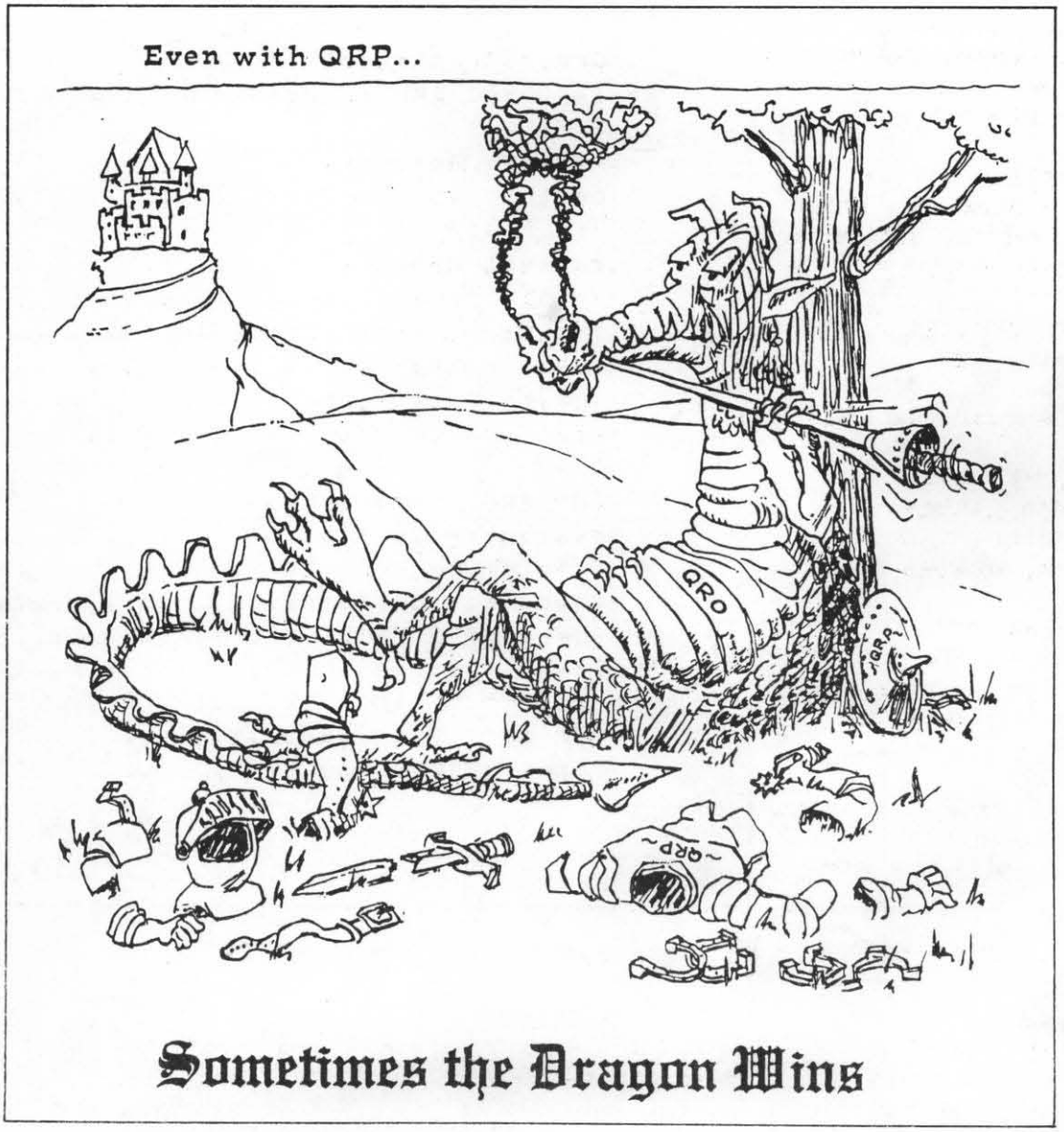
JOURNAL OF THE QRP AMATEUR RADIO CLUB, INTERNATIONAL
January, 1985 - Volume XXIII - Number 1

QRP Quarterly



Sometimes the Dragon Wins

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 5658, and QRP Quarterly circulation is 766.

Membership information is printed on the back cover.

TABLE OF CONTENTS

QRP QUARTERLY STAFF

PUBLISHER
Bert Zitek - N5ELM
1916 Lost Creek Drive
Arlington, Texas 76011

TECHNICAL EDITOR
Ed Manuel - N5EM
10430 Sagevale
Houston, Texas 77089

STAFF ARTIST
Lou Hannaford - WB0CZE
2712 Leroy Drive
Cape Girardeau, Missouri 63701

QRP EDITOR

Fred Bonavita, W5QJM

With this issue, we mark the start of the 23rd year for QRP ARCI and a new format for The Quarterly. We hope you will approve of the latest changes, all of which are designed and intended to make it more readable and to give the staff more room in preparing and presenting technical articles.

Credit for this goes to Bert Zitek, N5ELM, our publisher and managing editor, who hatched the idea and then made it work. It was Bert who revamped The Quarterly in its smaller size a year ago and won the approval of a vast majority of our members and readers.

We think this is another step forward of the type that has marked the progress of your club over the past 22 years. It is going to cost slightly more to produce, but we feel it is a worthwhile investment. We expect to gain between 25 and 30 percent more space for about a 9 percent increase in cost. We also are switching to a third-class, bulk rate postage from the present first-class postage to offset a large portion of the higher costs.

On behalf of the staff of The Quarterly, I thank those who contributed to our publication in 1984 to make it the leader in QRP journals. For a change, other quarterlies are now reprinting our articles.

Thanks go also to those who have written to express their pleasure with the revised Quarterly. Readers can show their approval by renewing subscriptions when that time rolls around annually.

In this vein, it is with pleasure that we announce appointment of a new staffer for The Quarterly: Lou Hannaford, WBØCZE. Lou's cartoon on the cover of our October issue drew many favorable comments, and he is hard at work on a cover for our April issue on antennas.

Our April issue will feature antennas, including one lengthy piece on a successful array for Field Day, a take-along antenna for 40 and 30 meters, a traveling trap dipole for 10, 15, 20, 30 and 40 meters, and a miniature antenna tuner. The deadline for the April issue is March 1, so shower down those stories, articles and comments gang.

Several letters in the wake of our October issue requested reprints of the schematic of the 30-meter transmitter on Page 35. That schematic is reprinted on page 19 of this issue, and we apologize for the inconvenience. More important, however, is the fact that there was enough interest in this home-brew rig that many of you asked for a legible copy of the schematic so it could be built. That in it self is a very encouraging sign and shows that many readers took seriously the comments by Wes Hayward, W7ZOI, in the October issue about building it yourself and about experimenting. As Wes observed: "... .there is satisfaction to be derived from operating equipment that is really your own...."

Finally, Les Shattuck, WB2IPX, our vice president, has agreed to head up the QRP ARCI presence at the 1985 Dayton Ham-vention, and I hope each of you planning to attend will make it known to him. His address is on Page 2. This is our first effort for QRP at Dayton, and Les needs the help and support of as many members as possible.

Your board of directors has approved funding for this effort from out treasury, so we hope all who can will take advantage of this opportunity to show the colors, to shake a few hands, meet some of the folks you've worked on the air, etc.

Chris Page, G4BUE, a well-known QRP DXer and a member of our board of directors, is threatening to be in Dayton and to have Colin Turner, G3VTT, an ssb QRP fan, with him. Who can top an offering like that ?

Remember:
Take Five in '85
Five watts, that is....
$q^r_p q$

ADVANCE NOTICE

QRP ARCI
SPRING SSB CONTEST

SATURDAY, APRIL 20 AND SUNDAY, APRIL 21, 1985

Experimenter's Corner

Wes Hayward - W7ZOI
7700 SW Danielle Avenue
Beaverton, Oregon 97005

THE PROBLEM

How often have you been operating in the QRP contests, having just called CQ, and find that a station is calling you on a frequency that differs from yours by several hundred Hertz? The same problem occurs during the popular QRP net sessions. This practice creates extra QRM and certainly degrades operating efficiency.

More often than not, the guys and gals who are not calling on frequency are using a direct-conversion transceiver, typically an HW-8. When queried, the user admits that he or she realizes the problem, but doesn't know what to do about it. The answer is found through the use of a simple, special-purpose receiver that we'll describe.

IT'S CAUSE

First, let's examine the problem and its cause. The simplicity of a direct-conversion transceiver results from the sharing of a common oscillator between the transmit and receive functions. Assume the oscillator frequency is fixed. A CQ is transmitted. A fellow QRP addict hears you, and being mindful of using no more spectrum than is absolutely required, he zero beats your signal exactly. His transmitter is now on exactly the same frequency as yours. He calls you, but you hear nothing. In frustration, the CQ is repeated.

The problem would be reduced if you offset your vfo frequency during receive periods. You would then hear the fellow calling you. The offset equals the pitch heard. A problem remains: unless you know the amount of the offset in your transceiver, you can't effectively zero beat a signal you wish to answer.

SOLUTION #1

There are several ways to handle the problem. One is with a frequency counter. Measure the oscillator frequency in both key-down and key-up conditions. Then tune your transceiver to produce a pitch equaling the difference in the counted results. An audio filter can be set for this frequency. Alternatively, the sidetone oscillator can be set to produce that same pitch. (Be sure you are on the right side if using a DC transceiver.)

SOLUTION #2

Another answer is to eliminate the offset circuitry in the transceiver, replacing it with a RIT that can be switched out of the circuit. with the RIT switched to an off state, exactly zero beat the station you wish to call. Then, activate the RIT, and tune it for the desired pitch.

BUILD A SOLUTION

A special-purpose receiver can also be built to provide the needed information. The circuit, shown in Fig. 1, is a simple direct-conversion receiver using but three transistors and a couple of diodes. Q1 is a crystal oscillator with output coupled to a singly balanced product detector. Silicon junction switching diodes (1N914, 1N4148, etc.) are suitable. L1 has a reactance of about 100 ohms at the crystal frequency with C1 picked for resonance (e.g., about 2 microhenry and 250 pF at 7 MHz.) A three- or four-turn link is coupled to the oscillator and applied to the detector. T1 is about 10 trifilar turns on a ferrite core such as the Amidon FT-37-43. All electrolytic caps in the audio amplifier (Q2 and Q3) are 10 microfarad or higher -- use what's available in the junk box.

The receiver can be built "ugly" on a scrap of circuit board material. There is little need to put it in a box for this application.

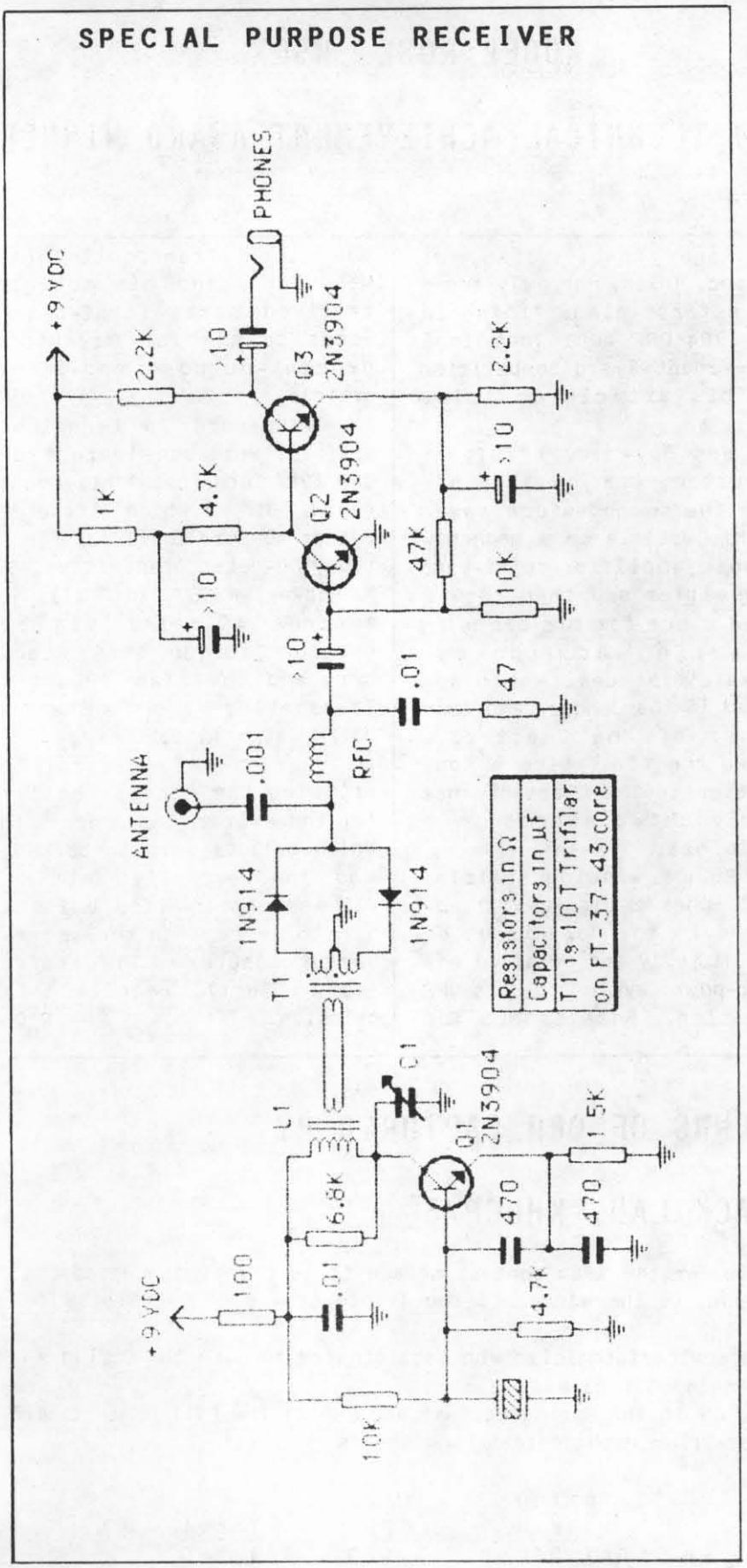
While this won't be the hottest receiver around, you should be able to hear some stronger signals with an antenna connected. The addition of a preselector filter and another stage of audio gain would produce a useable, ultra-simple receiver. (See Solid State Design for the Radio Amateur, Chapter 5.)

CALIBRATION

The receiver is easily used for calibration of our dc transceiver. The transceiver is attached to a dummy load and the special receiver is powered from a 9-volt battery. The headphones are plugged into the special receiver, and a small piece of wire is attached as an antenna. The transceiver (key up) is tuned until a signal is produced. Tune the transceiver for exact zero beat. You are now listening to the transceiver

Con't , next page

SPECIAL PURPOSE RECEIVER



Exp. Corner con't.

vfo as applied to the receiver. Now press the key. The transceiver offset will be activated and a signal will be heard in the special receiver. Mentally note the tone frequency. this is the tone that you should tune the transceiver to produce to ensure zero beat during normal operation. Play around with the setup to determine the direction of the offset used in the transceiver, allowing you to tune the rig in the right direction.

One of these receivers operating with a 7 MHz. crystal should be usable for calibrating a transceiver for 40, 20, 15, and 10 meters, using the harmonics of the oscillator. If the dc transceiver is well shielded with good isolation of the internal vfo, it may be necessary to provide tighter coupling between the rigs. The same setup can be used to calibrate equipment more elaborate than a dc transceiver.

It may seem a waste to build equipment for the sole purpose of calibrating an existing transceiver. There are numerous other applications possible for the circuit. Also, it should be a zero cost project, with all parts coming from the usual junk box. Use your imagination. $Q_p^r Q$

HW-8 MODIFICATIONS

Did you remember to send your favorite HW-8 modification(s) to Fred Bonavita, W5QJM, to be published in his anthology? All modifications are welcome, original or previously published. Fred's address is on page 2. Contributors will receive a complimentary copy.

FROM THE PRESIDENT

Ed Popp, K5BOT

In the July 1984 issue of CQ magazine, Ade Weiss, WØRSP, in his QRP Column, mentions that the DXCC QRPp Trophy is in debt approximately $800.

Director Ed Lappi, WD4LOO, moved and the board of directors agreed that $100 be donated to Ade in support of this program. A donation was made in the name of QRP ARCI.

The second annual payment of $25 was also made in support of The Milliwatt Field Day Trophy which QRP ARCI sponsors and is administered by Ade.

QRP ARCI now has two banners for use at QRP functions. One is suitable for outdoor use. These banners are available on a loan basis to members who are putting on a QRP program for ARCI. The banners are available, on request, from Les Shattuck, WB2IPX. A small deposit is required, which will be refunded upon return of the banner.

Q^rP^Q

ROGER ROSE, W5LXS

1984 TECHNICAL ACHIEVEMENT AWARD WINNER

Roger Rose, W5LXS, of Midland, Texas, narrowly edged out a first-place finish in the 1984 QRP ARCI Technical Achievement Award competition for his article on solar power.

Wes Hayward, W7ZOI, of Beaverton, Ore., walked off with the second-place award for his article on a general-purpose amplifier/multi-band transmitter and then took a third place for his piece on measuring low power. Hayward's pieces, which appeared in the January and July issues of The Quarterly, marked the first time a contributor to The Quarterly has received two awards in a single year.

Rose's winning article, "Bare Bones Solar Power," appeared in the July issue of The Quarterly and detailed his solar-power system for his QRP operation. Rose is NCS for the club's Transcontinental Net (TCN), and his article received seven first-place votes to six for Hayward's general-purpose amplifier article.

A record 25 technical articles were considered for the 1984 Technical Achievement Award. Others which attracted reader support included a one-tube, 80-meter transmitter, C. F. Rockey, W9SCH, in April; an antique 40-meter rig by Antoine Galindo, AC6G, October; and the Liam 30-meter Transceiver by Ha Jo Brandt, DJ1ZH, also in October.

Because of an error in printing the October ballot for the awards, the address to which ballots were to be sent was inadvertantly omitted. All membership-wide ballots are to be sent to the secretary-treasurer. The staff, (as in Bert), regrets this omission.

Q^rP^Q

TRIPLE CROWNS OF QRP CAPTURED BY

ZACK LAU, KH6CP/3

Now that the results are complete for the 1984 contest season it is hereby announced that Zack Lau, KH6CP/3, of Philadelphia, Penn., is the winner to the Triple Crowns of QRP Trophy for 1984 in the General-Extra Class.

There were no logs identified as Novice/Technician who participated in both the Spring and Fall contests, so no award is presented in that class.

The results, from having operated CW in the Spring contest and SSB in the Fall contest, are determined by the highest combined score from both contests and are as follows:

				Spring CW	Fall SSB	Total
1.	KH6CP/3	Zack	PA	642,960	1,620	644,580
2.	W3TS	Mike	CA	488,400	120,384	608,748
3.	N5ELM	Bert	TX	13,330	152,096	165,426
4.	N9DHX	Russ	IN	7,500	87,040	94,540

QRP "WORKED ALL CONTINENTS" TO BE RECOGNIZED

by Fred Bonavita, W5QJM

The International Amateur Radio Union (IARU) has finally approved a QRP endorsement for its well-known Worked All Continents (WAC) award, effective Jan. 1, 1985.

A sticker endorsing the standard WAC certificate for low-power operating will be available for proof of contacts with hams in the six continents for QSOs on or after Jan. 1. It is not available for contacts made prior to that date, according to IARU rules.

Power during the contacts must not exceed five watts output or ten watts input, the rules stipulate.

The effort to secure the QRP endorsement began in July 1983 at the IARU meeting in Cali, Columbia, when the idea was advanced by Carl Smith, WØBWJ, vice president of Region II, at the request of some union members. It won final approval at the IARU meeting late last summer in Paris.

To qualify for the award, an applicant must submit QSL cards from amateurs in each of the six continental areas as defined by the IARU rules and as shown in the ARRL world map. No photo copies of cards are acceptable. QSLs must show contacts made from one station, in term of callsign (this rule is waived in the case of a change of callsign because of license upgrade), from one location (an area or metropolis not exceeding 40 kilometers or 25 miles in diameter), and the mode and/or band used for any endorsement applied for.

The IARU offers this guideline in determining the area of a station located adjacent to a continental boundry. North America includes Greenland (OX) and Panama (HP). South America includes Trinidad & Tobago (9Y); Aruba, Curacao & Bonaire (PJ2-4); and Easter Island (CEØ).

Asia includes Ogasawara Islands (JD1), Maldives (8Q), Socotra Island (7O), Abu Ali Islands (J2/A), Cyprus (5B, ZC4) and Ankara (TA2). Oceana includes Minami Tori-shima (JD1), the Philippines (DU), West Malaysia (9M6-8) and Indonesia (YB). Europe includes all the 4th and 6th call areas of RFSFR (UA4-6), Istanbul (TA1), all Italian islands (I) and the Azores (CT2). Africa includes Ceuta and Melilla (EA9), Maderia (CT3), Gan Island (VS9M), French Austral Territory (FB8) and Heard Island (VKØ).

After verification, QSL cards will be returned, and the award will be sent soon afterward. There is no application fee for WAC. However, a self-addressed, stamped envelope must be included for return of all cards. If the cards are to be returned by registered of certified mail, sufficient remittance must be included to cover the costs. Check with local postal authorities to verify these charges.

Amateurs from the United States, Canada and those countries without IARU representation must use a special WAC award application form. Send a large self-addressed, stamped envelope to IARU, P.O. Box AAA, Newington, Connecticut Ø6111, USA. U.S. and Canadian applicants also must have a current membership in the ARRL or CRRL. All other applicants must apply through their respective country's member-society in IARU.

Meanwhile, IARU's Region 1 has begun action on a proposal to designate June 17 each year as an international QRP Day "with the goal that all amateurs worldwide (would) use low power on that day every year." The proposal was made by Kristjan Beneditksson, TF3KB, president of the Icelandic Radio Assn., and his nation's sole delegate to IARU. June 17 is the national holiday of Iceland.

There was no immediate word, however, on the definition of "low power" as it would apply to the proposal. The proposition must be approved by other IARU groups before becoming official.

$Q^{r}_{p}Q$

"ROCK'S TEST BOX" DOES IT ALL

by C. F. Rockey, W9SCH

"To measure is to know," the wise Hollanders say, but commercially made test gear is beyond the budget of many of us. On the other hand, it is practically impossible to get a freshly-fledged, "home-brew" QRP rig working correctly without some checks being made. We describe here a simple and relatively inexpensive test set-up which almost any QRP'er can build and use. And you will use it, too.

This gadget provides three basic test functions:

1. A DC volt-ohmmeter;
2. A practical transistor tester; and,
3. A "soup-sniffer" or RF "volt-scope".

We cannot call the later an RF voltmeter because it is not calibrated, but it's extremely useful, just the same.

The most expensive item used is a Ø-1 milliampere meter, probably as cheap as any meter you can buy, and often available for even less at ham "flea-markets". It is also able to take more punishment than are more sensitive types, a valuable ham feature.

THE DC VOLT-OHMMETER

The volt-meter provides the three voltage ranges I have found most useful during several decades of hamming. Other ranges may be set-up instead, if you prefer. But remember, you must provide a thousand ohms of series resistance for every volt of full-scale reading. (Due to the limited sensitivity, I do not recommend a full-scale range of less than ten volts, however.)

Use five-percent tolerance resistors for the voltmeter circuit (the 1 megohm, 100 Kohm, and 10 Kohm resistors) if you can get them. (or make them from various resistors in parallel and series from your junk box...Ed.) They must be of the ONE-WATT size, or larger. It is upon these resistors that the accuracy of the voltmeter chiefly depends. The ohmmeter function is also extremely useful; calibration data is given later. (Since 90% of the tests made in amateur trouble-shooting are DC, we choose to forego the complexity of AC (low-frequency) scales here.)

WHY A TRANSISTOR TESTER

The transistor tester is simple yet has proven most valuable over the years. It will answer two questions most vital to the QRP'er: 1. will it "transmit"?; and, 2. does it have any "betty" (beta)?

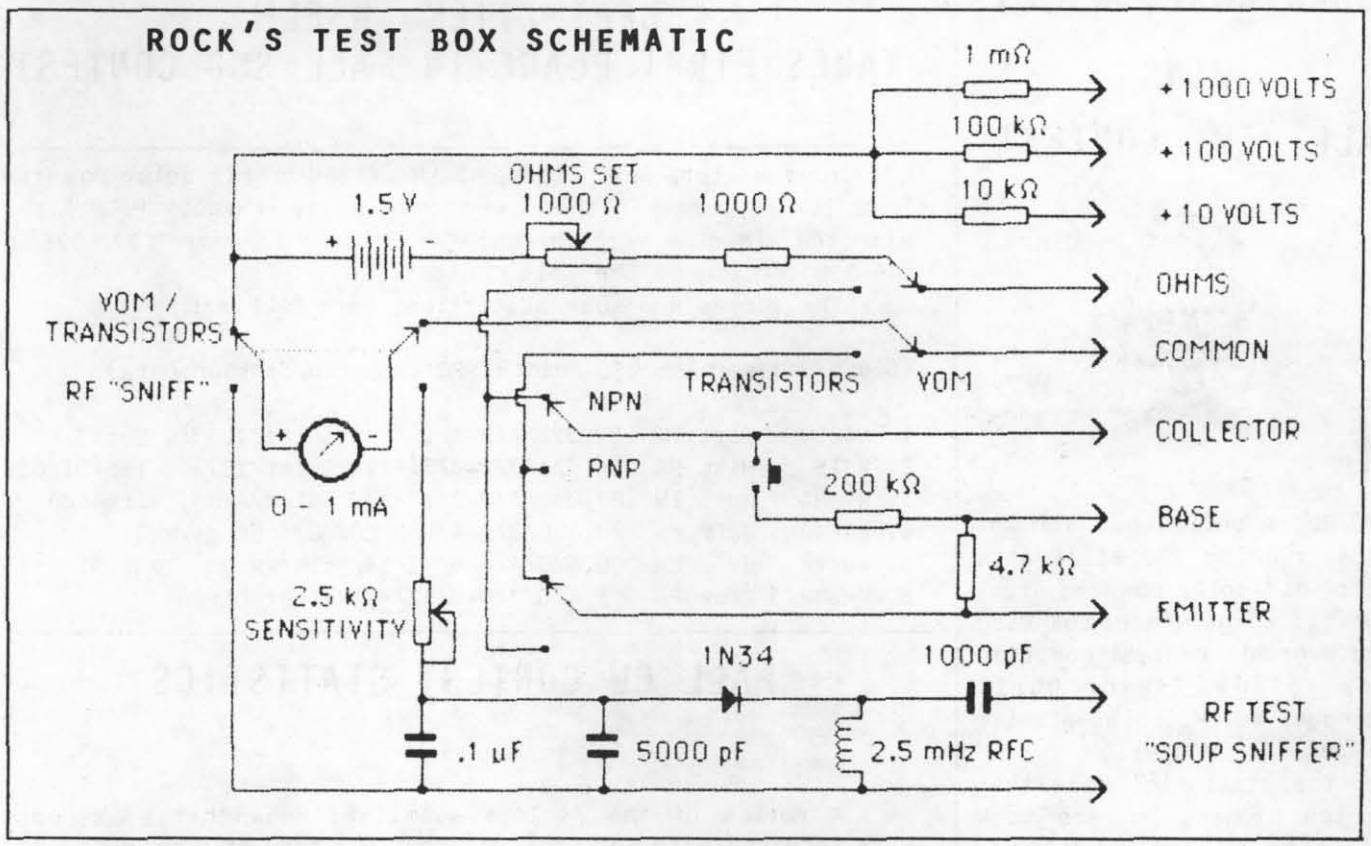
USING THE TRANSISTOR TESTER

To use it, first put the switches into the "Volt-Ohm" position, then short the test leads together, setting the "Ohm-Set" potentiometer to full one ma. reading. Then throw the switches to "Xstr Test" (selecting NPN or PNP approapriately, of course). The meter reading will then be the transistor leakage current; it should be no greater than about Ø.Ø5 ma. for germanium and negligible for a silicon unit. Push the button. The meter reading should swing sharply upward. (The higher the swing, the more "betty" she's got.) A good transistor should swing up to at least Ø.2 ma. and a hot one might go up to Ø.7 ma. A bad one will not swing up at all when the button is pressed. (If you've popped as many transistors in the initial testing of "home-brew" rigs as I have, you'll find this function extremely useful.)

THE RF "VOLT-SCOPE"

The "soup-sniffer", or RF "volt-scope" is a true friend-in-need when that new QRP rig you've just built just won't "put-out". With it you can trace the RF voltage right through, from oscillator to final amplifier. (This is practically the only simple way to check an untuned buffer or emitter-follower stage.) Hang a 47 ohm carbon resistor across the terminals and you

Con't., next page



Rock's Box con't.

could calibrate it as a QRP wattmeter; replace this with a piece of wire and you have what is called a "field-strength meter" by some. Clever folks will find other uses for it. It's a handy item.

CONSTRUCTION TIPS

Use your own taste in physical arrangement; nothing is critical except the voltmeter resistors. Wire your gadget sensibly and provide proper insulation for the terminals and it should develop no problems. The D.P.D.T. switches should be either of the rotary or toggle type; personally, I have had poor luck with slide-switches, but this is your choice.

I make no claims for high accuracy in this simple gadget, but no matter. Long experience shows that it is relative values that are important in most amateur measurements. An accuracy of, perhaps, plus or minus ten percent can be expected; sufficient for ham purposes in nearly every case.

Build one of these things. You'll be glad you did.

CALIBRATING THE OHM SCALE

Assuming that a good 1.5 volt battery is used and the "Ohm-Set" potentiometer is adjusted to bring the meter reading to one ma. when the test leads are touched together:

Ohms	Ma. Indication
0	1.0
100	0.94
300	0.83
500	0.75
1000	0.60
1500 (Mid-Scale)	0.50
3000	0.33
5000	0.23
10000	0.13
30000	0.05
50000	0.03

Q^rQ

QRP ARCI FIRST SUNDAY QSO PARTY

QRP ARCI First Sunday QSO Parties are a great opportunity to get together with other QRPers, meet new friends, show off your home brew rig or let us hear how well your new antenna is working. Check the time/frequency chart on the back cover.
Lets get together, on the air.

IS IT TIME TO RENEW

Check your mailing label, if your membership number is followed by "1/85" this is your last issue. Use the subscription renewal form on the bottom of the calendar.

Do it today.

ROGER ROSE, W5LXS WINS FALL CW CONTEST

Roger pulled out all the stops, running 500 milliwatts out of his solar powered Argonaut 515 to gain a commanding lead over his nearest competitor, fellow Texan, Chris Brakhage, WB5FKC, also a solar powered milliwatter.

The statistics show that the ten highest scorers took advantage of the power and bonus multipliers running milliwatt power output, battery or natural power, or a combination of both.

Despite QRM from the Pennsylvania QSO Party and the ARRL Activity Weekend, there was lots of action as reflected in the 74 logs submitted for scoring. Conditions were for the most part unfavorable for DX with but a few scattered DX (mostly JA's and South America) calls appearing in the logs. G4EBO submitted the only non-W/VE log.

The following is a recap of the top ten scores (with B=Battery power, N=Natural power, *=Milliwatter):

1.	W5LXS	TX	954,080	N*
2.	WB5FKC	TX	536,940	N*
3.	WB8VGE	OH	366,720	N*
4.	AA4CO	NC	354,780	B*
5.	W1FMR	MA	341,550	B
6.	KD8G	WV	313,910	B
7.	W6YMH	CA	305,748	B
8.	K4KJP	FL	280,308	N
9.	KN1H	NH	253,800	B*
10.	WB8UUJ	MI	226,440	B

BERT ZITEK, N5ELM TAKES FIRST PLACE IN FALL SSB CONTEST

Your editor, Bert Zitek, N5ELM, fired up his solar powered Icom IC-730, cranked the power down below 4 watts P.E.P., and with the aid of a vertical antenna managed to score 152, 096 in the SSB section of the Fall Contest.

The scores and some statistical data follows:

(Score/Bands/Power/QSO Points/SPC's/Source/Station Data)

1. N5ELM Bert TX 152,096/4/2-4/194/49/Solar/IC730, Vert.
2. W3TS Mike PA 118,624/3/2-4/337/22/Solar/IC751, Tee-Dipole
3. N9DHX Russ IN 87,040/3/0-2/136/32/Solar/Argo, Wireloop
4. WAØWJX Jeff KS 20,800/3/2-4/130/20/AC/(not given)
5. W6YVK Ev CA 8,568/4/4-6/51/14/Solar/Argo, Yagi-Sloper
6. KH6CP/3 Zack PA 1,620/3/0-2/22/6/AC/(not given)

FALL CW CONTEST STATISTICS

A review of the 74 logs submitted show that 65 reports were received with information about the type of equipment used in the contest. (Some used more than one rig or antenna)

RIGS

HW-8	16	HW-9	3	Omni	2
Argonaut 509	11	Homebrew	3	Century 21	2
Argosy	11	HW-7	2	Power-Mite	1
Argonaut 515	7	IC730/740	2	Others	9

ANTENNAS

Dipole	29	Long Wire	9	Zepp	4
Vertical	19	Vee/G5RV	6	"Apartment"	3
Beam	14	Quad	4	Others	17

The most common set-up reported was a HW-8 or Argonaut with multiple antennas consisting of tribander or vertical on 20-15-10 meters and a combination of dipoles, vertical, vee, slopers, loops, etc., on 160-80-40 meters.

POWER OUTPUT

Milliwatter	14	3 - 4 Watts	7
1 - 2 Watts	29	4 - 5 Watts	10
2 - 3 Watts	14		

NUMBER OF BANDS OPERATED

1 Band	11	4 Bands	26
2 Bands	13	5 Bands	6
3 Bands	18		

POWER SOURCE

A/C Mains	41	Solar	4
Battery	28	Solar/Wind	1

FALL CW CONTEST RESULTS - THANKS FOR PARTICIPATING

The following information is provided: Callsign, name, score/power/bands/QSO points/S-P-C. Power levels are: M = Less than 1 watt; 1 = 1-2 watts; 2 = 2-3 watts; 3 = 3-4 watts; and, 4 = 4-5 watts. Following the listing: B = Battery power and N = Natural power.

Alaska		
KL7XA	Rick	9,408/3/2/112/14B
KL7DG	John	684/2/1/ 19/ 4B
Alabama		
KA4LKH	Barry	190,080/M/5/264/48B
Arizona		
N7FU	Scott	75,240/M/3/228/33
KA9HAO	Randy	16,380/1/2/ 91/15B
KD7XZ	Karen	11,832/2/2/116/17
California		
W6YMH	Bob	305,748/1/2/447/57B
K6MDJ*	Fred	131,712/1/4/343/48
KA6SOC	Sue	60,120/1/3/167/30B
WD6DMY	Brian	34,684/4/4/377/46
W6SIY	Keith	11,904/1/2/ 93/16
NW6A	John	9,666/4/3/179/27
KG6KA	William	7,800/1/3/ 65/15
Colorado		
KRØU	Tim	77,982/3/4/317/41B
Connecticut		
KV1V	Bob	29,820/M/2/142/21
Florida		
K4KJP	Terry	280,308/2/4/497/47N
Georgia		
N4HLU	Dan	8,436/3/3/111/19
Hawaii		
KH6IJS	Howell	20,400/3/3/170/20B
Idaho		
NJ7M	Chuck	172,000/1/5/430/50
N7FEG	Maurice	25,920/1/3/135/24
K9EIJ	Norman	110,528/1/5/314/44
WD9EGW	Charles	108,000/M/4/225/32B
KA9NZI	Gary	17,024/1/4/112/19
KA9PNN	Norman	12,470/4/5/215/29
Indiana		
K9VCM	Roland	62,116/4/4/586/53
WD9CTB	Jerry	47,120/1/3/190/31
Kansas		
NØCLV	Bob	90/4/1/ 15/ 3
Maryland		
K3TKS	Danny	81,600/1/4/255/40
Massachusetts		
W1FMR	Jim	341,550/2/4/570/66B
N1CRD	Steve	132,848/1/4/361/46
N1BXC	Stephen	34,500/1/4/125/23B
W1XH	Al	2,940/4/3/ 98/15
WB1HGA	Ron	2,898/1/2/ 46/ 7B
Michigan		
WB8UUJ	Tom	226,440/1/4/370/51B
N8CQA	Buck	158,220/1/4/293/45B
KE8P	Ellwood	49,104/2/4/176/31B
K8KIR	Bud	1,620/4/1/ 60/ 9B

*Multi-multi entry - operators included W6RCP, N6GA and W6SKQ. Does not qualify for awards under current rules.

Mississippi		
WD5HLD	Don	380/3/1/ 19/ 5
Missouri		
KCØPP	Keith	65,772/1/3/203/27B
KAØKKV	Elliott	1,080/1/1/135/ 5
New Hampshire		
KN1H	John	253,800/M/4/360/47B
New Jersey		
K2JT	Joe	108,900/2/4/363/50
W2JEK	Don	12,096/1/4/ 72/14B
WA2GTJ	Rich	8,624/1/2/ 77/14
New Mexico		
W5TTE	Ed	161,124/2/3/463/58
KU7I	David	29,160/3/3/180/27B
New York		
WB2IPX	Les	221,328/1/4/477/58
W2PFS	Harold	32,160/1/1/201/20
KA2KGP	Tom	6,232/4/2/164/19
W2WSS	Pete	1,200/4/1/ 75/ 8
North Carolina		
AA4CO	Joe	354,780/M/4/438/54B
KF4AR	Rick	36,000/1/3/125/24B
Ohio		
WB8VGE	Mike	366,720/M/4/382/48N
WA2LZZ	Tim	17,176/1/3/113/19
South Dakota		
WØRSP	Ade	41,040/M/1/171/24
Tennessee		
WØSK/4	Jim	8,848/1/1/ 79/14
Texas		
W5LXS	Roger	954,080/M/3/712/67N
WB5FKC	Chris	536,940/M/5/471/57N
W5USJ	Chuck	100,980/2/2/374/45
NK5V	Jim	52,500/M/5/140/25B
K5SN	John	5,214/2/2/ 79/11
Utah		
KK7C	Jim	27,880/M/2/ 82/17N
Virginia		
WD4EXG	Billy	127,170/2/3/314/45B
KC4ZA	Alan	20,160/1/4/126/20
K7YHA	Rich	10,270/M/4/ 79/13
Washington		
KV7X	Jay	139,725/2/4/345/45B
N7DHA	Mary	130,242/3/4/443/49B
KA5GIS	Carol	4,608/2/3/ 64/12
West Virginia		
KD8G	Randy	313,920/2/4/545/64B
Wisconsin		
AE9G	Hans	60/4/1/ 10/ 2B
Puerto Rico		
KP4EIH	Ernie	2,764/1/1/ 41/13
Manitoba		
VE8PH/5	Peter	10,440/2/2/116/15
Ontario		
VE3KKO	Tom	124,160/M/4/388/32
England		
G4EBO	W.E.	1,736/1/3/ 31/ 7
Check Logs		
W5SUV and W7DRA		

JIM STEVENS, KK7C CAPTURES THE SUMMER DAZE SPRINT

Jim Stevens, KK7C, of Utah, running a Yaesu FT-707 cranked down to 2 watts and feeding a beam on 40 meters and a vee on 20 meters, turned in the top score of 1,904 points to win the 1984 Summer Daze Sprint.

Jim was followed closely by "Mike" Michael, W3TS, of Pennsylvania, running 6 watts out of an Icom IC-751, feeding a Tee on 160, dipoles on 80 & 40, and a tribander on 20, 15 & 10 meters. Mike scored 1,766 points and was the only entrant to claim any bonus points when he earned the 10 QSO-per-band bonus by making 12 contacts on 160 meters (Who said there is no 160 meter QRP?). Mike's 160 operation netted him 8 s/p/c's from as far away as Illinois.

There was some confusion as to the times for operations - although all times in the announcement were given in UTC, your contest chairman (a National Guardsman) unwittingly typed the military designation, Z (Zulu = UTC), with which many are not familiar.

SCORES:

KK7C	Jim	UT	1,904
W3TS	Mike	PA	1,766
KA5NLY	Gene	AR	360
W1FMR	Jim	MA	168
N5ELM	Bert	TX	104

Soapbox:

"...like sprint idea...4 hours just right and permits intense participation." KK7C

"...had even more fun with this one...think I made a couple of QRP converts." W1FMR

"...gave 160 meters a shot, and it was my saving grace." W3TS

"...since there was a bounty (bonus points) on my head, I wanted everyone to hear me on the air." N5ELM $Q^{r}_{p}Q$

ANOTHER 30-METER MODIFICATION FOR THE HW-8

by Ed Popp, K5BOT

After modifying my HW-8 for 30 meters via the Howell Ching, KH6IJS, method, "30 Meters for the HW-8" (June '84 Quarterly), I noticed that on occasion, I could hear HCJB, a shortwave broadcast station in Ecuador. At times, HCJB was loud enough to wipe out all but the strongest signals. This happened only at night and no other shortwave broadcast stations were heard.

Reviewing the schematic and the mod's, I found that the RF Amplifier was now broadbanded for 30 meters. to make the front end more selective, L1 and L5 need to be modified and C16 reinstalled. The hardest part of this modification is the removal and reinstallation of L1. The bracket that holds the tunning capacitor (C302) leaves very little room to accomplish this feat.

The modifications are as follows:

L1 - Remove 25 turns and adjust the remaining 34 turns evenly around the core. No change to the link. Be sure to install the link (4 turns) across the red dot on the coil support.

L5 - Remove 14 turns and adjust the remaining 18 turns evenly around the core.

C16 - Reinstall the C16 trimmer.

Tuning is straight forward. Set the Preselector to approximately 7 MHz and the frequency to 10.125 MHz. Peak C3 and then C16. Repeat peaking of C3 and C16.

You now have preselector peaking on 30 meters and HCJB has not been heard from since.

$Q^{r}_{p}Q$

QRP ARCI QSL CARDS

Are you advertising your favorite mode of operation? Do others know that your a QRPer and a member of QRP ARCI? Attractive QSL cards with the QRP ARCI symbol are available from the Little Print Shop, P.O. Drawer 9848, Austin, Texas 78766. 300 cards, printed on coated, heavy weight index stock for $30. The club logo, your call, name and address are printed on the front and a standard reporting form on the back.

Is it time to reorder?

REVIEW: TEN-TEC CENTURY 22

by Michael Bryce, WB8VGE

Everyone knows by now that Ten-Tec has introduced the Century 22. The radio club that I belong to decided to give away one of the new rigs as a major prize at our hamfest. I was able to talk the powers to be into letting me have it for a product review for The Quarterly.

One has to remember one thing when looking at this radio: It's not a replacement for the Argonaut. ten-Tec was out to market a radio for the newcomer to the hobby or perhaps the ham who wants a second rig to go into the mobile home while on vacation. The new rig succeeds the discontinued Century 21.

The Century 22 has what Ten-Tec calls a "double-direct conversion" receiver, which means it still has a direct-conversion receiver. this rules out the use of the Argosy-type crystal filters. This was done, I am sure, to cut the cost of the radio. It would have been really great if Ten-Tec had elected to go with the superhet receiver, however.

Ten-Tec has lowered the power level to 50 watts input. Tests were made on all bands as for power output, using a 13.8-volt power supply. A Bird wattmeter showed 21 watts into a 50-ohm, resistive load. The output held constant, plus or minus a watt, on the different bands.

The meter on the radio is not calibrated in watts out. You are told only that full power comes with full meter deflection. If you want to lower power to a known level, you will have to do so with a outboard watt meter. Both the sidetone level and pitch are adjustable to your liking.

CW keying waveform of the Century 22 showed good rise and fall times. More output power could be had by increasing the drive control, but this destroyed the CW keying waveform.

Factory specifications call for an input power of 50 watts. with 21 watts out, that seems like low efficiency in the power amplifier. I was unable to measure just the current for the amplifier, so I am at a loss to explain why the transmitter efficiency appears to be less than 50 percent. I will try to follow this up with the factory.

A great improvement over the old Century 21 is the AGC in the audio section. It makes for much better listening. The Century 22 has what every Argosy owner would like to have: an rf gain control. Its operation is smooth and really helps protect the receiver from overload. also included with the 22 is a rather novel audio filter system. I would like to have this type of filter on my Argosy. the filter is a variable-range, six-pole, active unit, from very wide to very narrow. One can set the filter to anything in between to suit the band conditions at the time, unlike the Argosy, with its crystal filters and the two-position audio filter. With the Argosy, sometimes position one is not enough and position two is too much filtering. I really like this system.

The QSK operation of the 22 is not as fast as in my Argosy. It works fine until code speeds get to 10 WPM. Beyond that, a delay in the receiver audio line does not allow you to hear between characters. However, during noisy band conditions, the small delay would be welcome to the ears.

Another shortcoming of the 22 is the manual. If you own a piece of Ten-Tec gear you know what I mean. The company previously not only included operations and set-up instructions, but also a very good service manual. Well the Century 22 comes with a very

Con't. on page 18

TECHNICAL EDITOR RESPONDS TO RECENT CORRESPONDENCE

by Ed Manuel, N5EM

Being an editor of a newsletter sure puts one in an interesting position. People you don't know send letters telling you: 1) how well you are doing; 2) how poorly you are doing; and 3) what you should be doing differently. Actually, it's neat.

Probably the most interesting part is reading the letters of dedicated members who have various ideas about how the club could be better. I'd like to share a few of those thoughts, with my feelings on the subject, and see what some of you out there in QRP-Land might think.

Some of the suggestions come in the form "Real QRP'ers ..... (you fill in the blank)." A few might be:

1. Real QRP'ers run less than 1 watt. (5 watts is too much;
2. Real QRP is done on CW (or SSB, depending on preference);
3. Real QRP'ers are folks who run their own home-brew gear;
4. Real QRP is contesting (or hunting awards);
5. Real QRP is DXing (or rag chewing); and so on.

Fact is, almost everyone has some special area of interest that he or she feels is REAL QRPing.

Some of the specific complaints or suggestions I have received is that 5 watts is too much power anymore for awards and contests. What is being suggested by some is a 1-watt output maximum. Another suggestion is that contests and awards be based on simple, wire antennas and dipoles, and that antennas with gain over a dipole not provide as many points.

It has been suggested that the Kmile/Watt award is so easy to get as to no longer have any real significance.

There is probably some truth to these. You may feel other changes would benefit the club or make QRPing more meaningful. I would like to hear from each of you. We really don't have room to publish each letter, but I have tried to capsule some of the thoughts in this column. Of course, if you feel strongly, your thoughts should also be sent to the board members, as it is ultimately their responsibility to make any changes in the way the club is organized or run.

Let me make a few observations, however. First, amateur radio, and QRP ARCI, is a hobby characterized by unusual diversity. If you have ever tried to answer the question "What do hams do?" by a non-ham, you have realized how difficult to describe amateur radio can be. Did you mention RTTY, satellites, packet radio, television and slow scan, moon-bounce, meteor scatter, FM and repeaters, contesting and awards, and so on and on. Of course I haven't even mentioned CW, SSB and DXing.

But how does all this pertain to the QRP ARCI? Our membership is just as diverse as amateur radio as a whole. We have people active in virtually all the areas previously mentioned. Our organization is held together by the glue of QRP. Looking up on the wall, I read from my membership certificate the words, "... is voluntarily using 5Ø watts or less output so that amateurs all over the world may more equally enjoy amateur radio." That is the crux of QRP. We are the environmentalists of the amateur radio hobby. We are the proponents of skill and patience, instead of raw power. Within these general areas of agreement is great room for the diversity of ham radio.

This is not to say that our organization is perfect. We have recently changed the rules of the club with regards to power to be more in line internationally. There will be changes in the future. I hope that QRP ARCI never becomes a static club. But when changes are proposed, they should be measured in the light of the greater goal of QRP.

QRPQ

AUTHORS WANTED
NO EXPERIENCE NECESSARY

Every article in The Quarterly was written by a QRPer, just like you. The success of The Quarterly depends upon the members to share their ideas, projects, modifications, and special interests with the other members. Keep us busy, we love it, and so will the other members.

THE RESULTS ARE IN FOR THE 1984 FIELD DAY QRP COMPETITION

by Ade Weiss, WØRSP

A two-operator team headed by Ron Moorefield, W8ILC, of Dayton, Ohio, captured top honors in the one-watt class for the 1984 Milliwatt Field Day trophy, Adrian Weiss, WØRSP, has announced.

In the five-watt categories, Bob Patten, N4BP, of Miramar, Fla., and Tim Cotton, N4UM, of Plantation, Fla., netted first place for the two-operator/one-transmitter class, while a multi-operator multi-transmitter headed by Steve Goode, K9NG, of Palatine, Ill., nabbed a first place in the club class.

Ade reports the number of entries for 1984 was down from the 1983 level overall, although interest in the one-watt category "is still going strong."

Second-place honors in the one-watt class went to a team led by John Collins, KN1H, of Newport, N.H.,; Robert Rosier, K4OCE, of Boerne, Texas, headed a two-operator team which placed second in the two-operator one-transmitter class for up to five watts output; and runners-up in the club competition went to a group headed by Gary Andary, N6UU, of Montclair, Calif.

QRP ARCI is an active supporter of the annual FD Milliwatt Trophy competition, which was first held in 1970. Complete rules for the 1985 event will appear in CQ magazine, for which Ade is the QRP editor.

Results of the 1984 competition are listed in the adjacent box.

QRPQ

1984 Milliwatt Field Day Results

One-Watt (2 Operators, 1 Transmitter)

	CALL	CW	SSB	TOTAL	SCORE
1	W8ILC	425	Ø	425	525Ø
2	KN1H	191	9Ø	281	3522
3	KC5EV-WA5BUC	31	171	2Ø2	2574
4	KM8X	18	Ø	181	2322
5	KA4LKH	8Ø	Ø	8Ø	111Ø
6	WD9EGW	54	Ø	54	798
7	NK5V	38	8	46	552

Five-Watt (2 Operators, 1 Transmitter)

1	N4BP-N4UM	759	287	1Ø46	6426
2	K4OCE	14Ø	211	351	21Ø6
3	KAØHIB	56	176	232	1542
4	VE1ABU-VE1CIX	137	56	193	13Ø8
5	WØUY-KØWRY	144	1Ø	154	1Ø74
6	N5AE-WD5FLU	74	73	147	1Ø32
7	KAØJXD	134	Ø	134	8Ø4
8	N9DHX	Ø	129	129	774
9	KT1H	Ø	116	116	696
1Ø	K6TG	98	Ø	98	588
11	KK7C/4	5Ø	22	72	582
12	WD9AEU	3	88	91	546

Club (Multi-Operators, 2 or more transmitters)

1	K9NG	327	91	418	5166
2	N6UU	4Ø4	327	731	4536
3	W3TS	597	Ø	597	3732
4	K8IF-K8BX	568	Ø	568	3558
5	W2LZ	512	Ø	512	3222
6	KX4G-KF4WX	271	79	35Ø	225Ø
7	WA6POC-W6TZA	192	87	279	1824
8	W6SKQ-KF6BC	1Ø6	155	261	1716
9	N8CGY-KA8KSJ	98	1Ø3	2Ø1	1356
1Ø	K2NH-N2BCF	158	5	163	1128

PATIENCE, PLEASE

"The joy of QRP: Strategy for Success" has run into difficulties because of the printer. The book still is not available, but will be eventually according to Ade Weiss, WØRSP, publisher. Patience

QRP ARCI BOARD OF DIRECTORS ELECTION RESULTS
JACK RUSSELL, K2RS, NAMED NEW PUBLICITY-INFORMATION OFFICER

by Fred Bonavita, W5QJM

A new member of the QRP ARCI board of directors was elected and two members re-elected in balloting late last year. At the same time, the board has named a new publicity and information officer.

The new board member is Jim Fitton, W1FMR, of Haverhill, Mass., who was unopposed for the directorship vacated by William Dickerson, WA2JOC, of Danville, Penna. Jim was elected to a three-year term expiring Dec. 31, 1987. Re-elected to three-year terms expiring at the same time were Robert W. "Red" Reynolds, K5VOL, of Lake Zurich, Ill., and Fred Bonavita, W5QJM, of Austin, Texas, neither of whom was opposed for another term.

The board, meanwhile, has named Jack Russell, K2RS, of Carlisle, Penna., as the new publicity-information officer, succeeding Bonavita, who resigned to become editor of The Quarterly.

The terms of four board members expire in 1985, and members interested in running for the slots should send their names and a brief biographical sketch to the secretary-treasurer not later than June 1, 1985. See Page 2 for his name and address. The sketch should include a definitive statement of the candidate's goals and interests in QRP. The ballot for the new board will be published in July.

Board members whose terms expire this year are: Garl L. Beam, WA9WZV/4; James Holmes, W6RCP; James Lyons, VE2KN; and Chris Page, G3BUE.

Names and addresses of board members are listed below.

qrpQ

QRP ARCI BOARD OF DIRECTORS

Harry E. Blomquist, K6JSS
founder & BOD for life
12430 Ted Avenue
Saratoga, CA 95070

Fred Bonavita, W5QJM
Editor & BOD to 12/31/87
Box 12072, Capitol Station
Austin, TX 78711

Gary L. Beam, WA9WZV/4
BOD to 12/31/85
720 Cheairs Circle
Columbia, TN 38401

J. M. (Jim) Fitton, W1FMR
BOD to 12/31/87
60 Hamilton Avenue
Haverhill, MA 01830

William K. Harding, K4AHK
Sec/Treas & BOD to 12/31/86
10923 Carters Oak Way
Burke, VA 22015

James Holmes, W6RCP
Net Mgr. & BOD to 12/31/85
136 Reed Way
Santa Cruz, CA 95060

Edwin R. Lappi, WD4LOO
BOD to 12/31/86
203 Lynn Drive
Carrboro, NC 27510

Robert Lyons, VE2KN
BOD to 12/31/85
35 Huron Avenue
Roxboro, Quebec, Canada H9G 2C2

Christopher J. Page, G4BUE
BOD to 12/31/85
Alamosa, The Paddocks
Upper Beeding, Steyning
West Sussex, England BN4 3JW

Robert W. Reynolds, K5VOL
BOD to 12/31/87
835 Surryse Road
Lake Zurich, Il 60047

Ellicott Valentine, K4JO
BOD to 12/31/86
4495 Bashavia Wayside
Pfafftown, NC 27040

William G. Welsh, W6DDB
BOD to 12/31/86
2814 Empire Avenue
Burbank, CA 91504

WHEN DOES
YOUR
LICENSE EXPIRE?

HAVE YOU UPGRADED OR CHANGED YOUR ADDRESS?

WHEN DOES
YOUR
QRP SUBSCRIPTION EXPIRE?

COMPUTER AIDED DESIGN LIBRARY GETS A 'WARM BOOT'

by Ed Manuel, N5EM

First I shall apologize for taking so long to get the CAD library project underway. Committments sometimes have a way of doing that to you.

Let me thank those of you who sent me letters and sample programs. You have demonsrtated enough interest to take the project to the next step and officially announce its beginning. I am now officially soliciting programs for the library. Here are the guidelines I would like you to follow in preparing your program.

1. List the program in one continuous page. the final size will be 8 1/2" x 11". Longer programs will be reduced on a Xerox machine to fit that page. If necessary, it will be reduced to two (2) columns to fit on one side of the page.

2. Please convert screen and other special control codes to their CHR$ equivalents. Do not leave funny symbols (like the Vic printer makes) in the listing.

3. Make use of remark statements to tell what your program is doing.

4. Write a short narrative on the use of the program and any limitations or "got-cha's" one might encounter. Draw any schematic that is used and make certain that any parts that are referenced in the program are designated clearly. Remember, the narative and schematic are to fit on the back of the program listing. Don't be verbose. Keep it short and to the point.

5. If you happen to have a Vic or C64, I can take tape cassette or floppy disc, but cannot return them unless you include return postage for the mailer.

That about does it. If you have specific questions, please send a letter with an SASE and I'll drop you an answer. I normally do not try to reply to every letter or article if everything seems OK unless you ask for a response and send an SASE.

(Editor's Note: The following information is presented for the benefit of our members. QRP ARCI in no way warrants, endorses or guarantees the availability, performance or quality of the items mentioned.)

Many readers will recall the unsuccessful attempts in 1982 by Dentron to market the MLX series of QRP transceivers in one of several monoband versions. Fewer than 200 of these compact units were sold before financial problems caused the company to close its doors.

The remainder of the production of the MLX transceivers has been bought by Bill Hickox, K5BDZ, who is making them available to club members on a limited basis. Bill has a few of the 80, 40 or 20 meter units complete, but not checked. He also has units in various stages of completition and has a wide assortment of the p.c. boards of the various subassemblies (power amplifier, digital readout frequency counter, vfo, rf mixer, etc.).

Full information on these 25-watt PEP transceivers can be had by writing Bill at 9896 Bissonnet, Suite 100, Houston, Texas 77036. His telephone number is 713-776-8888.

Too often would-be homebrewers are put off from rolling their own projects by what they see as the shortage of chassis and/or cabinets to give their work a professional-looking touch.

All that's come to an end, thanks to Charles Byers, who is marketing a wide selection of chassis and/or cabinet kits by mail at reasonable prices and in a variety of sizes and shapes.

Send an s.a.s.e. with 20 cents' postage to him at 5120 Harmony Grove Road, Dover, Pennsylvania 17315, and he'll send you an illustrated catalogue and price sheet by return mail. And tell him you read about it in The Quarterly.

CONTEST CHAIRMAN'S REPORT

by Gene Smith, KA5NLY

The Fall 1984 contest is now history (see results in this issue), and your contest chairman has done it again with another scheduling glitch. Also, I have a couple of corrections, some Sprint notes, and another new address.

After getting the Spring 1984 contest mixed up with Easter weekend, I was determined to avoid the Pennsylvania QSO Party in October. After checking with the ARRL and being assured the second weekend in October was fairly clear, I moved our contest from the traditional third weekend to the second. After our announcements had been sent out to all the ham media, the PA folks moved their party from the third to the second weekend, apparently in an attempt to avoid a conflict with our contest.

It appears that someone didn't check with ARRL before scheduling the Pennsylvania Party; regardless of one's feelings about ARRL, they do maintain the best calendar of upcomming events (including those of other major magazines and organizations), and one should always check with them before setting a date for an event. I will attempt to coordinate directly with the Pennsylvania contest chairman next year to avoid any conflict. Any assistance in obtaining his name and address as soon as he is appointed will be appreciated.

A couple of "mea culpas" are in order at this point. It seems that I left out two scores in recent contest results listings. My apologies to Gary Phillips, KA9NZI, of Chicago, who scored 4,664 points in the April contest, and Zach Lau, KH6CP, of Honolulu, who scored 220 points in the Novice Sprint.

Many have written that we need national publicity to announce Sprints and bring in more participants. We plan to do this with the first Sprint following the upcomming April contest. As orginally planned, the first few Sprints were kept "in-house" so that we could experiment and iron out any bugs before going public with them.

I might get shot for this, but I'm announcing a winter "Piggyback Sprint", a CW Sprint with international publicity.

The rules are simple: enter the National Contest Journal's Winter CW Sprint in February 1985 and send me a copy of your log, just as you submitted it to the NCJ contest scorer, and I will publish the QRP scores in the next Quarterly. The date and the rules will be published in all ham mags soon, so watch for them. Work some new states, have fun, and send me a copy of your logs within 30 days after the close of the Sprint. The entrants in these sprints number about 150-200, so they have plenty of action.

NOTE: I have yet another new address: P.O. Box 55010, Little Rock, AR 72225.

That's it for this quarter; keep those cards and letters comming as the contest program depends upon the members for ideas and suggestions.

QRP

Century 22 con't.

sparse manual. Only enough to get you on the air and nothing else. There is a block diagram of the board connections, but no board schematics. This may be due to the fact that I had a very early model and a proper manual is still being printed. Talks with a local Ten-Tec dealer, however, tell me that this will be the way of the future. That manual would make servicing the radio a dream.

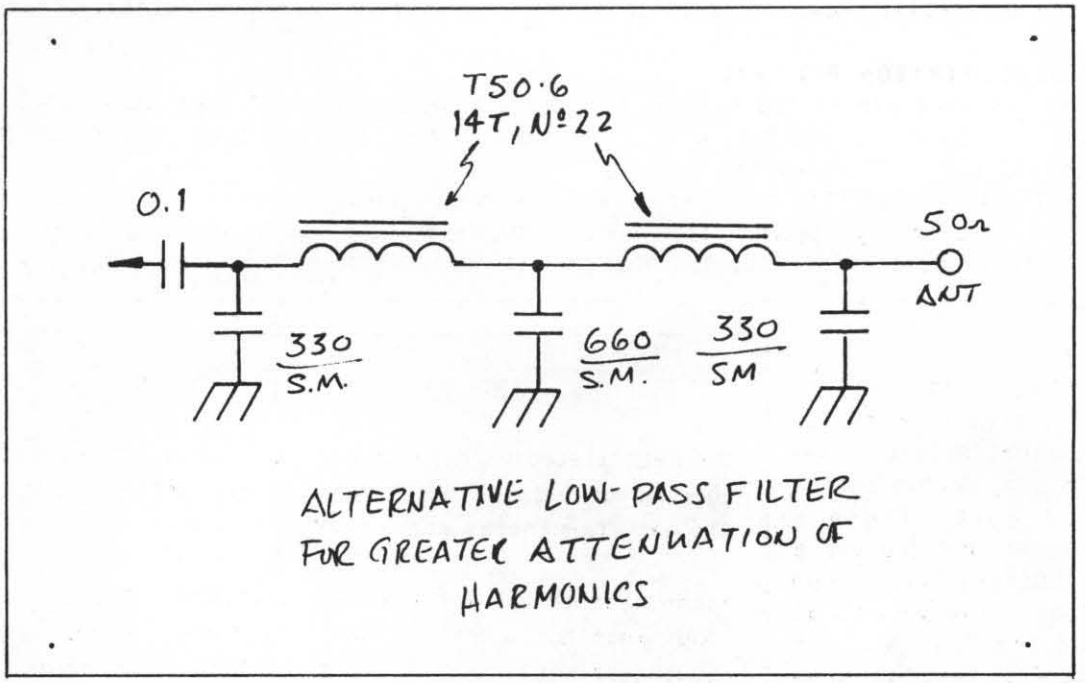
To tie up a few loose ends. I would have liked a switch to shut off the meter lamp. The crystal calibrator is not standard, but I think it should have been included in the base price. the radio is fused with the new spade-type fuse used in the new automobiles. a supply will have to be carried when going back-packing as they might be hard to find.

The Century 22 does not come with the built-in power supply as the Century 21 did, so be ready to build your own or buy one. There is plenty of room in the top of the radio to place a switching power supply. But perhaps the noise from it would drive the direct-conversion receiver crazy.

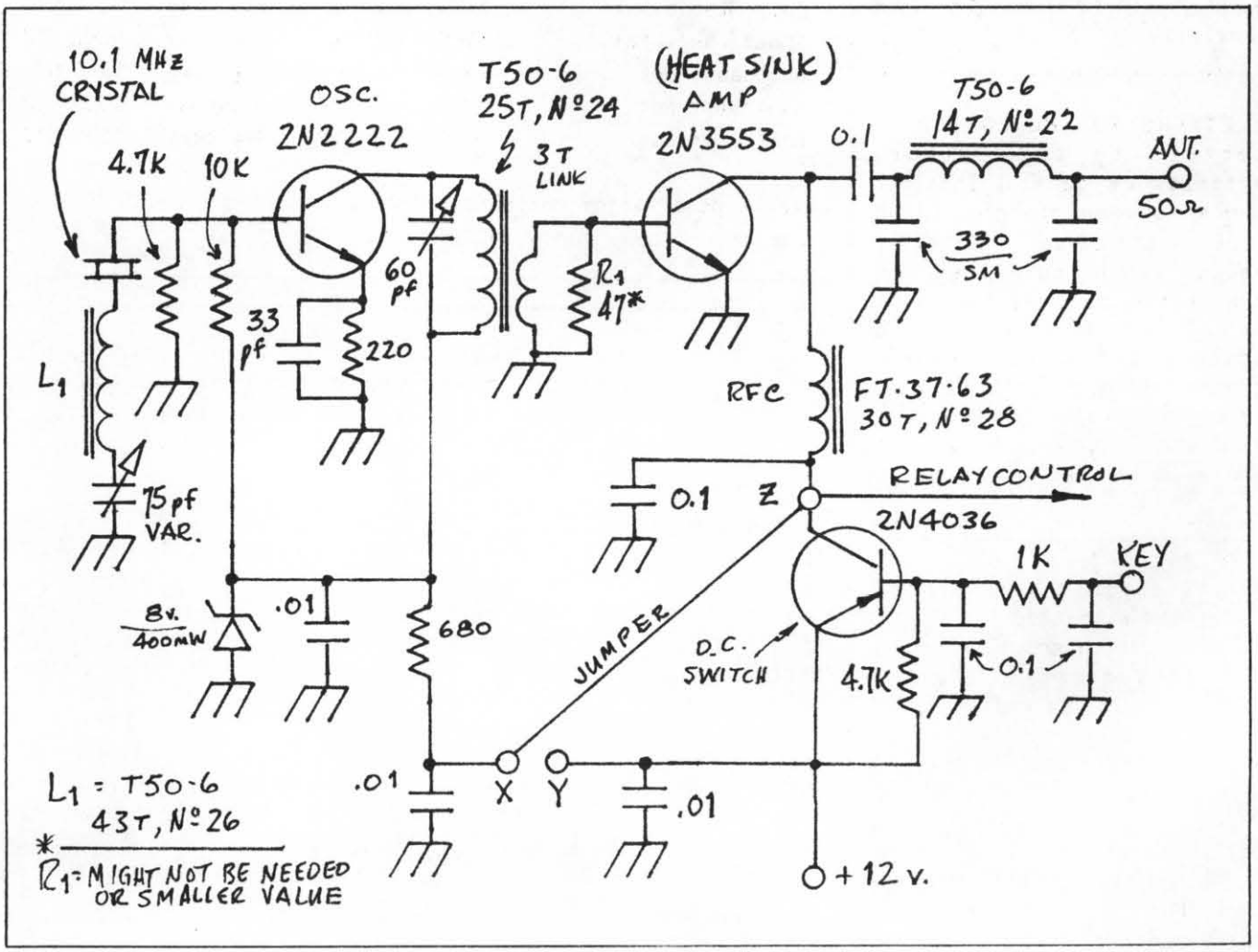
With the price tag of $389, the Century 22 comes in on the high side. the 5-amp power supply lists for $89. The crystal calibrator will set you back $29. I am sure that it will meet with tough competition from the HW-9 for about $100 less.

QRP

REPRINT OF THE QUICK AND EASY TRANSMITTER SCHEMATIC FROM THE OCTOBER, 1984 QRP QUARTERLY



ALTERNATIVE LOW-PASS FILTER FOR GREATER ATTENUATION OF HARMONICS



MEMBERSHIP

The initial membership fee of $6 ($7 for DX) covers lifetime membership plus the first four issues of the Quarterly. Membership information is available from the Secretary/Treasurer.

QRP SUBSCRIPTION RENEWAL

Subscription renewals are $5 ($6 for DX) for four issues. Notice of expiration will be stamped on the cover of your final QRP Quarterly. The subscription renewal date appears on the mailing label following the QRP membership number, i.e. 4174-1/85 means that member number 4174's subscription will expire with the 1st Quarterly (January) in 1985. Renewal and new member applications must be received by the 15th of the month prior to the next months publication to receive that issue, otherwise service will not begin until publication of the next Quarterly.

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 published in the Quarterly.

LETTERS TO THE EDITOR

Letters to the Editor, articles of general interest and announcements should be sent to the Editor. Not every letter can be published and the Editor 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 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 correspondence.

QRP ARCI NET SCHEDULE

The nets listed on the calendar are shown on the day on which they occur local time. Below is the offical listing in UTC. All net frequencies are +/- QRM.

*Transcontinental Net	14060	W5LXS	Sunday	2300 UTC
Southwest Net - 80	3560	WD6DMY	Monday	0400 UTC
Southeast Net	7030	K3TKS	Wednesday	0100 UTC
Gulf States Net	3560	W5QJM	Thursday	0200 UTC
Great Lakes Net	3560	K5VOL	Thursday	0200 UTC
Northeast Net	7040	W1FMR	Saturday	1300 UTC
Southwest Net	7030	W6RCP	Saturday	1600 UTC
Northwest Net	7040	N7DGZ	Saturday	1800 UTC

*Weekends of major contests TCN will meet one hour later, Monday 0001 UTC

QRP ARCI FIRST SUNDAY QSO PARTY

UTC	CW	SSB	NOVICE
1500-1600	14.060	14.285	
1600-1700	21.060	21.385	21.110
1700-1800	28.060	28.885	28.110
1800-1900	7.040*	7.285	7.110
1900-2000	14.060	14.285	
2000-2100	21.060	21.385	21.110
2100-2200	28.060	28.885	28.110
2200-2300	7.040	7.285	7.110
2300-0000	14.060**	14.285	
0000-0100	7.040	7.285	7.110
0100-0300	3.560	3.985	3.710

*Many foreign countries use 7.030 - check both
** Transcontinental Net

SWN-80	SEN	GSN-GLN				

MARCH 1984

Mon.	Tues.	Wed.	Thur.	Fri.	Saturday	Sunday
SWN-80	SEN	GSN-GLN		1	2 NWN-NEN-SWN	3 FIRST SUNDAY QSO PARTY TCN
4 SWN-80	5 SEN	6 GSN-GLN	7	8	9 NWN-NEN-SWN	10 TCN
11 SWN-80	12 SEN	13 GSN-GLN	14	15	16 NWN-NEN-SWN	17 TCN
18 SWN-80	19 SEN	20 GSN-GLN	21	22	23 NWN-NEN-SWN	24 TCN
25 SWN-80	26 SEN	27 GSN-GLN	28	29	30 NWN-NEN-SWN	31 TCN

Please use this form or a reasonable facsimile to renew your subscription, report change of address or call.
Send to the Secretary/Treasurer: William K. Harding, K4AHK
10923 Carters Oak Way
Burke, Virginia 22015

( ) Renewal for____yr(s) (Renewals $5, DX $6) ( ) New Member for____yr(s) (New Memberships $6, DX $7)
( ) Change of Address ( ) Change of Call - New Call:_____

Amount enclosed $_____ QRP ARCI #_____ Call _____

Name _____ Address _____

City_____ State_____ Postal Code_____ Country(if DX)_____

PLEASE MAKE YOUR CHECK OR MONEY ORDER PAYABLE TO: QRP Amateur Radio Club, International, Inc.
* * * * * PLEASE DO NOT SEND CASH * * * * *

G-QRP CLUB CONTEST

March 16 & 17, 1985

No additional details at this time. Check major amateur radio publications.

WORLD WIDE WPX CONTEST

S.S.B. - March 30 & 31, 1985
C.W. - May 25 & 26, 1985
0000 GMT Saturday to 2400 GMT Sunday

QRP section for single operator only. Power must not exceed 5 watts output. Competiting only with other QRP entrants.

See January 1985 CQ magazine, page 57 for complete rules and information.

QRP ARCI
FIRST SUNDAY QSO PARTIES

January 6, 1985

February 3, 1985

March 3, 1985

1500Z Sunday to 0300Z Monday

See Page 20 of this issue for a list of suggested times and frequencies.

QRP ARCI
SPRING SSB CONTEST

April 20 & 21, 1985
1200 UTC Saturday to 2400 UTC Sunday

Watch for complete details in the April QRP Quarterly. Remember, you must participate in this contest and the Fall cw contest to be eligible for the Triple Crown of QRP Award.

AGCW-DL QRP CONTEST

January 19 & 20, 1985
1500Z Saturday to 1500Z Sunday

All bands, 10 to 160 meters, cw only. The same station may be worked on each band for QSO and multiplier credit.

There are five classes:

- Single Operator - 3.5 watts or less
- Single Operator - 10 watts or less
- Multi-Operator - 10 watts or less
- QRO station, over 10 watts
- S.w.l.'s

Multi-operator stations may operate the full 24 hours, all other classes must take a 9 hour break.

Exchange is: RST, QSO number and power input. Add X if transmitter is crystal controlled. QRO stations add QRO.

Points: QSO with own country, 1 point. Other countries own continent, 2 points. DX outside own continent, 3 points. Crystal controlled stations are limited to 3 crystals for each band, and take double points.

Multiplier: One for each country and one for each DX contact. For scoring purposes call areas in JA, PY, VE, VK, W/K and ZS are counted as multipliers.

Final Score: Total QSO points times the multiplier on that band. Add the sum of scores from each band.

Awards: Certificates to the first three places in each class on each band.

Logs: Separate log for each band. All entries must be received by the contest manager no later than 6 weeks after the end of the contest. Send logs to:

Siegfried Hari, DK9FN
Spessartstrasse 80,
D-6453 Seligenstadt,
Federal Repbulic of Germany

Include one IRC for results.

JANUARY 1984

Mon.	Tues.	Wed.	Thur.	Fri.	Saturday	Sunday
SWN-80	1 SEN	2 GSN-GLN	3	4	5 NWN-NEN-SWN	6 FIRST SUNDAY QSO PARTY TCN
7 SWN-80	8 SEN	9 GSN-GLN	10	11	12 NWN-NEN-SWN	13 TCN
14 SWN-80	15 SEN	16 GSN-GLN	17	18	19 NWN-NEN-SWN	20 TCN
21 SWN-80	22 SEN	23 GSN-GLN	24	25	26 NWN-NEN-SWN	27 TCN
28 SWN-80	29 SEN	30 GSN-GLN	31		NWN-NEN-SWN	TCN

FEBRUARY 1984

Mon.	Tues.	Wed.	Thur.	Fri.	Saturday	Sunday
SWN-80	SEN	GSN-GLN		1	2 NWN-NEN-SWN	3 FIRST SUNDAY QSO PARTY TCN
4 SWN-80	5 SEN	6 GSN-GLN	7	8	9 NWN-NEN-SWN	10 TCN
11 SWN-80	12 SEN	13 GSN-GLN	14	15	16 NWN-NEN-SWN	17 TCN
18 SWN-80	19 SEN	20 GSN-GLN	21	22	23 NWN-NEN-SWN	24 TCN

Protective Cover - QRP Quarterly

Journal of the QRP Amateur Radio Club International