

40¢

the
NATIONAL JOURNAL OF

Milliwatt:



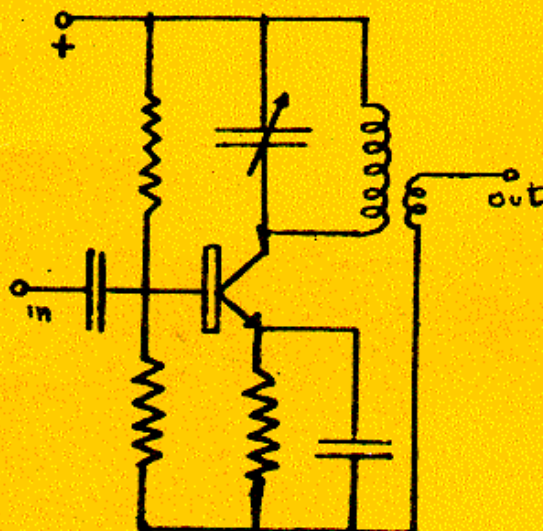
QRP

DEVOTED EXCLUSIVELY TO UNDER FIVE-WATT  amateur radio

VOL. 1 # 1

FEBRUARY 1970

IN THIS ISSUE:



- K40CE 'OCE-MINIRIG' 14MC TRANSISTOR TRANSMITTER 10
- W911L 7 WATT 14MC TRANSISTOR TRANSMITTER 11
- W71GV 7MC FET VFO TRANSISTOR TRANSMITTER 9
- K6E1L/2 'QRPP OPERATING HINTS' 2
- K8EEG/8 'FEEDLINES, ANTENNAS, AND VSWR' 4
- SYMMETRICAL PADDER: RUN QRPP WITH SB101 OR SIMILAR RIG 12
- QRPP OPERATING NEWS 15
- QRPP WAS STANDINGS 19

. . . devoted to under-five watt amateur radio.

* * * * *

Editorial Lucubrations . . .

During the past year, QRP/8 featured a 'QRPP Corner' dedicated to news about under-five watt operation, and it became apparent that QRP/8 owed its existence primarily to the 'QRPP Corner.' We decided thereupon that we ought to deal exclusively with QRPP for two reasons: first, interest indicated that such a move was warranted; and, second, we always had much more material than could be jammed into the space allotted for 'QRPP Corner.'

As you probably realize, despite the large number of hams interested in QRPP, none of the major ham mags--or the national newsletter of QRP ARC I, for that matter--has provided the QRPP'r with an opportunity to exchange ideas and technical information, and as a result, most of us have been ignorant of the overall picture of QRPP activity and technical progress. This has been good, in a sense, because QRPP'rs have been forced to design their own rigs and have thus advanced the state of ham radio, especially with respect to transistor technology in practical applications related to emergency and fixed operation from independent power sources. But on the other hand, most new-comers (and some oldtimes) are in the dark as to what to expect from QRPP, what successes other hams have had with QRPP, what rigs have been proven on the air, how best to operate QRPP, and, in fact, every aspect of the subject. The Milliwatt will provide hams with the forum for the exchange of such vital information.

We hope that The Milliwatt will lead many interested but uncertain hams into the fold of the "already present and ever-growing lunatic fringe of flea-power amateurs" by providing operating info and construction projects.

We QRPP'rs are idealists, dedicated to challenging the limits placed upon two-way communication by power limitation. We are in agreement with the FCC Regs. of 1936 which, although permitting 1 kw. input, explicitly note that hams should use minimum power necessary to maintain contact. We believe that the milliwatt, coupled with rig and antenna design of the highest efficiency, operating skill of the first order, and sheer perseverance, can contribute to a vital and real 'upgrading' of

amateur radio.

We received several suggestions for the name of the new ham journal, but we finally decided on the simple unpoetic self-explanatory The Milliwatt. You might be interested to know what you missed though. Among the outstanding suggestions in the way of poetic were 'The Penneywhistle' (by K6EIL's wife), 'The Softenboomer' (xyl of K8EEG), and 'The Virus,' of which Rocky (W9SCH) noted: "Like a good QRP rig, a 'virus is small, but, oh my!' Not only that, but once a ham gets the QRP-itis, it's as hard to cure as virus flu . . ." We agree, but somehow feel that "virus" carries the wrong implications, and we all know that there isn't any such disease as 'QRP-itis' . . . don't we? At any rate, we hope that you readers will appreciate the motive and rationale underlying The Milliwatt, support it by passing the word around to interested hams, and above all, by contributing your ideas, rigs, experiences, operating hints, operating news (however insignificant you might think a QSO of 350 miles with 100 mw. is, remember, the interested ham is going to get his feet wet in QRPP ONLY if he knows it can be done!!!), and whatever you think relevant. For our part, we hope to be able to make every issue of The Milliwatt as excellent as the first! We can, if you keep the material rolling in.

Some Operating Tips for the QRPP Ham . . . K6EIL

The single most important determinant of whether we, as QRPP'rs, will establish a QSO is the level at which the amateur at the receiving end has placed his RF gain. Indeed, because we know that the RF gain level at the other end is so important, it is all the more easy to identify good and bad operating practices and to use the former to our advantage.

Answer rather than call CQ's: I did not hesitate to call CQ during my first six months of QRPP operation. Checking the log after that interval, though, I found that 92% of my own contacts had been with stations that I had heard calling CQ and had answered. This is so, I suspect, because like all humans, hams are hedonistically positive. They tend to seek, in other words, no-strain-no-pain copy. When listening for responses to his own CQ, the average ham will often use as much gain as the receiver allows him. And this, gang, is our chance!!

Let the other station know that you are using QRPP: Rather than signing QRP after your call, a practice that seems to make no difference in establishing QSO's, mention very early in the QSO that you are using QRPP. This will explain to the other ham why your signal is relatively weak (if it indeed is) and often it will so excite the fellow that he will not mind spending an hour or so pulling your signal out of the mud.

QRS: At low readability and signal strength levels, high-speed CW is unintelligible. Slowing down increases by many times the informational efficiency of a weak sig. I have been told on the air that I was solid copy at 10 wpm, but, at greater speeds, characters and bauds could not be picked out of the QRN and QRM.

Operate the contests and CD parties: RF gains are cranked wide open and hams willing to suffer a bit for one crummy QSO point and perhaps a juicy multiplier!

Don't try to break into a QSO: This is tempting, especially if you have just hooked up a new QRPP rig, but most likely the stations' RF gains are turned down for a armchair ragchew.

Don't call a single station all night: If, after two or three calls, an operator does not answer you, forget it. He either is a lid, has a crystal set for a receiver, or propagation is against you.

Use QRP Club, QRP Net and other special frequencies: We are listening for you!

Of these eight tips, I have found the first four to be the most helpful or relevant to my own day-by-day operation. There are, of course, other suggestions relating to such topics as the efficient use of propagation, antennas and tuning devices, and so on, but undoubtedly other fellows will be able to deal more effectively with them.

Wes Mattox

* * * * *

TECHNICAL TOPICS

(I'm certain everyone has heard of the fantastic exploits of Bob Rosier, K4OCE, who has chalked up 118 DXCC on 20 meters running just 7 w. to a 4 element quad. See 'How's DX?' in QST, July, 1969 for summary of Bob's achievements. Don't let the 4 element quad worry you, tho, cause K8EEG has racked up about 30 states on 20 & 15 w. 1.5w. and inverted vee! Propagation is just good! More on this later, but now, here is a short bit from Bob

about the efficiency of transistor rigs and proper design. . . Ed.)

The big advantage of the transistor circuits is that you can obtain better than 90% efficiency, which is impossible with tubes. I compared my 'OCE Minirig' (see construction projects below) with a very popular rig rated at 50 watts which a novice friend brought over. I got more output with my 7 watt rig than he did with his. His final tube was a little weak, but measurement proved that the input to output ratio was terrible.

I might also mention that my most efficient transmitter was one which was similar to the new proposed 20 m. rig (see next issue of The Mw.). The only difference is that I capacity coupled directly from the collector of the final to the antenna which presented a 50 ohm load. I calculated that the transistor would have a ratio of collector voltage to collector current equal to 50 ohms while still being within its safety ratings. I therefore connected the collector directly to the antenna through a capacitor and varied the B+ while monitoring the output power. Sure enough, I got a peak in output at 19 volts, and the collector current was 380 ma. The match was achieved: $R = 19 \text{ volts} / 380 \text{ ma.} = 50 \text{ ohms}$. I was also getting better than 90% efficiency, but also interfering w. 90% of the TV sets in the area. So the question is: which is easier, a PI net output circuit or a filter--^{BOTH} probably about require the same amount of work. Also it might be difficult to convince hams to tune for a peak in outpower by varying the power supply voltage!

I thought that this was a unique experience and somewhat ironic, so I included the story.

Bob Rosier K4OCE

* * * * *

Feedlines, Antennas, VSWR, and Effective Radiated Power

The question regarding the theoretical and actual relationship among an antenna, its feedline, the VSWR, and the radiated power is one that is of special interest to the QRPP'r, for he is dealing with amounts of power which, in terms of signal strength at the receiving end, are of such a low level that 2db loss may be the difference between a QSO and a scratch attempt. As a result, it is essential to make every effort to deliver as high a percentage of the RF power generated at the transmitter to

the various elements of the sending medium. For quite a number of years, it was generally thought that a low SWR meant a good delivery of power to the antenna system, while a high VSWR meant that a certain ratio of the RF power was being reflected from the antenna because of a mismatch and consequently being dissipated in heat in the transmission line or the final circuit tank. For instance, in a recent issue of SARA SLIP, the publication of the Shawnee Amateur Radio Assoc. of Carbondale, Ill., we find a statement of this typical view shared by many hams:

SWR is an indication of how much of your transmitter's power is getting into the antenna. For instance, if you have a transmission line with an SWR of 3:1, and your transmitter is delivering 100 watts of RF, how much signal is being transferred . . . to the antenna? SWR of 3:1 gives you only 75% power transfer efficiency. So only 75 of your 100 watts is being transferred . .

In the chart supplied, typical ratios of efficiency are 1.6:1=95%; 2:1=89%; 3:1=75%; 5:1=56%; 8:1=40%. Most economy SWR bridges on the market have these rates marked along with the SWR scale, in case you hadn't noticed. When dealing with a power of perhaps 800mw, a factor of 75% efficiency can drop the delivered power, according to this view, to 600mw. which must be of receivable level 350-1000 miles away on 40mtrs., or a corresponding distance figure on corresponding bands. Since this RF signal must also undergo loss in the ionosphere of several db., there is reason for concern about that lost 200 mw.

In the Nov., 1969 issue of 73, however, Carl Drummer W5JJ, presents the results of controlled experimentation on the actual significance of VSWR in terms of power delivered to the antenna. Surprisingly, he reaches the conclusion that VSWR has NO effect on the amount of power transferred at 1:1 and 4:1 to a dummy load. You are advised to check that article for full details, but the gist of it is this. With the transmitter (the tank circuit designed to achieve a high degree of flexibility in matching a wide range of impedance) tuned to exactly the same input in both conditions of 1:1 and 3:1, the power measured at the matched or mismatched load proved to be nearly the same. The difference, however, was registered on the SWR bridge reading, where, with 80w. input and 80w. delivered to the load, the SWR meter showed respective readings of 80w (1:1) and 130 forward and 50 reflec-

ted. In short, the actual forward power remained relatively the same! 1/8 wave variations in feedline made no difference. (I have, after reading this article, verified W5JJ's results, but at power levels of about 1.5w. With given input, the difference between forward and reflected power remained the same up to about 3.5:1, where the size of the induced mismatch was beyond the matching capability of the double pinet output circuit of the transistor rig.)

Where does this all leave us? Both schools of thought are right, in a sense. If we make the the constant of measurement the input power to the final, then the W5JJ theory will hold. If, however, we tune for the exact same amount of forward power under the varying conditions of match and mismatch, then the old theory is correct! One rule of thumb to engage, if you don't have a wattmeter to insert at the antenna feed-point, but only an SWR at the transmitter, is to focus on the difference between forward and reflected power. If your milliwatt rig moves the needle to half-scale at a 1:1 SWR, the forward movement should be as great as the rise in reflected power movement as the SWR increases.

There are factors which entered into neither of the above theories which should be brought to the fore. SWR bridges are not frequency sensitive; that is, they do not discriminate between RF at 7mc and RF at 28mc. Thus, if your transmitter is tuned to 7 mc but generating 28mc. RF energy of sufficient quantity to move the SWR (and it only takes about 1/8 the power at 28mc to move the needle an equivalent distance as at 7mc!) WILL REGISTER AS reflected power, even though your antenna is perfectly cut to frequency at 7mc, and your feedline is 100% efficient! This fact is important in tuning harmonic prone transistor rigs: most of your output may be harmonics if you have a high SWR with an antenna cut to a lower freq. Then again, I've had a transistor rig that simultaneously transmitted on 40/20/15, and when hooked to an all-band 1LAVQ, showed an SWR of no more than 1.6:1! This is perhaps the best argument for single frequency cut antenna.

Further, neither theory measures the only important factor (relatively speaking), and that is, how much RF is being transferred into the ionosphere? Remember, you may be loading a nearby building, a telephone pole, or your gutter spouts! I suggest that the only final word on this subject will be that which measures the relation

ship between the transmitting installation and some point significantly removed from³; in other words, a field strength measurement is the only final indication of how much power is "getting out" to where it counts! Those of you who experience some difficulty in QRPP QSO ought to get out of the shack, down the road a piece, and see what is reaching there. You never know, your 500mw could be whipping around the local water system, getting into the steel girders of the apartment nearby, and tickling the roots of some spinster's geraniums.

Ade Weiss K8EEG/Ø

* * * * *

As For Antennas . . .

(Every now and then, an editor gets his inky hands on a bit that evidences true poetic genius and a grasp upon ineffable vicissitudes of irascible and unpredictable Lady Fortune and her effects upon the ironies inherent in human existence in this best of all worlds. Such is the following, which poetically and poignantly defines my meaning in the above few sentences--Ed.)

--well, in my spotted and sinful career, I guess that I've tried-out almost every type of antenna that was available to me within my finances and space-limitations. Guess I've read ab out every book generally available on the subject in English, too, all the way from ponderous tomes on Maxwell's equations all the way down to the wireless funnypapers. I've worn the finish off'n a few sliderules, and chased many a Poynting vector down a rat-hole, and, after all this, there's just one thing I know. An electromagnetic wave is like a woman; fatally interesting in her wispy way, like the wind, a thing of her own moods and wiles. Just you begin to think you got her figured out and then she'll give her polyhedral personality a flip just to show you that you don't know nuttin. She'll go where she wants to go, when she wants to go there, and in her own good time, and there's not much any mere man can do about it. . . . With most hams, antennas are things of fashion, like ladies' hats; they put somethin' up just because they've read about it in some funnypaper, or because Joe Zilch down the street has one. When the style changes, they put up something else. And it's just as well, too, because (unless your abode is a spaceship) your electromagnetic environment--power wires, gutter-pipes, the neighbor's garbage can--everything metallic within a wavelength or so of the electromagnetic

center of the system will affect things so much that pious calculations are as naught. . . . I've gotten so that I believe that the main answer is height above dirt. Hoist an old chamber-potty sixty to a hundred feet above dirt, feed it some soup, and work the world, by golly! All else is metaphysics or witchcraft. Trouble is, height is still the most expensive commodity in amateur antenna economics, dammit!

C.F. Rockey W9SCH

* * * * *

The Steam Powered Nut . . .

(Last Sept., word got around about a genuine hot-air QRPP QSO. Upon checking out the rumour, we found:)

I made four contacts with the steam powered rig. The steam engine drives a Pitman HO gauge electric train motor, which produces about 9 volts at 20 ma with a full head of steam. That is good for about a 5 minute QSO. I am too long-winded for that kind of operation tho.

The motor used as a generator was a Pittman 12 volt half-amp job. They are used in HO guage locomotives. The steam engine is the toy type, made by Wilesco. It has a small boiler and doesn't produce enough power to run the motor to its rated speed. I changed the safety valve and used a larger pan for feul. We ran the OX LO rig (International Xtal Oscillator available in kit form with xtal. See any QST, CQ mag for ad.) with it and can get more power output using an Eveready 216 battery. Using a piece of rubber tubing on the motor shaft, we made a holder for the motor and drove it by friction on the steam engine flywheel. I would like to try a bicycle light generator sometime.

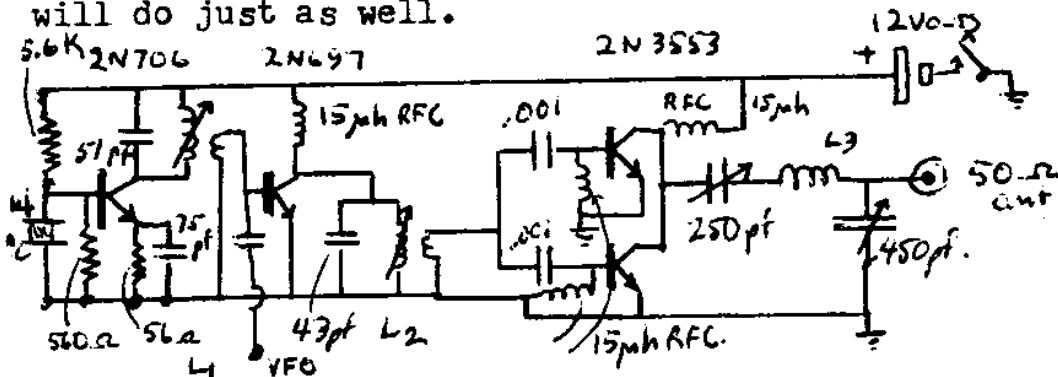
This winter I hope to build a larger boiler, using a piece of stainless tubing I have in the junkbox. This boiler will hold over a pint per filling, and should give a half-hour or more of pressure. I also have several gasoline engines from model airplane days, but they are too noisy.

Hope this has cleared up the Rube Goldberg. At least this rig was a bit different than the usual. Last night we had a meeting of the (Reading, Pa.) ham club, and the fellows want to start a QRPP Net locally. Elmer (K3YNN) was one of the four hams we QSO'd with the 'Canned Heat Special.'

Milton Artz WA3APN

The K4OCE 'OCE MINIRIG', 20mtr, 7w, xtal/vfo rig.

This is the rig that opened the eyes of many of us interested in QRPP, and no doubt caused many of the KW DX boys to regret ever publishing their DXCC standings. This rig had worked 118 DXCC by last fall, and some of the stuff QSO'd will be listed later. The rig is simple, operating on the fundamental frequency. While an xtal is shown below, a vfo or sig. generator with output on 14mc will do just as well.

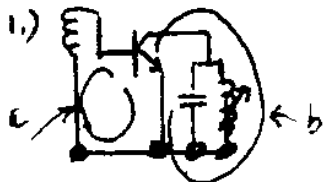


L1,2=16t on slug-tuned form 3/8" dia.; links=2t.
L3=12t on same form. Amidon T-50-2 can be substituted with approximately same # turns, but then the shunt caps will have to be made variable trimmers. The vfo blocking capacitor can be determined through experimentation.

Bob Rosier K4OCE

Ground Connections in Transistor Circuitry.

The subject of proper ground connections in RF circuits is one that is not fully understood at this point. Even NASA projects have been bamboozled by this effemeral problem. The common opinion is that, in transistor circuitry, it is wisest to take into account the actual RF current paths in each stage, and to make common grounds accordingly. The RF paths in the 'MINIRIG,' to use an example, can be represented thus:



As can be seen, the shortest paths can be achieved for both the minor and major currents by grounding the base-coil, emitter, and collector tank at a common point. This represents the best compromise. Thus for each stage of a rig. At the high currents often met with in the major current loop, stray capacitances that can result from long runs between collector and base are minimized, and higher stability thus achieved.

16t. #22 on 3/8" slug tuned form; tap for best drive; link=2t on cold end.) L4=10t #18 on 3/4" dia. slug form, about 3/4" long; or, approximately 12t. #18 on toroid form T-80-2 (see p. 9 for address of Amidon Assoc. supplier of toroid forms). R1 and R2 lower input to driver and final during tuning procedure, experimental, about 2-5,000 ohms, 1watt; a dpdt switch can be used for the tune-transmitt functions. The output indicator circuit is optional; an SWR meter will serve same purpose. If you omit the output indicator circuit, feed antenna at tank output, indicated by dashed box. It would be wise to insert a 1 ohm 1 watt resistor in the emitter leads of each of the driver and final transistors to protect against thermal runaway. The base chokes and emitters of the final transistors should be grounded at a single point along with the base resistor and the cold end of the base coil.

In tuning the rig, start with first stage; it is a good practice to use an RF indicator coupled to each tank as you proceed; or otherwise, listen to the signal in your receiver without an antenna; tune for loudest sig. No stage will draw current unless preceding stage drives it. DO NOT ATTEMPT TO OPERATE FINAL WITHOUT LOAD!!!! Be sure to use heat sinks on driver and final. W9IIL ran this rig usually at 20v @ 250ma for 5 watts; it can be pushed to 10 watts, but the increase in power is not worth the danger to the transistors in the final! At this input, the rig should light a 6.3v bulb to full brilliance. After tuning with tune-resistors in, it may be necessary to retune each stage just a bit for maximum output. Load the antenna by adjusting capacitors in output tank in the normal manner. If you don't have a a.c. power supply for 25v, two 12v. lantern batteries will do as well, and will last a remarkably long time.

V.S. Buccicone W9IIL

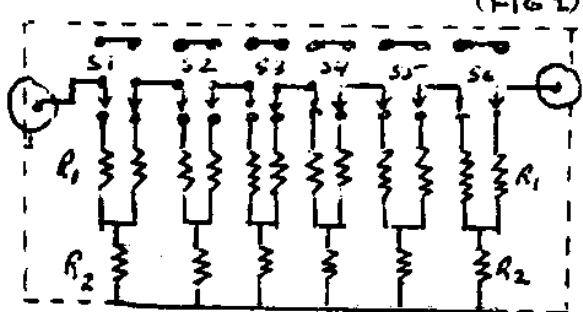
* * * * *

Design Figures for a Symmetrical RF Padder.

To some fellows, the main problem of going QRPP involves the necessity of constructing a rig from scratch, with all the inherent possibilities of failure implicit in such an action. There is a method for using your present rig, out of which all the bugs have been worked, as your first QRPP rig: by employing a symmetrical padder or attenuator. Bob Rosier K4OCE has provided the follow-

ing design information on such a padder. Of his own specific padder, used in conjunction with his 'OCE MINIRIG,' Bob makes the following comments:

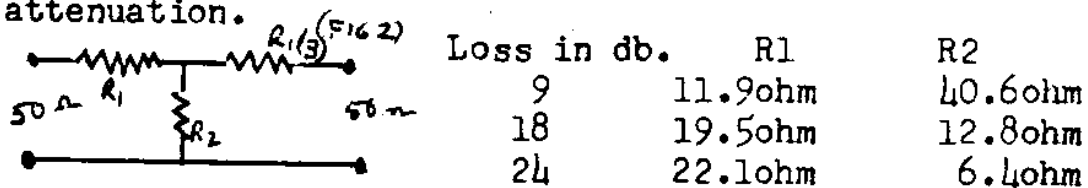
'Enclosed are values for resistor pads which are very useful for seeing how far you can get with the least power. My attenuator drops my 7 watt rig in steps to 1w., .3w, .1w, 100mw, 10mw, 3mw, 1mw, .3mw, .1mw. I added the last three steps of attenuation after working ZL2AFZ with 3mw and I couldn't go down any further. Using values of 3db will lower power to 1/2 so the best circuit probably would be as follows:



Input & output $Z=50\text{ohms}$
 $R1=8.2\text{ohm}$ (4-33 Ω in paralel)
 $R2=142\text{ohm}$ (4-560 Ω in para.)
 Switch=dpdt, shown in pos. of maximum attenuation.
 The rates of attenuation which correspond to each switch progressively put

into the chain as follows: 1 section= $1/2$ power; 2 sec.= $1/4$ power; 3 sec.= $1/8$ power; 4 sec.= $1/16$ power etc. As many sections may be added, figuring each section as a 3db reduction in power (half).'

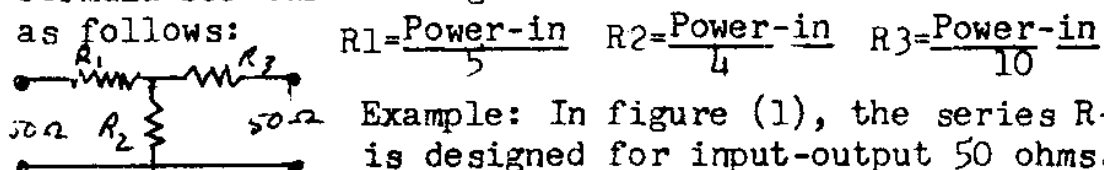
Bob uses this setup with a QRPP rig, but it can be adapted to high power rigs with the proper values and resistor wattages. I have taken the liberty to go ahead and devise values for certain rates of attenuation based upon the values provided by Bob and computed on a IBM computer. The basic circuit is shown below, and if you desire to drop from 100 watts to 5 watts, it will require roughly 6-half power reductions, or roughly 18db attenuation.



Some intermediary values: 12db/14.9ohm/26.8ohm; 15db/17.5ohm/18.4ohm; 20db/20.5/10.1.

In practical construction, a simple approach would be to decide upon the fixed value of output that you wish, calculate the needed db attenuation, choose the proper values for R from the chart, and then figure out how to arrive close to those values, either by purchasing the exact size R, or working it up from other R's that you have. If you intend to drop from QRO such as 100 w., it

would be wise to use large size resistors capable of dissipating the heat load. ONLY CARBON RESISTORS CAN BE USED IN THIS Padder DUE TO HIGH L & C OF WIRE WOUND TYPES. The formula for calculating exact size of each R (wattage) is as follows:



Example: In figure (1), the series R-pad is designed for input-output 50 ohms. In the case of a 100 watt input, wattage of $R_1=100/5=20$ watt. $R_2=100/4=25$ watt. $R_3=100/10=10$ watt. Resistors can be above calculated wattage, but not below it. Following table presents values and combinations of R's to achieve desired:

$R_1=8.2$ ohms @ 20watt: use 10 82 ohm 2w resistor in paralel

$R_2=14.2$ ohms @ 25w: use 14 2000ohm 2w. resistors in paral.

$R_3=8.2$ ohms @ 10w: use 10 82ohm 1watt r's in parallel.

The above are for an input of 100 watts RF. If you string a series of sections (as represented in figure 1), remember that you are cutting the input to each section by half each time, and can drop the wattage of the R's accordingly. If you use the padder for powers of 10 watts or lower, $R_1=2$ watt, $R_2=4$ w (4 560:ohm in parallel), $R_3=8.2$ ohm 1 watt. The design figures for 75 input-output are: $R_1, R_3=12$ ohm; $R_2=212$ ohm; same formula as above applies to wattage size of each R in this case also.

It might be mentioned that proper ventillation requirements be observed in high power use. Further, note that the output power of your transmitter is likely to be about 50%-70% of your input, so that an input of 180 w. will get you closer to 100 w. at the padder input.

This padder is about the simplest way of getting to try out QRPP imaginable. No modifications are needed in the rig, and the padder may be switched in and out of the feedline at will. QRO to QRPP methods of making QSOs become feasible, that is, calling on QRO and switching to QRPP. One further advantage of using such a padder is that you can jump right into the QRPP thrills of 20/15/10 meters, where propogation is best, without all the messy business of building something that you might not like to use after trying out QRPP.

Bob Rosier K4OCE

* * * * *

QRPP OPERATING NEWS

(AS A REGULAR FEATURE OF THE MILLIWATT, WE WILL PROVIDE AN IN-DEPTH REPORT ON QRPP ACTIVITIES ON AND OFF THE AIR. NEARLY ANY INFORMATION THAT WILL PROVIDE INSIGHT INTO THE NATURE OF QRPP WILL BE INCLUDED IN THIS SECTION, RANGING FROM REPORTS OF QRPP QSO'S TO QRPP CONSTRUCTION PROJECTS, PROFILES OF QRPP OPERATORS, AND THEIR ADVICE, OBSERVATIONS ON THE ART OF QRPP OPERATION, AND DESCRIPTIONS OF THEIR RIGS. WE WILL DIVIDE THIS SECTION INTO A TREATMENT OF THREE GEOGRAPHICAL AREAS, INCLUDING 1.) EAST (W1, W2, W3), WHICH WILL BE HANDLED BY ASSOCIATE EDITOR WES HATTON W5ELL/2, 115 PARK AVE., BINGHAMTON, NY 13903; 2.) MIDWEST (W4, W5, W6, W7), WHICH IS HANDLED BY MIKE OZUHAJEWSKI W4SMCO, RT. 3, PAW PAW, MICH. 49079; AND 3.) WEST (W8, W9, W10) BY ADRIAN WEISS W8EEG/0, MECKLING, SD 57044. WE ENCOURAGE YOU TO SEND US UP-TO-DATE REPORTS OF YOUR QRPP OPERATIONS ETC. SO THAT WE CAN SHARE IT WITH THE REST OF THE FELLOWS. ALSO, PLEASE INFORM US OF ANY QRPP OPERATORS WHOM YOU HAVE WORKED OTHERWISE DISCOVERED SO THAT WE CAN QUERY THEM ON THEIR ACTIVITIES. YOUR CORRESPONDENCE SHOULD BE ADDRESSED TO THE ASSOCIATE EDITOR OF YOUR AREA IN REGARD TO NEWS.

AS I NOTED EARLIER, THE LATENT QRPP'ER WANTS TO KNOW HOW QRPP HAS SUCCEEDED ON THE AIR, WHAT EQUIPMENT QRPP'ERS HAVE USED, WHEN THEY HAVE HAD THE BEST SUCCESS IN TERMS OF SEASON AND TIME OF DAY, ANTENNAS USED, AND SIMILAR INFO. WHEN ANYONE IS INTERESTED IN ENTERING A NEW REALM OF ACTIVITY, HE IS LITERALLY STARVED FOR ANY DETAIL ABOUT THAT ACTIVITY, BE IT EVER SO INSIGNIFICANT TO THOSE OF US WHO HAVE BEEN OPERATING QRPP FOR SOME TIME. WE TAKE MANY THINGS FOR GRANTED BECAUSE THEY HAVE BEEN INCORPORATED INTO OUR QRPP OPERATING HABITS AND SKILLS, BUT THE INTERESTED HAM DOES NOT NECESSARILY KNOW ABOUT THOSE THINGS. THE ONLY WAY HE CAN GET SUCH KNOWLEDGE IS THROUGH OUR HELP. IF ANY GROUP OF HAMS NEEDS MUTUAL ASSISTANCE, IT IS THE QRPP'ER; INDEED, HIS VERY EXISTENCE DEPENDS ALMOST ENTIRELY UPON THE ASSISTANCE RENDERED BY OTHER HAMS IN MANY FORMS, SUCH AS EXTRA EFFORT IN COPYING A WEAK QRPP SIGNAL, GIVING ANTENNA COMPARISON REPORTS ON THE AIR, AND SO FORTH. SO, IF YOU FEEL THAT NO ONE WOULD BE IMPRESSED BY THE FACT THAT YOUR BEST QRPP DX IS ONLY 300 MILES WITH 100 MW, TWO THINGS ARE ERRONEOUS ABOUT YOUR APPROACH: FIRST, WE ARE NOT TRYING TO IMPRESS ANYONE—MERELY GIVE THEM AN IDEA OF QRPP OPERATION; AND SECONDLY, IT IS SIGNIFICANT THAT YOU CONSISTENTLY WORK DISTANCES OF ONLY 300 MILES WITH YOUR 100 MW! THIS REFLECTS UPON EXAMINATION VERY IMPORTANT FACTORS, SUCH AS ANTENNA AND PROPOGATION CORRELATIONS ETC. ANY SCIENTIFIC CONCLUSION ABOUT A PHENOMENON IS BASED UPON FACTS AND DATA, AND THE CONCLUSION IS VALID IN PROPORTION TO THE EXTENT OF THE DATA SAMPLE. SO IF THIRTYFIVE QRPP'ERS MANAGE ONLY TO WORK 300 MILES WITH THEIR 100 MW., AND 90% OF THOSE GUYS USE A DIPOLE LESS THAN ONE-HALF WAVE ABOVE GROUND, THESE FACTS BECOME EXTREMELY IMPORTANT BOTH TO THE NEW QRPP'ER AND THE SEASONED QRPP'ER.

THE FIELD TESTING OF RADIATION THEORIES IS ESSENTIALLY WHAT QRPP IS ALL ABOUT: WE CAN CONCLUDE THAT PUTTING A 100 MW INTO AN ANTENNA THROUGH THE USE OF TRANSISTORS IS POSSIBLE FROM WHAT WE DO IN THE LABORATORY. BUT THE MAJOR QUESTION CAN ONLY BE ANSWERED IN THE FIELD: WHAT CAN WE DO WITH THAT 100 MW ONCE WE GET IT TO THE RADIATING SYSTEM? PROPOGATION ON ALL FREQUENCIES IS A SUBJECT WHICH IS DEMANDING MORE AND MORE ATTENTION; NO ONE REALLY KNOWS THE EXACT NATURE OF NORTH-SOUTH AND EAST-WEST AND CROSS-EQUATORIAL PROPOGATION ON 150 METERS, FOR INSTANCE, AND AS HUMAN BEINGS (AND ACTIVE USERS OF PROPOGATION PHENOMENON) WE HAVE GOT TO KNOW! A MAJOR ASPECT OF ALL PROPOGATION RESEARCH IS THAT RELATED TO POWER-LEVEL. HOW IMPORTANT A VARIABLE IS THE POWER-LEVEL? WE DON'T REALLY KNOW YET WITH ANY ULTIMATE CERTAINTY. THIS IS WHERE QRPP COMES IN. IN THE NEXT TEN YEARS, I HOPE THAT WE CAN GATHER SUFFICIENT DATA ABOUT POWER-LEVEL; SUNSPOT CYCLE; UP; DISTANCE TO ALLOW SOME SYNTHESIZING MIND TO COME UP WITH SIGNIFICANT CONCLUSIONS ABOUT THESE QUESTIONS. WE ARE NOT, THEREFORE, MERELY A 'LUNATIC FRINGE'; WE ARE LITERALLY A FRINGE WHICH PLACES ITSELF AT THE HORIZONS OF A VERY IMPORTANT INVESTIGATION—WE WILL CONTRIBUTE SIGNIFICANTLY!

SO, CONTRIBUTE ANYTHING THAT YOU CAN, HOWEVER INSIGNIFICANT

YOU MIGHT THINK IT IS.

DE. WIWVK, 'OW' FARR (P.O. BOX 37, REED'S FERRY, NH 03078):
 'THANK YOU FOR YOUR INQUIRY INTO MY QRP CONTACT WITH W60A. IT WAS
 DONE A NUMBER OF TIMES IN MAY AND JUNE 1969 ON 15 AND 20 METERS.
 THE BEST PERFORMANCE WAS SOLID COPY OF MESSAGE WITH A CALIBRATED
 OUTPUT OF 1/10 WATT (100 MW).

ON JUNE 22, W60A CUT BACK HIS OUTPUT POWER FROM NORMAL LEGAL
 LIMIT OPERATION TO 100 W., THEN TO 10 W., THEN TO 1 W., THEN TO
 1/10 W., AND FINALLY TO A STILL LOWER OUTPUT. AFTER EACH TRANS-
 MISSION LEVEL WIWVK ACKNOWLEDGED UNTIL FINALLY, BELOW 1/10 W., THE
 COPY WAS INCOMPLETE.

RECEIVING EQUIPMENT AT WIWVK WAS A HEATHKIT SB-101 ON A MOSLEY
 TRI-BAND BEAM ON A 35 FT. TOWER. TRANSMITTING EQUIPMENT AT W60A
 WAS A SIMILAR BEAM AND TOWER AND A COLLINS 3253 WITH A CALIBRATED
 WATERS DUMMY-LOAD WATTMETER. W60A IS A PHYSICIST, SO WHEN HE SAYS
 'CALIBRATED' HE IS PRETTY CREDIBLE! OTHER TESTS WERE SUCCESSFULLY
 MADE USING SIMILAR EQUIPMENT AND PROCEDURE ON 15 METERS ON MAY 25,
 JUNE 8, AND JUNE 14, 1969. THIS IS NOT QRP IN THE USUAL SENSE, BUT
 LOW POWER IS LOW POWER EVEN IF YOU GET IT BY 'TURNING DOWN THE WICK'
 ON A CONVENTIONAL EXCITER. (WE HEARTILY AGREE: ED.) PRESENT PLANS
 ARE TO BUILD THE MILLIGALLON 2 TRANSISTOR TRANSMITTER (1ST, APRIL
 1969 (THIS RIG WORKS: ED.) AND TRY FOR CONVENTIONAL QRP WITH W60A.
 I'VE KNOWN W60A SINCE 1918 AND HAVE WORKED HIM NEARLY EVERY WEEKEND
 FOR 13 YEARS. (DID YOU SAY IT IS PROBABLY ESP INSTEAD OF QRP? HI)
 THANKS FOR YOUR INQUIRY.'

.. ..

(ED.: THE ABOVE REPORT IS IDEAL, AND CAN BE USED AS A MODEL. ONLY
 OTHER THINGS THAT SHOULD HAVE BEEN INCLUDED: A.) TIME OF TEST B.)
 METHOD USED AT W60A FOR REDUCING POWER.)

.. ..

DE. . . W0BV, ROBERT J. PEAVER (RT. 4, KIRKSVILLE, MO 63501):

MY INTEREST IN QRP IS SOMEWHAT OF A SIDELINE, SINCE I HAVE QUITE
 A FEW OTHER INTERESTS WHICH TAKE UP MUCH OF MY TIME. HOWEVER, THE
 QRP CONTEST REPRESENTED QUITE A CHALLENGE, AND ONE WHICH HAS HELD
 MY INTEREST FOR QUITE A WHILE.

BEFORE 1941, THERE WAS SOME DISCUSSION ABOUT THE POSSIBILITY OF
 MAKING WAS WITH ONE WATT INPUT. I HAVE HEARD NO DISCUSSION ABOUT
 IT SINCE, AND THE PROBLEM HAS BEEN MADE QUITE A BIT MORE DIFFICULT
 BY THE INCLUSION OF HAWAII AND ALASKA SINCE 1941. STILL, THE IDEA
 FASCINATES ME (AND MANY OTHERS. ED) AT PRESENT, I HAVE NO SPECIAL
 ANTENNAS FOR QRP, BUT IT SEEMS RATHER CLEAR THAT A GOOD ANTENNA IS
 A REAL NEED FOR SERIOUS QRP WORK. SO FAR AS EQUIPMENT IS CONCERNED,
 I HAVE ALWAYS BUILT MY TRANSMITTERS; IN FACT, I DO NOT KNOW OF ANY
 QRP TRANSMITTERS ON THE REGULAR MARKET. (THE TEN-TEC RIG IS NOW
 BEING ADVERTISED IN QO AND QST; WE HOPE TO REVIEW IT SOON-ED.)

MY PRESENT PLANS ARE AIMED PRIMARILY AT BUILDING A TRANSMITTER
 WITH SLIGHTLY LESS THAN 1 W. INPUT SO AS TO EXPLORE THE POSSIBILITY
 OF A 1W. WAS. I EXPECT TO USE SOMETHING LIKE A 201-A OR SOME OTHER
 ANCIENT VACUUM TUBE. (THE 201-A REACHED ITS PEAK OF POPULARITY
 ABOUT 40 YEARS AGO, AND IS OBSOLETE TODAY; HOWEVER, THERE ARE STILL
 QUITE A FEW USABLE ONES TO BE FOUND AROUND SOME HAM SHACKS AND SER-
 VICE SHOPS.)

.. ..

(ED.: WE ARE EXTREMELY INTERESTED IN LEARNING ABOUT THE QRP WAS
 STANDINGS OF EVERY STATION THAT HAS EVER WORKED QRP. WE WILL IN-
 CLUDE LISTINGS REGULARLY. PLEASE REPORT YOUR NUMBER OF STATES AND
 POWER LEVELS USED SOON.)

.. ..

DE. . . W7IGV, BOB DARHAM (810 6TH ST., COEUR D'ALENE, IDAHO 83814):

MAIN INTERESTS ARE CW QRP AND THE DESIGN AND CONSTRUCTION OF
 ANTENNAS, TRANSISTOR RIGS POWERED BY D-CELLS DESIGNED FOR PORTABLE-
 EMERGENCY OPERATION WITH REASONABLE BATTERY LIFE. USE MOSTLY TRAN-

618TOR RIGS AT ABOUT 5 WATTS BUT VARIABLE TO THE MILLIWATT LEVEL. ALWAYS USE BATTERIES.

MOST OF RIG TROUBLE ARISES FROM INSTABILITY AND TVI. SOLUTIONS USUALLY INCLUDE LESS DRIVE POWER, MORE PARASITIC RESISTORS, DIFFERENT TRANSISTORS (OFTEN OF THE SAME TYPE, AS THEY VARY) ETC. RECEIVERS USED IN QRP PORTABLE ARE REGENERATIVE WITH LOTS OF RF GAIN. REGENERATIVE DESIGN IS A LITTLE DIFFICULT TO TEMPERATURE STABILIZE, BUT GOOD ENOUGH FOR PORTABLE USE. (ED.: THE DIRECT CONVERSION RECEIVER COVERED IN MAY '69 QST ELIMINATES ALL THE DIFFICULTIES ENCOUNTERED IN THE REGENERATIVE, AND WORTH A TRY.)

IN PORTABLE OPERATION, ANTENNAS USUALLY CONSIST OF A MAGNET WIRE THROWN OVER A TREE. SOMETIMES USE A DIPOLE, WINDOM, OR LOADED WHIP. DIPOLE IS THE ONLY REALLY PRACTICAL ANTENNA IN MY VIEW. DIPOLES CAN'T BE BEAT. ALSO HAVE USED 1/4 WAVE VERTICALS, LOADED WHIPS—ELECTRICALLY 1/2 WAVELENGTH. THE WINDOM WITH A BALUN WORKED FAIRLY WELL ON 80/40 METERS AS FAR AS TESTED. MY DIPOLES HAVE BEEN USING 72 OHM TWIN-LEAD. I'M NOW STARTING TO CHANGE TO COAX, BUT FOR FIELD WORK THE TWIN LINE IS A LITTLE HANDIER.

MY PORTABLE TRANSISTOR RIGS WERE DESIGNED TO VOLTAGE FEED OFF THE TOP OF THE TANK COIL: THIS WAY I COULD USE A LOADED WHIP WITHOUT ANY LOADING COILS IN THE RIG. ALSO, I COULD DIRECTLY FEED A LENGTH OF MAGNET WIRE USED IN PORTABLE WORK, AGAIN, WITH NO MATCHING NETWORK OR BOTHERSOME TUNE-UP. I USUALLY USED VOLTAGE FEED IN THIS MANNER: A HALF-WAVE INVERTED VEE WAS TETHERED IN PROPER SIZE TREE AT THE CENTER AND THE CLOSE END BROUGHT RIGHT DIRECTLY TO THE TRANSMITTER. I HAVE TRIED A 500 FT. LONGWIRE USING MAGNET WIRE, BUT NO GREAT RESULTS YET; HAVEN'T USED IT LONG ENOUGH FOR EVALUATION, AS IT TAKES MONTHS.

AT PRESENT, I HAVE A 20 WATT TRANSISTOR RIG IN THE WORKS, BUT AM PROCEEDING SLOWLY, SINCE THE 2N3632 COSTS \$12.00. IT WILL INCLUDE A DOUBLE PINET OUTPUT IN ORDER TO AVERT TVI ON CHANNEL 2, AND IT WILL BE DESIGNED TO LOAD A 52 OHM RESISTIVE LOAD. I HAVE ALWAYS TRIED TO MATCH THE RIG TO THE ANTENNA IN THE PAST, BUT WITH THIS RIG, IT WILL BE THE ANTENNA THAT HAS TO DO THE MATCHING. SO, I'M DRIFTING OVER TO COAX AND SWR BRIDGES AND PHASE-DETECTOR EQUIPMENT. IT'S A HECK OF A BOTHER FOR FIELD OPERATION, BUT I EXPECT IT IS VERY IMPORTANT TO HAVE EVERYTHING PERFECT WHEN FOOLING WITH EXPENSIVE TRANSISTORS. ALSO, I WILL INCLUDE ALL THE NECESSARY ZENER DIODES IN ORDER TO PROTECT THE TRANSISTOR FROM VOLTAGE SPIKES AND THE LIKE, AND UNLOADED OR IMPROPERLY LOADED CONDITIONS THAT MAY ARISE ACCIDENTALLY.

AS FOR OPERATING, I PREFER 40 METERS; HAVE TRIED 10 METERS ALSO. NOT INTERESTED IN DX OR WAS. IN PAST THREE YEARS, NEARLY ALL MY TIME HAS BEEN IN QRP. IT IS A WONDERFUL WAY TO GET TO KNOW TRANSISTORS FOR USEFUL KNOWLEDGE IN OTHER FIELDS SUCH AS REPAIR WORK ETC. THE QRP PROBLEM HERE IS TOO MUCH FOR QRP BEFORE MOST HAMS ARE IN BED. HAVE TROUBLE EVEN WITH QRO (75W.) IN EVENINGS. EARLY MORNING IS FAIR HERE FOR MODERATE SKIP WORK, BUT THE LATE AFTERNOON IS QRN/QRM. BEST TIME HERE HAS BEEN 2200 LOCAL TIME. WE DON'T HAVE MANY STATIONS OUT HERE AND I HAVE A HECK OF A TIME GETTING THE RIGHT DAY AND TIME FOR TESTING WITH SOMEONE. WHEN I WORK SOMEONE FROM HERE, IT IS USUALLY AT LEAST 300 MILES AWAY AND USUALLY MORE TO CAL WHERE THERE ARE INTERESTED QRP'RS.

— . — .

(ED.: THERE ARE RUMOURS ABOUT W7IGV'S PORTABLE OPERATIONS IN THE WOODS, AND OF ALL PLACES, A ROWBOAT IN THE MIDDLE OF A LAKE. I HOPE THAT OUR FOLLOW UP WITH BOB WILL NET A NARRATIVE ABOUT THIS.)

— . — .

DE. . . K6EIL/2, WES MATTOX (115 PARK AVE., SINGHANTON, NY 13903): I WAS IN THE SS TEST FOR 8 HOURS. RUNNING 1.6 WATTS INPUT TO A PAIR OF 3S4'S, I ACCUMULATED THE INCREDIBLE TOTAL OF 31 CONTACTS IN 13 SECTIONS (10 STATES, TWO OF WHICH, ARKANSAS AND ILLINOIS, WERE NEW AND BOOSTED MY WAS QRP TO 17.) SORRY THAT I WON NEITHER HONORS NOR FAME FOR THE CAUSE, BUT I HAD LOTS OF FUN AND THAT, IN THE END, IS WHAT COUNTS.

I WORKED ONLY 7MC CW. CONDITIONS WERE NOT THAT HOT HERE. ODDLY, I HAD LITTLE LUCK IN THE WEE HOURS AND LOTS OF IT DURING THE SHORT SKIP AND AFTERNOON QRM/QRN. ALL MY CONTACTS, EXCEPT FOR TWO, TOOK

PLACE BETWEEN 1230 AND 2130 GMT. NEXT YEAR, UNLESS I RUN A MAXIMUM OF 5 WATTS (FOR I HAVE VOWED THE VOW OF QRP!), I'LL SET A GOAL OF 50 QSO'S. FROM MY EXPERIENCE HERE, I WOULD SAY THAT WITH 1 OR 2 WATTS ABOUT 100 CONTACTS WOULD BE AN UPPER LIMIT IN THE SS. (ED.: I'M MORE OPTIMISTIC THAN THAT! I KNOCKED OFF SOME 30 QSO'S IN THE NJ QSO PARTY DURING THE SPACE OF AN HOUR-AND-HALF USING ONLY 100MW)

DE. . . W8CM (EX-W8CHO,) C.A. 'CHUCK' KOPPE (37432 EDGEWOOD DRIVE, MT. CLEMENS, MICH 48043):

I'VE BEEN ON THE AIR SINCE 1927. IN 1933 I GOT AN AMATEUR EXTRA FIRST CLASS TICKET—I'VE ONLY SEEN ONE OTHER LIKE IT, AS NOT VERY MANY HAMS GOT THEM. I USED AN RK20 RAYTHEON TUBE WITH SUPPRESSOR GRID MODULATION FOR ABOUT 15 W. CARRIER ON 20 METERS WHEN IT FIRST OPENED UP TO HAMS. WHEN SSB BECAME POPULAR, I BUILT SEVERAL WIRED CRYSTAL FILTER RIGS BACK IN 1950, AND ALSO BUILT THE W2EWL COMMAND SSB RIG. ABOUT A YEAR AGO I BUILT A SOLID STATE SSB RIG WITH A COLLINS 455KC 2.1 MECHANICAL FILTER WHICH RAN ABOUT 1/4 WATT PEP.

PROBABLY MY BEST DX QRP WAS WITH MY VERY FIRST TRANSISTOR RIG WHICH USED A 2N384 XTAL OSC AND A 2N384 AMPLIFIER RUNNING 90 MW (9V @ 10MA) ON 7MC. ONE SATURDAY MORNING AT 1000 LOCAL TIME I WORKED W9ALM AT KOKOMO, IND., WHICH IS APPROXIMATELY 250 MILES. I STILL HAVE A QRP TUBE PORTABLE RIG THAT I BUILT WHILE I WAS IN THE AIR FORCE. IT USES A 12AU7 DETECTOR-AUDIO RECEIVER WITH PLUG-IN COILS FOR 80/20/40, AND A 6C4 XTAL OSC AND 6AQ5 AMP THAT RUNS 12 WATTS INPUT. I HAVE WORKED A KH6 ON 7MC WITH THIS RIG. MY PRESENT RIG IS THE TECH-TEC PM-1 (SEE ADVERTISING INSERT). I USE IT AS A TRANSCIVER AND POWER IT WITH A REGULATED 12V POWER SUPPLY (LABORATORY GRADE) MADE BY TECHNIPOWER. THE POWER SUPPLY COST MORE THAN THE WHOLE RIG. HI. NORMALLY I USE IT WITH MY REGULAR DIPOLE. HOWEVER, IN THE FIELD, I THROW UP A TEMPORARY DIPOLE, AS WHEN I AM CAMPING ETC.

I PREFER 7MC CW FOR QRP WORK AND FIND DAYTIME EASY TO WORK QRP, ALTHOUGH I HAVE BEEN MAKING EVENING CONTACTS WITH THE PM-1. I WOULDN'T THINK OF USING THE QRO RIG TO SET UP A QRP QSO IN THE U.S., ALTHOUGH I MIGHT DO IT WITH A DX STATION.

(SEVERAL SCHEMATICS SUBMITTED BY CHUCK WERE INCREDIBLY LOST IN THE U.S. MAILS. WE HOPE TO HAVE THEM AGAIN FOR PUBLICATION SOON—ED.)

DE. . . W7NUN, R.B. 'RV' JOHNSON (5743-28TH AVE. N.E., SEATTLE, WASH 98105):

I HAVE IN RADIO SINCE 1935, DURING WHICH I'VE ALWAYS BEEN INTERESTED IN QRP, AND QRP ESPECIALLY DURING THE PAST 2 YEARS. RIGS ARE NOTHING UNUSUAL HERE: THE INTERNATIONAL 'OX' XTAL OSC., THE OMEGA LT-5; A 12BY7A VFO IN THE REGULAR RIG RUNNING A MEASURED 2W OUTPUT IS USED REGULARLY AS NOS OF THE PACIFIC AM. RADIO GUILD NET ON 7135 KC, WHICH MEETS AFTER THE REGULAR SESSION AT 1000 LOCAL TIME. ABOUT A DOZEN PARTICIPANTS SO FAR FROM CAL, ORE, WASH, AND IDAHO, WITH MANY MORE EXPECTED SOON. MANY ARE LEARNING TO CONVERT REGULAR QRO RIGS TO RUN QRP.

AT PRESENT I AM PLANNING A CONVERSION OF A CB 'TUNABLE' XCVR TO 7MC; IT'S TOUGH, BUT I'M SURE IT CAN BE DONE. ANTENNA IS A 40 MTR DIPOLE FED WITH 75 OHM TWINLEAD, CUT AND TUNED FOR EXACT RESONANCE ON 7135KC. IT WORKS THE BEST BY FAR OF ANTENNAS TRIED. USE A NOISE BRIDGE FOR TUNING AND CUTTING.

MY QRP CONTACTS ARE MANY—BUT FEW WORTHY OF MENTION, I.E., LESS THAN 1000MI. PER WATT (KM/W). I HAVE HAD PERHAPS A HALF-DOZEN THAT ARE OVER KM/W. ONE WAS 5 KM/W. I RARELY GET ON THE AIR AFTER 7PM, AND NEVER GO 'DX HUNTING,' AND MOST CONTACTS ARE 'CASUAL' TYPE AS I WOULD RATHER ENJOY A GOOD RAGCHEW THAN TRY TO SEE HOW MANY STATIONS I CAN WORK. I LIKE TO EXPERIMENT BUT AM NOT AN ENGINEER SO HAVE TO DEPEND ON THE DESIGN KNOWLEDGE OF OTHERS. HAVE BUILT MANY THINGS AND ALL HAVE WORKED FINE, EXCEPT FOR SOME BUGS I'VE PUT IN. MY BIGGEST FAULT IS CURIOSITY—I SEE A NEW CIRCUIT, COLLECT THE PARTS, BUILD IT, SEE IF IT WORKS, AND IF IT DOES, PUT IT ON THE SHELF TO GATHER DUST.

W7GNT AND MYSELF HAD A 100% SOLID STATE QSO LAST YEAR WITH BOTH RECEIVERS AND TRANSMITTERS TRANSISTORIZED. AS FAR AS I KNOW, THIS IS A FIRST, AND NO CHALLENGERS HAVE APPEARED.

DE. . . W7OE, HOWARD S. FYLE (P.O. BOX 784, MERCER ISLAND, WASH 98040):
 'YOU WILL FIND A LARGE NUMBER OF QRPP ENTHUSIASTS, MANY IN THE MINI-
 WATT FIELD, IN THE RANKS OF THE PACIFIC AMATEUR RADIO GUILD (OF WHICH
 W7OE IS GENERAL MANAGER). YOU MENTION YOUR DESIRE TO ARRANGE SOMETHING
 IN THE WAY OF SCHEDULES WITH OTHERS, AND THERE ARE SEVERAL WHO WOULD
 BE HAPPY TO. AMONG OUR MOST AVID ENTHUSIASTS IN THIS FIELD ARE W7IGV
 (SEE ABOVE-ED.), W7NUN (SEE ABOVE-ED.), WA7JZO (JEFF DUNHAM, 7711-34TH
 AVE. N.E., SEATTLE, WASH 98115), WA7FYW (EDWIN MCGINNIS, 7800 RIVER
 BLVD., PASCO, WASH 99301), AND W6EAC (AL JENSEN, 3649 OSO ST., SAN
 MATEO, CAL 94403). I'M SURE A CARD OR NOTE TO ANY OR ALL OF THEM WUD
 OPEN SOME NEW QRPP CONTACTS FOR YOU..'

(ED.-ACCORDING TO RANDOM RADIATION, THE NEWSLETTER OF THE PARG, W7OE
 HAS RECEIVED HIS TENTEC ~~PH-1~~, AND DONE A REVIEW OF ITS OPERATION. IN
 GENERAL, HE FOUND IT A VERY NIFTY PIECE OF GEAR, HAS MADE NUMEROUS
 QSO'S WITH IT, AND RECOMMENDS IT HEARTILY. HE SUGGESTS, HOWEVER,
 THAT SOME PADDING ETC. BE ADDED IF IN-MOTION MOBILE OPERATION IS CON-
 TEMPLATED.)

DE. . . RANDOM RADIATION:

A FEW MORE MEMBERS ARE BEGINNING TO APPEAR ON OUR MINI-POWER NET
 ACTIVITY PAGE/M, BUT STILL PLENTY OF ROOM FOR MORE AND WE'D LIKE TO SEE
 MORE PARG 2ND AREA STATIONS IN THERE WITH US. W7NUN, WA7FYW, AND
 W6EAC ARE THE 'OLD RELIABLES' HERE; MAC (WA7FYW) RUNS 2 TO 10 WATTS
 WITH HIS USUAL PHENOMENAL ACCOMPLISHMENTS. THE 2-WATTER FROM W7NUN IS
 LIKEWISE HOLDING ITS OWN WITH GOOD REPORTS FROM THE CAL AREA WHERE
 W6EAC WITH 1-10 WATTS PROVIDES THE MOST FREQUENT CHECK POINT. W7OE
 HAS JOINED THE CHARMED CIRCLE WITH BOTH A 100MW RIG (OX XTAL OSC)
 AND HIS OMEGA LT-5 RUNNING ABOUT 3 WATTS INPUT. WA7BIY RECENTLY SPLU-
 RGED AND BOUGHT HIMSELF A MOBILE WHIP, INSTALLED HIS OMEGA LT-5 AND IS
 NOW TRYING TO DECIDE WHAT TO GET FOR A RECEIVER. TESTS WITH THE XMTR
 ON A RECENT AFTERNOON BROUGHT HIM S9 FROM W7OE (5 MI.), S4 FROM W7HB
 AND S4 FROM WA7BNZ. JOHN, WA7HOE US AN OCCASIONAL VISITOR ON PAGE/M
 RUNNING 4 WATTS FROM PORT ORCHARD, WASH. W7CWP AND W7IGV ARE OCCASIO-
 NALS RUNNING LESS THAN 10 WATTS.

(ED.-THE PARG NET MEETS TWICE DAILY, AND QRPP TESTS OCCUR AFTER EACH
 REGULAR SESSION. NET: 0900 PST, 7135 KC; 1800 PST, 3640KC. I'VE TRIED
 THE MORNING SESSION WITHOUT LUCK, BUT SUSPECT THAT THE 90 SESSION IN
 EVENING OFFERS POSSIBILITIES.)

AT A GLANCE

(RATHER THAN TRAFFIC IN LENGTHY, SPACE CONSUMING, VISION RUINING
 PROSE ELABORATION OF THE EXPLOITS OF QRPP STATIONS, WE HAVE DECIDED
 TO INSTEAD REPORT QRPP QSO'S IN LOG-FORM, THUS GREATLY EXPEDITING THE
 EFFICIENT PERCEPTION AND ANALYSIS OF THIS TYPE OF DATA. IN SUBMITTING
 YOUR LOG REPORT, PLEASE INCLUDE: DATE, TIME (LOCAL OR GMT) STATIONS
 WORKED, YOUR POWER INPUT, APPROXIMATE DISTANCE (TO CLOSEST 25 MILES),
 AND TYPE OF ANTENNA USED. IT IS ANTICIPATED THAT YOU WILL USE ONE OR
 TWO DIFFERENT ANTENNAS, AND NEED ONLY NOTE THEM WHEN CHANGE OCCURS.)

DATE TIME STATION UR POWER DISTANCE KILO-MILES PER WATT

FROM MAC WA7FYW : (ALL 1968 ENTRIES)

OCT 4	0226GMT	WB6LQR	500MW	460	.920
6	1658Z	W6CIS/6	500MW	625	1.250
12	1622	K6RUH	500MW	540	1.080
15	0412	WB6OWS	600MW	850	1.416
22	0240	K6RUH	120MW	540	4.500
22	0315	WA0UAI	1.2WATT	1250	1.000
22	0344	WB6PFS	1.2WATT	740	.616
25	0220	WB6IVH	1.0WATT	650	.650
11/25	0245	W5AB	3.0WATT	1700	.566
25	0313	WB6OWS	500MW	850	1.700

DE . . . BOB W7IGV : (1968 ENTRIES, WORKED WITH THE 40 MTR RIG FOUND IN CONSTRUCTIONS PROJECTS AT APPROXIMATELY 1 WATT INPUT)

10/22	1547PDT	W7AGE	1.0WATT	265	{S5}	.265
24	1453"	VE6AUZ	1.0WATT	260	{S5}	.260
10/5/69	1345	W7OE	1.0WATT	265	{S6}	.265
		W7HB	1.0WATT	410	{S6}	.410
		W6ANA	1.0WATT	?		

DE . . . VAL W911L (ALL ARE 1967 ENTRIES WORKED WITH W911L RIG FOR 20 METERS PRESENTED IN CONSTRUCTION PROJECTS AND VFO; ANTENNA WAS HELI-WHIPE ROTABLE DIPOLE)

APR 29	0010GMT	K6YFY	3.0WATT	{S5}	1900M	.635
30	0032	PA0BRM	3.0WATT	{S6}	3100	1.010
MAY 2	0245	VE7VC	3.0WATT	{S5}	2000	.642
9	2305	11HM	3.0WATT	{S4}	3300	1.100
JUN 4	0355	DL0DG	5.0WATT	{S5}	3300	1.100
4	0415	G3TXJ/P	3.0WATT	{S5}	2600	.355

(AND MANY MORE DX)

DE . . . BOB K40CE (1969; 4 EL. QUAD):
 MAR 22 0353 ZL2AFZ 3.0MW (3/429) 8000 2,680.00KM/W
 (AND MORE TO BE LISTED NEXT ISSUE-ED.)

NET NEWS

WE HAVE BEEN CALING QNI ON 7080KC, 0100 SAT, SINCE OCT FOR THE PURPOSE OF QRPP TESTING AND QSO. TURNOUT HAS BEEN AS GOOD ON EAST AND MIDWEST AS WITH THE PAG/W NET ON WEST COAST. MANY QRPP QSO'S HAVE BEEN RECORDED AND SEVERAL KM/W AWARDS QUALIFIED FOR; WITH K8EEG/Ø IN SD, ANY POWER BELOW 700MW USUALLY GAURANTEES KM/W. SO FAR, THE FOLLOWING STATIONS HAVE CHECKED IN: K6EIL/2 (900MW-2.4W); W8NDG (1W.); K8SHJ (1W.); W8MCO (800MW); W4UM (3W.); K40CE (4W.); W84G0R (2W.); W8CM (2W.); W8BZY (400MW-2W.); K8EEG/Ø (400MW-1.5W); AMONG THE QRC QRPP GUYS: W8BZX, W8NT1, W2FHU, W47CV, W8ZPO (ALSO QRPP), AND MANY OTHERS.

DESPITE THE ACTIVITY, IT IS ESSENTIAL THAT WE CHANGE EITHER THE TIME OR FREQUENCY!! FOREIGN FONE OFTEN RUNS SB ON 7080, AND QSO PARTIES OFTEN WIPE US OUT. PERHAPS 7120 OR SUCH FREQUENCY WILL BE BEST. PLEASE LOOK AROUND FOR A BETTER FREQ. AND TIME AND SUGGEST IT TO US.

QRPP WAS STANDINGS

W4UM 50 {3WATT}	K8EEG/Ø 39 {900MW/1.5W}	W47HQE 23 {400M/4W}
W8MCO 47 {800MW}	W8BAEX 13 {1WATT}	W911L 47 {3-5 WATT}
K6EIL/2 22 {1.4W}	W7PUL 23 {400MW/4W}	K40CD 25 {1-2WATT}

(MORE NEXT ISSUE; SEND YOUR WAS STANDINGS IN)

THE MILLIWATT: NATIONAL JOURNAL OF QRPP VOL.1, #1, FEB'69
 SUBSCRIPTIONS: \$2.00 PER YEAR (SIX ISSUES); NEWSTAND PRICE 40¢
 ARTICLES (UP TO 1400 WORDS) ON RELEVANT TECHNICAL TOPICS, OPERATING HINTS, ANTENNAS AND FEEDLINES, TUNING TRANSISTOR RIGS, RIG AND ANT. DESIGN, TUBE AND TRANSISTOR RIGS FOR CONSTRUCTION PROJECTS, LOG REPORTS, PROPGATION, QRPP TEST REPORTS, AND QRPP EXPERIENCES ARE NOT ONLY WELCOME, BUT INVITED!!! SHARE YOUR QRPP SAVVY WITH OTHER HAMS!! EVERYTHING GETS PUBLISHED IN THE MILLIWATT, BECAUSE IT IS DEVOTED SOLELY TO QRPP. RIG PROJECTS, TECHNICAL TOPICS, ARTICLES GO TO ADE WEISS K8EEG/Ø, BECKLING, SD 57044; WAS STANDINGS, NEWS #1,2,3, OPERATING HINTS WES MATTOX K6EIL/2, 115 PARK AVE., BINGHAMTON, NY 13-903; NEWS #4,8,9,0, HINTS&KINKS, SUBSCRIPTIONS, GENERAL QUERIES TO MIKE CZUHAJEWSKI W8MCO, RT. 3 FAW PAW LICH 49079.
 COMING IN NEXT ISSUE: REVIEW OF TEN-TEC GEAR; DOPE ON 20/15 MTR QRPP OPERATION; W9SCH TUBE QRPP RIG FROM A.C. LINE; W7OVP 3W 7MC VFO TRANSISTOR RIG; W911L XTAL 2N5053 5W, 40-10MTR RIG; HIGH-NOON KM/W QSO; LOG REPORTS DE K40CE, K8EEG/Ø (20/15), W4UM ET AL.
 SUBSCRIBE!! DO TRIBUTE!! PASS THE WORD AROUND ABOUT THE NEW MAG!!

RETURN POSTAGE GUARANTEED

THE MILLIWATY
ADRIAN WEISS K8EEG/8
MECKLING, SD 57044

to:

Published at

University of South Dakota