the artwork. You may note that the symbols used for resistors and capacitors differ from out usual convention. These are used by the G-QRP Club in SPRAT and are European standard. This was done to make the artwork more legible and I would like to hear what you, the membership think.

Ed Manuel, N5EM - Technical Editor

WHEN DOES YOUR LICENSE EXPIRE? CHECK IT NOW!

WOULDN'T WANT YOU TO MISS THE QRP ARCI SPRING QSO PARTY

THE JOY OF QRP:

STRATEGY FOR SUCCESS

Word was received at press time that the long awaited QRP book will soon be available. Here is a quick sketch of the contents.

Ade Weiss, K8EEG/W0RSP, lifetime QRPer and noted QRP author explains how to devise strategies for successful QRP operation of **your** set-up, objectives and location.

Seven detailed chapters cover: (1-2) overview of QRP operation - types, activities, awards, clubs; (3) complete discussion of the many factors that must be considered in planning for QRP operation with realistic expectations, including selection of objectives, available *operating times, location, antenna capabilities, and propagation* and band selection; (4) new/used commercial equipment selection with detailed explanation of desirable features, QRO to QRP modification; (5) homebrewing the first QRP rig, circuit selection tips, parts sources, projects: Viking-5 5w 1- or 2-band transmitter for 3.5, 7, 10 and 14 mHz, 1-band v.f.o., 2-band v.f.o., high-current (3amp) d.c. supply and design theory; (6-7) exhaustive discussion of general operating techniques, and techniques for specific types/events.

In all, this book has 96,000 words (about 160) pages, 31 illustrations, project photos, and is 5½" x 8½". The book will retail for $10.95 postpaid.

Pre-publication special (until June 1, 1984) for QRP ARCI members: $9.00 with your QRP ARCI number: (over-65 Seniors, $7.00).

Submit your orders to Ade Weiss, 83 Sub. Estates, Vermillion, SD 57069.

IS IT TIME TO RENEW YOUR SUBSCRIPTION?

CHECK YOUR MAILING LABEL!

THE BEST ONES YOU MAKE YOURSELF

BY C.F. ROCKEY, W9SCH

When the frost is on the pumpkin, I get the annual urge to get back on 80 meters CW. I had, however lent my faithful, decade-old, home-brew QRP transmitter to a young friend up north. There was naught left to do but build a substitute for it.

Now, a QRP rig is something like a corn-cob pipe: the best ones you make yourself, preferably at no cost. That's how it was with this little job. Cooked-up on a drizzly Saturday afternoon, this little 80 meter transmitter cost nothing but my time. It was born entirely from my junk box but it puts out a clean five watts anywhere in the 80 meter CW band using a 6V6 tube.

The circuit is what was once called the "tri-tet"-a triode Hartley oscillator coupled via the electron stream to a tetrode frequency-doubling amplifier; this, all in one 'lil ole' tetrode tube. As a result, there is good isolation between the frequency-generating section and the antenna, much better than the usual simple oscillator.

The schematic diagram should be self-explanatory. Almost nothing is critical. You can use what you have on hand, but a few points should be noted: solid construction is a must, fasten everything down firmly, and no 'swinging chokes' or haywire if you want modern signal quality. The grid tank circuit, which controls the frequency, should contain at least 300 pf. to swamp out drift and instability. Old parts are perfectly alright, but all parts used should be of good quality. As with all simple rigs, do not try to suck every drop of 'soup' out of the plate tank. This is vital!

Use your own judgement in mechanical arrangement. Keep the grid and plate coils at mutual right angles and at least six inches apart. Unlike what the so-called savants say, shielding is not necessary. The rig is built upon the classical plywood baseboard and panel. It looks like nothing available on the market today, but I couldn't care less. Here is a chance to exercise your personal creativity (if you build something nice, send us a photo...). Despite the fact that my rig contains no more shielding than a rabbit has morals, TVI and other unpleasantness is completely absent.

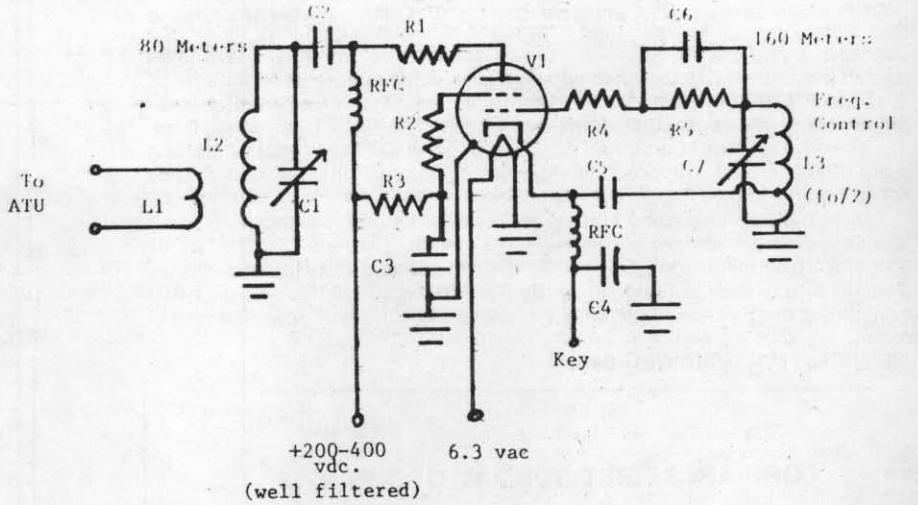
I have made dozens of fine QSO's, many, long 'rag-chews', with this rig and couldn't enjoy it more if it cost a kilobuck. Don't avoid 'home-brewing' something just because you cannot duplicate the latest 'state-of-the-art' trinket. If you've never built and used a simple transmitter you have never experienced ham radio in it's true essence. Try it and see, this might well be your dish.

In radio, as in as in most everything else, you get what you pay for. Buy a sophisticated, state-of-the-art rig and it practically runs itself. You have to run a simple rig like this yourself. That's what is involved in the price difference. But if you build this rig carefully, and use it thoughtfully, you will be pleased with the results. Using an ordinary tuned-feeder dipole ('zepp') at 25 feet, I have contacted at least 60% of all stations called, so it works! See you on the air.

PARTS LIST:
C1 and C7 - 350 pf. variable, air space
C2 - 2000 pf.
C3 - 500 pf.
C4 - 0.05 uf.
C5 - 5000 pf.
C6 - 50 pf.
R1, R2, and R4 - 47 ohm
R3 - 22 ohm
R3 - 22 Kohms
R5 - 220 Kohms
RFC - 2.5 Millihenry
V1 - See Notes
L1 and L2 - Plate Coil:(10 microhenrys), 15 turns. Antenna Coupling Coil is one turn around ground end; may have to be adjusted to match Z of your antenna tuner.
L3 - Grid Coil:(30 microhenrys), 35 T., tapped 7 turns from ground end.

SCHEMATIC FOR THE CORN—COBBER

(Not recommended for frequencies above 4 Mhz.)



SCHEMATIC DIAGRAM NOTES

1. Coils: Ours were close-wound with #20 ga. 'bell wire' on plastic drinking glasses, 2 3/8" diameter. (They may be funny looking but they are high-Q and stable. Besides, they are cheap and available).

2. KEEP COILS AT MUTUAL RIGHT ANGLES AND AT LEAST SIX INCHES APART.

3. If you can get them, use silver mica fixed capacitors for grid, cathode and screen fixed units

4. Tubes usable: 6V6, 6F6, 6Y6, 6K6, 6W6. Use what you have. (I use a 6V6 at 350 volts and 40 ma. for 14 watts input and 5 watts output).

OCTOBER QSO PARTY COMMENTS

"Band condx were very poor here, or so it seemed." WA9FWO/0

"A new KLM beam made a much better score than in the past. I heard N4BP in the 'test' so I doubt that I can take Florida." K4KJA

"Used up two sets of lantern batteries. . .where were all the other members? I heard none at all." GM4ELV

"Operator is totally blind but used memory keyer to assist." Father of KA4MKF

"Think I ended up some 36 QSO's short of last year but still had a lot of fun." WD9EGW

"Equipment used (includes) Argonaut 509, HW-8, longwire, dipole, groundplane, two 7.5 Ah gen-cells, homebrew antenna tuner, Vibroplex bug, Electro-Voice mic., headphones, 1 operator, no assostance, lots hinderance, log sheets, dupe sheets, pencil (mechanical), desk, chair, necessary coax, wire, battery clips, paper clips and one glass iced tea (used for voice repair after ssb QSO)." K5VOL

"It was a thrill to work a VK2 on 40m with only 5 watts output. I haven't done that since I was a kid before WW2, with my trusty 6L6 crystal oscillator." N7DGZ

"Decided to put in entry in spite of having very little time to operate. Someone has to come in last!" G3IQF

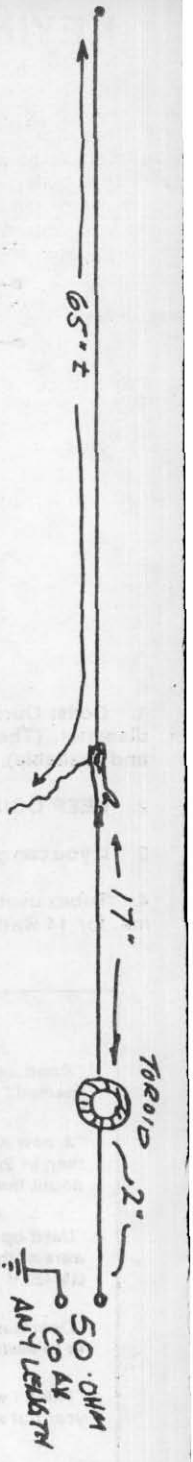
A POCKET PORTABLE

BY DAN LEWIS, N6HY

QRPer Dan Lewis, N6HY, enjoys experimenting with portable antennas to take along on his many camping trips in the mountains of California. In the course of trying one while still at home, Dan came up with this idea, and he landed a station in Oregon on the first try. Dan was running his Argonaut 505 at two watts' output from inside his frame house. The house's metal water pipes were used as a ground system, says Dan, and he was on the second floor. He was on 40 meters. Dan offers this design to SW/QRP readers as a starting point to experiment with portable antennas. This one, for instance, could be rolled up and tucked neatly into a pocket.

The toroid was described by Dan as "a large, balun-type toroid" about 2 inches in diameter and wound with 46 turns of wire. The next 17 inches of the antenna are connected to an alligator clip on the far end away from the toroid. That, in turn, is moved up or down the 65-inch section of hook-up wire that constitutes the balance of the antenna. Move the clip up or down the wire to aid tuning, Dan advises.

(REPRINTED FROM "SOUTHWEST QRPer")



QRP ARCI FIRST SUNDAY QSO PARTIES

Want to have some fun while building up your QRP contact total for the club's certificates?

Well, after more than a year's absence, the QRP ARCI monthly informal QSO Parties are returning with the start of the new year.

Beginning January 1 at 1500Z and running until 2400Z, these once popular parties will be held the First Sunday of each month, unless there is a major national and/or international contest on the air at the same time. By major, we mean ARRL's Sweepstakes or CQ's WWDX Contest -- not some competing minor QSO party.

The idea is for QRP'ers to get on the air the First Sunday of each month to provide oldtimers and newcomers alike an opportunity to build their membership QSO totals for the club's awards program. It offers a chance to introduce other hams to the world of QRP.

These informal QSO parties are**not** contests, and operators should not call "CQ QRP CONTEST" but should simply call "CQ QRP". However the traditional exchange of RS(T); State, Province or Country; and QRP QRCI number applies.

And take some time to do a little ragchewing instead of the usual contest-like hit and run exchange.

The traditional QRP frequencies should be used. And since this is not a contest, contacts on the new 30 meter band **WILL** be allowed. The QRP frequencies are listed elsewhere in this issue.

Don't forget the novice bands. And send your applications for the QRP 25 Award, the Kilomile-per-Watt Award and/or other certificates to the Awards Chairman.

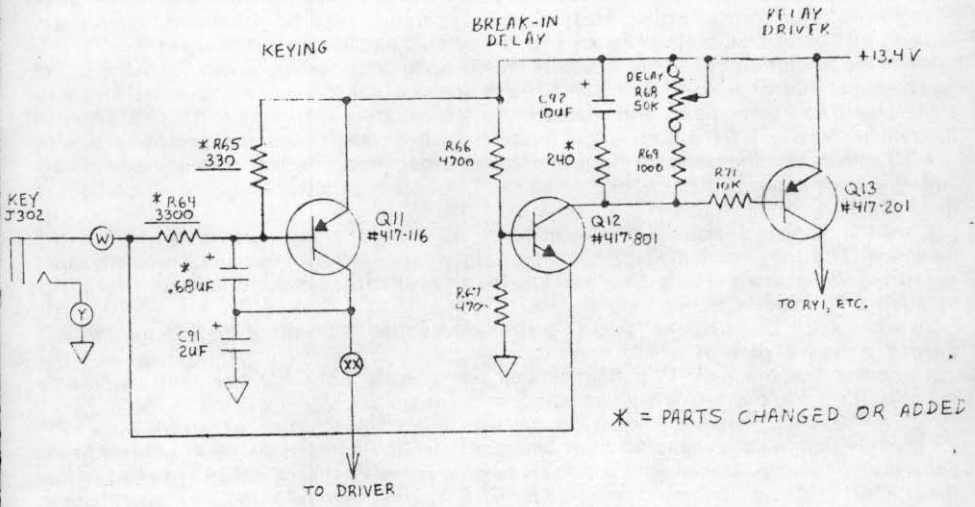
The First Sunday QSO Parties are listed on the calendar. And remember the Transcontinental Net takes place immediately after the QSO Party at 0001Z on 14.060 MHz. After grabbing some QSO credits, grab a QNI credit also.

KEYING SHAPING MOD FOR THE HW—8

BY TIM GROAT, KR0U

This modification eliminates the harsh keying caused by the fast rise-time of the keyed signal. A .68 uf. capacitor (tantalum or other compact, low leakage type) is connected from base to collector of Q11. The positive lead should be on the base. It may be mounted on the foil side of the circuit board, underneath Q11. It is also necessary to change the values of R64 and R65 to obtain proper shaping; the original values give too slow a decay, and virtually unreadable keying. 330 ohms at R65 and a 3.3 Kohms at R64 will produce rise and fall times close to 5 msec.

SCHEMATIC FOR THE KEYING CIRCUIT MODIFICATIONS



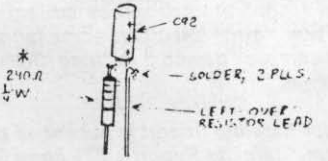
BREAK—IN CIRCUIT MODIFICATION

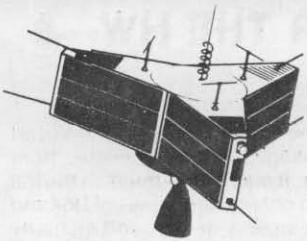
If you use a key or keyer with delicate contacts (or ICs), you may experience contact burning or premature failures. This is caused by the high surge currents that flow to charge up C92 in the break-in circuit. To limit these surges, install a resistor in series with the capacitor. A 240 ohm resistor limits the current to under 60 ma.; this will be adequate in the majority of cases. The resistor may be installed without cutting the circuit board by connecting it in series with one lead of C92. The other lead of C92 is extended with the lead trimmed from the resistor.

Don't try to simplify this by putting the resistor in the key line. This will delay operation of RY1, chopping off the beginning of the first dot or dash sent. The method shown does not slow down the relay.

Special thanks for helping develop these circuits go to Jim Gray, W0GNV, who did the first fix for the motorboating problem; to Wes Hayward, W7ZOI, for similar work on this type of keying; and to BARC's Bark, in which the first part of this keying circuit was published.

INSTALLATION OF RESISTOR WITH C92





QRP ON OSCAR 10

BY ED MANUEL, N5EM

AMSAT OSCAR 10 operations took a very favorable turn this past week when on Monday, 12 September, the first QRP day was scheduled. Initial reports received by AMSAT officials indicated the event was a notable success.

Maximum allowable ERP (effective radiated power) for QRP was 100 watts with the range of 50 to 100 watts put forth as a goal. Many stations apparently were delighted, if not astonished, to learn that good QSO's could be made using as little as 20 watts ERP or less.

While those with higher power available mostly obliged by turning down the 'wick' to the recommended limits or less, those with 10 watts or less of 435 RF were well-pleased that their signals were now being heard and copied well. This resulted, according to AMSAT, because the satellite receiver AGC was no longer forced to cut back the transponder transmitter power.

AGC activity and the resultant cutback of receiver gain occurs when too many excessively strong signals appear in the uplink passband. The consequence to lower-power stations is most severe.

Since the receiver sensitivity is reduced, only the stronger signals are transponded to the downlink. The irony lies in the fact that at the point where AGC cut-in occurs, the strong don't get stronger; the others simply disappear into the noise as all the available power is 'sucked up' by a few uninformed QRO operators.

So when QRP Day demonstrated so well that less than 100 watts ERP was all that was needed, a general glow of satisfaction set in.

It appears that the word IS getting around very quickly that QRO operation is not only impolite; it's a mark of an inexperienced operator; or worse!

. . . QRP days will continue on each Monday with uplink power not more than 100 watts ERP.

. I thought that the above reprint from Amateur Satellite Report might be of interest to the general membership. It seems to sound very familiar to me! For years, AMSAT has known that the OSCAR satellites performed very well for QRP inputs. For most of the previous satellites, AMSAT has established QRP Days. Not only do these days give QRP operators a break from the QRO stations, they give the satellite a needed rest. Since the available battery power is used more heavily when the passband is full of QRO stations, QRP operations tend to lengthen the life of the satellite.

This presents some exciting possibilities for club members. Since the club power limit is 5 watts output (CW), the 20 watts ERP referred to above could be realized with a very minimal 435 Mhz. antenna. A 6 dB. gain, circularly polarized antenna would be the equivalent of a 3-element yagi. Further, if one were willing to use a 10-foot boom (12 or so elements) yagi, 13 dB of gain could be realized, resulting in 100 watts ERP.

The point is that a quite usuable OSCAR 10 station for the QRPer may be very modest, indeed. A 5-watt-output signal on 435 MHz. with a sensitive receiver on 145 MHz. equips one for Mode B operations. Many of you are now looking around the shack at a spare 2-meter multimode or FM rig. A simple varactor tripler or active transistor multiplier from your 2-meter rig would get you transmitting. A multimode 2-meter rig or simple 2-meter receiving converter and preamp would provide downlink reception.

If you want to build a simple, easy-to-get-going OSCAR station, stay tuned. Over the next few issues of The Quarterly, I will be describing some simple equipment that will do the job with a minimum of cost.

Been moaning about the current state of DX because of the declining sunspots? Why not expand your technical horizons by adding VHF/UHF/Satellite skills. In this issue of The Quarterly, Terry Young describes some fantastic results on 23 cm (1296 Mhz.) with milliwatt levels. QRP can provide some exciting times on the higher bands. Why not give it a try? You might just like it.

Note: Amateur Satellite Report is published bi-weekly. Information on subscriptions may be obtained from "Satellite Report", 221 Long Swamp Road, Wolcott, CT. 06716.

ANTI—MOTORBOATING FOR THE HW—8

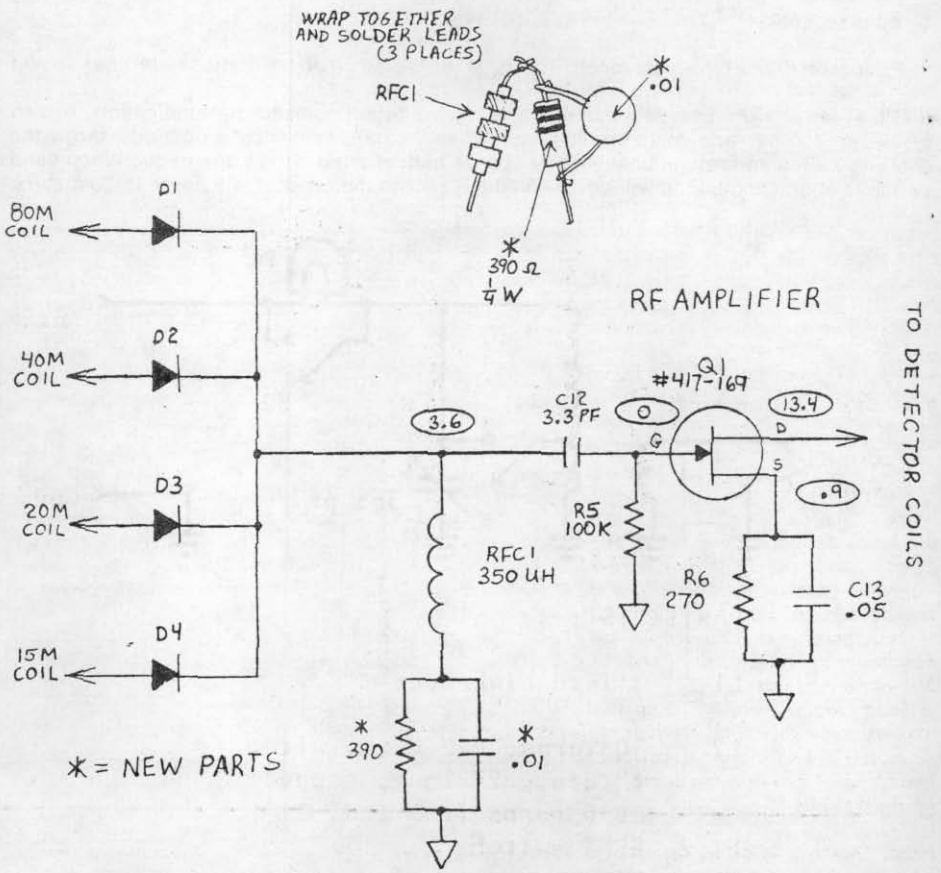
BY TIM GROAT, KR0U

Jim Gray, K0GNV, described a cure for the poor bandswitch isolation that leads to motorboating during transmit (QST "Hints and Kinks", Jan. '81). This simplier method is the second of two I have devised to accomplish the same thing, but without use of the bias battery and switching transistor that Jim used.

The required reverse bias for diods D1 through D4 is generated by allowing the band switching current to flow through a 390 ohm resistor. The diods for the bands not selected see 3.6 volts; enough to give good isolation. Capacitor C12 blocks this voltage from the gate of Q1. so RF amplifier operation isn't affected. The bias resistor is shunted by a .01 uf. capacitor, to prevent degradation of the Q of RFC1.

The additional parts may be installed by first preparing the parallel R-C combination, then soldering this to one lead of RFC1. The other end of the combination goes into the hole orginally occupied by the lead of RFC1.

SCHEMATIC FOR THE ANTI—MOTORBOAT MODIFICATION



A HOMEBREW QRP ANTENNA TUNER

BY BOB TRUHLAR, W9LNQ

The following antenna tuner is very simple and will tune four bands nicely with 135' or 66' of wire. Also, the small bulb will give an indication of maximum loading. All the parts can be derived from the junkbox and the tuner is built breadboard-style on a small ¼" board with an aluminum front panel. The base is 5" x 3½" and the front panel is 5" x 2½".

The link around the inductor should be three turns of 22 guage insulated hook-up wire.

A good ground or counterpoise is a must for the ultimate results. At our cottage, I use the well casing which is down 80 feet and does a fine-business job.

Parts List:

BC capacitor from old portable radio (use only the larger section, 365 pf.)

Coil: 1" diameter x 2" long. 30 turns #22 spacewound (or use B&W #3015 coil stock.)

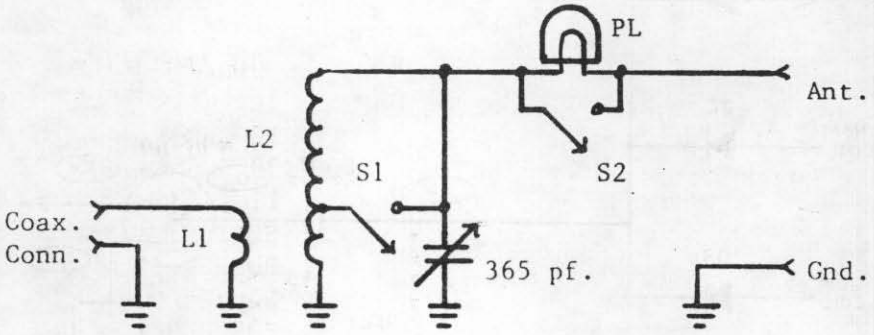
2 - mini slide switches

2 - binding posts

1 - coax recepticle

1 - PL socket - screw type or bayonett. This is for the the lamp - do not confuse with coax socket

1 - PL #1448 or #47, #51 type miniature lamp. Try different bulbs for best indication. Brown beads are 150 ma. and white are 300 ma. When the most brilliance is obtained, throw the shorting switch and retune final slightly. Leave bulb shorted during operation. When band switch is in one position, it will cover 40/80 meters. In the other, it will cover 15/20 meters.



PARTS LIST:

L1	3 Turn Link Over L2
L2	30 Turns, #22 enam. wire, 1" dia., 2" long, tapped at 6 turns from gnd.
S1,2	SPST switch
PL	Miniature Lamp (see text)

THE HW—8 NET NETTER

BY JIM FITTON, W1FMR

Frustrated at missing the QRP nets with your handy little HW-8? It seems that with the HW-8 the frequency of operation is more dependent on the power supply voltage than on dial calibration. A simple way around this little problem, is to mount a separate calibration oscillator inside the rig, switch it on, and listen for it in the receiver. This puts you right on frequency.

The circuit (amazingly simple), can be built on a small terminal strip or perfboard, using a surplus crystal (hopefully on 7.040 Mhz. for the N.E.N. Net, on Saturdays at 8:00 PM EST.) The radiator is a short length of hook-up wire taped to the inside wall of the rig. A small toggle switch mounted on the rear wall turns the lettle "net-netter" on. Since installing this, I haven't missed a net yet (well, hardly)!

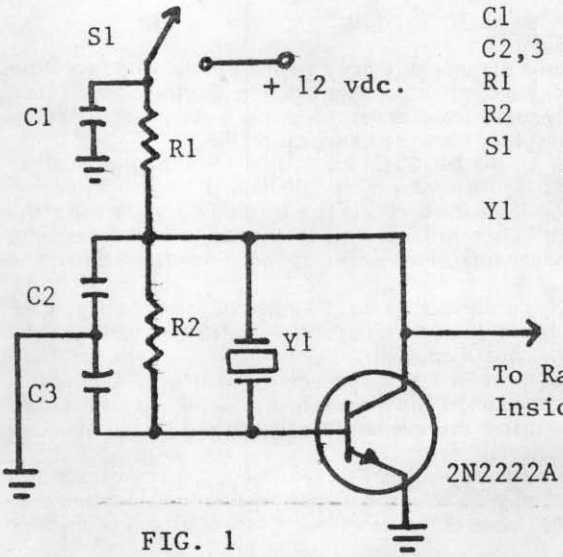


FIG. 1

PARTS LIST:

C1	.01 uf.
C2,3	100 pf.
R1	2000 ohms
R2	110 Kohms
S1	SPST Momentary Push-Button
Y1	Surplus Crystal 7.040 Mhz.

QRP ARCI
PUBLICITY AND INFORMATION OFFICER
POSITION VACANT

Fred Bonavita, W5QJM, has resigned as publicity and information officer of QRP ARCI but will continue to serve as editor of The QRP Quarterly. he held the publicity post more than two years and felt it was not in the best interest of the club for him to occupy two offices.

The board of directors has invited any club member interested in running for the office of information and publicity director to write Bill Harding, K4AHK, the secretary/treasurer, whose address appears on Page 2 of this issue. The application should be accompanied by a letter giving a brief biographical sketch, including the class of license held, number of years a ham, length of club membership and a list of goals and interests in working with the club's leadership.

Letters must be received by Bill no later than June 1, 1984, so ballots can be sent to directors and the results announced in the July issue of The Quarterly.

QRP ARCI HOMEBREW COMPETITION

There are only five short months left to submit entries for the QRP ARCI Homebrew Competition, and even less if you want those extra points for using the gear in the QRP ARCI SPRING QSO PARTY.

Listed below are the rules that were announced by technical editor, Ed Manuel, N5EM, in the January, 1984 issue of The QRP Quarterly.

1. All entrants must be current members in a WQF society.
2. All entries must use parts readily accessible in the U.S., and must list sources for any part that might be difficult for the builder to locate.
3. Each entry must be accompanied by a legible and correct schematic diagram, as well as a short narrative describing the theory of operation. Because some builders may not have the capability to photograph their gear, photos are not required. However, every entrant is encouraged to provide good black and white photos to assist fellow builders in later duplication.
4. Entries can be in one of three categories:
   A. Transceivers
   B. Transmitters/Receivers/Transvertors
   C. Accessories/Antennas
5. Entrants must provide a statement, signed by the builder and two other amateurs, that all rules of the competition were followed. Further, it must state that the entry was actually constructed, as described, and is completely functional. The signers must attest they have used the gear on the air.
6. Entries will be judged on the basis of a list of different attributes, such as uniqueness, engineering soundness, ease of reproduction, pc board information, simplicity and appearance. An additional category for judging will be use in the QRP ARCI QSO PARTY. Each fo these characteristics will be assigned a maximum point value and the total of the judges assigned points will determine the score.
7. Judges will be electronics professionals, and their decisions will be final. QRP ARCI reserves the right to publish all designs submitted. No information can be returned to the entrant (i.e., make copies!).
8. Plaques will be awarded to the First Place winner in each category. Certificates will be awarded to the Second and Third Place winners. Certificates will also be awarded to those designs that, in the opinion of the judges and Technical Editor, deserve honorable mention.
9. All entries must be postmarked by August 31, 1984. Judging will take place during the month of September, 1984. Winning entries will be announced and published in the January, 1985 issue of the Quarterly. Every effort will be made to publish all entries.

HEATHKIT HM-9 QRP SWR/WATTMETER

BY JOE GARZIK, KA4TAU

The day my new Heathkit catalog arrived in late July, I "had" to have their new HM-9 SWR/Wattmeter. Ever since I had been bitten by the QRP bug in 1981, I had longed for an SWR meter that would deflect full scale at about one watt, the power at which I like to operate. So it was with some degree of trepidation that I placed my order for this new unit who's published SWR sensitivity was "less than 1.5 watts".

After almost five agonizing months of "non-availability of parts" delays, I received my unit shortly before Christmas. (Such delays, I have found, are not unusual for newly-announced Heath units.) I am, however, happy to report that the wait was worth it. I couldn't be more pleased with the HM-9.

Construction of the unit is a one-night affair and could be characterized as "easy". There is only one small circuit board (not dense at all), two switches, a meter, and two coax connectors to solder. The parts are of very good quality -- six of the eleven resistors are 1% tolerance and the remaining are 5%.

Parts are supplied so that one can wire the kit for any one of three frequency ranges -- 1.8 to 30 MHz, 50 to 54 MHz, or 144 to 148 MHz. Because of this arrangement, there will be parts "left over" that one can add to his junk box.

Calibration of the unit was a breeze too -- requiring only a dummy load and a QRP transmitter. (The closer your output power is to 5 watts, the more accurate is the calibration.) I found both the SWR and watt meter readings well within the published tolerance of 10 percent of full scale. My most pleasant suprise was being able to get full-scale SWR meter deflection with power as low as 620 milliwatts!

In short, if you, like me, have been looking for a reliable QRP SWR/Wattmeter, then you may find the solution in the $50 HM-9.

HELP WANTED: Your favorite HW-8 modification(s) for use in an anthology to be published later this year. Send to Fred Bonavita, W5QJM, P.O. Box 12072, Capitol Station, Austin, Texas 78711.

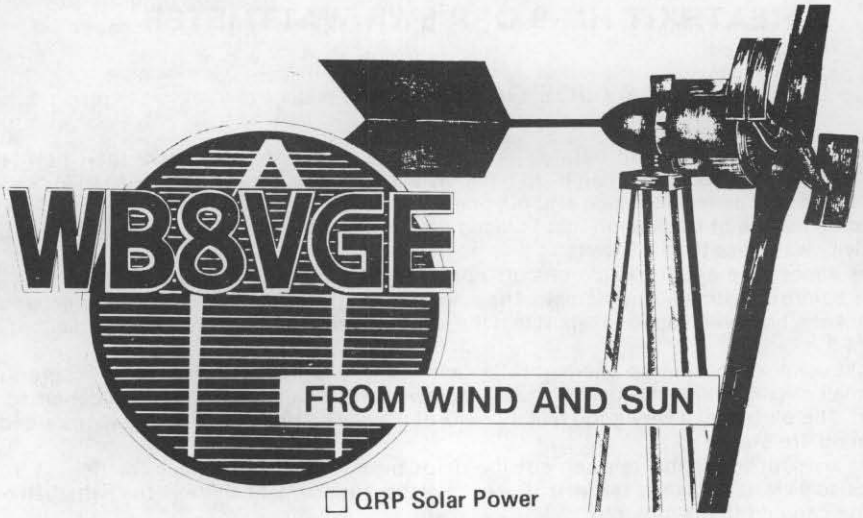
An effort has been launched to publish a collection of modifications for the venerable HW—8 QRP transceiver, and suggestions for inclusion in the anthology are ernestly solicited.

This collection will cover the spectrum from the Adrian Weiss, W0RSP, series in CQ magazine in 1977 -- probably the most definitive articles on modifying the HW-8 yet published - through the simple, two-line items in Hints and Kinks in QST.

Those published will be credited as to the author and the source in which they originally appeared. In cases of duplication, all sources will be cited. Those who offer items accepted for the anthology will receive complimentary copies.

The anthology also welcomes original modifications never before published. All suggested articles should be accompanies by a clear statement of the source and date of publication and a legible schematic.

Once published, the anthology will be available at a modest cost to cover printing and postage.



☐ QRP Solar Power

Michael Bryce, 2225 Mayflower NW, Massilon, Ohio 44646

Michael Bryce, WB8VGE, and QRP ARCI member, is among the few to have his QSL card featured in "73" magazine as the "QSL of the month".

I thought it would be nice if Michael told us more about himself and his station, which he agreed to do and he was also kind enough to submit some photos. Here is what he has to say.

For some background information on myself, I am 29 years old, married and have one child. I work for Republic Steel, Union Drawn division. In my spare time I enjoy working with plants in the greenhouse.

Now for the solar/wind stuff. All of what you see is homebrewed. I started construction on the first of 1982. It is still not finished and is in the constant state of change.

Outside I have three arco asi 16-2000 solar panels. They will generate about 100 watts of power. When the sun is not shining and the wind blowing then a winco 200 watt windcharger charges the batteries. On the ground, I have two sets of batteries, first set is a group of 4 lead-acid deep discharge exide ev-4 golf cart batteries, the second set is a ni-cad.

With both sets of batteries I have a total of about 1,000 amp-hours worth of storage. The lead-acid I call the "primary" and the ni-cad the "secondary".

Here, in a nutshell, is how the system works. Thru a homebrew controller, which looks at the battery voltage, it will decide were the energy will go. If the "primary" battery is low, all the power will go to it. The "primary" battery runs the station here, all radios, scanners, etc. When the controller decides that the battery is "full" then all power is moved to the "secondary" battery. That battery is charged until a second controller decides that it is "full". Two controllers were needed because of the different type of batteries. When the "secondary" battery is full then all energy is moved into resistive loads that I use for "hot water pre-heat". This is my "energy dump". The "secondary" battery is used for the energy needs of the house. These are minor as of now but do include a small TV and some lights. This will be added to as more solar panels come on line.

If I start to run down the "primary" battery then the controller will reconnect the energy to that battery. The whole process will then repeat itself. In effect, the station gets the juice first, then the house, and then the hot water heater last.

Should something go wrong, like a shorted transistor, and the battery starts to overcharge, then the controller will start beeping a high tone signal from the control panel. Likewise, if the battery should be undercharged from times of no wind and no sun then the controller will start to beep with a low tone.

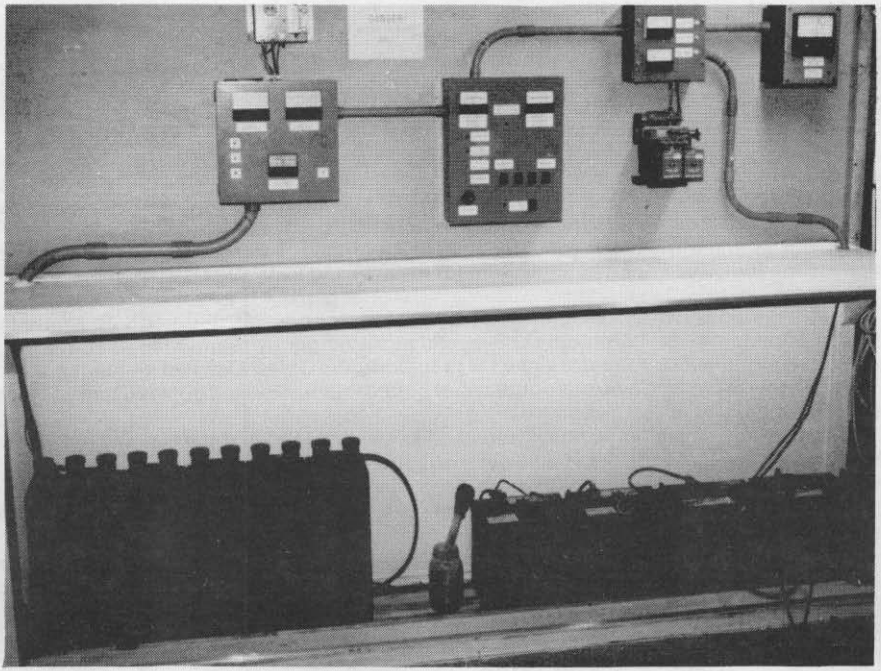
As you can gather, the controller is the heart of the system.

I really enjoy homebrewing. In fact most of the station here is homemade. I do have a Argonaut 515 and a HW-8, but the rest is by my own hand.

You will never see my call in the DX list of DXCC as I don't chase DX, but will work them if they call me. You will not see the call in the contest sheets either, but I do work the smaller QRP ones. My main mode of operating is cw and on the 40 meter band. Now and then I work ssb on 40 and 10 meters, all QRP of course. 7040 and 7170 are on when I am in the shack.

Wishing you best DX,

Michael Bryce, WB8VGE



A TRUE LIFE DRAMA FROM THE CARIBBEAN

CAYMAN ISLAND DXpedition

BY FRED BONAVITA, W5QJM/ZF2AL

The whole thing just didn't feel right.

I mean, there have been many stories in the various ham magazines about DXpeditions, right? Lots of pictures of small armies of men ferrying crates of equipment ashore through the pounding surf at some exotic spot in a well-financed operation that captured headlines for months afterward. All very dramatic.

Yet here I was, waiting my turn in the customs queue at the airport in George Town, Grand Cayman, B.W.I., where I was about to launch my own version of a QRP DXpedition from that Caribbean island.

Instead of being flanked by hordes of hams, I was all alone on that score (my family was along for an early winter vacation). All my gear was packed neatly into two briefcases held in my hands. In my coat pocket were my license (ZF2AL) and an authorization to bring my gear onto the island -- and take it off with me when I left a week later.

The customs officer couldn't have cared less what I had in the briefcases. He gave them and my import authority a cursory glance and waved me through. Instead of an HW-8 in there, I could have had an Argonaut 515, and he wouldn't have known the difference let alone cared.

Such was my introduction to hamming on a semi-rare DX island. It got worse.

I'd made an almost last-minute decision to take my ham radio gear along on the family's pre-Christmas holiday for 1983, and I had to do some rushing around as a result. I was able only to notify a handful of QRPers that I would be on as ZP2AL for seven days. Next DX spot for me will be planned a little more in advance and a little better.

For one thing, I wrote to the ARRL for an application for a reciprocal license. Back came the application form, the import authorization for my gear and instructions to send the authorities $25, which I did.

I was stunned about a week later when my personal check was returned with a note that it was unacceptable. So I fired off a U.S. postal money order by return mail (that was OK, the letter said) and held my breath, since I was to leave for Grand Cayman within ten days.

Much to their credit, Caymanian authorities outdid themselves and got my license to me with about four days to spare! Very close.

It would have helped in planning, too, if I'd known the layout of the Holiday Inn where we were to stay, but since that was not to be, I had to plan for the worse. The place turned out to be U-shaped, with the open end pointing out to sea to the west.

We were on the third floor of the four-story inn, and our balcony looked into the interior courtyard and to the north toward the U.S.

Unfortunately, we'd arrived just after dark. We went to our rooms and unpacked. While the family scouted out the hotel and beach, I quickly hunted up the bar, fortified myself and set about hanging my antenna -- an inverted vee 33 feet on a leg and fed with 300-ohm line through a tuner.

I hung the feedpoint via thin nylon line from my balcony, dropping the legs to the ground below. It was dark enough that no one noticed -- or cared -- that I was running around in the garden below, pulling the ends of my antenna up into conveniently placed palm trees. In fact, I made it through the whole week without so much as a peep from management about the wires hanging from the third-floor balcony.

QRP ARCI SPRING QSO PARTY

DATES: 1200 UTC Saturday, April 21, 1984 to 2400 UTC Sunday, April 22, 1984. Participants may operate a maximum of 24 hours.

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 multiplier credits.
Each member contact 5 points, regardless of location.
Each non-member U.S. or Canada contact 2 points.
Each non-member contact other than W/VE counts 4 points.

MULTIPLIERS:
4 to 5 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 output x 10
More than 5 watts output counted as check logs only.

BONUS MULTIPLIERS: If 100 percent natural power (solar, wind, etc.) with no storage, x x 2. If 100 percent battery power x 1.5.

SCORING: QSO points (total all bands) times total number of states/provinces/countries (a s/p/c may be worked on more than one band) times power multiplier, times bonus multiplier (if any) equals claimed score. Send a large s.a.s.e. or IRC's to contest chairman for scoring summary sheet in advance of contest.

SUGGESTED FREQUENCIES: 1810, 3560, 7040, 14060, 21060, 28060 and 50360 KHz; Novice and Technicians 3710, 7110, 21110, and 28110. No 30-meter (10.1 MHz) contacts will be counted.

CALLING METHOD: CQ CQ QRP DE (Call Sign)

AWARDS: Certificates to the highest scoring station in each state/province/country with two or more entries. All entries are automatically considered for the Triple Crowns of QRP Award.

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

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

DEADLINES: Logs must be received by May 21, 1984; logs received after that date or missing information will be used as check logs. MAKE SURE THAT YOUR CALLSIGN IS WRITTEN ON THE TOP OF EVERY PAGE THAT YOU SUBMIT (logsheets, summary sheet, time-off, worksheet, etc.) JUST IN CASE THEY SHOULD BECOME SEPARATED DURING SCORING!

SEND ALL MATERIAL TO:
QRP ARCI CONTEST CHAIRMAN
Eugene Smith, Jr., KA5NLY
#16 Fairmont Drive
Little Rock, AR 72204

April, 1984

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
						1 QRP ARCI FIRST SUNDAY QSO PARTY TCN - 14060 - 2300Z
2	3 SEN - 7030 - 0100Z	4 GSN - 7040 - 0200Z GLN - 7040 - 0200Z	5	6	7 NEN - 7040 - 1200Z / GLN - 3560 - 1500Z SWN - 7040 - 1500Z / NWN - 7040 - 1700Z	8 TCN - 14060 - 2300Z
9	10 SEN - 7030 - 0100Z	11 GSN - 7040 - 0200Z GLN - 7040 - 0200Z	12	13	14 NEN - 7040 - 1200Z / GLN - 3560 - 1500Z SWN - 7040 - 1500Z / NWN - 7040 - 1700Z	15 R.S.G.B. LOW POWER CONTEST TCN - 14060 - 2300Z
16	17 SEN - 7030 - 0100Z	18 GSN - 7040 - 0200Z GLN - 7040 - 0200Z	19	20	21 QRP ARCI SPRING QSO PARTY NEN - 7040 - 1200Z / GLN - 3560 - 1500Z SWN - 7040 - 1500Z / NWN - 7040 - 1700Z	22 TCN - 14060 - 2300Z
23 30	24 SEN - 7030 - 0100Z	25 GSN - 7040 - 0200Z GLN - 7040 - 0200Z	26	27	28 NEN - 7040 - 1200Z / GLN - 3560 - 1500Z SWN - 7040 - 1500Z / NWN - 7040 - 1700Z	29 TCN - 14060 - 2300Z

May, 1984

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
	1 SEN - 7030 - 0100Z	2 GSN - 7040 - 0200Z GLN - 7040 - 0200Z	3	4	5 **G — QRP — CLUB** **LATE SPRING SSB ACTIVITY** NEN - 7040 -1200Z / GLN - 3560 - 1500Z SWN - 7040 - 1500Z / NWN - 7040 - 1700Z	6 QRP ARCI FIRST SUNDAY QSO PARTY TCN - 14060 - 2300Z
7	8 SEN - 7030 - 0100Z	9 GSN - 7040 - 0200Z GLN - 7040 - 0200Z	10	11	12 NEN - 7040 - 1200Z / GLN - 3560 - 1500Z SWN - 7040 - 1500Z / NWN - 7040 - 1700Z	13 TCN - 14060 - 2300Z
14	15 SEN - 7030 - 0100Z	16 GSN - 7040 - 0200Z GLN - 7040 - 0200Z	17	18	19 NEN - 7040 - 1200Z / GLN - 3560 - 1500Z SWN - 7040 - 1500Z / NWN - 7040 - 1700Z	20 TCN - 14060 - 2300Z
21	22 SEN - 7030 - 0100Z	23 GSN - 7040 - 0200Z GLN - 7040 - 0200Z	24	25 Board of Directors applications due in one week - June 1	26 **CQ WPX C.W. CONTEST** NEN - 7040 - 1200Z / GLN - 3560 - 1500Z SWN - 7040 - 1500Z / NWN - 7040 - 1700Z	27 TCN - 14060 - 2300Z
28	29 SEN - 7030 - 0100Z	30 **QRP ARCI HOOTOWL SPRINT** GSN - 7040 - 0200Z GLN - 7040 - 0200Z	31			

June, 1984

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
				1	2 NEN - 7040 -1200Z / GLN - 3560 - 1500Z SWN - 7040 - 1500Z / NWN - 7040 - 1700Z	3 QRP ARCI FIRST SUNDAY QSO PARTY TCN - 14060 - 2300Z
4	5 SEN - 7030 - 0100Z	6 GSN - 7040 - 0200Z GLN - 7040 - 0200Z	7	8	9 NEN - 7040 - 1200Z / GLN - 3560 - 1500Z SWN - 7040 - 1500Z / NWN - 7040 - 1700Z	10 TCN - 14060 - 2300Z
11	12 SEN - 7030 - 0100Z	13 GSN - 7040 - 0200Z GLN - 7040 - 0200Z	14	15	16 NEN - 7040 - 1200Z / GLN - 3560 - 1500Z SWN - 7040 - 1500Z / NWN - 7040 - 1700Z	17 TCN - 14060 - 2300Z
18	19 SEN - 7030 - 0100Z	20 GSN - 7040 - 0200Z GLN - 7040 - 0200Z	21	22	23 **ARRL FIELD DAY** NEN - 7040 - 1200Z / GLN - 3560 - 1500Z SWN - 7040 - 1500Z / NWN - 7040 - 1700Z	24 TCN - 14060 - 2300Z
25	26 SEN - 7030 - 0100Z	27 GSN - 7040 - 0200Z GLN - 7040 - 0200Z	28	29	30 NEN - 7040 - 1200Z / GLN - 3560 - 1500Z SWN - 7040 - 1500Z / NWN - 7040 - 1700Z	

FIRST SPRINT IS A "HOOTOWL"

Membership response to the idea of having "Sprint" contests was so strong in favor that the board of directors has given the green light to the idea.

The sprints will be of various types and modes and will have a major purpose of testing out new ideas which may be incorporated in future regular spring and fall contests.

Our first sprint will be the *1984 SPRING HOOTOWL SPRINT* to be held on Wednesday, May 30, 1984. This will be a four hour CW contest from 2000 - 2400 hours (8:00 pm to Midnight) LOCAL TIME. Due to the short duration of sprint, all stations will necessarily have to operate in their local time periods' so as to provide similar operating conditions for everybody regardless of location.

The other rules for the sprint will be the same as the April QSOP party given elsewhere in this issue, except that the following rules will be substituted for exchanges:

EXCHANGES: Give RST, state/province/country, member/non-member, power category, and antenna type. Members would give "M" for member and non-members would give an "X".

Power categories are as follows:

9 - less than 500 milliwatt
0 - 500 milliwatt to less than 1 watt
1 - 1 to less than 2 watts
2 - 2 to less than 3 watts
3 - 3 to less than 4 watts
4 - 4 to less than 5 watts
5 - 5 watts
6 - more than 5 watts (QRO)

Antenna type will be designated by the following:

D - Dipole
I - Inverted VEE/G3RV
L - Long wire
Q - Quad/Quagi
S - Sloper
V - Vertical
Y - Yagi/Log Periodic
Z - Other

Following the letter, where multi-element antennas are used, the number of elements is given.

For an example of the exchange, if Ade, W0RSP works Wes W7ZOL with Ade in South Dakota running 0.1 watt to a two-element quad and Wes in Oregon, running three watts to a vertical, the exchanges might look like this (both members):

Ade - 469 SDak M9Q2
Wes - 559 Or M3V

Stations may be worked once per band for QSO multiplier credits. Each member (M) contact is worth five points regardless of location. Non-member (X) contacts are worth two points if within one's own continent and four points of located on another continent (DX).

We are trying out some new ideas in exchanges in this sprint and hope that all participants will send along their comments with their entries. Scoring summary sheets will be available if you send a S.A.S.E. to the contest chairman.

Certificates will be awarded to top scores in the various states/provinces/countries and second, third and fourth place certificates will be awarded within s/p/c where there are a sufficient number of entries. In addition, your contest chairman will provide a plaque to the first, second and third place scorers overall.

THE 28th ANNUAL CQ WORLD WIDE WPX CONTEST

C.W.: MAY 26-27, 1984
STARTS: 0000 GMT SATURDAY
ENDS: 2400 GMT SUNDAY

QRPp Section Rules (Single Operator Only)

Power must not exceed 5 watts output. You must denote QRPp on the summary sheet and state the actual maximum power output used.

Certificates will be awarded to each top scoring QRPp station in each participating country and in each call area of the United States, Canada, Australia and Asiatic USSR. The certificates will be marked QRPp and will show your power output.

QRPp stations will be competing only with other QRPp stations for awards.

Type of Competition: Single Operator; (a) All Band or (b) Single Band

Exchange: RST report plus a progressive three-digit contact number starting with 001 for the first contact.

Points: Contacts between stations:

1. North America Only

A. Contacts outside of North America count 3 points on 10, 15 and 20 meters, and 6 points on 40, 80 and 160 meters.

B. Contacts with other North American countries count 2 points on 10, 15 and 20 meters, and 4 points on 40, 80 and 160 meters.

C. Contacts within own country, count 0 points but are permitted for prefix multiplier credit.

2. Europe, Asia, Africa, Oceania, S. America

A. Contacts outside of own continent count 3 points on 10, 15 and 20 meters and 6 points on 40, 80 and 160 meters.

B. Contacts with other countries on own continent count 1 point on 10, 15 and 20 meters, and 2 points on 40, 80 and 160 meters.

C. Contacts within own country count 0 points but are permitted for prefix multiplier credit.

Multiplier: The multiplier is determined by the number of different prefixes worked. A prefix is counted once during the entire contest regardless of how many times the same prefix is worked.

A prefix is considered to be the three letter/number combination which forms the first part of an amateur radio call.

Scoring: Single Operator, All Band score, total QSO points from all bands multiplied by the number of different prefixes worked.

Single Operator, Single Band, QSO points on the band multiplied by the number of different prefixes worked.

Contest Period: Only 30 hours of the 48 hour contest period permitted for Single Operator stations. The 18 hours of non-operating time may be taken in up to 5 periods anytime during the contest, and must be clearly indicated on the log.

Log Instructions: All times must be in GMT. The 18 hour non-operating periods must be clearly shown. Prefix multipliers should be entered only the first time they are contacted. Logs must be checked for duplicate contacts and prefix multipliers.

An alphabetical/numerical check list of claimed prefix multipliers must be sent along with your contest log.

Each entry must be accompanied by a summary sheet listing all scoring information, the category of competition and the contestant's name and mailing address in block letters.

Also submit a signed declaration that all contest rules and regulations for amateur radio in the country of the contestant have been observed.

Official log and sample summary sheets are available from CQ. A large self-addressed envelope with sufficient postage or IRC's must accompany your request.

If official forms are not available you can make your own with 40 contacts to the page.

Deadline: All entries must be postmarked no later than July 10, 1984.

Logs go to:

CQ Magazine, WPX Contest
76 N. Broadway
Hicksville, NY 11801

or to the new WPX Contest Director:

Steve Bolia, N8BJQ
7659 Stonesboro Drive
Huber Heights, OH 45424

For complete details of the WPX Contest see "CQ" January, 1984.

Having got that far successfully, I got greedy and wanted to hoist my vee from the fourth-floor balcony overhead, giving me another 10 feet of altitude and a better shot out there. My efforts to climb out on the railing and hook my lines through the railing above to pull up the antenna failed. I'm not a great one for that trick without someone to hold my belt.

So I went to the room above and knocked on the door. A woman, who refused to open it, heard me explain my request but refused to help me. It later turned out the couple on the fourth floor was on its honeymoon. So I got my nephew to climb out, hook the ropes in the balcony above and pull my antenna higher.

The honeymooners apparently were too busy to notice.

I hit the air first thing next morning on 40 meters, working into the states along the U.S. Gulf Coast. My first QRP contact was with Gene, N5DDV, in Jackson, Miss. Since I was on the air as early as 1100 GMT while it was still dark in the Caymans, I was operating from a small table between the bed and the balcony door. Having rigged my HW-8 with silent break-in keying, I was able to operate while my wife slept.

In addition to my HW-8, I had an outboard MFJ CWF-3 active audio filter, a Ten Tec 227 tuner, an MFJ-820 QRP SWR/watt meter, a Ten Tec KR-5A keyer and a one-amp power supply, which I sat on the nearby air conditioner (in December yet) to keep it cool.

MY main focus was for QRPers, so I adopted a calling method of "CQ QRP, CQ QRP, CQ QRP DE ZF2AL QRP PSE K." I would call that twice and then put out a general CQ to anyone. With but one exception, operators honored my call for QRPers. A W4 in South Carolina, I think, refused to budge until I'd worked him. I did, but I promise you he isn't getting a QSL card.

I drew lots of favorable comments from other stations about the strength of my 1.75 watts output. Unfortunately, I was able only to work into the U.S. for the first six days. The wing of the hotel was between my antenna and South America, where some folks were listening for me.

The only decent opening to Europe came on Saturday, Dec. 24, on 15 meters, and just as I got into it with an ON4 in Belgium, the family decided it was time to hit the beach.

Since this was a family holiday, I could not spend as much time at the key as I would have liked. We left on Dec. 25.

I also had problems with nearby stations -- hams, CBers in taxicabs and boaters -- whose QRO signals frequently swamped the receiver in my HW-8 and left me straining to hear the incoming CW stations. A more sophisticated receiver and filtering system probably would have helped.

My pint-sized DX operation was fun. I didn't generate any massive pile-ups, although I had several stations calling me many times. I was able to provide a new country for several, and that's always a pleasure.

All my QRP contacts got specially endorsed QSL cards from ZF2AL, and I probably qualified for a few KM/W Awards. As soon as I can find Great Circle charts to calculate distances, I might apply for some.

The bottom line was about 100 QSOs in 27 states and one other foreign country. Not too shabby for the first time out. But it's also not the type of DXpedition you read about in the major ham magazines.

After all, what's so sexy about a solo operation where the gear arrives in two briefcases that fit under the seat in front of you on the plane?

G-QRP-CLUB ACTIVITY WEEKEND
LATE SPRING QRP SSB

Members of all QRP clubs throughout the world and all amateurs interested in QRP are invited to join in this activity on May 5 and 6, 1984. The times (UTC) and frequencies for this activity are listed below.

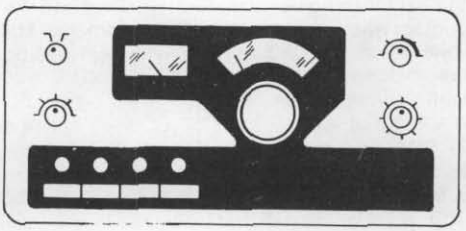
Remember to check into the TCN which starts immediately after this activity concludes.

0900 - 1000	14285
1000 - 1100	21385/28885
1100 - 1200	7090*
1200 - 1300	3690*
1300 - 1400	14285
1400 - 1500	3690*
1500 - 1730	21385/28885
1730 - 2000	14285
2000 - 2100	7090*
2100 - 2200	3560*
2200 - 2300	14285

*These frequencies are out of band for U.S. amateur radio operators.

30 METERS FOR THE HW-8

BY HOWELL CHING, KH6IJS



When considering the addition of the new 30-meter band to my HW-8, I knew one thing for sure; I did not want to give up either 40 or 20 meters to acquire performance on 10.1 Mhz.

Since 80 meters is a rarely used band out here in Hawaii, I determined to sacrifice it rather than any of the others.

With the help of Zachary Lau, KH6CP, I got to work on a conversion of the HW-8 to 30-meters using available components plus a crystal and a handful of replacement capacitors. I've converted two HW-8's this way. The first one took the better part of a day. The second was completed in less than three hours.

This conversion is straightforward, and I encountered no problems. I should caution, however, that the spacing of the windings on the toroids affects inductance, so keep the turns as uniform as possible. I used a grid-dip meter to check the rewound coil's resonant frequencies and then dripped hot candle wax on them to hold the turns in place.

OK, here are the simple steps:

RECEIVER SECTION

1) Remove C1, C15 and C16 (trimmer) and snip off R50;
2) Disconnect C301A from the circuit;
3) Replace Y1 crystal with an 18.895 Mhz. rock in an HC-6/U holder with 30 pf. loading and a .005% tolerance;
4) Replace C116 with a 43 - 47 pf. capacitor (I used 47 pf.) and replace C64 with a 27 - 33 pf. capacitor (I used 33 pf.);

EXTRA COPIES OF THIS ISSUE ARE AVAILABLE

Would you like an extra copy of this issue, for yourself or a QRP friend? Send $1.00, to cover postage and production costs, to Bert Zitek, 1916 Lost Creek Drive, Arlington, TX 76011.

If the extra copy is for yourself be sure to print your return address clearly. If the extra copy is for a QRP friend, send his address and one of your QSL cards, I'll send it directly to him, with your compliments.

This would be a great way to introduce a friend to the world of QRP or to encourage a QRP friend to join QRP ARCI.

I have a big mailbox and a nice mailman, so don't hesitate, send your request and a dollar today.

TRANSMITTER SECTION

(Note; use silver mica capacitors for all replacement work)

1) Remove C94;

2) Replace C77 with a 150 pf. capacitor; C78 with 150 pf.; C96 with 85 pf.; and C97 with 270 - 300 pf. capacitors (I used 270 pf.);

3) Remove, alter and replace the original coils:

L22 - (9 uH, 25 turns orginally) unwind 10 turns and adjust the remaining 15 turns evenly around the core;

L26 - (15.5 uH, 31 turns originally) unwind 19 turns; do not respace the remaining 12 turns;

L27 - (27.5 uH, 36 turns originally) unwind 23 turns and adjust the remaining 36 turns around the core evenly. In all cases, the changed coils should have an inductance of 3 uH. Note: When unwinding the toroids, do not trim excess lead length until the coil has been resoldered to the proper spot on the p.c. board. The long leads make them easier to thread back into position

REALIGNMENT

Adjust L17 until the new crystal oscillates properly. Check the alignment of L18 (40 meters), since there is some interaction between these coils.

In the mixer section, L13 will have a very broad peak. I got the best rejection of unwanted signals with the slug turned counterclockwise until it was nearly level with the top of the stack.

Initially, I found that the frequencies generated by the HW-8's VFO (8.645 to 8.985 Mhz.) could be heard quite loudly in the new 30 meter band. I used my grid-dip meter to generate a signal in that range and then adjusted L13 for the best rejection of these frequencies.

While you have your HW-8 on the bench, there's another modification worth trying. Replace the noisy relay that comes with the rig with a SPDT, 12 volt mercury-wetted relay. This makes for silent keying, and a very fast break-in (near QSK) can be had by adjusting the t/r delay pot to it's minimum position.

Although my 30 meter conversion has not been checked on a scope or spectrum analyser, I did check the high-frequency spectrum with a receiver and found no harmonics or spurs. The signal appears clean.

Contacts with West Coast stations were fairly common, and I've worked as far away as Maryland, Illinois, Ohio, Michigan and Montana. Thirty-meters is a fine QRP band, and propagation for Hawaii is best between 1530 and 2030 hrs., Hawaii time. I've provided many stations with their first 30 meter contacts.

Most stations were amazed at my fine signal with low power. Others thought I was kidding, since they knew that the HW-8 did not have 30 meters. Mine didn't when I first got it, but it does now.

OCTOBER QSO PARTY COMMENTS

"My first QRP contest. Recently bought the Argonaut 509. Plan to work it longer next time." WD4EXG

"It was difficult for me in Hawaii to get through the QRM stateside...Perhaps Hawaii and Alaska should get a higher multiplier for contacts." KH6IJS

"I'm a new ham, and this is my first contest attempt. Using HW-7 bought at hamfest recently. I'm fascinated with low-power capabilities." VE3NYT

"I made 45 points in the contest...based on QSO in final five minutes after four steady hours of brass pounding. W7ZOI saved the day!" KL7DG

"I tried 100 mW on G4BUE, worked him and stuck with it to see if I could get out. Lots of good op's out there, or my antenna works better than I figured." W0RSP

"Can't figure out why 7 and 21 MHz were unuseable, while 28 and 3.5 MHz were open. Seemed like lots of activity this time." W9OA

PIONEER 10

THE ULTIMATE QRP STATION ?

The following letter from NASA was forwarded by A.L. Goeppinger, W6FXL.

June 17, 1983

Mr. A.L. Goeppinger
2161 Sunset Drive
Escondito, CA 92025

Dear Mr. Goeppinger:

Thank you for your letter on the success of the Pioneer 10 mission.

In answer to your questions, I have compiled some information about the spacecraft and I have also sent you our latest fact sheet on it.

Pioneer 10 is approximately 2.9 billion miles from earth and has a power output of 8 watts. (I'll let YOU figure out how many miles-per-watt that is). Hint: If this energy were collected for 19 million years, it would light a 7.5 watt Christmas tree bulb for a mere 1/1,000th of a second! The signal is magnified by three huge radio telescopes around the world: one in Canberra, Australia; one in Madrid, Spain; and the third at NASA's Deep Space Tracking Station in Goldstone, California. Three tracking scopes are necessary because of the earth's rotation.

Yes, the power output is diminishing and will probably quit in 8 to 10 years. The earth's rotation and revolution about the sun affect the attenuation of its signals.

Pioneer 10 has observed solar flares and the Doppler Effect and scientists hope to obtain evidence for gravity waves, the boundry of the heliosphere (sun's atmosphere) as well as evidence for the existance of a 10th planet or dark star somewhere beyond Pluto's orbit.

I'll let you read more on our fact sheet. Thank you for your interest in NASA and the space program. As far as encouraging funding for the space program, we can write to our congressman.

Sincerely yours,

Chris Borden
Public Affairs, NASA

For those who don't want to make the calculation, that comes out to a cool 362.5 MILLION miles-per-watt!!! Fortunately, NASA has not applied for an award. For those who might want to know more about the Pioneer 10 mission, W6FXL provides the following information.

"You might want to write to Mr. Chris Borden at the Ames Research Center, Moffett Field, CA 94035 and ask for the NASA News Publication No. 83-10. It is about 13 pages of interesting facts along with diagrams of the space vehicle and a photo of the planned trip into the outer planetary space.When the satellite left our system, it took a radio signal 8 hours and 40 minutes to make the round trip".

QRP DXCC AWARDS PROGRAM

BY ADE WEISS, W0RSP

QRPer Ronald Moorefield, W8ILC, of Dayton, Ohio, has added yet another record to his list of achievements in low-power operating: He has become the first to qualify for the DXCC 300 Milliwatt Trophy.

Adrian Weiss, W0RSP, sponsor of the award, said Ron won the trophy in February for having confirmed his 300th DX contact while running less than one watt on sideband.

Ron got his first DXCC Milliwatt Trophy for 100 confirmed ssb QSO's in June 1978. He topped that with the first DXCC 200 Milliwatt Plaque in April 1980 on ssb.

In announcing the feat, Ade also released the rules for the QRP DXCC awards program which follow:

DXCC MILLIWATT TROPHY. Iniated by "The Milliwatt: National Journal of QRPp" and offered in its memory. Perhaps the most difficult award now offered to radio amateurs. To qualify, an operator must submit QSL proof of two-way contacts with stations in 100 ARRL DXCC list countries **while not exceeding one (1) watt r.f. output from his transmitter.** All qualifying contacts must be iniated, maintained, and completed at this power level. Special conditions apply with respect to contacts worked via NET or "list" situations. In these cases, the DX station must locate, recognize the call of, and communicate directly with the QRP station without assistance from the NCS or "list control station" other than the latter informing the DX station that a QRP station is the next on the list. The NCS cannot relay the actual call of the QRP station; if he does, the contact is invalid toward the award. Applications must include the following:

1. a log list of the 100 contacts alphabetized by prefix (i.e., A2, DL, G, PY, 4X4, 9Y5), including the pertinent information such as dates, times, stations worked, bands, modes, and r.f. power outputs;
2. one QSL verification for each listed contact;
3. a description of the method used to measure r.f. output power, and the measurements made - in the event that an un-modified stock commercial transceiver is used, and that unit is known to be unable to exceed the specified output power limit, the limit will serve as de facto proof of the power limit;
4. a signed affidavit attesting to the veracity of the applicant's claim that all contacts were completed with the given power limit according to the above conditions regarding power limit;
5. a $24.00 fee to offset part of the cost of the 28 inch trophy which constitutes the award, as well as postage.

Foreign applicants should submit equivalent currency. It is suggested that the applications/QSL's be sent via certified mail - 33 mail transactions involving QSL's have been successful with no losses of extremely valuable cards yet. Murphy's Law being what it is, this is a remarkable stretch! For applicants in Europe, Africa, and Western Asia, applications may be sent directly to the U.S., or to the Official Milliwatt DX Awards Program DX Representative, A.D. Taylor, G8PG, 37 Pickerill Road, Greasby, Merseyside, L49 3ND, England. Mr Taylor will examine the QSL cards in combination with the list of qualifying 100 contacts, and will provide an affidavit as to the veracity of the claim. Please submit only the cards and list to Mr. Taylor, and once he returns them, they may be submitted along with the remainder of the application material to: Ade Weiss, W0RSP, 83 Suburban Estates, Vermillion, SD 57069 USA

DXCC QRPp TROPHY. DXCC QRPp is awarded for working 100 DXCC list countries with an r.f. output not exceeding five (5) watts. The rules detailed in regard to the DXCC MILLIWATT award apply to this award also.

DXCC 200 QRPp, DXCC 200 MILLIWATT. These awards are offered to any QRP operator who submits QSL proof of two-way contacts with 200 DXCC list countries. The rules are the same as detailed above for DXCC MILLIWATT. The list of contacts qualifying an applicant for the 100 country level award is kept on record, and an applicant for the 200 country award need only submit a list and QSL verifications for countries 101-200. Or, an applicant may submit his initial application at the 200 country level. A handsome, suitably engraved plaque constitutes the 200 country award.

A SOLID STATE ID'er
FOR THOSE EYEBALL QSO's

Here is the information you have been waiting for, and its just in time for the hamfests and conventions this summer.

The QRP ARCI name badge.

It's an attractive way to promote the club, and advertise your preferred mode of communication.

These name badges are available from Hot Pantograph, George Collier, W0EG, 1816 Third Avenue South, Anoka, MN 55303. They are $4.50, ppd., with usually a 24-hour service. Make your check or money order payable to Hot Pantograph.

. . QRP ARCI
SPRING QSO PARTY
APRIL 21 and 22

QRP ARCI
FIRST "HOOTOWL" SPRINT
WEDNESDAY, MAY 30

THE BOBTAIL CURTAIN

BY JIM FITTON, W1FMR

The simplicity of the Bobtail Curtain, described by Woody, W6CBX, in "Ham Radio" (Feb., March '83) prompted me to try this very interesting antenna. The two element version was chosen to fit my small size city lot.

The Bobtail, basically an inverted ground plane, operates with the maximum current node near the top. This tends to reduce currents flowing through the ground, therefore ground losses will be held to a minimum. A small ground screen is all that is needed, and connection to ground itself is not necessary.

The radiating part of the antenna, being up high, provides a lower angle of radiation for DX work.

Theoretically, the radiation pattern will be broadside to the array but, from my experience, the highest Bobtail always seems to work best regardless of orientation.

The antenna is made from a single length of wire, and exact dimensions and shape do not seem critical. Use the following formulas:

General - A=473/F B1 & B2 =225/F
My Antenna - 473/7.025 = 67.3 Feet and 225/7.025 = 32.0 Feet. (see figure below)

In my case, vertical element B2 is about 8 feet longer to allow entrance through an adjacent window. The ground screen is a piece of hardware screen or cloth (⅜ or ½ in. mesh) about 4 x 5 feet, with a length of heavy wire soldered to it for a ground connection. Both the antenna wire (B2) and ground connection go through the window, to an antenna tuner located on the inside window sill.

If you think of the Bobtail as being only a terrific DX antenna, you are missing half of the fun. Using the antenna as described, cut for 40 meters; and with a simple tuner (QST, Feb. '80, p.22), the following were worked during the Fall, '83 QRP ARCI QSO Party:

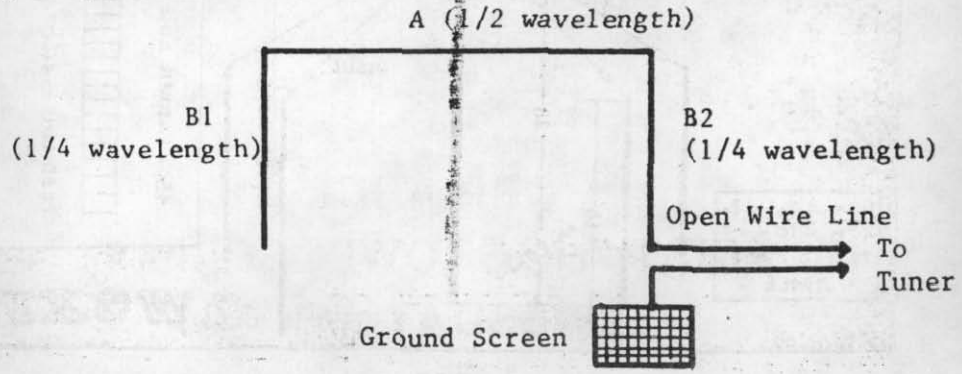
80 meters - 23 QSO's to 10 states
40 meters - 24 QSO's to 11 states and 1 DX country
20 meters - 57 QSO's to 24 states and 2 DX countries
15 meters - 57 QSO's to 17 states and 5 DX countries
10 meters - 11 QSO's to 2 states and 4 DX countries

The big suprise for me was on 20, 15 and 80 meters. Many stations commented on the strength of my signals.

Here are some references other than those already mentioned:

1. "ARRL Antenna Anthology" (p.81)
2. "ARRL Antenna Handbook"
3. "CQ" March, 1948
4. "Ham Radio", July 1969

If there were a prize offered for the shortest, simplest, most efficient all-band antenna, ***I'd bet my money on a Bobtail Beam!***



THE SKELTON CONE PROVES ITSELF

BY JOHN McNEIL, WA2KSM

If you saw the description of the Skelton Cone antenna in the Spring 1983 issue of the G-QRP Club's SPRAT and passed it over, you missed out on a good performer.

In the summer of 1983, I was forced to remove my aerials from my nextdoor neighbor's home. She had decided to move, and our agreement had to be broken.

I gave the Skelton Cone idea to Joe Mazzarella, KA2GAT, and in short order, he had added two wires to his existing inverted-vee Zepp.

We spread the antenna legs apart about 45 degrees but left everything else the same as in the SPRAT article. The apex is at 55 feet, and the antenna is fed with 80 feet of 450-ohm open-wire ladder line tuned with a Johnson 250-watt Matchbox.

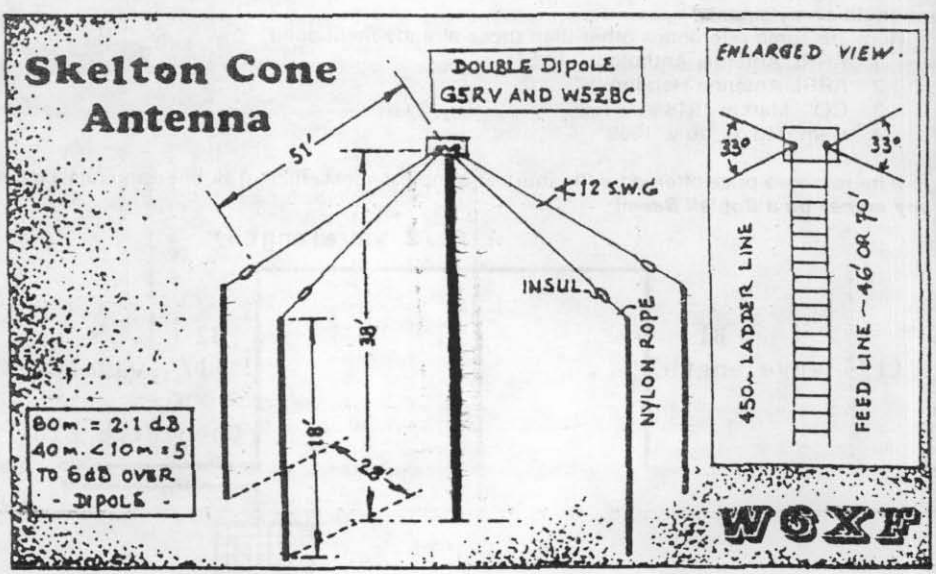
With a Heath HW-101 on 20 meters SSB, we got consistently higher reports from locations previously worked with the old antenna. Stations worked were impressed with our signal strength and wanted more details about the antenna setup.

Later in the afternoon, Joe kept a sked with his cousin in Italy. His cousin was also impressed with the improved signal strength over the Zepp, thinking we were trying to put one over on him. He accused us of having erected a quad or beam.

During the following weeks, Joe told me results on the other bands were equally good. This told me that we had a winner.

By the end of last summer, I also had a Skelton Cone up in the air. I was amazed at the results I got with my one-watt output. Signal reports did improve.

If you want to try something cheap and different, give this arrangement a try. You'll be amazed with the results.



QRPp DX ON 1296.1 Mhz

BY TERRY YOUNG K4KJP

I just wanted to pass on my QRP experiences on 1296 Mhz. after the solar flare in June, 1983. I was able to work out of town for the first time with my varactor diode tripler/transmitter and had QSO's with three Texas stations: WA5TBE, Sandia; WB5LUA, McKinney; and W5HN, Dallas.

My power output to the feedline was only 900 milliwatts. I was curious as to what power was actually reaching the homebrew 10-element quagi antenna on the roof, so I slipped the antenna end of the coax into the shack. I measured the power to be only 370 milliwatts. Wow! These measurements were made with a Hewlett-Packard Model 435A laboratory-quality power meter. These QSO's were all CW, of course, and you can imagine what 3.86 dB of feedline loss did to my receiver noise figure!

I am using a Microwave Modules 1296 Mhz. receiving converter. The 1296 Mhz. energy from the antenna goes directly to the mixer in the 23 cm. converter without the benefit of RF amplification. This converter is then fed to my Argonaut 509 QRP rig as a 10 meter I.F. The exciter is an Icom IC-402 feeding 3 watts output to the tripler. The tripler is followed by a tuned filter to insure that only the 1296 Mhz. energy is radiated. The antenna is the 10-element quagi described by N6NB in the August, 1981 issue of QST.

During this opening, W5HN was 439 and WB5LUA was 569. While I can only transmit CW, other stations are operational with SSB, and I copied WA5TBE 5x5 in this mode. You can imagine my thrill to be able to work this far with a diode transmitter on microwaves! Before these QSO's, I had only worked a local on 23 cm., W4ODW, who is 12.6 miles away. All this would not have been possible without the first-class stations at the other end of the path.

Calculating the great-circle distance to WB5LUA, it seems that we are 619.74 miles apart. With an output power of 370 milliwatts, this represents 1,670 Miles-Per-Watt. The distance spanned at this frequency, and with this power level, is an exciting experience for an avid QRPer like myself.

I hope this experience will encourage those interested in microwave communications with simple gear and antennas to give it a try.

Technical Editor's note: While I would not take anything away from the spectacular results Terry had on 23 cm., I would remind members that all awards (like K/Mile-Per-Watt) are based on transmitter power output. In Terry's case, this figure would have been the 900 milliwatts measured at the transmitter output, not the 370 milliwatts measured at the antenna.

GENERALLY RECOGNIZED QRP CALLING FREQUENCIES

CW	SSB	NOVICE
1810	1810	
3560	3985	3710
7040	7285	7110
10106/10120		
14060	14285	
21060	21385	21110
28060	28885	28110
50360	50385	

Some European QRP groups recognize 7030.
Check 'em all!

IMPROVING THE ARGONAUT 515

BY JACK RUSSELL, K2RS

Having acquired a Ten-Tec Argonaut 515 recently, I began looking for modifications that might improve it's operation, so I called Joe Redwine at the factory in Sevierville, Tenn.

He provided a wealth of information on improving the 515 with factory-available parts and accessories. A stock, out-of-the-box Argonaut 515 has a four-pole ssb crystal filter used on both transmit and receive, but the more recent Ten-Tec rigs use an eight-pole model

Joe told me I could order the eight-pole ssb crystal filter (Ten-Tec part no. 220) for $59.00, substitute it for the four-pole filter, return the four-pole unit to the factory and get a $20.00 refund. Where the heck can you get an eight-pole filter for $39.00 these days?

He also told me that a really effective add-on for the 515 is the Model 234 speech processor. Although this unit is no longer in production, Joe says there are a few left at the factory for $55.00 each.

Finally, our telephone skull session produced a word that the 515 plays best on sideband using either Ten-Tec's electret microphone or a Shure 444. Joe said the pushier mikes, such as the Astatic D-104 are too sharp and harsh to do a good job with the 515's audio circuit.

QRP ARCI

FIRST SUNDAY QSO PARTIES

April 1 **May 6** **June 3**

STAYING ON TOP OF THE DOWN UNDER SITUATION

BY FRED BONAVITA, W5QJM

The VK C.W. QRPp Club of Australia has become a silent key, and it has been succeeded by the C.W. Operators QRP Club.

Jack Swiney, VK6JS, the VK club's founder and driving force for years, had to "fold" the operation early last fall after pressures of work and his personal life overcame things.

Jack also had to surrender his post as secretary of the World QRP Federation temporarily to Collin Turner, G3VTT. (The new WQF secretary is David Farris, K5NT.)

Despite this setback for Australian QRPers, the new club has been organized by Len O'Donnell, VK5ZF, 33 Lucas Street, Richmond, South Australia 5033, Australia.

"The club is seeking members world wide," Len says. "Membership fee is $4 Australian . . .

"This is not an attempt to revive the VK CW QRPp Club. That has been disbanded," he said. "As far as club awards, club contests and a club magazine are concerned, we will be running all three. It's just going to take a little while."

Len advises the new organization has more than 25 members and is electing a committee to run the club.

The club's frequencies are 3530, 7025, 14050, 21130 and 28125 kHz. It has adopted a power output of 5 watts or less for QRP and/or one watt or less for QRPp.

A DELTA LOOP FOR THE NEW AND OLD BANDS

BY BILLY VAHLDICK, K5LKT

Mention a full-sized delta loop antenna to the average ham -- especially a city dweller -- and you likely will get a look somewhere between pure lust and pure panic. For most folks, the idea of erecting an 80-meter delta loop qualifies as a dream. Just consider the arithmetic on it: one cut for 3.75 MHz is 268 feet in circumference or 67 feet on a leg. That takes a lot of real estate, is the usual conclusion. (The formula, by the way, is 1005 divided by the frequency in megaHertz.) For someone like me, for instance, who has a city lot measuring 85 by 150 feet, the idea of a delta loop sounds a little far-fetched. Not so.

Rather than taking the usual approach of stringing the antenna away from the house, I strung mine **around** the house. It works fine. I'm able to load it on all bands from 80 meters through 2 meters, and even on the MARS frequencies. I used trees, the corner of the house, a 10 MHz vertical and other supports to hold my loop in place. The antenna is made from insulated, multi-stranded 20 gauge wire and is all but invisible from the street. Because of the location of these supports, however, the four legs of my loop are not equal. It appears to make no difference. The antenna's height above ground averages 21 feet.

I used a Palomar noise bridge to tune my delta loop, and it is resonant at 3750 kHz. After circling the house, the loop is brought into the shack on a pair of parellel feeders made of the same wire and spaced about six inches. It's terminated in two nails on the wall. I use a six-foot piece of 50-ohm coax with alligator clips on one end to attach to the feeders, purely as a matter of convenience. Most of my rigs feed it without the need of a tuner and with reasonable SWR. One plus: I've taken down my Gotham quad. The delta loop out-performs it, and I don't have to rotate the loop.

(REPRINTED FROM "SOUTHWEST QRPer")

ADD THESE CATALOGS TO YOUR BOOK SHELF

BY ED MANUEL, N5EM

Here are three more suppliers of radio parts to add to your lists:

MCM Electronics, 858 E. Congress Park Dr., Centerville, Ohio
Telephone: 513-434-0031 and 800-543-4330

MCM's current catalog number 6 lists a variety of consumer electronic equipment, as well as a good number of parts that would be useful to the QRP builder. They accept COD, MC/Visa and have a minimum cash order of $10.00. The minimum charge order is $20.00.

KCS Electronics, p.o. Box 33205, Phoenix, Arizona 85067
Telephone:602-274-2885

KCS provides a mail order catalog that can be very useful. They accept UPS or US mail COD, MC/Visa and have no minimum order.

Mouser Electronics, 11433 Woodside Ave., Santee, California
Telephone: 619-449-2222

If you do any building at all you should have a copy of Mouser's catalog and purchasing manual number 541. This company supplies about anything you could need, from aluminum boxes of all types to chip resistors and capacitors. They accept COD, MC/Visa and have no minimum order, but they do charge a $5.00 service fee on orders under $20.00.

One word of caution is in order if you buy your parts by mail. When ordering COD or with a credit card, be very specific with the order-taker that, if an item is not in stock, you do not want the part back-ordered. Failure to do this could result in a $2.00 part arriving a week or two later, complete with a $2 or more shipping charge. That's a good way to shoot your bargain in the head.

As we find more sources of parts, we'll pass the information along. In the meanwhile, build something and submit it to me for publication in the Quarterly.

ONE FOR THE ROAD

BY WAYNE SAYLES, N9AKM

That old saying, "Necessity is the mother of invention," must have bee conceived in the mind of a QRP operator. Over the past two years, I've had occasion to travel all over the United States. Spending an average of 180 days a year on the road, I managed to stay in every type of hotel and motel configuration imaginable.

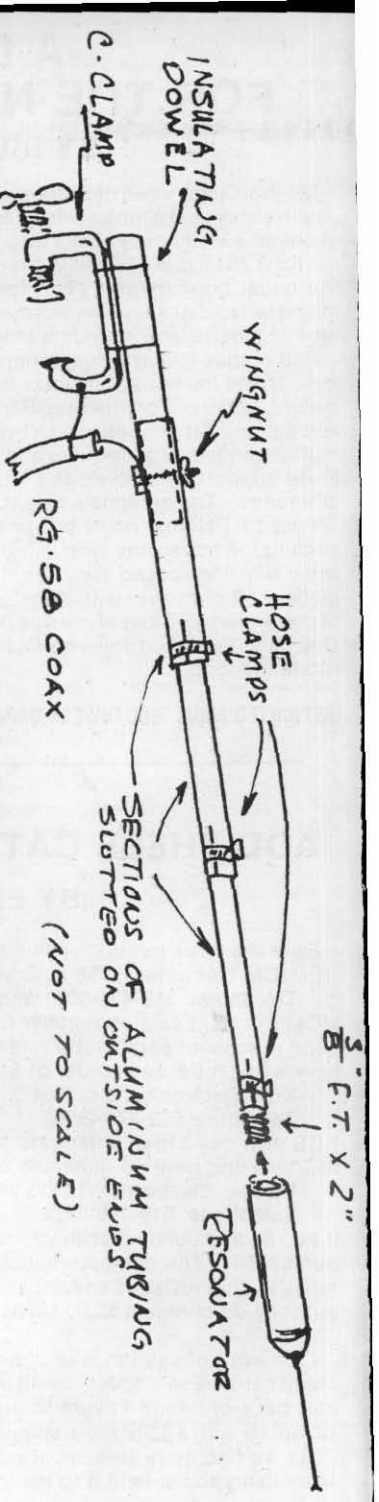
My constant companion during these trips was a very faithful and forgiving Yaesu FT-7, a versital rig that operates on 12 volts d.c., drawing about four amperes of current and giving a 10-watt output. A Gelyte-type, nine-amphour battery works well and will sustain several hours of either voice or CW operating. An overnight charge usually brings the battery back to full power, and it requires only an easy-to-carry wall charger.

Getting powered up is the easy part, but getting out with a usable signal is where the real challenge and necessity of invention begin.

There must not be an architect in this country with a ham ticket, because every motel room ever built is loaded with special features to prevent radio communications. Some constant frustrations are windows that won't open, steel-reinforced walls, balconies on the window side and acoustics that somehow let the guy next door count dots and dashes instead of sheep. Naturally, the toughest thing in this hostile environment is coming up with an antenna.

I have long carried a Dentron Jr. Monitor antenna tuner to load my FT-7 into every possible excuse for an antenna. It got to be a standing joke among my friends when I loaded into floor lamps, rain spouts, metal windowsills and screens, or ran speaker wire back and forth across the room. Have you ever tried hanging a 20-meter dipole in a 10-by-12 foot motel room? Believe it or not, all of these work to some degree.

The best antenna I've seen, however, for portability and performance is a simple quarter-wave element that is center-loaded and tunable. Eight hours of operating my FT-7 with one of these antennas hung out a second-floor window brought 25 DX contacts in four countries, most on 20 meters and all ssb. Construction is so simple that it seems a little far fetched even to me. The key to it is a Hustler resonator of the type usually found on mobile antennas. It is attached to an aluminum tubing base, whose length and diameter are not critical, and the whole thing is held in place with a simple C-clamp. I've varied the length of the base section from three feet to six feet with practically no difference in performance, although a change in the base length might require some adjustment of the tip rod in the resonator. The tip usually is tuned with each new installation anyway, so that's no problem. When the C-clamp is attached to the windowsill, metal balcony railing, rain spout, etc., it forms a crude but effective groundplane. It appears not to matter that the antenna is horizontal and the groundplane vertical. A tuner might not be needed since the resonator can be tuned to eliminate SWR. Any change in antenna position or groundplane composition probably requires adjustment of the resonator tip.



If you can't get a low SWR or can't seem to get out at all, chances are the resonator is not tuned properly. If a groundplane is not available, try running 50 feet of so of bare wire around the room and attach it to the C-clamp. When I've had problems in getting the SWR down, a slight change in the angle of the antenna cured the problem. If your room is on the ground floor, you'll find the antenna works best in the vertical position. On the second floor or higher, horizontal works better.

This is not just a plug-in-and-go antenna. It's an experimenter's dream. The more you work with it, the more adaptable it becomes and the more proficient you are. (Editor's note: Wayne will be glad to correspond with SW/QRP readers about this antenna. Include an s.a.s.e. and write him at Rt. 2, Box 32AA, Clear Lake, WI 54005)

THE N9AKM QRP PORTABLE ANTENNA *(Drawing is on the facing page)*

The unit, essentially, is a mobile antenna made in sections. A wooden or plastic dowel is attached to the C-clamp. The first section of tubing is sized to fit over the dowel and is held in place with a through-bolt and wingnut, to which the center conductor of 50-ohm coaxial cable is fed. The braid connects to the clamp, as shown. The tubing is from 18 to 24 inches in length, with each succeeding section sized to fit in the previous one. The ends are slotted and fitted with hose clamps to hold the base sections together. The last tubing section is fitted with a ⅜" X 2", fine-thread bolt from which the head has been cut. Clamp it in place permanently. The Hustler resonators screw into it.

(Editor's note: Wayne Sayles aroused some interest among QRPers with his article "Portable QRP: Some Unscientific Lessons Learned" in QST for January 1983. In this follow-up article for SW/QRP, Wayne elaborates on his successful antenna design and give its dimensions and construction method. *See QST piece for additional information and photographs.*)

(REPRINTED FROM "SOUTHWEST QRPer")

QRP RTTY TYPES TAKE NOTE

QRP ARCI has begun a program of offering Short Sprint contests; we are utilizing these contests to experiment with various modes, new types of contest exchanges, etc. We have had articles in The Quarterly about QRP RTTY and your contest chairman, also interested in this mode of operation, solicits comments from QRP RTTY operators about the possibility of conducting an RTTY Sprint.

If you guys would like to try it, let me know and suggest a frequency range. Provided there is sufficient response, a special RTTY Sprint can be arranged.

WANTED: For NARDA model 8401 RF power meter, thermocouple mounts for the following power ranges: 0-0.1 mW, model 8420 (color-Blue). 0-10.0mW model 8422 (color-Red). Contact Gene Smith, *KA5NLY, 16 Fairmont Drive, Little* Rock, AR 72204

What do QRP'ers do on the beach? Well if they are Jim Fitton, W1FMR (left) and Les Shattuck, WB2IPX, (right) they spend their time working a 'little' QRP. Les is the new Vice President of QRP ARCI and he spent a few days this summer at Jims' beach house in Salisbury, Mass.

DONATIONS GRATEFULLY ACCEPTED FOR THE QRP ARCI COMPUTER PROGRAM LIBRARY

Recently the number of amateurs owning personal computers has seen a dramatic increase. Many are now looking for new applications for their machines. Have you considered using the computer to help you design your QRP equipment?

Many of the circuits normally used in electronics lend themselves to rapid analysis with a pocket calculator or computer. All that is needed is a program for the particular problem. This is where the large number of ARCI members can benefit each other.

We are considering establishing a library of programs that would be contributed by the membership. Here's how it would work.

When you work out a particular computer solution (and have checked it out thoroughly!) the program is listed and a short narrative is written to document its use. This, along with the applicable schematic diagram, is mailed to the librarian. In its final form, the program will be on one side of a page with the schematic and narrative on the opposite side.

If your program is designed to accompany an article in The QRP Quarterly, a short note about its availability will be made in the text. Those desiring a copy can then obtain it from the librarian. We simply cannot use the very limited space of The Quarterly to print program listings.

The program sheets, as well as an up-to-date list of all the programs available, would be available from the librarian for an SASE and a small amount to cover copying cost (I'm thinking about $0.25 per sheet).

This is still a concept. I want to know what you, the membership, think of the idea. My ideas, so far, are that all programs would be in BASIC with all statements written to be 'transportable' to different machines. Sample solutions would be given to aid in debugging typographical errors.

There you have it. Set right down and jot your thoughts out and mail them me at the address listed on Page 2. If there is sufficient interest, we'll start a new program immediately. Who knows, in a year or so, we may have enough programs to put out a good size handbook. 73s . . . . .

Ed Manuel, N5EM - Technical Editor

A KM/W certificate was issued to VU2USA in Bangalore, Inda. While operating novice station VU2SAZ, he made over 500 contacts with a single transistor rig having only **8 components** - including the crystal! K.S. Shama Sunder is a new member of QRP ARCI and will be looking for 2-way QRP QSO's with other club members.

Secretary/Treasurer Report

William K. Harding, K4AHK

A word of thanks is due to all of you who have provided your support while I have been getting up to speed with the Secretary/Treasurer's job. A greater word of thanks is due to outgoing secretary Ed Lappi and others who have gone before him. Ed did a terrific job. His accurate record keeping has made the transition an easy one.

If you have old copies of membership applications with Ed Lappi's name on the bottom, please change them to show my name and address before mailing them to prospective members. The recent article by Ade Weiss in CQ has sparked a number of QRPers to join our club. Before the end of this month, member #5500 will be assigned. Thanks, Ade.

Some confusion was generated in the last issue about the expiration date shown on your Quarterly mailing label. The label marking (4749-3/84) means that member #4749 will receive his last issue in the 3rd quarter of '84, not the 3rd month. Please send your renewals direct to me, not to the editor. The mailing list is kept up to date on my Apple II. In order for me to update the file, print labels and get them from Virginia to Texas in time for the mailing on the first of the month, it has become necessary for us to cut off renewals 30 days before publication of *The Quarterly*. To ensure a continuing subscription, mail your renewal check to me within one month of receiving your last issue. Be SURE to include your QRP NUMBER and your CALL with your renewal and make checks or money orders payable to "QRP ARCI, INC.".

For those of you who have asked, the club treasury is in excellent shape. The treasurer's report for January '84, after paying all bills associated with the January Quarterly, indicated a balance of $3,926.59. In addition to advertising and material costs, our greatest expense is publication of *The* Quarterly. Materials, printing and postage for the issue you are reading is expected to run about $550.00.

NOMINATIONS DUE FOR THE BOARD OF DIRECTORS

The board positions currently occupied by W5QJM, WA2JOC and K5VOL will expire on December 31, 1984. A ballot for election of three board members will appear in the July Quarterly. Members interested in running for the board of directors seats should send me their name, call and a short profile of their amateur radio experience along with projected goals for the club by the middle of May.

NEW AWARDS MANAGER LEO DELANEY, KC5EV

By unamious decision, the board of directors elected Leo Delaney, KC5EV, to succeed me as your Awards Manager. You will remember that Leo is the guy who did such a bang up job of arranging QRP activities at the ARRL national convention in Houston last Fall. I'm sure that Leo will do a great job.

K8WPE, David Wilcox, MI
WA8MLV, Timothy Colbert, OH
KA6QLQ, James McNew, CA
WD9AEU, James Jones, IL
WB0CZE, Lou Hannaford, MO
NX6A, Dan Price, CA
WB0BMT, Larry Stambaugh, IA
KC7FI, George Gooder, OR
KC9NF, Michael Herman, IL
W6SIY, Keith Clark, CA
W3GW, Joseph Gerry, LA
KB4EVF, Morris Boschen, NC
No Call, Robert Power, UT
W7DIG, Robert Creighton, WA
WB9AYB, Robert Doles, IN
wa4nbe, George Livingston, FL
KD9BS, Dr. M.F. Klaes, IN
KA0GPE, Paul Montgomery, CO
AH6EK, Alan Jay, HI
WB9HRO, Jim Fitzpatrick, WI
WA3JAX, George Macey, MD
KW9N, Mike Bailey, WI
WB9PQO, John Mori, IL
KA3EPW, Bernard Fuller, PA
NA4X, William Rheney, FL
NF5Z, Richard Powell, TX
W5UNV, Wil Cowan, TX
WH6AKJ, Lawrence Koga, HI
WA0RBR, Mark Oman, CO
No Call, Bruce Zimmerman, IA
NN5I, Max Dahlgren, TX
KB6DEZ, Ron Lingren, CA
KA6IBI, Charles Cline, CA
NW6I, Robert Jacobs, CA
WB1DCC, Richard Epe, CT
KZ9H, Albert Cox, IN
AC6Y, Ron D'Eau Claire, CA
W3JMM, Harry Bloomer, Jr., PA
KA8TVO, Charles, Nohava, Jr., OH
N4HE, Gary Forehand, FL
KB4ICE, Deborra Forehand, FL
KB8KN, Jerry Cook, WV
WA7KED, Charles, Rice, AZ
WD4EXG, William Cline, VA
W1ED, Frank Darmofalski, CT
WS4R, Bob Hoffman, FL
VE2EZT, Claude O'Neill, Canada
VE3ECV, Victor Bel, Canada
YV6AHM, Ivan Chalvens, Venezuela
PY2NE, Carlos Moura, Brazil
VE7COU, Rick Van Kruipl, Canada
JA1EVK, Masahiko Okuyama, Japan
KA1JJX, Peter Matson, CT
KB6DEY, Robert Calvert, CA
KA0QHF, Roy Crosier, KS
W4ZPA, Alson Siler, NC
W2GMR, Adelbert Carpenter,
W1IKB, John Yacovelli, CT
WH4CGC, Randall Pettie, VA
KX5L, Tom Getts, TX
KA9QKI, James, Kase, IL
KA8QGD, David Younker, OH
KA0HIB, David Blanchard, IA
K4ICH, Charles, Evans, TN
K4NZ, Madison Alderson, FL
KA5MXX, Carl Vincent, TX
W2OXJ, J.T. Krinsky, NY
WA1KEI, Edgar Lizotte, RI
KA9QPG, Thomas, Talley, IL

THE 1983 QRP FIELD DAY RESULTS

BY ADE WEISS, W0RSP

Luckily, the 1982 Field Day story appeared in the June issue of CQ this past summer, just in time to alert many of the fellows about the program and potential joys of a QRP FD.

Several of the long-standing regulars such as K6TG, W6SKQ, WA6POC and others showed up in the results as well as many newcomers to the QRP version of the FD experience.

The most satisfying part of going through the 1983 entries occuried in regard to the One Watt category. No entries were received last year, which led to my dire threat to discontinue it if less than 5 entries were received this year! Gladly, we received twice that number. And the One Watt group did a quite respectable job despite the power handicap.

In glancing over the results, bear in mind that scoring includes a One Watt power multiplier of X8, twice that for the Five Watt category. So, an equal number of QSO's at the One Watt level will produce approximately twice the score as at the Five Watt level.

Note the outstanding performances of KA1R, W5LXS and N0BYC. KA1R's 550 QSO's tops the entire list for one-transmitter/two operator categories. W5LXS's 342 QSO's would give him a fourth place in the 5 watt class by a wide margin. Admittedly, both these stations operated from the home QTH using regular antenna systems. Nonethless, they demonstrate what can be done with less than one watt, a good antenna and operating savy.

The trophy went to the highest scoring portable station, N0BYC, who produced 241 QSO's with nothing more elaborate than a ground-mounted vertical over four 3-foot X 25-foot pieces of chickenwire and six 70-foot radials for a groundplane. Similarly, K5WNH/0, winner of the 1981 One Watt Trophy, used a similar antenna to rack up 239 QSO's. Close spread!

In the Five Watt category, scores were much higher than last year. Shows what a difference a solar flare can make! Ed Manuel, N5EM, pushed his last year's trophy winning total of 259 QSO's way up to 448 QSO's this year. Due to the 'alternate years' rule, Ed was not eligible for the trophy this year, but next year its open game for him again. K5HGB assisted Ed in the effort. Randy Shirbroun, WA0VBW, was assisted by KA0HIB in racking up 435 QSO's and topping out for the trophy. I shopuld note that N0BYC was a single-operator effort.

In the Club category, Paul Seamon's crew operating as N2RI finally pulled it off after a couple of years learning the tricks of the trade (see Club rankings). Included in the effort were AI2Q and KQ2G operating a pair of 509's. I think that their success this year may be due to finally having a decent club name -- "Sticky and the QRP Bulkhead Bashers!" Under a banner like that, how could you lose?

A misinterpretation of the rules led Leo Delaney, KC5EV, and KQ5U, to operate two transmitters at under - one watt, forcing them into the Club category, but they did a good job, pounding brass under the "Won Watters" (get it? 'won', 'one').

Full reports from participating stations will be in the May and June issues of CQ.

Overall, I and the Board of the QRP ARCI, cosponsors of the FD awards, are very pleased, nay, more than pleased, with the showing in the One Watt category, and we hope that the successes of this year's entries will inspire many others to head out in that category. Similarly, we are gratified by the turn out in the Five Watt and Club categories. We congradulate N0BYC and WA0VBW on their trophies, and N2RI on the Club plaque awarded them.

We're including a 'standings list' of Club results from the last several years as part of the program. It provides a goal to aim for as well as showing how the various clubs have been doing.

So, fellas, start thinking FD and planning for this June. Everyone claims to have a great time whether they 'bomb' out or rack up a fantastic total. It's a natural -- QRP is made for the field! And we continue to encourage those who can't get out into the field to operate from the home station and send in results, even though not eligible for a trophy. The purpose is to show the world what low power can do in a high power world!

1983 MILLIWATT FIELD DAY TROPHY

ONE WATT CATEGORY

	STATION	QSO's CW/SSB	SCORE
1	KA1R	375/175	6600
2	W5LXS	342/0	4104
3*	N0BYC	241/0	3042
4	KN1H	195/0	2490
5	KM8X	181/0	2322
6	K6TG	153/0	1836
7	KB1DH	67/1	544
8	KA5NLY	2/28	510
9	KH6CP	8/1	258

FIVE WATT CATEGORY
1 TRANSMITTER — 2 OPERATORS

1	N5EM	423/25	2838=
2*	WA0VBW	113/322	2760
3	W3TS	418/2	2670
4	W9OA	250/7	1692
5	NI4R	170/79	1644
6	K8IF	255/0	1530
7	KA8LCJ	12/167	1224
8	KN7W	170/7	1212
9	WA1VVX	0/188	1128
10	KA1CZF	111/71	1092
11	W6YVK	0/181	1086
12	KK7C	139/38	858
	KR2V	118/0	858
13	N3ANW	10/85	720
14	WA5BUC	0/87	672
15	W0VS/7	60/0	510
16	KW8B	87/0	348
17	N3AWS	74/0	296
18	W8EAO	60/1	244
19	N5EYF	42/0	168

CLUB CATEGORY
2 TRANSMITTERS — 2 OPERATORS

1*	N2RI	354/345	4344
2	KN9W	396/247	4008
3	W2LZ	618/19	3972
4	W0VM	394/0	2514
5	N5AE	151/128	1824
6	W6SKQ	117/142	1704
7	WA6POC	158/87	1620
8	KQ5U	87/1	1206**
9	W6JTH	75/3	618

*Trophy Winners (KA1R, W5LXS were home stations, ineligible for trophy)
**One Watt Club Entry
N5EM ineligible - trophy winner in '82

QRP FIELD DAY CLUB STANDINGS

TOP 25 - 1979 to 1983

	CALL	YEAR	QSO's	SCORE
1	N4BP	'82	1170	7170
2	K8BX	'81	854	5274
3	K8IF	'79	732	4488
4	N2RI	'83	699	4344
5	N5AF	'82	685	4260
6	K8IF	'82	684	4254
7	KN9W	'83	643	4008
8	W2LZ	'83	637	3972
9	AC2U	'81	627	3912
10	N2RI	'82	625	3900
11	WB9JVX	'82	584	3654
12	N2RI	'81	555	3480
13	K8BX	'80	378	2985
14	KB8GC	'79	437	2772
15	KM8X	'81	407	2595
16	W0VM	'83	394	2514
17	W6SKQ	'82	394	2514
18	W0MHK	'79	336	2166
19	K1GAX	'79	342	2052
20	WA0VBW	'81	312	2022
21	K9BCM	'81	300	1950
22	N5AE	'83	279	1824
23	W6SKQ	'83	259	1704
24	WA6POC	'83	245	1620
25	W3FQR	'79	243	1608

QRP FIELD DAY TROPHY WINNERS

FIVE WATT CATEGORY

YEAR	STATION	QSO's	SCORE
1970	K4OCE	220	1470
1971	WA6ABP	137	1175
1972	W7DRA	55	562
1973	WA5WYO*	79	1098
1974	W0IYP	439	2748
1975	WB8OSM	220	1470
1976	K6TG	128	918
1977	N2AA	389	2790
1978	WA4IAR	442	2804
1979	WD5BKO	287	1872
1980	K1JX*	741	9042
1981	N4BP	999	6144
1982	N5EM	259	1704
1983	WA0VBW	435	2760

*One Watt entries, score adjusted to current X8 power multiplier.

ONE WATT CATEGORY

1981	K5WNH/0	239	3018
1982	NO ENTRIES THIS YEAR		
1983	N0BYC	241	3042

Awards Chairman Report

Leo Delaney, KC5EV

Kyle Chavis, WA4PGM, has claimed a record for the "1000-MILE-PER-WATT" award. On Nov. 20, 1983, Kyle completed a QSO with Charles Cullian, K0RF, on 28 MHz while running an output of .00003125 watts.

An output of 31 milliwatts was first measured using an R.F. voltmeter and a 50-ohm dummy load. A known attenuator was then inserted in the line and power reduced to 31 microwatts. The distance between Kyle's house in Farmville, Va. and Charles' in Longmont, Co., is 1,448 miles. The resulting distance of 46,336,000 miles-per-watt is the longest recorded in the QRP ARCI records.

The previous KM/W record of 21,600,000 miles-per-watt was set in January, 1983, between Dan Lewis, N6HY, and Charlie Ebert, KD5OB. Dan ran 67 microwatts.

During the 1983 ARRL National Convention in Houston, a small single-band QRP transceiver kit was awarded to Larry Jones, WD0AFR, at the QRP Forum. A recent inquiry as to the progress of the assembly of the kit brought the following response:

"Well, when I opened the box and saw there were not any instructions at all about assembly of the unit, my first thought was to go into total panic. What little information that was there was in a language only a resident of the local chicken coop could read.

But after I opened some of the packages of goodies and examined the boards and compared them with the schematic, some light began to shine at the end of the tunnel.

I carefully counted out the parts and compared their values to the values specified on the schematic. This was also an enlightening experience. It seems that some of the values were not specified on the schamatic. The symbol was there, but not a value to be shown. But, I counted the number of parts left that did not have a match to the schematic, and I counted the number of symbols on the schematic that did not have a value specified. Would you believe it the two numbers matched.

So all I did was install all the parts that were specified and then match parts to symbols on the schematic. Now I must note here that the parts that were not called out on the schematic just happened to all have the same value. I got it all together in about a week and a half. I then gotr the old trusty power supply that has not failed me in years and connected it up to the radio. I applied power and watched the IC audio power amp go up in smoke. For the life of me I could not understand what was the problem. I am really starting to believe that those solid-state devices do work on smoke, because when the smoke escaped from the IC, it quit working.

Well a check of the old power supply turned up the problem. It seems the 2N3055 pass transistor passed away, letting the full unregulated 25 volts attack the audio amp IC. The rest of the radio consists of descrete transistor circuits and nothing else seems to have been damaged. I have been searching for a replacement part for the audio amp. So that is where it is at the moment, resting peacefully in its box in the corner."

Brian Heywood, ZL2NCC, notes that ZL novices are limited to 10 watts CW and ssb and operate between 3.525 MHz and 3.575 MHz on 80 meters and between 28.100 MHz and 28.600 MHz on 10 meters.

As the incoming awards manager, I wish to thank Bill Harding, K4AHK, for his never-tiring efforts during the past two years administering the QRP ARCI awards program. He has expressed his enjoyment of a great experience sharing in the unabashed excitement of applicants from all around the world who have finally qualified for a long-sought award. During the past two years, the following awards were issued:

WAC-QRP	37	DXCC-QRP	19	QRP-NET	20
QRP-25	16	WAS-QRP	51	KM/W	172

In addition to these certificates, more than 40 seals were issued to upgrade previously issued awards. If you total all of these, you will see that awards were issued averaging one every two days. It has been a great experience sharing in the unabashed excitement of applicants from all around the world who qualified for a long sought award

QRP ARCI AWARDS SUMMARY

FOURTH QUARTER, 1983 AND FIRST QUARTER, 1984

CALL	ENDORSEMENTS-NOTES-MILES/WATT	POWER	MODE	BAND
	DXCC SUMMARY			
WB2IPX		3.0	MIX	MIX
AA2U		5.0	MIX	MIX
W6SKQ		3.0	MIX	MIX
WA1YLN		5.0	SSB	MIX
	W.A.C. SUMMARY			
WD9FSA		5.0	SSB	10M
W6YMH		5.0	SSB	15M
G5CSU		2.0	SSB	MIX
JA7AS		1.0	CW	MIX
	W.A.S. SUMMARY			
W6YMH		2.0	CW	MIX
AA2U		3.5	MIX	MIX
KA3CRC		3.0	MIX	MIX
WD9FSA		5.0	SSB	10M
W9DRL		5.0	SSB	MIX
KW9N		5.0	CW	MIX
KO7V		2.0	MIX	MIX
	NET SUMMARY			
W6JHQ	SWN-40 CERTIFICATE			
WB2IPX	NEN-40 & SEN-40 CERTIFICATES			
	QRP-25 SUMMARY			
W6YMH	"100" SEAL			
AI2T	BASIC 25			
WA1YLN	"100" SEAL			
WB2IPX	"100" SEAL			
WA8MLV	BASIC 25 - ALL CW			
N7DGZ	BASIC 25			
	1000 MILE/WATT SUMMARY			
WB2IPX	TO ZL2OD	2,943 M/W	3.0	CW 40M
AI2T	TO KA4CKL	1,713 M/W	.150	CW 40M
WA3GYW	TO N6DYZ	1,547 M/W	1.5	CW 15M
N5CNH	TO JA5FMP	2,305 M/W	3.0	CW 15M
KC5EV	TO ZL3RK	2,570 M/W	3.0	SSB 15M
KC5EV	TO VK2NEC	4,323 M/W	2.0	CW 15M
JA3PAV	TO JA8EUU	272,083 M/W	.0024	SSB 6 M
JL1GOG	TO JA8JDM	2,488 M/W	.250	SSB 6 M
JA1GOG	TO JA7IFI	8,663 M/W	.300	SSB 15M
JJ1OSG	TO JH1MBQ	11,377 M/W	.0138	AM 6 M
N9EEP	TO TI2PZ	1,383 M/W	1.6	CW 20M
KW9N	TO YU3DT	1,002 M/W	5.0	CW 20M
WA3NXA	TO ON4OU	1,356 M/W	2.5	CW 20M
JA1CKE	TO LU6CT	11,419 M/W	1.0	CW 15M
N4BP	TO WA6GFE	1,684,000 M/W	.001	SSB 10M
N4ELM	TO KA7CZA	1,570 M/W	1.5	CW 20M
DE1BMH	N8CQA & DL0HB	2,007 M/W	SWL	CW 20M
KO7V	TO VK5NPS	6,552 M/W	1.3	CW 15M
VK5AGX	TO CT4CH	2,062 M/W	5.0	CW 15M
G5CSU	TO VK3PR	5,223 M/W	2.0	SSB 20M
ZL2NCC	TO OE6JGG	2,253 M/W	5.0	SSB 10M
JA7AS	TO LU6DKX	11,304 M/W	1.0	CW 20M

CONTEST CHAIRMAN'S REPORT

BY GENE SMITH, KA5NLY

Member response to the suggestions and ideas in last quarter's contest column was overwhelming and sure proves that our members do read their Quarterlies! We will share some of the comments received and further discuss the CW and SSB contests, W/VE vs DX scoring, possible changes in the contest exchange, and let you know that Sprints are on!

First, the separate CW and SSB contests generated the most comments. John Collins, KN1H, summed up the reaction to having the October contest as SSB only, stating that it "...excludes a large portion of membership from what is undoubtedly the biggest QRP contest of the year." Several members suggested that the SSB contest be held in the spring and the CW contest in the fall.

Others such as Joe Garzik, KA4TAU, suggest that both contests be dual mode; "Those of us with HW-8 are getting left out in the cold." There would be no difficulty in having both as dual-mode contests, but efforts to encourage more SSB QRP activity might suffer, as well as participation in the Triple Crowns of QRP competition. The trophies are awarded upon "...the combined scores from the spring SSB QSO party and the fall CW competition..." so operation in both modes is a basic requirement, except for novice and technicians, to win a trophy.

Having each contest a single mode correspondes with Triple Crown requirements but imposes hardship on those unable to operate both modes; in the words of Bob Brown, N7DGZ, "If they (CW contests) are a year apart, it's going to be tough on some to keep their juices flowing." Perhaps the soultion to this problem is for both the spring and fall contests to be dual mode (CW and SSB). That way everyone, including the HW-7 and HW-8 operators, have more chances to participate, while those wanting to go for Triple Crowns will have to decide which contest they will operate on each mode.

Your contest chairman does not have the authority to decide what contest will be CW, SSB, dual mode, etc., as that's up to the board of directors. However I can compile your comments and provide some statistics to the board summing up your responses. So, all QRP ARCI members are requested to let the contest chairman know your preference for the following: (1) fall CW, spring SSB; (2) spring CW, fall SSB; or (3) fall and spring dual mode. The results of this poll will be given to the board for it's consideration.

As for W/VE vs DX scoring problems, Chris Page, G4BUE, pointed out that under current rules "...I earn only two points for a QSO with a W/VE station, whilst I earn four points for a QSO with a European station." In effect a US/Canada operator receives a two point bonus for working a DX station while the DX station gets no bonus for working a W/VE (DX to him) and a bonus for working his local stations. Since most are W/VE stations, the DX station is hard pressed to be competitive. Your board has addressed this problem and (it's too late to correct it in the April '84 contest) has decided that the DX bonus will apply where the QSO is between two continents. If KA5IGA works G4ART (both non-members) in a future contest, then each will receive four points for a DX contact.

Another item generating a lot of feedback concerned proposed QSO exchanges which would eliminate the exchange of QRP ARCI member number and substitute instead an "M" for member and "X" for non-member. Chuck Carpenter, W5USJ, says that without the number exchange "... it's too difficult to collect numbers for the QRP-25 award." and Bill Harding, K4AHK, warns that eliminating the number from the exchange would "... be the death of QRP-25."

Actually, under the rules, QRP-25 is awarded for **CONFIRMED** contacts, so the only purpose served by exchanging member numbers is to let you know who you need to exchange QSL cards with for QRP-25. Confirmed contacts require a QSL card exchange, so member numbers will be listed there. The letter "M" can accomplish this much quicker than sending the membership number, and therefore allow other valuable information, such as power and antenna type, to be exchanged as was suggested in this column last month. Your comments are solicited.

Sprints are on! Member response to the idea of sprints was so strong in favor of them that the board has instructed your contest chairman to proceed with them. Look for the announcement in the activity center section for the first Sprint, which we hope will proive a popular event in the future.

Keep your letters with comments and ideas comming. Your contest program depends for its success upon responding to your needs and desires. Let's hear more about single-band, natural-power, battery-power, RTTY, and other types of sprints we might put together. We will come up with sprints to meet our members' desires. Give me the word, gang!

QRP ARCI NET REPORT

BY JIM HOLMES, W6RCP

The Transcontinental CW Net (TCN) has moved to a new time because of propagation problems. The net now meets at 2300Z instead of 2400Z on Sundays on 14.060 MHz.

Roger Rose, W5LXS, Midland, Texas, is doing a great job as net manager and NCS for the TCN. Roger beams east for the first call for the net and then to the west for more check-ins. His methods have proven very effective. Remember to stick around on April 23 immediately after the QSO Party and check into the TCN. Then make TCN a weekly habit.

The new Northwest Net (NWN) got off to a roaring start Jan. 7 with 13 stations from five states checking in. Bob Brown, N7DGZ, of Anacortes, Wash., is the net manager and NCS.

Six club members have qualified for the QNI-25 award for checking into various nets: TCN: W5QJM; NEN; WB2IPX and WA3UJM; GSN: K5PSH; GLN: K9IFO; and SWN: W6JHQ.

The best DX check-ins to regional nets recently have been KL7XA to NWN and KA7PMP to GLN.

Records of the various nets have yielded some interesting facts and figures: K8IF and K3TKS have received QNI-25 awards for check-ins on four nets each and K4AHK has the awards for check-ins to three nets. K4AHK, K8IF and W6RCP have each checked into QRP nets more than 200 times.

Here are the net schedules effective April 23 and lasting until the return of Standard Time in the fall. The chart shows the day in the continental United States; the time in GMT followed by the day, if different; the net; the frequency; and the net manager's call:

Sun	2300Z	TCN	14,060 kHz	W5LXS
Wed	0200Z (Thu)	GSN	7,040 kHz	W5QJM
	0200Z (Thu)	GLN	7,040 kHz	K5VOL
Sat	1200Z	NEN	7,040 kHz	W1FMR
	1500Z	SWN	7,040 kHz	W6RCP
	1700Z	NWN	7,040 kHz	N7DGZ

All frequencies listed are plus or minus QRM.

The Southeast Net (SEN) meeting Tuesday on 7030 kHz at 0100Z (Wed) and the Great Lakes Net (GLN) meeting Saturday on 3560 kHz at 1500Z have not reported a change with the return to Daylight Time.

QRP QUARTERLY SUBSCRIPTION RENEWAL

Please use this form, or a reasonable facsimile to renew your subscription or report changes of address or call. Send to the Secretary/Treasurer.

William K. Harding, K4AHK
10923 Carters Oak Way
Burke, Virginia 22015

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Amount Enclosed $ _____ **QRP ARCI #** _____ **Call** _____

Name _____ **New Call** _____

Address _____

City _____ **State/Province** _____ **Postal Code** _____

Country (If DX Subscriber) _____

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