SPRAT

THE JOURNAL OF THE G-QRP CLUB

DEVOTED·TO·LOW·POWER·COMMUNICATION

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Petr OK1DKW

QRP GUIDE
1980

SPECIAL
PULL-OUT

CONTENTS

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STAPLEFORD
NOTTINGHAM NG9 8PU
TEL: (0602) 394790

Dear Member,

You will notice from the address above that G3RJV is on the move again.

At the beginning of 1980 I am to take up the post of Team Vicar for Education at St. Andrews Church Centre, Chelmsley Wood. This is a joint Church of England / Methodist venture with an exciting building and resources, so I am looking forward to beginning work in this new field.

My removal date is, as yet, not fixed, but for the purposes of club mail, please use my new QTH from Jan. 10th. 1980. Naturally I will arrange for the forwarding of mail sent to Willowdene. May I also ask for patience over mail handling during early 1980 because of the problems of moving and re-settlement.

I look forward to meeting the local club members in the Birmingham area and making contact with local radio amateurs. If you are local to the new QTH, please give us a ring.

The last three months have been very active for the club and myself. Over 75 new members have joined, bringing us to nearly 700, over 40 of these being from overseas. This issue contains our annual members callsign list. This time presented in a new form as part of a QRP Guide, which when pulled out of SPRAT can be kept by the rig as an aid to QRP operating. May I refer you to the notice about subscriptions on the back of that guide.

G4DVW and I vis ited Leicester together and were pleased to meet several members and chat about QRP. I was especially pleased to meet Chris, G4BUE, for the first time. Chris and I have been attempting a meeting for some time, always failing at the last moment. I also enjoyed a visit to the East London R.S.G.B. Group where I gave a talk on QRP and met several members

May I wish members an active and happy 1980. One of the best features of 1979 for the club has been the increased activity by members on the QRP Frequencies. So let us hope that in the coming year members will use the QRP calling frequencies and join the Activity periods to show that QRP is viable on today's amateur bands.

73 fer nw George

G3RJV

SPECIAL NOTE: John,G3DOP,tells me that the JU-6,last SPRAT is very effective on 15m as it stands by merely taking a tapping on the PA Pi net coil 2 turns down from the 20m tap, no change to receiver. If there is enough interest, we could order a batch of 21060 crystals.

A CW TRANSCEIVER FOR 20

By Frank Lee [G3YCC]

Some of the modules used to build up this rig were removed from existing equipment and others were built specially for it. This explains why different devices are used for the TX modulator and the RX mixer, the option of two different types of carrier injection oscillator (cio), and the use of an ssb type filter instead of a cw filter.

The vfo employs the colpitts circuit, with gate clamping to improve stability. Two buffers are incorporated, the second providing individual outputs to the TX and RX. An rit circuit is provided on receive: it must be correctly set up when initially aligning the rig(see later). Coil winding details for the vfo and other circuits appear in the associated diagrams. The vfo must be built in a stout metal box and careful attention must be paid to mechanical rigidity.

The RX front end employs 40673 dual-gate MOSFETS. The associated tuned circuits are peaked to the centre of the cw band with the aid of trimmers. The mixer output is link-coupled to a KVG 9 MHz ssb filter, the output from which is amplified by means of an SL612 if amplifier ic. The product detector uses a pair of BC107 transistors. Carrier reinjection is from a crystal oscillator using the upper sideband crystal supplied with the KVG filter. Diagrams of an fet oscillator and a pnp bipolar oscillator circuit are given; either can be used, or the circuit polarities can be altered to allow an npn transistor to be substituted. No audio amplifier circuit is shown , but an LM380 ic would be suitable.

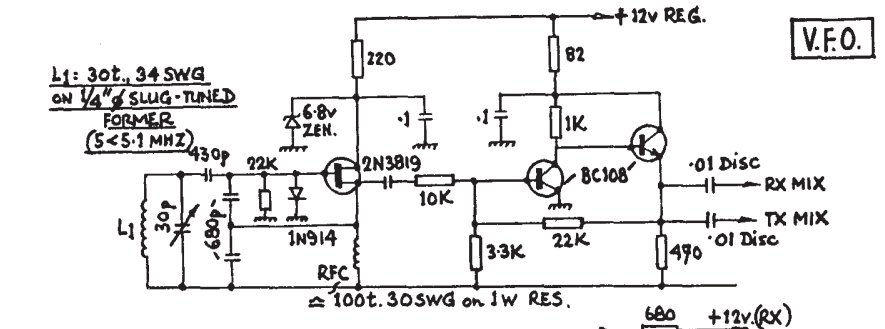
The TX mixer is an MD108, fed from the vfo and the lower sideband carrier injection oscillator. (The less expensive 40673 could probably be used as a mixer if desired). The mixer output is applied to an SL610C rf amplifier, then to an fet driver stage which drives a 12BY7A pa similar to that used in the well-known "Tucker Tin" circuit. Attempts were made to use a transistor pa, but they produced troubles which were almost certainly due to lack of previous experience with transistor pa design. A simple diode/meter circuit is fitted to provide a means of measuring relative power output. Sidetone is provided by means of an NE55 circuit. Send/receive switching is by means of a 4-pole changeover relay controlled from a switch, one contact set being spare. A reed relay is used as keying relay. With the vfo and cio frequencies chosen 80 metre operation would also be possible by changing the appropriate coils.

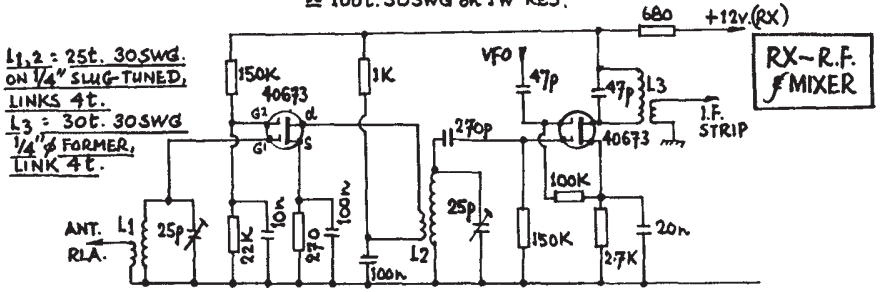
Alignment is conventional except for the rit, which must be set up as follows if it is to compensate for the frequency difference between the two cio crystals.

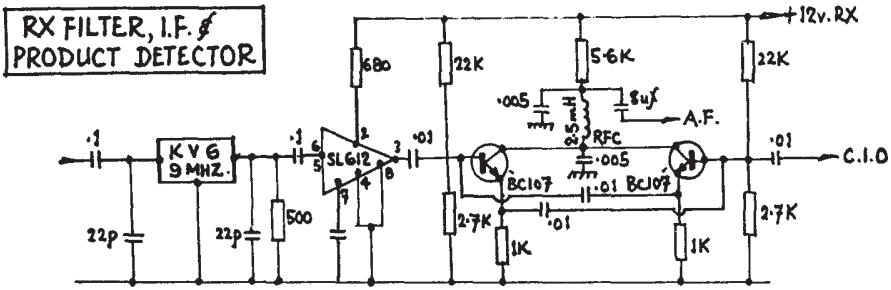
1. Using an external receiver with no aerial connected , and a signal source such as a crystal calibrator, switch the transceiver to send and zero beat it with the signal source.
2. Switch the transceiver to receive, then use the rit control to zero beat it with the signal source. Carefully mark the setting of the rit control on the front panel of the transceiver so that the setting can be accurately repeated.
3. When searching the band do so with the rit control set to the mark on the front panel. If it is required to net on to another station, tune to zero beat, then off-set the rit control to give the required beat note. After a QSO or an unsuccessful call always re-set the rit control to the mark on the front panel in readiness to zero beat with the next station to be called.

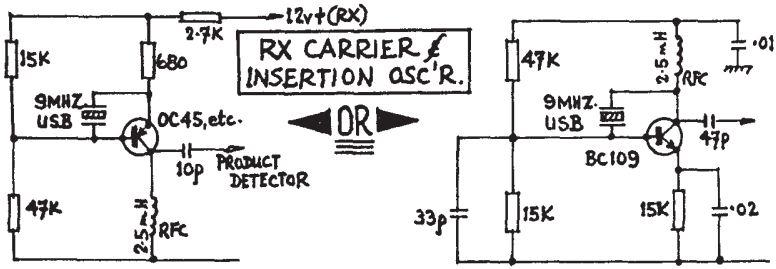
So far the best DX with this rig is when a VK answered a CQ call from G3YCC.

20M TX-RX BY G3YCC

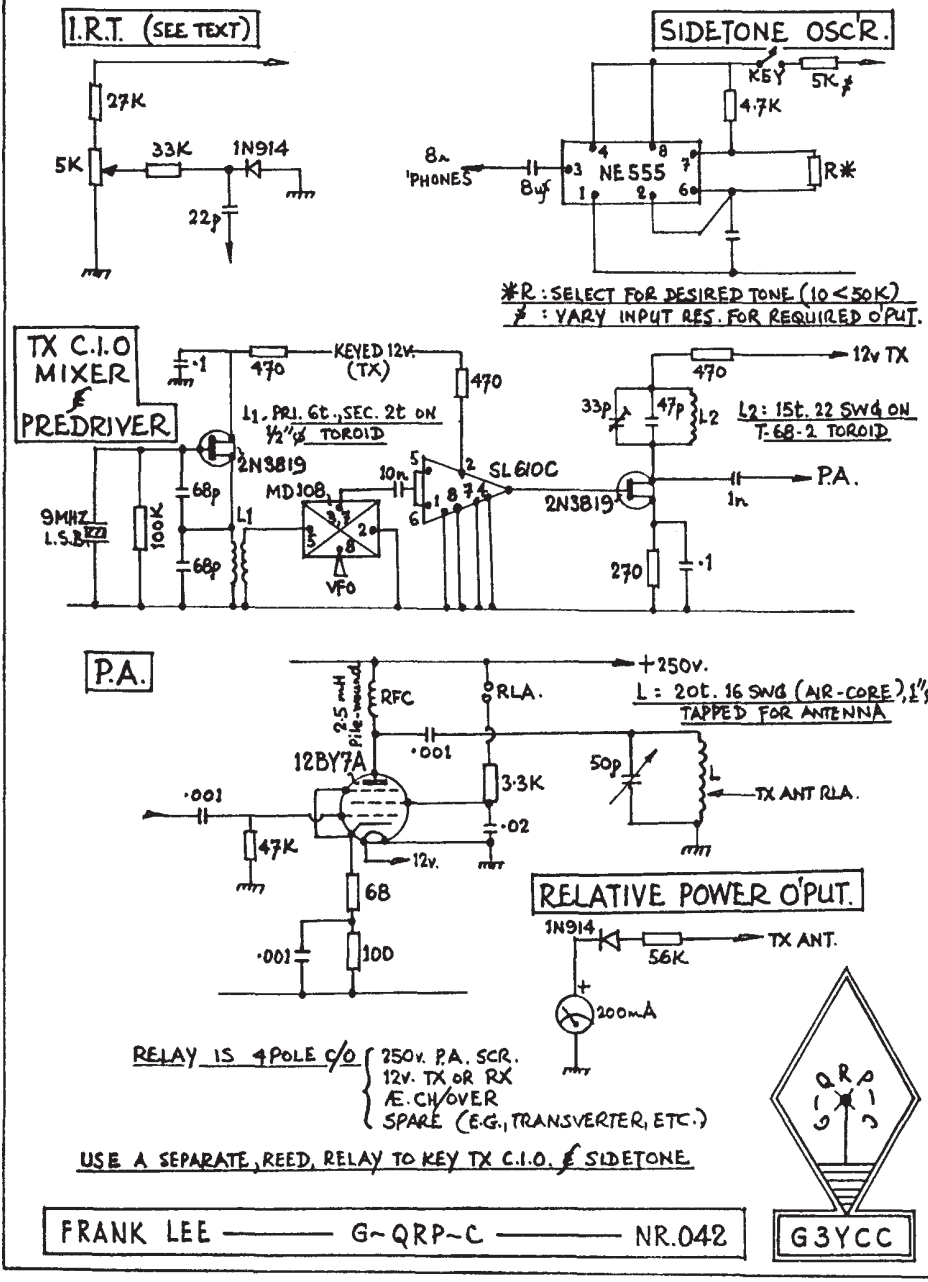








20M. TX-RX (CONT'D.)



Input or Output Power? An Appraisal of the Alternatives by Gordon Bennett, G3DNF

The publication of Adrian Weiss's article in the Summer edition of 'Sprat' gave us all food for thought, as it dealt with both the theoretical and the practical aspects of output power measurement. At a time when QRP operation is gaining increasing acceptance in amateur circles, there is undoubtedly a need to look critically at the methods used to define the performance of our equipment.

However, power whether measured as input or output is not the only factor to be taken into account when assessing or comparing results. The efficiency of the equipment, the aerial system, band conditions and the skill of the operator are just as important. In some situations they may count for more than the power alone, but paradoxically they are the hardest of parameters to define. By contrast, power can be measured but this convenient fact should not be allowed to beguile us into believing that a given number of watts is the only fair basis for comparison.

The practice of measuring input power and its use as the basis for setting limits and making comparisons between QRP stations is firmly established and widely accepted. Output power measurement also has a valid part to play, but although it gives us information about the efficiency of the PA stage of a transmitter, it cannot be said to do much more than that. The two measurements are equally valid and meaningful and they are related in the same way as the fuel consumption of a road vehicle and the power that its engine will develop under test. Thus, the fuel consumption of a Rolls Royce is known and quotable, though its makers will go no further than to describe its power output as 'adequate'!

If we measure the output power of a transmitter under test conditions, with PA tuning and coupling adjusted to optimum settings, using a well matched dummy load, we can derive a value for the PA efficiency. When the same PA is coupled to an aerial it is most likely that power transfer will be different from that under test conditions. This is due to inaccuracies in matching and loading and to losses in cables and connectors.

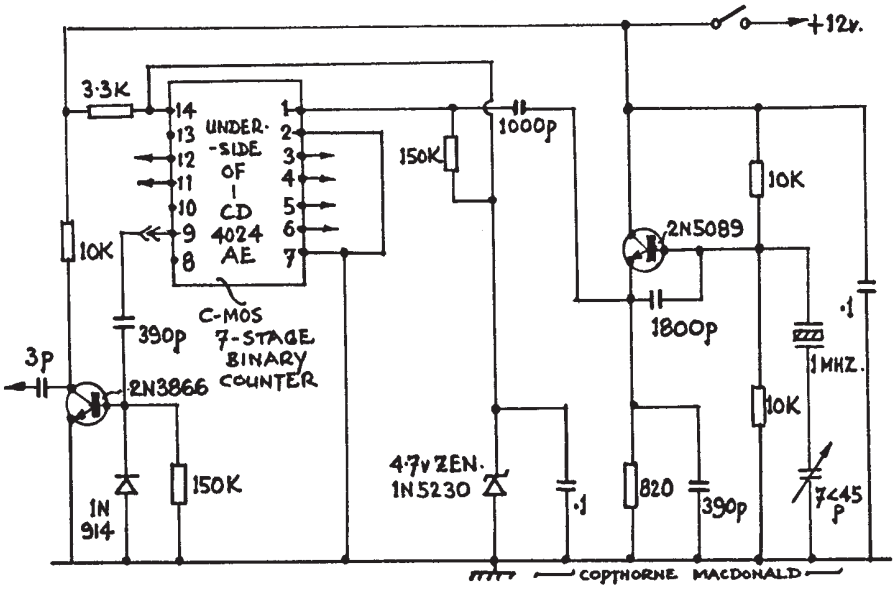
Although we believe that a certain number of watts is being generated, we are possibly mistaken. The only measurement that can then be made to reassure ourselves is the input power, in the hope that the PA is running at the same efficiency as it exhibited during our test. If the PA is to be run at a range of power levels, it will be necessary to keep at hand a calibration chart by which input can be quickly and hopefully converted to output. An alternative would be to use an in-line RF wattmeter, but this demands some sacrifice of output power, and will introduce even greater errors if mis-matched.

The advantage of input power measurements are that it is simple, direct and easily achieved using test instruments that are possessed by all amateurs. The same cannot be said of output power measurement. Input power measurement is also required as part of log keeping, at least in the U.K. If output power were accepted as the norm for contests and awards, it would exclude many operators without output measuring equipment. Obviously, a consistent practice is desirable, whether we choose input or output as the power rating. It is very frustrating to work a QRP contact, said to be running "5 watts", only to have our hopes dashed by the additional word "output". If output were to be adopted as the future basis for comparison, it would reduce the incentive to run our equipment efficiently at all times. In QRP contests we would find stations running QRO gear at reduced drive just for the day.

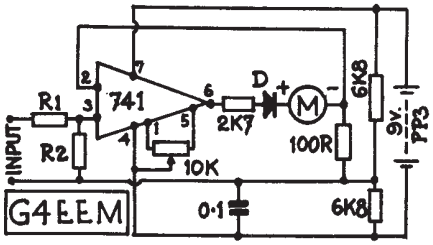
So called scientific principles have nothing to do with the input/output question. It is wholly a matter of practical expedient and simplicity. Though most of us may prefer input power as the basis of record keeping and comparison we usually have only a rough idea of the efficiency of our PAs. Adrian Weiss's article leaves us with no excuse for ignoring the question of efficiency and it is certain that the measurement of this characteristic will encourage us all to improve the performance of our gear.

Now you have read arguments for both input and output power, what is your opinion? Let us hear from you so the Club can make representations setting out the opinions of the majority of our members.

ODD-FREQUENCY XTAL. CALIBRATOR ——— VE1BFL



This calibrator is fitted into my HW8 with its output attached to point M on the HW8 pcb, but it can be used with any rig. When the base of the 2N3866 is connected to pin 3 on the CD4024AE output is obtained on the exact band edge and at each 7.8125 KHz increment upwards throughout the band (7.000 KHz, 7007.8125 KHz, 7015.6250 KHz and so on if the band is 7 MHz.) Similarly connection to pin 4 provides 15.625 KHz increments, pin 5 31.250 increments, pin 6 62,5 KHz increments, pin 9 125.00 KHz increments, pin 11 250.00 KHz increments , and pin 12 500.00 KHz increments. Excellent marker signals are provided in the 21 MHz range of the HW8, so the system should be usable up to at least 28 MHz.



Cheap Meters Again

Bob,G4EEM,offers a modified form of the G4DYF circuit in the last issue. The diode prevents M reading reverse and can be set well into zero by offset pot. The biasing of the non-inverting input means that a single battery supply may be used. Bob now has a cheap ultra sensitive field strength meter

Award News

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QRP MASTER AWARD No 2. TO CHRIS PAGE, G4BUE. Congratulations !

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QRP Countries Award. 150 G4BUE, 50 VE5JQ, OK1DKW, 25 GM3VAI,PA3AJU,WB8BHU.
Worked G QRP Club. Basic G3RJV, OK1DKW.60 G4BUE.
Two-way QRP. 20 OK1DKW.
QRP WAC. VE5JQ, OK1DKW.

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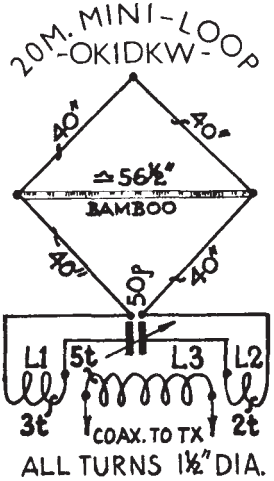


Lesser Known Antennas

No:4

THE MINI LOOP

Petr Doudera

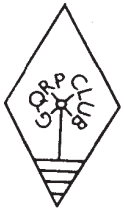
OK1DKW

This version is based on an idea by JG7UEA reported in CQ Magazine for June 1978. The original version was for 14 and 21 Mhz and it is claimed that it was 2 S-points up on a GP on 21 MHz. I modified the design and this gave problems on 21 MHz, but on 14 MHz the swr was acceptable. The JG7UEA version was made from four, 40 inch lengths of 3/8 inch aluminium tubing. The ends of these lengths are flattened and drilled so that they can be bolted together, except at the bottom of the loop where they are bolted to a small piece of insulating material. The connections to the tuned ciruit are made via these bolts, the tuned circuit itself being located in a small plastic box. A length of bamboo is used as a cross piece and the whole assembly is mounted on a short wooden pole. Capacitor C1 is 150p ,L1 and L3 are 3 turns and L2 is two turns, all 1½ inch diamater. The capacitor is used to resonate the loop to the desired band. My version was different. It was erected indoors in a ferro-concrete apartment building in Prague during last winter. The loop was made from 1mm stranded wire with PVC insulation. A 50p capacitor was used for C1. L1 and L2 were as per the **original** design, but L3 had to be made 5 turns to give a better swr on the co-ax feeder. The loop was hung up near the window , some degree of rotation being possible. Using 4w input on 14 MHz many F and G stations were worked, a clear path existing in these directions. Firing through the length of the building UA stations were worked, and also YO stations through the breadth of the building. Compared to my vertical on the roof of the building signals were 2 S-points down, but the loop was much lower and indoors. Maximum radiation was at rightangles to the plane of the loop.Tests lasted for a week.

G8PG comments. "The radiation resistance of this loop is very low, so conductor losses become very important. Using pieces of tubing bolted together is not suitable for a permanent outdoor installation because of corrosion losses in the joints. This problem can be overcome by making the loop from a continous length of good quality transmitting type co-axial cable with the inner and outer conductors soldered together; o.4 inch diameter co-ax is suitable. The connections to L1 and L2 must be carefully soldered, and the connection to the moving plates of C1 must be low loss, as all these items are in series with the loop resistance. Making L3 movable in relation to L1/L2 might help in reducing swr, and it might be worth trying a balun between L3 and the co-ax to the TX. A version with 10ft sides would allow interesting experiments on 7 MHz".

Members Small Ads:

WANTED ON LOAN - TEST EQUIPMENT MANUALS:
Heathkit, Sine/Squarewave Gen. Model IG82U (C.M.Lindars,41 Blenheim Gnds Wallington. Surrey)
Heathkit R.F. Sig. Gen. Model RF-1U (to G3RJV)
Philips Oscilloscope, Model GM5655 (to G3RJV)



QRP GUIDE FOR 1980

A SPRAT PULLOUT

International QRP Calling Frequencies

CW	SSB
3560	3690
7030	7090
14060	14285
21060	21285
28060	28885

Club Weekly Nets Every Sunday

1100 - 1230	CW	on	7030
1130 - 1230	CW		14060
1400 - 1500	CW		3560
1600 - 1700	SSB		7090

QRP DIARY FOR 1980

1.1.80	AGCW - DL Happy New Year cw Contest with QRP Section
19/20.1.80	AGCW - DL Winter QRP Contest
1/2.3.80	G - QRP - Club cw QRP Activity Week-end
29/30.3.80	CQ WPX SSB Contest with QRP Section
13.4.80	R.S.G.B. Low-Power Contest (3.5MHz)
10/11.5.80	G - QRP - Club ssb QRP Activity Week-end
24/25.5.80	CQ WPX CW Contest with QRP Section
21/22.6.80	QRP Field Day organised by QRP ARCI of U.S.A.
13.7.80	R.S.G.B. 3.5MHz Field Day
19/20.7.80	AGCW - DL Summer QRP Contest
27.7.80	R.S.G.B. 144MHz QRP Contest
2/3.8.80	G - QRP - Club cw QRP Activity Week-end
4/5.10.80	QRP ARCI (U.S.A.) Annual October QSO Party
19.10.80	R.S.G.B. 21MHz cw Contest with QRP Section
25/26.10.80	CQ WW SSB Contest with QRP Section
1/2.11.80	G - QRP - Club cw Activity Week-end
29/30.11.80	CQ WW CW Contest with QRP Section
26/31.12.80	G - QRP - Club Winter Sports Programme

Activity Weekend/QRP Sports CW:Gmt/Freq

0900 - 1000 14060	1300 - 1400 14060	1730 - 2000 21060
1000 - 1100 21060	1400 - 1500 3560	2000 - 2100 3560
1100 - 1200 7030	1500 - 1600 7030	2100 - 2300 14060
1200 - 1300 28060	1600 - 1730 28060	

G QRP CLUB Members List Nov. 1979

G2

BS
CP
NJ
BON
BOF
CAS
CAV
CCQ
CGL
CKM
CVA
CVV
CYN
FRZ
FWA
HCP
HII
HKU
HKZ
HLL

G3

CJ DVL IRM MBW RDU VTD ZNK
GB EDW IRW MDQ RFE VTT ZOF
VA ENB IVF MLC RIS WBO ZOH
ADB EPU JFM MPW RJF WYF ZPF
AHS ESB JIS MQQ RJV WFV ZPN
AIP FCK JKB NEO ROO WOV ZQA
AMF CMW JKY NHC RRD WZA ZWH
AMO FNM JSP NIJ RYP XFG ZXC
ANQ FVD JXQ NJC SGY XMI ZXK
ASE GBD KAN NPJ SMV XPM
AWO GET KDL NRO SSJ XVF
BGR GGL KFE NTM SVO YCC
BOK GQE KFS OAZ SYC YGI
BRL GSY KFZ OEP TKU YJM
BVN GWI KII OIN TML YLL
CCB HCM KPP OJM TOG YNA
CED HKD KPT OKY TPI YOV
CEL HKO KQT OSJ TVU YUQ
CWL HQQ KRR PEQ UBZ YVZ
CWX HRD LBT PKQ URU YXB
DBU HZM LDO PLB UWZ ZDE
DMC IEB LGX PQB UYM ZDR
DNF IGM LJF PTO VBS ZEE
DOP IGU LXQ PVQ VFA ZGN
DPS IOL LYK PXS VKM ZKU
DRP IQF LYE PZP VRM ZLA

G4

AL CKG DOU EOE FQE GUW
OO CIB DPY EPW FSP GWI
AEM CKI DQA ERE FST GWV
AHF CLD DQF ERO FVE GYM
ANF CLN DQP ERT FXI GYQ
ATN CLR DRB ESF FZO GZI
AYN CMY DRZ ETJ FZS GZS
AYS CQK DTP ETS GBE HAQ
BCY CRI DTE EUW GBR HED
BJS CUY DVW EYA GCU HME
BJZ CVE VXN EYE GDR HLP
BKQ CWS DYF EYS GER HNI
BLG CZB EAM EZF GHM HNR
BLM CZX EAN FAI GIE HPQ
BQC DBN EAX FBA GIU HPV
BSS DBU EBO FBZ GJA HQJ
BUE DFX EEM FCU GJW HQV
BWP DEP EFJ FEI GJY HSG
BXL DES EHT FJF GKC HSO
BXN DGX EHU FKH GMI HTP
BZB DHF EJN FLO GOF HWZ
CCB DKS EJT FLQ GOT HYY
CCW DMB EKH FMD GOY ICC
CEJ DMH ELZ FMH GRP IDG
CFW DMP ENK FMK GSA IEE
CIA DOP ENW FNL GSC IIN

G5

BH
FF
IC
LS
OW
CSU

G6

AB
AAL/T

G8

DV
IB
KB
PG
VN

G8[VHF]

AAL IUS OOB
APR JCY OOG
ASW JMO ODL
AXO KEN OQX
BVH KLO PEW
FGY KMV PRU
FHV KNA PUD
GLG KZV PWJ
GRT LVZ RVD
IGZ LXJ TBF
IQT MUA SHR

GD3

FXN

GI

2DZG
3NZZ
3VYY
3XZN
4CBG
4FFL

GW

3KMG 4FNE
3KNX 4FPR
3MXN 4GIF
3OXX 4GNB
3RFR 4HBN
3RKO 4IIR
3VAI 4ITH
3WIG 8JQF
3XNE
4CIP
4CXP
4EFR
4EWM

GW

3CIJ 4EYG
3DEX 8PG
3ELM 8WJ
3HAI 8GBJ
3YWE 8HZW
3ZFY 8PBO
8PLV

Europe

C31DV
CT4CH
DA1JS
DF5KD
DJ1ZB
DJ4HR
DJ5QK
DJ7ST
DK2PK
DK5RY
DK6AJ
DK9FN
DK9TZ
DL7DO/P

EA8OA

EI1DA
EI6BA
EIØCF

F3IM
F6FZL
FØHX

HB9AK
HB9ALF
HB9ANW
HB9BCO

IV3BOZ
I3ESX
I5WUO
I7CCF
I7NFE
I7SVY

OE1SBA

OH2KF
OH5WH

OK1DKW
OK2BMA

ON5AG
ON5LJ
ON6GA
ON6KE
ON6WJ

OZ3XH
OZ8SO

PA3ABA
PA3AJU
PAØGG
PAØYF
PAØAQG
PAØCWA
PAØCWF
PAØDST
PEØLIA

SM4DXL
SM5CCT
SM5ENX
SM6EUZ
SM6FQE
SM7BNG
SM7EHK
SM7GUY
SMØFSM
SMØGHU
SMØGKF
SMØGMG
SMØIIN

U.S.A.

1

K1DDC
K1GKR
W1EXZ
WA1JVY
WA1THQ

2

AI2J
N2AXL
W2BKH
W2BYO
W2YJR
WA2JOC
WA2LZZ
WB2EUF
WB2ONA
WB2QOH

3

W3AEC
W3FQT
WA3NWR
WA3TKU
WA3YZW

4

K4AJF
K4BNI
K4BFP
KA4KXX
WA4BTL
WD4FZU
WD4NGD
WN4AEC

5

AB5L
KA5AMD
KA5EDG
KB5B
KB5OX
WA5TFU/Ø

6

KA6FRM
W6IRA
W6PQZ
W6SKQ
W6YVK
WA6POC
WB6WKM
WD6BYN

7

K7BD
W7EL
K7BWE
WB7QWA

8

K8AEM
K8EEG
K8LJQ
K8MX
KA8BUE
KA8HAN
N8ALE
W8JGK
W8LCU
W8WCS
WB8OWM
WB8PJR
WB8BHU
WD8AZF
WD8BMQ
WD8LJF
WD8NOY

9

AA9N
AE9G
W9PNE
W9SCH
WA9FPP/1
W9KFR
WB9FRU
WB9LGZ
WB9QPS
WB9VKU
WD9CIX
WD9EAF

Ø

KØUBA
KAØDGN
WØGK
WØCGA
WØPFR
WBØHMN
WBØOKY
WBØWGS
WBØWKY

World

VE1BFL
VE3JFH
VE4QL
VE5JQ
VE7CKF

VK5ADG
VK5ME

VS5MG

ZC4AU

ZE1CQ
ZE3JO

ZL1AO
ZL1HV
ZL1BGS
ZL1BHT
ZL1BJS
ZL1BLJ
ZL2AUJ
ZL3WJ

3B8BJ

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G4CUY (SPRAT Address Labels)

IMPORTANT NOTICE SUBSCRIPTION INCREASE

After holding the present rate for two years, price increases of printing and postage now force a rise. Although the new format SPRAT is a little cheaper to produce than the A4 size, postage costs are a problem. When the UK flate rate increased by 1p, there were much heavier increases in overseas posatage. It costs 8p to post SPRAT to the UK and Europe, but 24p to the U.S.A. and 28p to some parts of the world. The club now just manages to build up funds in time for each SPRAT, but we would like to build a small surplus. Several members have asked about metal club badges, and the demand for back issues (I hold none) suggests we could attempt to produce a small book of the best of SPRAT technical articles for sale to members and non-members. The club is unable to finance any prjects like this because of initial costs. We also lose heavily on overseas cheque exchange - as high as 25% loss on U.S. Bank cheques. I urge overseas members, who cannot send Sterling, to send local paper money whenever possible. E.E.C countries can supply Giro cheques. WITH THESE POINTS IN MIND, THE NEW RATES, FROM 1.1.80, WILL BE:

UK and EUROPE £2·50

US and Others $5 cash [By Cheque $6]

Renewals to:Alan Lake,G4DVW,7 Middleton Cl. Nuthall,Nottingham.
Cheques made out:G.C.Dobbs re: QRP Club. Please quote your club number.

To aid renewal dates and avoid confusion a fixed date system will be tried for the rest of this year. Please chech your number and date:

000 - 090, 178 - 200 254 - 270, 351 - 392 466 - 521,	BY MARCH 31st
091 - 120, 201 - 222 272 - 292, 393 - 418 522 - 572,	BY JUNE 31st
121 - 154, 223 - 232 293 - 325, 419 - 444 573 - 615,	BY SEPTEMBER 31st
155 - 177, 233 - 253 326 - 350, 445 - 466	BY DECEMBER 31st

WHO TO CONTACT

G3RJV:
General Club matters,
Material for SPRAT (Technical)
Datasheets, Membership.

G3DNF:
General Club matters,

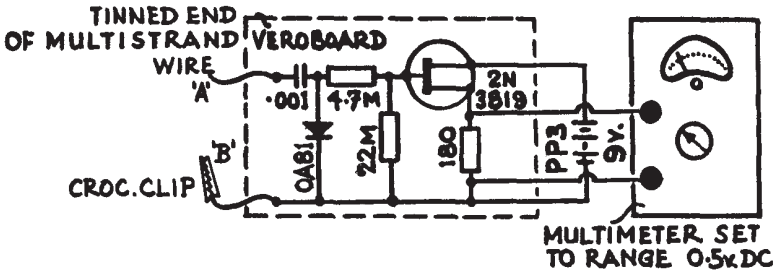
G4DVW:
Subscription Renewals,

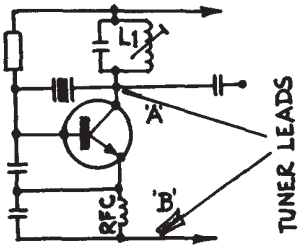
G8PG:
Award Information and Claims,

G4BUE:
Communications News,
Members personal News,

GW8PLV:
Club C.W. Training Tapes,
PLEASE QUOTE MEMBERSHIP NUMBER IN ALL CLUB MAIL.

R.F. CIRCUIT TUNING ARRANGEMENT ~ GW3ZFY





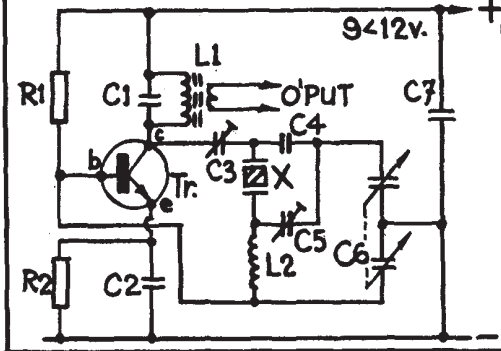
EXAMPLE OF USE OF TUNER IN PEAKING L1 FOR MAX O'PUT IN A XTAL. OSCILLATOR.

A good but simple circuit from Don.

The standing voltage across the 180 ohm resistor, with no input is around 0.45 volts

R.F. peaks give a DOWNSCALE READING.

7 MHZ CRYSTAL BENDER ~ G3XMI



~ MIKE PRIOR ~

C1=100p	R1=100K
C2=·01	R2=330
C3=5<50p	L1=SEE NOTES
C4=470p	L2= DO.
C5=3<30p	X = DO.
C6=500+500p VAR.CAP.	
C7=·01	
Tr.=BC108, 2N706 etc..	

NOTES ~ L1 TO RESONATE AT XTAL. FREQ. ~ 'X' ≏ 7·01, 7·015 TO COVER WHOLE 40m. BAND ~ L2 = 80t. 34 S.W.G., CLOSE-WOUND TIGHTLY ON 3/8" DIAMETER GLASS OR CERAMIC FORMER.

WANTED: Xtals - 10XAJ or FT243: at 7030, could swop 7000,7005 also FT243 xtals 3594,3783,8000,8412.86. Contact G3IEB (QTHR)

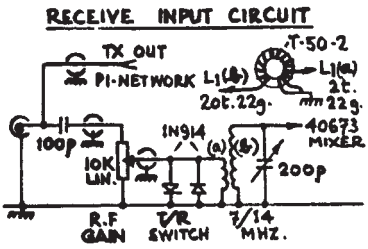
HW8 PROBLEM: GM3MXN has bad key clicks with his rig. Has tried usual filtering ideas and would be grateful for any further advice.

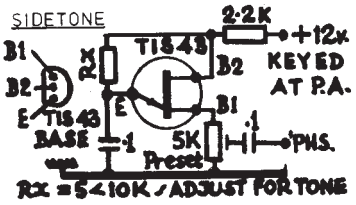
SIMPLE TRANSCEIVER ADDITIONS

Useful Additions to the JU-6 (SPRAT 20) and EBOR (SPRAT 19) which could be used with any simple transceiver based upon direct conversion.

The JU-6

By G3RJV

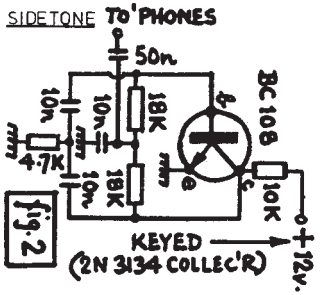


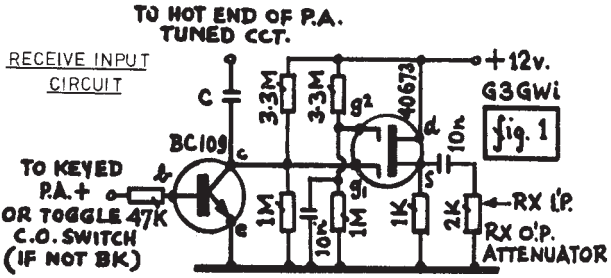


The JU-6 like many direct conversion receivers suffers from breakthrough. This RX input circuit, with inductive coupling, simple RF gain control and screened leads throughout, does help. The T/R arragement does away with manual switching (S1 replaced by diodes and S1A not really vital) However muting the RX audio stages by switching input to earth gets rid of the Key thumps on transmit. Also - try taking the RX input point from the .1uF capacitor (after the P.A.) rather than the end of the Pi-Net. This adds the Pi-Net to the receiver input circuit.

The sidetone tried on the JU-6 overcomes 'deaf keying'. It is a simple unijunction relaxation oscillator, keyed with the P.A. Rx is adjusted for desired tone and the preset feeds the audio to the phones.

The EBOR By G3GWI





This alternative input circuit for the receiver of the EBOR uses an untuned MOSFET stage. If the input is fed from the PA side of the TX output coil, this adds an extra tuned circuit to the receiver input. The BC109 acts as a diode switch for transmit/receive switching. The value of C must be adjusted in use. Too large and the losses on transmit (when it is still in circuit) are high and too low a vlaue will reduce the sensistivity of the receiver.

The Sidetone circuit of Fig.2. is a simple phase shift oscillator. This should produce a pleasant sine wave for CW monitoring which is keyed with the transmitter.

CORRECTION OF ERROR IN JU-6 CIRCUIT

ON PAGE 5 OF SPRAT 20, the JU-6 CIRCUIT, THE CAPACITOR (0.01uF) at L2A, SHOULD NOT BE TAPPED TO THAT COIL BUT CONNECTED BETWEEN THE 12v END (86 ohm resistor) AND EARTH.

NEW QRP KITS

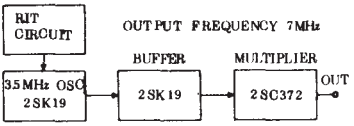
Notes by G3RJV

MIZUHO

FOR MODEL QP-7 21

VFO UNIT

MODEL **VFO-7**



★ RIT circuit included

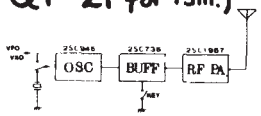
(£18-00) MADE IN JAPAN

MIZUHO

7 MHz QRP CW TRANSMITTER KIT

MODEL **QP-7**

(OR QP-21 for 15m.)



★ Simple circuit
★ Easy assembly
★ A crystal included

(£11-04) MADE IN JAPAN

For some weeks I have been testing the first of a series of QRP KITS loaned to me by the importers, Lowes of Matlock.
They are two (40m&15m) transmitters and a ready built VFO which matches either of the transmit boards. I hope that a full review will appear in RAD COM, but offer a brief outline.

The transmitter kits were easy to build, use a broadband P.A. Pi Net output and are supplied with a crystal. 7020 on 40m and the very useful 14060 on 15m - this is in fact a 7020 tripled. The kits come complete with an amusing LED tuning indicator and full instructions for alignment. Both basic kits produced very useful QSOs using my Argonaut as a receiver.

The VFO is built in a sturdy steel case with slow motion drive and dial and the parts for a R.I.T. circuit. It will feed either transmitter board and gave about two watts DC input from the 40m board and 1.8 watts in from the 15m board. It is possible to overdrive the 40m board and produce chirp, but this was easy to avoid. I used a direct conversion receiver board with the VFO/TX combination on 15m and enjoyed many pleasant QSOs. In the available time no real DX was worked, but good reports came from all over Europe and a few East Coast Ws were worked with my dipole.

Verdict: Useful, simple to make Kits, Fair price, Details from Mr. Lowes usual QTH, Watch out for fuller report, hopefully, in Rad Com.

WANTED: Loan for copy of circuit/data of ex-RAF VOM "CT54."
Paddle for El-Bug, commercial or good homebrew.
Fundamental HC6U xtals in ranges 7010-7025,14010-14025,15020-15050 and 28030-28050 KHz - Details to G3FCK (QTHR)

WANTED: Circuit for Laffayette HE80 RX - GW3ZFY, 46 Landor Ave,Killay, Swansea.

TO BUY: G[illegible](QTHR) requires any VALVE type 5.2MHz I.F. Transformer.

QRP NEWS By G4BUE

QRP SUMMER CONTEST 1979 - RESULTS

Once again Club members have shown that they are tops in QRP. Congratulations to John Spinks, G4GIE on gaining first place in Class A (power not exceeding 3.5 watts) with a score of 5500, followed by Petr Doudera, OK1DKW in second place with 3818 points and Dave Powell, G3ZXK operating as C31DV in third place with 2650 points. Other positions of Club members in Class A were G3DNF 4th 1820, I7CCF 7th 1235, PA3ABA 12th 951, G4BUE 13th 946, DK2TK 18th 680, GW8PG 20th 632, SM7BNG 26th 438, G4EJN 32nd 175 and PAØYF 35th 80. In Class B (10 watts) Club members were placed 16th VE5JQ, 21st SM7GUY and 22nd DJ5QK. Well done to you all.

CQ WW CW CONTEST 1978 (QRPp SECTION) - RESULTS

The results of the above contest appeared in the October 1979 edition of C.Q. Magazine, and again Club members appear in the results. Chris Page, G4BUE was world second on all bands scoring 192,280, being beaten by (non member) Paul Wise, OA8V with 199,383. Paul was the amateur that introduced Chris to QRP! In fifth position and second European was Petr Doudera, OK1DKW scoring 94,628, and in sixth position Bengt Eriksson, SM5CCT scoring 92,443. Other Club members were positioned 9th WA2JOC 29,402, 10th W9PNE 19,600, 11th VE5JQ 18,564, 12th HB9IK 15,908, 17th G3IGU 4,272 and 19th K8EEG/Ø 8. All members entered the 'all bands' class.

THE BENELUX QRP GROUP

In issue 11 of the magazine of the above QRP Group it is noted that the following QRP QSO parties are held :-

Sundays: 0900 on 3540 - 0930 on 7030 - 1000 on 14065 (cw)
Saturdays: 0930 on 3640 (ssb)

OCTOBER QRP CW ACTIVITY WEEK-END

Everyone agreed that this was by far the best of the three week-ends, obviously due to the improved conditions and number of members active. Willi Scherner, DK5RY showed nine QRP stations in his log, including WD9WOM on 14MHz who was running 5 watts. The new members worked took Willi's total to 26 and is now waiting for the QSL cards to enable him to claim the basic Award. John Spinks, G4GIE said he was not able to spend a lot of time on the air, but he did find time to work eight QRP stations including VE3KZ who was running one watt on 14MHz. He also worked two JA QRO stations. Jeff Pascoe, G4ELZ was another member who found the DX on 21MHz in the shape of an EA8, CT2 and several W and VE stations, unfortunately all of whom were running QRO. John White, G4BCY only managed to work three members on 3.5MHz, but as he said "I tried, where was everyone?" Reg Lyddon, G4ETJ made two QRP QSOs, and Ha-Jo, DJ1ZB had six QSOs with U.K. members on 14MHz, and could only hear weak signals from QRP stations in the U.K. on 21MHz. Paul Carter, GM3VAI was active for most of the two days, (he even sent the family out on Saturday so he could get some peace). He managed twelve QRP QSOs, and of those seven were new members for him. Paul said he heard a total of nineteen members over the week-end and his best DX was AC4X in Alabama running 5 watts. During the week-end Paul also worked three new countries for his DXCC, 3A, UH8 and EA6, so a very successful week-end QRPing for Paul. George Burt, GM3OXX was another very active member over the week-end, having 26 QRP QSOs with 18 members. He had two-way QRP QSOs with the following countries, SP, SM, OK, G, PA, GM, W, and I, and his log also shows QSOs with EA9V and VP9DR. Chris Page, G4BUE apologises for his absence on the bands, except for an hour on the Sunday morning, but the F.O.C. Dinner was held over the same week-end. Members known to have been active over the week-end included I7CCF, G4DQP, G4FAI, GM3VAI, G3RJV, G3DNF, G8PG, G4BUE, G4GIE, G4EFJ, G4ELZ, G4ETJ, G4AL, ON6WJ, GM3OXX, GM3RKO, G2CVA, G8IB, G2CP, G3HRD, GM3MXN, GM4GNB, G4DQP, G3PTO, G3HQQ, G3DOP, G3HKO, G8DV, G3ILO, G3VTT, G4CQK, G3SVO, and G3IRW. 33 members. Great show and thanks to you all for taking part. In addition there were many other QRP stations active who are not (yet) members of the Club.

STOP PRESS NEWS.....AGCW-DL QRP ACTIVITY WEEKEND.
22nd and 23rd March 1980. On International QRP Calling Frequencies.
TIMES:
80m:1700-1900 40m: 1030-1230 20m: 1100-1200 15m: 1000-1100 plus 15m: 1300-1600 10m: 1300-1600.
NOTES AND REPORTS TO DK9TZ. (G4BUE would also like Club members results)

MEMBERS NEWS

G3DOP - John McDonnell: John uses a homebrew six transistor transceiver to a 132 feet long wire antenna. His transmitter runs at 700mW input and his list of October QSOs shows many good contacts with this set up, including WB4AWH and VE3IER on 14MHz, amongst a total of 13 countries. He is also active on 7 and 21MHz, but has found 14MHz to be the best band. John is only QRV at the 700mW level and has no QRO gear.

G4GZI - Gill: Gill is one of our newer members and now gives us the opportunity to have a two-way QRP QSO with a yl. At the moment she is only QRV on 28MHz with 500mW input to a dipole. Todate a total of 14 countries have been worked, including several W and VE stations.

F6FZL - John: At the time of writing John had ordered an Argonaut, and I guess he should now be QRV with it. It would appear that he has intentions of trying milliwatt dx with it and we await his results with interest. He has just moved into an apartment which is on the top (seventh) floor and has an unobstructive take off, but feels the vertical he intends to use for the HF bands should work out well.

G4CTE - Pat: Pat is building a solid state ssb rig which he hopes to use with a trap dipole on a 36 feet mast. He has a problem with QRM from Humber Radio which is about 150 yards away from him.

G3PTO - John: John is another member who runs 700mW input from a crystal controlled BFY 51 pa on 7MHz only. His dipole at 30 feet must be working really well as he has worked W8LYO and (wait for it chaps) VK2BYO, which I think we can count as one of the best QRP contacts accomplished by members of the Club. John does admit, however, to having a good QTH, but even so QRP dx with 700mW on 7MHz is a very fine achievement.

G3CCB - Alan: Alan is active with a HW7 on all bands using a 7MHz dipole at 20 meters high and centre fed with a tuned line from a balanced coupler of his own design.

W9PNE - Brice: Brice took part in the April QSO party of the ARCI and made 10,218 points with input varying between 250mW and 4 watts. Only one European was worked. In the CQ WPX cw Contest running 5 watts output he made 62776 points and says the Summer QRP Contest was almost a washout. Brice was complaining about the heavy rain and high winds which had taken his aerial down three times, and his Hustler vertical was struck by lightning! Brice is hoping to complete his 250mW WAS in the near future.

G3DNF - Gordon: Gordon will hopefully be applying for the Club's Masters Award as he now has 69 countries confirmed, 18 on two-way QRP and 55 members confirmed.

I7CCF - Felix: Felix has been finding some of the Club members on the HF bands and has now worked 31 countries on 20 metres, 17 on 15 metres, 10 on 10 metres and 10 on 40 metres

G4ELZ - Jeff: Jeff uses the driver stage of his FT 101 to obtain 1 watt output to an indoor dipole. Contacts around Europe and with North America were made and I guess I owe Jeff an apology as he called me on 21MHz and I didn't hear him - sorry Jeff.

DK5RY - Willi: Willi had some bad luck when he fractured his right hand, but this did allow him to spend some time at home and be on the bands. He worked 54 other QRP stations during October mostly on 14MHz. In a second letter (which Willi wrote with his left hand!) he reports having worked a total of 26 members of the Club and calls every Sunday between 0900 and 1000z on 14060. In September he tried some portable activity with the HW7 and a long wire on a kite on 7MHz. He made 11 QSOs, but the wind was causing the kite to fly up and down and causing QSB! Eventually the kite came away from the antenna and was last seen by Willi at about 3000 feet and flying higher!

G4GIE - John: Our Winter QRP Contest winner is active with a HW8, 12 volt battery and a Joystick. John was pleased to make his first Atlantic crossing on two-way QRP with VE3KZ. John mentioned the HA QRP 3.5MHz Contest which unfortunately we were not aware of. I should be interested to see the results and for the dates of next years contest if anyone can oblige, in order that we can publicise it as another QRP event.

G4BCY - John: John says he gets more satisfaction from his 1 watt of rf on 80 metres than from the QRO rig. He uses a Swedish design transmitter with a 12 volt HT and the Young DC receiver all in the same box - sounds as though that would make the basis of an interesting article for Sprat.

K4AJF - Bill: Another new member is active with a HW8 to a tri-band yagi about 12/13 meters high. He has an advanced class licence and his wife is licensed as K4QHD and his daughter as KA4KTY. Bill also has a TS 120S for QRO work at 100 watts.

DJ1ZB - Ha-Jo: The non-appearance of Ha-Jo during the August activity week-end was due to him being in Nigeria. Unfortunately he was not able to get a 5N call.

GM3VAI - Paul: Paul has visited George (GM3OXX) and seen his homebrew equipment and his Milliwatt Trophy which he says are both 'very impressive'. Paul has worked 52 countries and with regard to the activity week-ends makes the comment that out of a membership of 615, not very many members were active!! By the way Paul uses a HW8 (with 3N201 rf amp), and a 14 AVQ. He overheard I7CCF (Felix) working TG9ML and as he says 'Pretty good'.

GM3OXX - George: George has been continuing to work the dx in the shape of KG6, HS1, JW, to make 123 countries worked. In addition he has worked many W, JA and ZL stations so George's homebrew equipment and antennas are still working as good as ever. I think everyone in the Club will join me in congratulating George on being awarded The Jack Wyllie Trophy for 1979. The trophy is awarded to the Scottish RSGB member thought to have done most for Amateur Radio in Scotland. You have to be nominated by five RSGB members and no doubt George's fine QRP achievements helped him to be nominated. The trophy stands 12 inches high and he is talking about getting a bigger t.v. set, as it isn't large enough to take his new trophy together with the Milliwatt Trophy and the Masters Award. I guess that is the price one has to pay for success George!!

G3RJV - George: George has been on the bands as GW3RJV/P with a PM2 fed via a L match to a wire about 90 feet long and about 20 feet high. Although George was not able to work out of Europe, he did work OZ on the last day of his stay to complete 25 countries. In addition he worked several Club members on 7MHz. He had a sked with George (GM3OXX) one evening, and the following morning found the reason that he didn't make it. The antenna had blown down!

G4BUE - Chris: Your scribe has been working one or two new countries including the 3C1AB and VE1CR dxpeditions, the latter on four bands. During the 21MHz cw contest he found conditions first class and worked KL7 and KH6 in addition to W1 through WØ. At the time of writing he is half way through a five week training course at work and is taking the opportunity to catch up with admin and QSLing. An article (or two) on QRP is also planned for some of the other magazines.

Many thanks indeed to all the above members who either wrote or passed details of their activities over the air. This column can only exist with all your help, so please let G4BUE, Chris Page have your news, views, equipment and anything else of interest to your fellow Club members. Thanks are also given to those members who have written on the subject of output/input power and they will be published in the next edition together with those received as a result of Gordon's article in this edition.

CHANGES OF QTH. The Following are members new addresses:

024	G3IQF	2 Fieldhouse Way,Marlow,Bucks.SL7 1PF.
043	G3YUQ	25 Elmsdale Rd.Wootton. Beds.
122	G2CVA	20 Chalkwell Ave,Westcliff-on-sea,Essex.SSO 8NA.
138	G4DPY	Holmefield,TreswellRd.Treswell,Retford.Notts.
190	GM4EWM	14 Duncan St.Banff.Banffshire.AB4 1EQ.
298		69 Trafford Park,Penrhyn Bay,Llandudno.Gwynedd.LL30 3HD.
302	G4DVI	1 Wingate Rd,Heaton Chapel,Stockport,Ches. SK4 2RJ.
312	G3YVZ	19 Tenth Ave,Heaton,Newcastle-on-Tyne.NE6 5XU.
338	WB2QOH	51 Ridge Rd,Poughkeepsie,NY 12603. USA.
473	G4HNR	112 Fir Trees Ave,Lostock Hall,Preston. Lancs.
509	F6FZL	Residence Hiruena,Rue du Moulin Barbot,Anglet 64600.France.
550	G4HSO	Rumaillah Radio Station,Cable and Wireless Ltd, P.O. Box 14. Doha, State of Qatar. Arabian Gulf.
598	G3VTD	36 Hadleigh Rise,Pontefract. W. Yorks.

NOTE:

451 Add HILTON before Derby in QTH.

NEW CALLS IN THE CLUB

083 NOW G4ITC 252 NOW G4IMH (ex G8IUS) 258 NOW G4IVJ (ex G8KLO)

Congratulations to all the above three new calls.

RESIGNATION

031 G3LGX has resigned membership for personal reasons.

PLEASE QUOTE CLUB MEMBERSHIP NUMBER WHEN WRITING TO CLUB OFFICERS.

NEW MEMBERS

616		E.R.Ibrahim, 23 Marlow Bottom Rd., Marlow, Bucks, SL71AJ.
617	GM4DKL	George Pople, 25 Cromarty Dr., Milton, Invergordon, Ross-shire
618	GM6EUZ	Axel Christensen, Ekhagen Lund, 44020 Vargarda, Sweden.
619	G4BLM	Norman Burton, 'Windermere', St. Johns Rd., Stalham, Norfolk.
620	G2AXU	Kenneth Mallett, 23 Bexley Lane, Sidcup, Kent, DA14 4JW.
621		Ray Bethell, Labour Construction Unit, Ministry of Works, P.O. Box 20, Maseru 100, LESOTHO.
622	G5CSU (K7YHA)	Richard Arland, 10 Apple Close, Lord's Walk Estate, RAF Lakenheath Camp, Brandon, Suffolk, IP 279 PJ.
623	SM7GUY	Ingar Lagerholm, Konsultgatan 5, 214 69 Malmo, Sweden.
624	G3MPW	A. Walker, 14 St. John's Dr., Scawby, Brigg, S.Humberside.
625		G. Waywell, 106 Arran Ave., Blackburn, Lancs.
626	G3CCB	A.Chester, 3 Rowanside, Presybury, Cheshire, SK10 4BE.
627	G3ASE	H. King, 7 Needingworth Rd., St. Ives, Huntingdon, PE17 4JN.
628	GW32FY	Don Benham, 46 Landor Ave., Killay Swansea, W. Glam., SA27BP.
629	G4HQJ	William Matcham, 6 Joyes Close, Folkestone, Kent, CT19 6HN.
630	G3ZXC	George Earnshaw, 12 Withy Parade, Fulwood, Preston, Lancs.
631	AI2H	Rev.Barry Ryan, 2609 East 19th Str., Brooklyn, NY 11235, U.S.A.
632	PAØCWA	P. van Veen, Ericalaan 35, 4621 Ec Bergen op Zoom, Holland.
633	VK5ADG	Doug Adam, 73 Maxwell Rd., Ingle Farm, Adelaide, 5098.
634	G8PEW	John Finley, 70 Edinburgh Ave., Gorleston, Gt. Yarmouth, Norfolk
635	G3NJC	William Cox, 41 St. Annes Rd., Doncaster, Sth. Yorks. DN4 5DZ.
636	G4DHF	David Johnson, c/o 'Bank Flat', 8 North St., Bourne, Lincs.
637	G8TBF	Robert Jenkins, Hodsock Park, Langold, Worksop, Notts.
638	SM5JBM	Ken Linderhed, Selkammargatan 15, S-724 81 Vasteras, Sweden.
639	G8BVH	Brian Hick, 14 Elizabeth Dr., Ferrybridge, Knottingley W. Yorks.
640	ON6KE	August Kegelaers, Kernenergiestraat 7 Box 6, B-2610 Wilryk, Belgium.
641	WDØCGA	Daniel Alit, 2511 Lynn Circle, Lincoln, NE 68506.
642		Daniel O'Connell, P.O. Box 88, Winhall Hollow Rd., South Londonderry, VT 05155, U.S.A.
643	W2YJR	Jack Lavigne, 26 Franklin Ave., Troy N.Y. 12180 U.S.A.
644	WA3YZW	Henry Ford, c/o Thomson KcKinnon, 301 Fifth Ave., Pittsburgh PA 15222 U.S.A.
645	N8ALE	Don Heise, 404 N. Main, Scottville, Mich 49454, U.S.A.
646	G4ANF	Walter Cartlidge, 73 Main Rd., Wybunbury, Nantwich Ches. CW5 7LS
647	G2CYN	Myles Hely, 25 High St., Olney N. Bucks.
648	G2CCQ	William Pollard, 26 Basilon Rd., Bexley Heath, Kent, DA7 4RG.
649	WA5TFU/Ø	Jeeey Felts, 102-4 Sherwood Circle, Minot AFB, N. Dak. 58704, U.S.A.
650	WBØOKY	Wayne Haggarty, 5410 Allison 307, Arvada, Colo. 80002.
651	I5WUO	Leonardo Boselli, v.D. Comparetti 26, I-501 35 Firenze, Italy.
652		Wm. Hansen, 747 Sunset Drive, Glenwood, IL 60425, U.S.A.
653	WA3TKU	Norman Shuey, 101 S. Enola Drive, Enola, PA 17025, U.S.A.
654	WB2ONA	Warren Whelan, P.O. Box 142, Sayreville, N.J. 08872, U.S.A.

655	KA4KXX	Walter Legan, 141 Christina Blvd., Lakeland, FLA. 33803, U.S.A.
656	ON6GA	Andre Godart, 46 rue Pasteur Buse, 7240 - La Bouverie, Belgium.
657	G4FST	David Gibby, 4 Cricket Cl., Mudeford, Christchurch, Dorset.
658	KA6FRM	Mrs.Beverley Rudley, 5103 Leigh Ave., San Jose, Cal. 95124,USA.
659	GM4ITH	Thomas Henderson, 9 Pendreich View, Bonnyrigg, Midlothian.
660	KAØDGN	Nate Bushnell, 7175 S.Grant St., Littleton, Colo 80122, U.S.A.
661	SMØFSM	Per Hansson, Langseleringen 47, S-16229 Vallingby, Sweden.
662	KA8HAN	Thomas Hauff, 1143 Florida Ave., Akron Oh. 44314. U.S.A.
663	WD9CIX	James Sieja, 2541 West Belden Ave., Chicago, Ill. 60647, U.S.A.
664	OK2BMA	Pavel Cunderla, Slunecna 4558, 76005 Gottwaldov, Czechoslovakia.
665	K1GKR	Richard Moore, 16 Creeper Hill Rd., North Grafton, Mass 01536, U.S.A.
666	KB5OX	Dr.Tom Coffin, Rt.3 Box 68, Idabel, Ok. 74745, U.S.A.
667	G4FMD	Malcolm Connah, 11 The Maltings, Great Dunmow, Essex, CM6 IBY.
668	K4AJF	William Hicks, 5257 Rainey Ave North, Orange Park, FL. 32073, U.S.A.
669	AB5L	Michael Hopkins, 4040 Orlando Ct., Dallas, Tx. 75211,USA.
670	G3SSJ	Richard Farley, Badgers, The Dean, Alresford, Hants, SO24 9BH
671	CT4CH	Bengt Johansson, Rua David de Sousa 6-1-DTO, P-1000 Lisboa, Portugal.
672	G4IIN	Norman Evans, 56 Homerton Rd., Pallister Park Estate, Middlesbrough, Cleveland.
673	GW3DEX	F.Howard, 7 John Lewis St, Wakin, Milford Haven, Dyfed.
674	KB5B	Kirk Godfrey, 133 Hedgerow Lane, Lewisvills, Tx. 75067, U.S.A.
675	WBØWKY	Lawrence Weucker, 8035 Wynwood Dr., St. Louis, Mo.63123 USA
676	G8SHR	Mark Goodfellow, 99 Somerset Rd., Knowle, Bristol 4
677	WDBYN	Ken Hollander, P.O.Box 49395, Los. Angeles, Cal.90049, U.S.A.
678	KA5AMD	Leo Delaney, 22527 Millgate, Spring, TX.77373, U.S.A.
679	W2BKH	H.Geijenhoner, 120 ishakill Rd., Albany, N.Y., U.S.A.
680	WA9KFR	W.Stasiowski, 337 Parkway Ct., Port Washington, Wis. 53074,USA.
681	NZAXL	Gary Long, 215 Main St., Hightstown, N.J. 08520, U.S.A.
682	KA5EDG	Bill Bergenron, 405 Dilton Ave., River Ridge, LA 70123, U.S.A.
683	WB9VKU	Harold L. Hart, 1054 Green St., Henry, Ill.61537, U.S.A.
684	K1DDC	Robert Turnbull, 9 Canonicus Ave., Newport, R.I.02840, U.S.A.
685		Nick Baga, Jr., 1317 SE 31st., Albany, OR 97321, U.S.A.
686	VE3JFH	Ed Shields, 412 Talfourd St., Sarnia, Ontario, Canada, N7TIR6.
687	WØGK	Charles Files, Box 33-G, Hedmitage, 65668, U.S.A.
688	G3AMF	Menneth Thompson,28 Dover Rd., Wanstead, London E12
689	G4BLG	Albert Head, 19 Brodrick Grove, Abbey Wood, London, SE2 05R
690	GW3YBB	A.Thomas, 7 St. Martins Park, Haverfordwest, Dyfed, SA61 2HP.

WANTED: VT70 (6F7) valve for a BC348L, also circuit or handbook for the same on loan. G4GDR (QTHR).