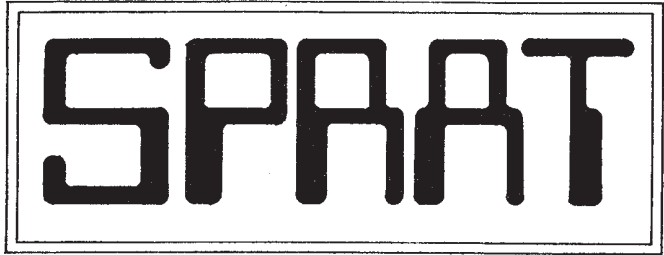
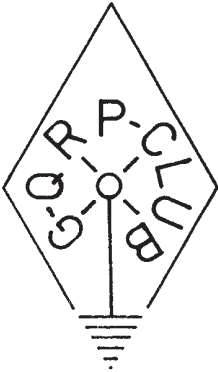


REV. G.C.DOBBS [G3RJV] 131A. MANSFIELD ROAD, NOTTINGHAM

# Devoted to Low Power Radio Communication

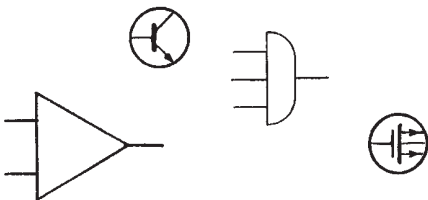


December 1977

**BUMPER**

**CIRCUIT**

**ISSUE**



Issue 11/12.

SIMPLE SPEECH PROCESSOR.  
 THREE WAY A.T.U.  
 MODS & ADDITIONS TO THE ZVC BOARD.  
 TRANSMITTER FOR THE VALVE PAN.  
 QRP S.W.R. INDICATOR.  
 6K8 QRP TRANSMITTER.  
 2 el. 2M. BEAM.  
 SIMPLE AUTO KEYS.  
 THRESHOLD GATE NOISE LIMITER.  
 THE "PORTATEST".  
 PIN DIODE ATTENUATOR.  
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QRP NEWS - MEMBERS NEWS  
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 OUR Q.R.P. DXCC MEMBER.

# S.P.R.A.T. Journal of the G QRP CLUB

Rev.G.C.Dobbs[G3RJV] 131a Mansfield Rd. Nottingham. NG1 3FQ.

Tel: Nottingham 411546.

December 1977.

## EDITORIAL NOTES:

Once again members have had to wait for an issue of SPRAT. My change in QTH, which for rather complex reasons is short term did result in the Summer issue being produced in the autumn, so the problem of when the next issue should appear was raised.

In September the club funds were in a rather sad state - see the item on club finance elsewhere in this issue - so to restore timing sequence and avoid extra costs, this special issue of SPRAT as been produced. It is intended as a CIRCUIT ISSUE and gives 12 complete constructional projects for those cold winter evenings.

Because of my sojourn into the city centre for a while, and the pressure of work, very little operating has been done at G3RJV, but I hope to put that right soon. Although most of my available amateur radio time seems to be taken up by club matters.

Alan Lake, who has been handling subs renewals is to become Hon. Treasurer of the club. Quite how this will finally work in practice Alan and I have yet to decide, so more news later. Alan not only deserves thanks for his work with the renewal of membership, but he has been a great help in the collation and stapling of each issue of the last two SPRATs. This is an irksome task for one and Alan has been a great help. I think we should also continue to thank Connie Wade G4CUY and Gwyn Williams, G4FKH for their help with preparing address labels and datasheets.

The membership has grown very well since the last issue and now has gone over the 350 mark. Some of this is thanks to the fine article by Gus, G8PG, in the Short Wave Magazine, a mention of the club by K8EEG in CQ and a mention in the Swedish magazine QTC. I think this shows that there is probably still quite a lot of potential membership for the club in the amateur radio world.

I hope that during the winter months members dust off their soldering irons and make good use of the cold evenings, perhaps using some of the ideas in this issue. Naturally I will be very happy to receive any practical articles for SPRAT - no great literary merit is required, a circuit and notes is quite adequate.

Let us hope that 1978 will be another good year for QRP work, and that activity amongst low power operators will be at an all time high level.

73 for '78,

  
G3RJV.

## SUBSCRIPTION RENEWALS:

All subscription Renewals (please note new rate of £2.00 - see elsewhere this issue) are notified by club number sequence after each SPRAT issue. Please mark cheques - G.C.Dobbs re: QRP Club - Send to : Alan Lake, G4DWW, 7 Middleton Close, Nuthall, Nottingham.  
SUBSCRIPTIONS NOW DUE: 155-177 and 233-232 (unless paid this year)  
SUBSCRIPTIONS DUE BEFORE EASTER: 0-90 and 178-200 and 254-270

# MEMBERS NEWS

DM2DTG writes to describe his QRP operation, with a station photo which alas is too dark to reproduce in SPRAT. With a 80m rig, running between 5 and 9 watts - homebuilt - 31 EU countries have been worked since 1972, with a couple of AU9 QSOs. The receiver is a 7 transistor superhet with 4m L.W. about 8m high. In the summer DLGCV QRP Contest operation was from the club station DM5LG with a W3DZZ antenna for a score of abt 10,000 points.

G4EUW, having moved house, is active on 160m into a loaded whip. Bruce suggests that there are quite a lot of useful quiet spots for QRP work around 1900, but the usual QRP spot at about 1850 is too busy with commercial traffic.

G2BS, one of the original club members is moving away from the HF bands onto more 2 metre work. He is interested in club contacts on 2m SSB. Chas is active most nights at around 1800-2000 and hopes to see more members on the band. He would like to correspond with any members on the subject of VHF.

GM3OXX is at it again! George has just built another transceiver, this time for CW only, with amazing specifications. In the first two days of testing the new rig, his couple of watts into a dipole QSOed W8MSS, WA2ZWH, K1TVM, JA1YXP, JR1RNC, VK3MJ, JA2HNP, VK2APK, KV4AA, W3UM, JA1OHD etc.

W6IRA mentions working JA1BN on 20m who was using 1 watt - Gary was QRO for that one. Gary does run QRP on 40m with a transmitter from the Caringella book Transistorised Amateur Radio Projects (Sams) with a regenerative receiver. Best Dx with this setup is JA with a 40m ground plane on the roof. Gary wants hints about finding VT for WAS on QRP or QRO!

MEET THE MEMBER: Peter Lumb, G3IRM.

Peter is aged 55 and retired from the water industry under a recent reorganisation, having been treasurer of the West Suffolk Water Board. Linc'd in 1952, Peter is the contest manager for T.O.P.S. R.S.G.B. QSL Bureau submanager for G3IAA-G3KZZ. He is also a member of the Amateur Radio Mobile Society with WAC mobile and 111 countries worked and 75 confirmed. He has just begun QRP work with 4 watts. Peter has just completed a morse decoder which takes code from key or receiver to a V.D.U. printout, upto 1000 letters or more. Peter also makes a good mention of the new ARRL Book: Solid State Design For the Radio Amateur

QRP WORK ON THE MAP.

Recognition of QRP work seems to grow. The RSGB have invited me to write a few words on QRP for their new Amateur Radio Operators Handbook, and have requested the GM3OXX photograph for the new issue of the Guide To Amateur Radio. The magazine Undercurrents, an alternative technology publication have written for back copies of SPRAT for an article on amateur radio they intend to publish shortly.

\* \* \* \* \*

MEMBERS ADS:

G3YCC, 8 Westland Rd. Kirkella, Hull, has some HRO coil packs for sale. Bandspread for 160 and 80m and G.C. for 7-14.4MHz. at £3.50 for the bandspread coils and £1 for the G.C. coil.

Have you noticed the V.H.F. front end units and I.F. filters sold by J.Birkett of Lincoln, with data for conversion to 2 metre use? An advert appears in this issue and the Spalding Radio News gives good reports of the use of these units.

QRP<sub>p</sub> DXCC #1 ON SSB DEC.1975



# W6PQZ

STATION	
<b>G3RJV</b>	
DATE	GMT
RST	MC
MODE	QSL

RIG	POWER	ANTENNA
SOLAR POWER TEN TEC ARGONAUT	<b>5</b> WATTS P.E.P	4 EL. YAGI UP 70 FEET ON HILLTOP

W/VOXAM AUDIO  
PROCESSOR

**JOHN K. AKIYAMA**  
1161 North Ridge Place  
Monterey Park, California 91754 U.S.A.  
MEMBER SO. CALIF. DX CLUB

We are pleased to welcome W6PQZ to the club. John was the first person to claim QRP DXCC in the form of a splendid trophy inspired by K8EEG. John's present score on QRP SSB is an amazing 179/158 for DXCC and 39/35 for WAZ. He has recently wkd JT1AN and WB7TKB/SU in the Sinai for his zones 23 and 34. Since November John has been using a Solar Cell PSU and achieved WAC in 5 DAYS with Solar Power!

He also mentions Ms. Marion Lister who recently operated on a Kermedic Island DXpedition and shows a positive Attitude to working QRP stations. On this DXpedition she frequently gave calls for QRP stations only. As John points out, Marion should be praised for this consideration and we hope that it may begin a trend in DX working.

John will monitor the QRP Frequencies from time to time on CW at around 1500-1600 GMT, looking for UK contacts, and invites members to look for him at these times.

I hope that John will supply further details of his Solar Powered work for future issues.

## J. BIRKETT

## Radio Component Suppliers

25 THE STRAIT . LINCOLN . LN2 1JF

Telephone: 29787 \*20p P/P

6 ASSORTED 80m. 10X CRYSTALS for £2.16 GLASS WIRE ENDED CRYSTALS 28 kHz, 28.5 kHz Both 50p each	12 ASSORTED BRANDED N CHANNEL FETS £1	SPECIAL 10X CRYSTAL 100 kHz plus 1 MHz with COSMOS Circuit For Calibrator £2
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FT 243 CRYSTALS 8040, 8100 at 75p, 7630, 7720, 7900, 7966.7, 8166.7, 8111, 8100, 8166.7, 8068.3, 8081.3, 8050, 8716.7 kHz. All at 40p each.  
WIRE WOUND VARIABLE RESISTORS 1.2K & 6 Watt at 22p  
TANTALUM BEAD CAPACITORS 1uf 35v.w., 33uf 35v.w., 47uf 35v.w., 10uf 50v.w., 22uf 35v.w., 33uf 16v.w., 47uf 16v.w., 47uf 35v.w., 5uf 25v.w., 6.8uf 25v.w., 8.2uf 35v.w., 10uf 25v.w., 15uf 20v.w., 20uf 6v.w., 22uf 16v.w., 33uf 25v.w., 47uf 6v.w., 68uf 3v.w. All at 8p each  
50 BC 107-8-9 TRANSISTORS. Untested Assorted for 57p  
100 POLYSTYRENE CAPACITORS. Assorted for 57p  
VARI-CAP DIODES 8A 103 at 20p, 88 121 at 15p  
SOLDER-IN FEED THRU'S 6.8uf, 300pf at 100pf at 20p dot.  
FERRANTI ZTX 108 TRANSISTORS at 7 for 50p  
TEXAS SCR TIC 45 200 PIV 300mA at 18p each  
SILICON STUD DIODES B1X 38-300 100P/6 AMP at 15p each  
UNMARKED 10 AMP DIODES 100 PIV at 15p, UNMARKED 100 PIV 15 Amp at 15p, 100V 20 Amp at 25p  
OP-TO ISOLATORS IL-74 with Data at 30p  
COMPRESSION TRIMERS 10uf, 30uf, 50uf, 100uf. All at 6p each  
PHOTO TRANSISTORS at 15p, PHOTO DARLINGTONS at 25p  
ITT NPN 300 MHz TRANSISTORS. Type TM11 at 24 for 60p  
GLASS WIRE ENDED CRYSTALS. 28 kHz at 50p, 28.5 kHz at 50p  
20 ASSORTED VARI-CAP DIODES. Untested for 45p  
5 GANG VARIABLE CAPACITORS 250 + 250 + 20 + 20p at 75p  
BELLING CO-AX PLUGS at 15p. CO-AX SOCKETS at 15p  
6 to 1 FRICTION SLOW MOTION DRIVE at 55p  
ELECTROLYTICS. Screw Terminal Type. 680uf 160v.w., 41 x 11" at 40p, 3300uf 63v.w., 41 x 11" at 35p, 4700uf 100v.w., 41 x 7" at 41, 15,000uf 60v.w., 41 x 7" at 41, 33,000uf 16v.w., 41 x 7" at 75p, 47,000uf 100v.w., 41 x 7" at 75p. Tag Ended Type. 500uf 70v.w., 1.5/16 x 1" at 30p, 500uf 100v.w., 23 x 11" at 30p, 1000uf 100v.w., 41 x 18" at 60p, 3000uf 25v.w., 41 x 11" at 50p, 4700uf 25v.w., 23 x 11" at 50p, 5000uf 30v.w., 4 x 11" at 80p, 500uf 63v.w., 22uf 63v.w., 22 x 20p, 330uf 63v.w., at 20p, 330uf 63v.w., at 20p, 470uf 63v.w., at 25p, 470uf 16v.w., at 10p, 680uf 40v.w., at 20p, 3300uf 16v.w., at 25p.

J.C. DIL SOCKETS. 8 pin, 14 pin, 16 pin, 18 pin. All at 15p each  
200 ASSORTED RESISTORS 1/4 Watt for 75p  
100 MULLARD CIB CAPACITORS. Assorted for 57p  
50 AC 128 TRANSISTORS. Branped But untested at 57p  
30 BC 107-8-9 TRANSISTORS. Assorted Untested at 57p  
VISCONEL CAPACITORS 0005uf 25k.v.w. at 40p, 0005uf 75k.v.w. at 50p, 61uf 63v.w. at 25p  
TUNING METER 100-5-100uA size 1 1/2 x 1 1/2" for 80p  
COMMUNICATION SYSTEMS OF 1.2". Untested, consisting of:  
3 x R.F. 1 x I.F. 2 x WOGAD, 2 x AGC, 1 x Mike Amp, 2 x Double Balanced Modulator, 1 x Mixer. The 121 Cx. with data at 42p  
BCX 37 1 Amp 90 Volt PNP 80 MHz TRANSISTOR at 12p  
LOUDEFABRIKERS 317 Dia. Apogee, 800m, 400m, 750m. All at 75p  
MINIATURE 3 Pole 4 Way ROTARY SWITCH at 20p  
UNMARKED TRANSISTORS BC 107, BC 108, BC 109, BC 177. All 10p each, 6 for 50p  
FERRANTI ZTX 108 TRANSISTORS. 7 for 57p  
VME POWER TRANSISTORS. Unmarked Good 2N 3866 at 3 for 75p  
MINIATURE But 300v.w. ELECTROLYTICS. 10 for 57p  
10 MULTI-TURN TRIMPOTS. Assorted values for 60p  
CANNON R.F. CONTACTS 23114 at 50p each  
HEAT SINKS. TO18 at 5p, TO5 at 10p. SPECIAL TO5 Type at 15p  
20 ASSORTED VARI-CAP DIODES. Untested for 45p  
20 ASSORTED 10uA CRYSTALS. Between 5100 to 7900 kHz at £1-10  
30 ASSORTED FT14A CRYSTALS. 96kh Harmonic 72 to 96 MHz for £1-10  
F.M. 1 Cx. Hls TBA 1205. Untested with data at 6 for 60p  
HIGH VOLTAGE DISCS. 500uf 11KV at 3p, 1000uf 10KV at 3p  
2N 706 TRANSISTORS. Unmarked Good at 12 for 50p  
AUCIM Cx. 2N 7000 in 80p, TBA 6118 at 65p, TBA 651A at 80p, SN 74013ND at £1, TBA 800 at 80p LP 380 at 80p, TBA 940 at £1-30, 455 kHz VERSION OF LP 1175 with data at 80p

BC 212K TRANSISTORS  
by National at  
10 for 50p  
10.7 MHz CRYSTAL  
BLOCK FILTER  
B.V. 15 kHz at £1-80

FM TUNER HEAD  
88 to 108 MHz  
With Conversion  
Details to Aircraft  
Band or 2 Metres  
£3

MULLARD 10.7 MHZ  
I.F. MODULE WITH  
465 kHz at £4  
MULLARD VARI-CAP  
MODULE LP 1186  
at £4-40

## CONTEST & AWARD NEWS

New information for the DL AGCW gives us the following to work for:-

### AGCW DL HAPPY NEW YEAR CONTEST / EU

1st Jan, every year, 0900-1200 GMT on 2X CW only,  
Frequencies 3.5 to 14 MHz bands, preferably around 5560, 7030 & 141000.  
EU applicants only - classes: I:input max.500w, II:input max 100w,  
III:input max.10w. IV:SWL.

General call: TEST AGCW/EU, AGCW members add "-....- AGCW".

Serial number exchange: RST/001 upwards. do not count separate bands.

Scoring: 1pt for valid QSO irrespective of country or band (EU on DXCC)  
plus 1 multiplier for each AGCW member worked.

A station may only be worked once on each band. Single ops only.

LOGS: GMT, Band (m), calls, series numbers exchanged, QSO points.

Multiply by the number of multiplier points achieved on all three bands.

Logs, post marked not later than Jan. 31st to: Renata, DJ9SB,

Johannesmuhler Str.36, D-6800 Mannheim 31. Germany.

SASE for full results to DJ9SB. Award for 1st 3 in each class.

### AGCW DL AWARDS

Any licenced amateur or SWL may apply for these awards at the cost of DM5 or 2 US dollars, or equal IRCs. Applications to: Atto Wiesner, DJ5QK, Freudenheimer Str.14, D-6900 Heidelberg 1. F.R.G. GRP-CW-250.

For CW activity on 160-10m bands. 250 CW QSOs are required with an input of less than 10w. during one year (1st Jan - 31 Dec of that year) Accompanied by declaration, signed : "I hereby certify that all the QSOs contained in this claim, have been made using a TX input of less than 10 watts".

Non members should include a list giving the number of CW QSOs achieved for each month to which the claim relates. T is list must be signed by two licenced radio amateurs or confirmed by the claimants local club. GRP SWL AWARD.

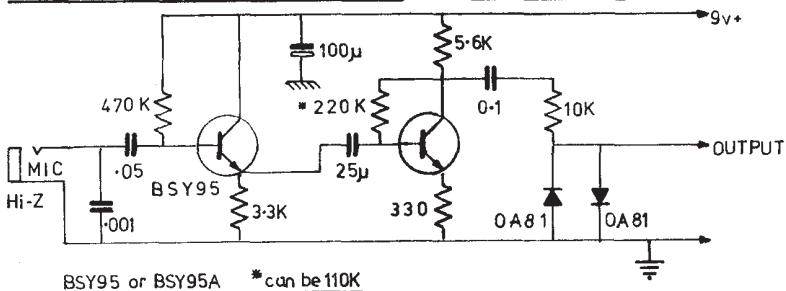
The above award may also be issued to SWLs. It is only necessary to read the transmission of one station in a QSO, but the callsigns of both stations must be recorded. Receiving CQ calls does not count. All other condition as above apply. An extract from the log of all CW QSO heard should be submitted showing the input of each station. It may be possible that the same station may be heard by SWLs during the year. However all claims must show an interval of not less than 12 hours on each band for which any station is being claimed on more than one occasion.

The log extract must be signed by two radio amateurs or confirmed by the claimants local amateur radio club.

### Important Note For All Transmitting Amateurs;

As all diplomas are issued under the name and callsign of the claimant, all QSOs must be made using the claimants own callsign. However any combination such as /M, /P and /A will be valid. QSOs from a station other than the claimant own will not be valid, except when the claimants own callsign is used.

# Simple Speech Processor by G2CKM

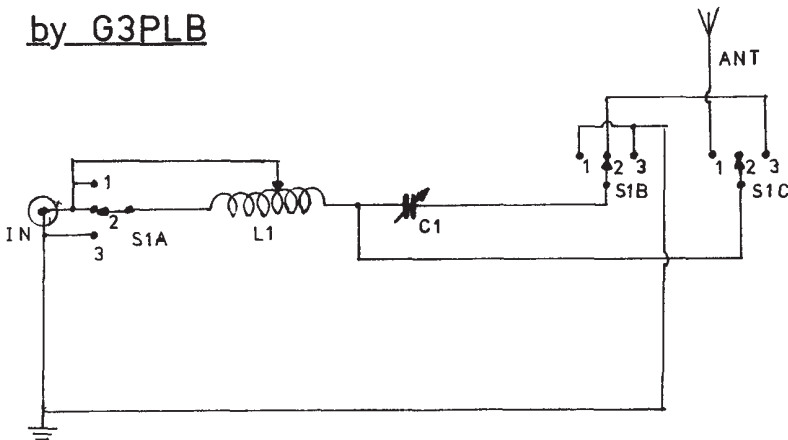


This circuit, originally from G3BMT, is used by Miles especially for /M SSB working. (It sounded very good when working G3RJV some time ago on 80m) It enable the operator to sit a couple of feet from the mic and get on with construction or smoke his pipe! It is really a microphone head amplifier, giving extra audio "punch" to the signal, with a minimal amount of clipping from the two diodes. Most people say it does not reduce the audio quality, but increases the Q<sub>RR</sub> by about 2 S points. (Who needs a linear!) The mic may be fitted with the usual PPT.

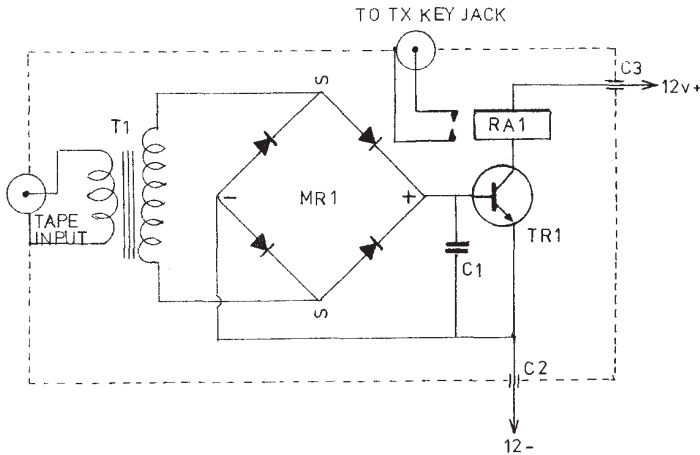
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## 3 Way A.T.U.

by G3PLB



L1 = Rollercoaster Coil (or tapped coil), C1 = 150/200 pF,  
 S1 = 3 pole, 3 way.  
 Switch Positions:  
 1 = 'L' Network, 2 = Series Network, 3 = Parallel Network.  
 N.B. Both sides of C1 isolated from earth.



TR1 = 2N3053  
 T1 = Valve spkr.  
 output trans.  
 C1 = 0.47uF.  
 C2 = 1000pF Lead  
 through.  
 C3 = as C2.  
 MR1 = diode bridge  
 RA1 = 500 to 1K  
 ohm low voltage  
 HS Relay.

This little device takes the work out of contest and activity periods. Record a few minutes of "CQ QRP" on your tape recorder with the aid of an audio oscillator, connect the recorder to SK1 and the key jack to SK2 and the tape will key the TX. The recorder input is stepped up by T1, rectified by MR1 and biases TR1 on and off, working RA1. Good screening is essential since RF on the input or supply leads will be rectified by MR1 and lock on TR1. The circuit works well with QRP but has not been tried with QRO. The input level is adjusted with the recorder volume control - use just enough to give good keying. An ex-WD Seimens HS relay was used which works at about 10mA and the 2N3053 does not need a heat sink. The key lead is connected in parallel with the hand key and el bug and after a minute or so of CQ QRP DE G8PG, K is sent by hand, after the recorder is stopped. Maybe a few of these devices would increase activity on the international QRP frequencies!

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MEMBERS ADS:

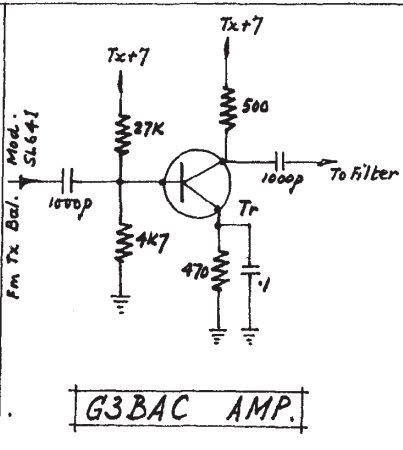
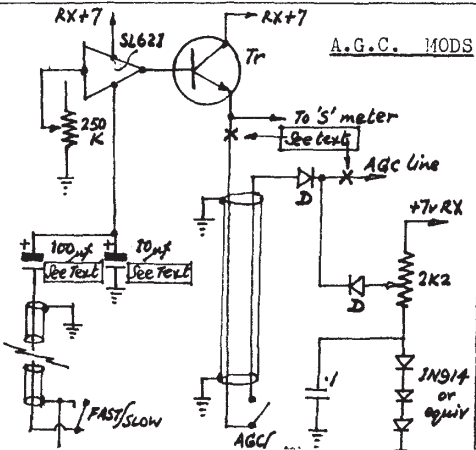
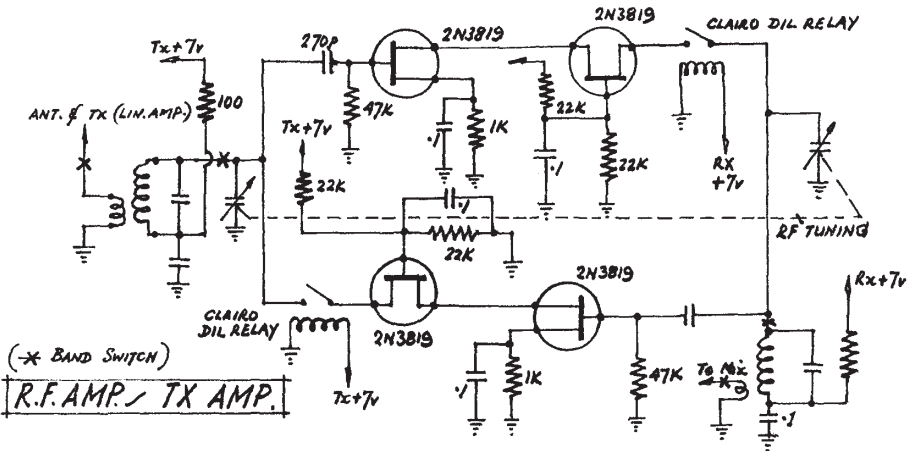
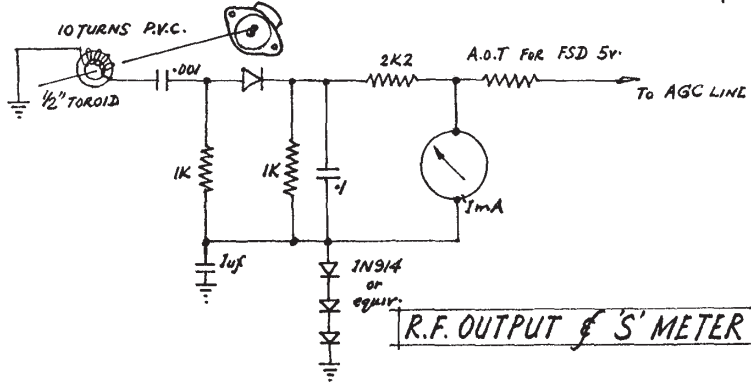
Dave Logan, G4EZF, 27 Shaw St. Mottram, Via Hyde. Cheshire. requires information on WW2 transceiver TYPE A MKIII (B2 Minor)

G3GGL. Graeme Wormald, Livery House, Sandbourne Drive, Bewdley. Worcs. has the following Xtals for exchange: 1894, 1865, 14216 (several of each) 10XAJ (large 1/2") 7085. Wanted - any Top Band, 3540, 14065 etc.

G3RJV. Urgently requires the following valves:- 12AQS, 12AT6 (HBC90), 12BA6 (HF93), 12BE6 (HK90), 35W (HY90). please state price & postage.

G3FZS. Maurice Bulmer, Searchlight Workshop, Newhaven. Sussex. is unable to erect an HF band aerial and seeks advice or suitable substitute. Maurice is a disabled member.

# MODS & ADDITIONS TO 'ZVC' TX/RX - G3R00





MODS AND ADDITIONS TO THE G3ZVC TRANSCEIVER. G3R00.

Three ZVC trx's have been tested and all found to have sensitivitiy and all found to have 2uV for 10dB not .2uV as claimed by the Plessey handout. An R.F. amp is therefore required and a useful circuit for this is two FETs in cascade. With this configuration there is a high input and output impedance and therefore it can be used with simple coils and only one link winding for 50 ohm input and output. Another satge could be used but R00 decided the ATU would supply this.

In the I.F. stages it was found that the third stage of amplificatio -n provided a lot of noise to trigger the SL621. Removal of this made things a lot more pleasant but the problem of triggering the AGC became severe. It was found that this could be overcome by placing a resistor of about 100K from the input of the 3L621 to ground. It was found that this triggered the AGC and the device ran well as a det/amp only. I adjusted the value the run the AGC line at 1 volt.

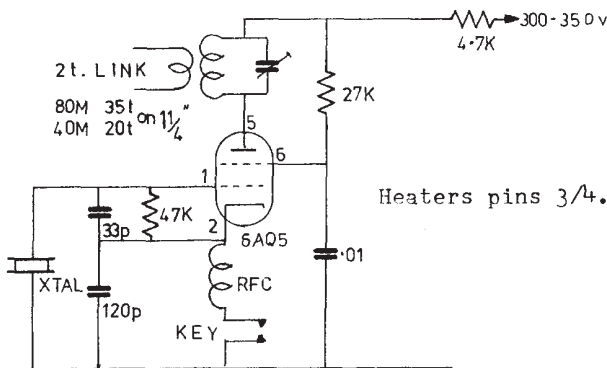
Two AGC time constants are used in conjunction with gated Manual I.F. gain control (see circuit)

G3BAC reports that greater tx o/p can be gained by replacing TX SL 610 with a BC108. (see diagram)

A second FET stage is used as an FET cascade RF amp to amplify the TX ssb signal, switched into circuit using two claire relays (see circuit)

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TRANSMITTER FOR THE VALVE FAN. G4BWP.



Circuit of a QRP TX which can run 10 watts input, but is usually used at 5 watts. Valve can be almost anything - 6V6, 6BW6, 807 etc. The R.F.C. is a large valve type - 4 or 5 section.

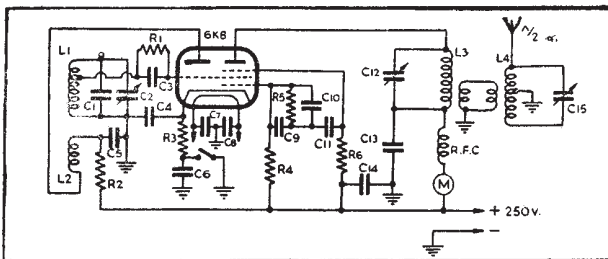
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MEMBERS AD:

G3FCK/QTHR. requires loan or purchase of circuit for Heath RA1 RX, details of integral calibrator, external Q multiplier.

As has surplus Xtals (10K, FT243, HC25U) swap for CW end MF/HF AM Band XTALS or W.H.Y. : 0.455, 5.7(2) 6.815, 8.1, 8.205, 14.325, 21.5(5), 23.0(5) 23.2(5) 35.9, 49.2125.

===== THIS ISSUE HAS DEPLETED THE SPRAT FILES - HAVE YOU ANY SUITABLE CIRCUITS HINTS, QRP ITEMS ETC. TO SHARE WITH THE CLUB \_ WHAT DID YOU BUILD LAST ?



Circuit of ZL3DT's low-power 3.5 Mc/s. transmitter.

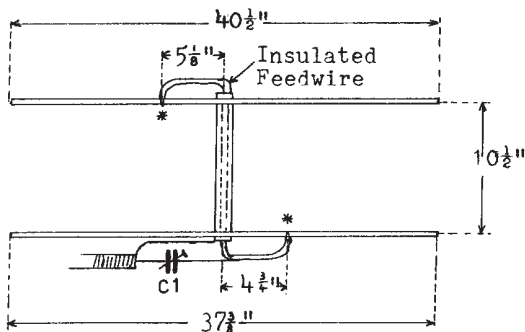
C1	500 $\mu$ F.	C7, 8	.002 $\mu$ F.	R3	1,000 ohms.
C2	75 $\mu$ F. variable.	C12, 15	100 $\mu$ F. variable.	R4	+5 megohm.
C3, 9	100 $\mu$ F.	C13	.01 $\mu$ F.	R5	50,000 ohms 2 watt.
C4, 5, 10,		C14	.1 $\mu$ F.	R6	10,000 ohms 2 watt.
11	.005 $\mu$ F.	R1	+1 Megohm.	M	25 mA. F.S.D.
C6	.5 $\mu$ F.	R2	10,000 ohms 5 watt.		

This circuit, originally published in 1950 is by ZL3DT. It uses a triode-hexode to obtain many of the advantages of a two stage VFO transmitter with a single valve. It could well be modified to use a B9A frequency changer triode hexode.

The circuit consists of a simple regenerative feedback triode oscillator operating on 1.75 MHz coupled via the hexode injection grid to a power doubler stage with output on 3.5MHz. This system has the advantage that all coupling is through the electron stream. A small positive voltage is applied to the control grid of the hexode section by means of a resistor network., and both stages are key together by cathode keying. The stability of the coil is ensured by tapping the grid down one third of the coil and using C1 across the control circuit. A voltage regulator valve (eg. VR150) between the anode end of R2 and earth would add further stabilisation. A well smoothed supply is advised. The anode current of the hexode is around 15mA unloaded and for T9 results should be operated upto about 20mA (5 watts input). Under these conditions a 6K8 is operating in excess of its normal ratings, but appears to perform well in the circuit.

2el. 2metre

Beam - G3BGR

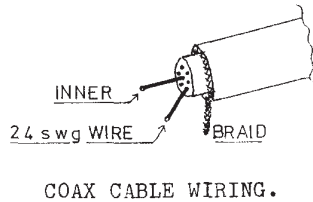
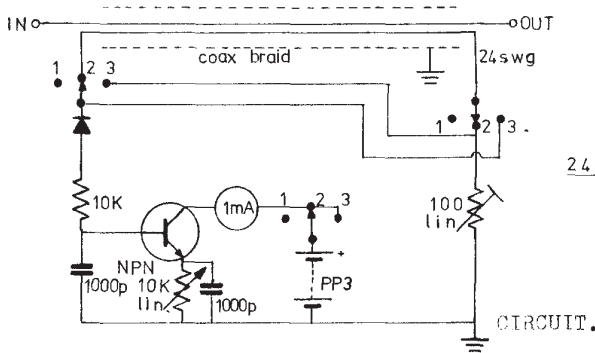


\* Bare wire ends fixed with clips - adjust taps for forward gain.  
C1 = 3-30pF beehive trimmer adjusted for min. S.W.R.

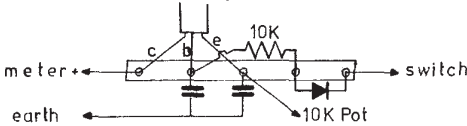
Original idea by HB9CV, with credits to G3NOW and G3HXQ.

# QRP S.W.R. Indicator by G3RJV

Reproduced from SPRAT No.1, by request:



SWITCH: 1 = OFF, 2 = FORWARD, 3 = REVERSE.



LAYOUT OF D.C. AMPLIFIER ON 5 WAY TAG STRIP.

This simple indicator gives relative readings of forward and reverse aerial current, allowing forward readings for the peaking of output power and reverse readings for aerial matching purposes.

The bridge is based upon a random length (abt 18") of heavy duty AIR-SPACED coaxial cable. The ends are bared as shown, and a couple of feet of enamelled 24 swg wire (or similar) is carefully threaded through one of the air spacing holes.

The three leads must be insulated from each other - a 'mess' of PVC tape does the job! The 100 ohm preset is a reference impedance.

The forward and reverse currents are rectified and fed into a simple NPN D.C. amplifier (any high gain transistor will serve). The gain of the amplifier forms a useful front panel control - increasing the gain for low current levels.

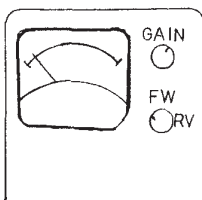
A front panel switch is used for OFF/FWD/REV and a PP3 provides the power.

Construction is not critical, a stout copper wire bus bar was put across the case to provide a decent earthing point and the D.C. Amplifier was built on a tag strip as shown.

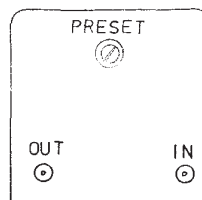
The indicator was set up using a dummy load across the input, the gain control being useful for low reverse readings.

Two watts pushes the needle hard over with about two thirds gain, but this naturally depends upon the gain of the D.C. amplifier and the forward resistance of the diode.

## LAYOUT.



Front



Back

The limiting diodes must be silicon types, and the 'gating' diodes must be germanium (transistors used). The gate opens at .3v and only signals from .3 to .6v reach the phones. Prototypes used very cheap 2G382's (100 for 45p - J. Birkett) The figure below shows the effect of the limiter on signals and noise. Somewhat better results can be achieved if 2 or 3 diodes (cheap silicon) are used in parallel for DL1 and DL2.

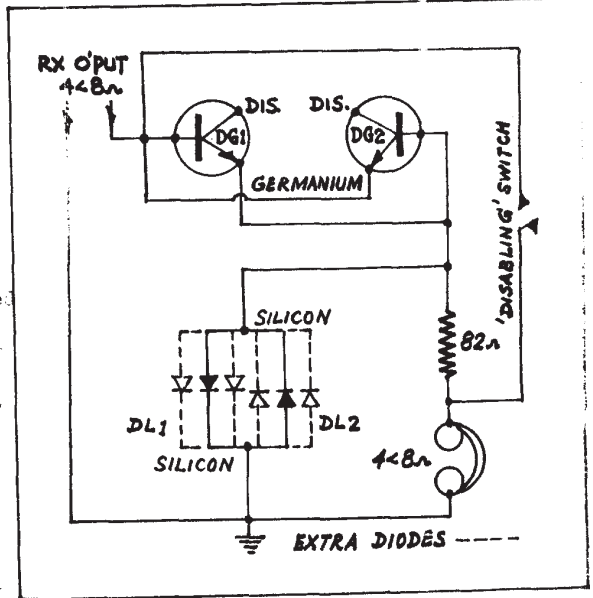
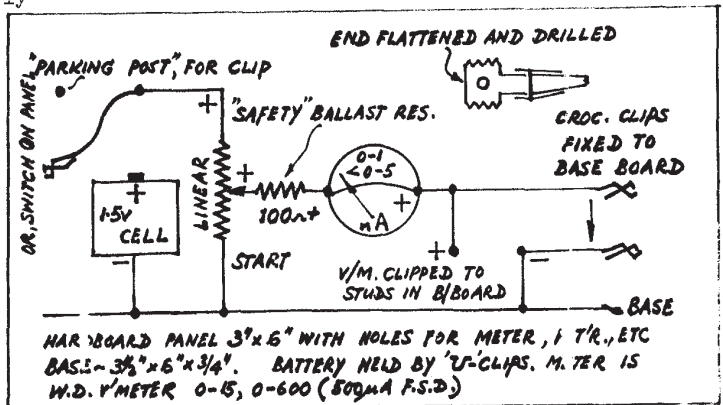
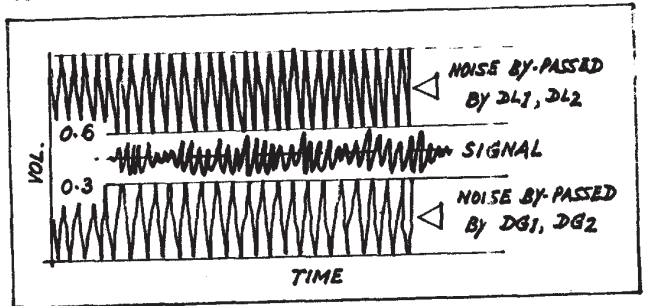


Fig.3. shows a Diode Assessor used to match diodes used in the limiter. All that is needed is about 1.5volts, a voltmeter (or 2 studs to the 'station Avo') and a 1mA meter or similar to show the 'onset' of rectification. The unit was built on a board with croc clips modified to screw onto the board.

The pot may be any lin. value between about 500 ohms and 5K. This may be mounted on a panel and marked 0 to 1.5 volts.

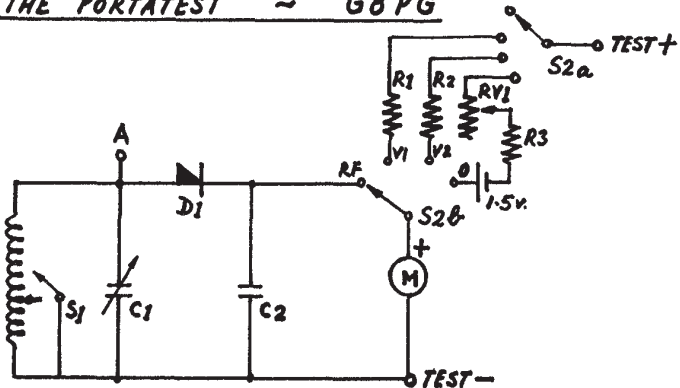
**TO OPERATE:**

Clip in the diode to be tested (right way round) clip the voltmeter or 'Avo' to the studs and switch on, and slowly increase the pot from the zero end. Read off the volts as soon as the rectified current flows - about .3v for germanium and silicon at less.



## THE "PORTATEST" ~ GBPG

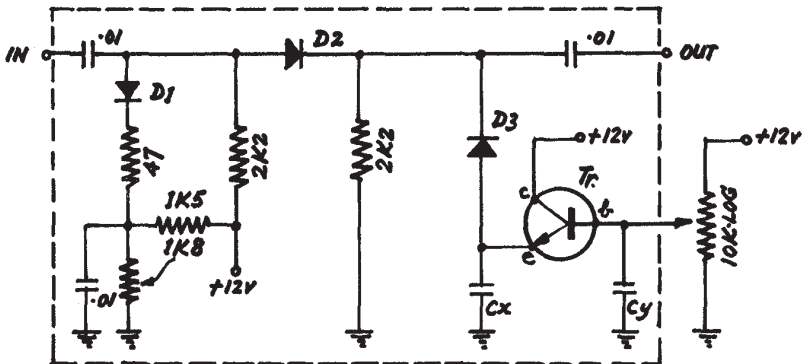
- D1 = Germ. Diode.
- M = 0-1mA meter.
- C1 = 200pF
- C2 = 1000pF
- R1 = 15K 1%
- R2 = 300K 1%
- R3 = 1K
- VR1 = 1K
- L1 = Approx 30t.  
1" dia.  
Tap 7t.



This simple Instrument provides the QRP operator with an absorption wavemeter/radiation meter/voltmeter/continuity tester for /P & /M work. With S2 in the RF position it is an absorption wavemeter & radiation meter.. Positions V1 & V2 provide 0-15v and 0-300v measurements. The 0 position provides continuity tests. The device can be built in any box. If the coil is inside the box a short length of wire can be attached to A for RF pickup when laid near the aerial. If 1% tolerance resistors are used voltage readings will be accurate. If coil L1 is adjusted to just cover 3.5MHz with C1 at max. it should be possible to cover all bands 2.5 to 21 MHz in the RF position by adjusting the tap so that with S1 closed, the 14 & 21 MHz bands are covered. If the 0 position is calibrated against known values of resistance and a calibration chart is made, resistance measurements may also be made. In this position VR1 is used for zero (P3D) setting. Apart from use with the rig, this unit can save the /M op a few pounds if he has electrical faults on the road.

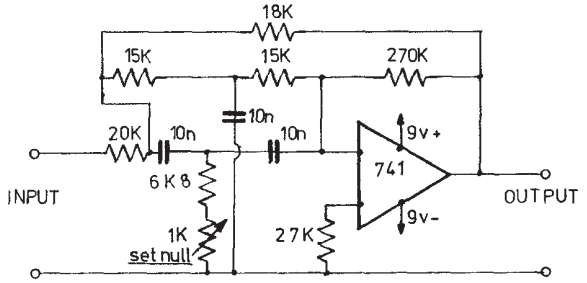
\*\*\*\*\*

## 0-30dB PIN DIODE ATTENUATOR ~ G3R00

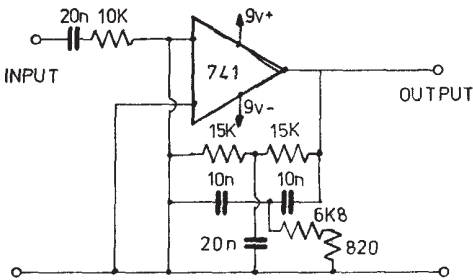


A useful pin diode circuit using 3 HP 5082-3080's available from A.G.H. Electronics. Very useful on 40m at night or with sig. gen. However beware of Cross Mod - They are non-linear devices and with a ZVC TRX X Mod is audible and may mask a QRP station!

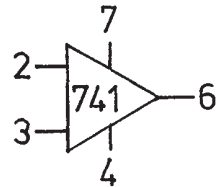
# THREE 741 CIRCUITS



1KHz Notch Filter

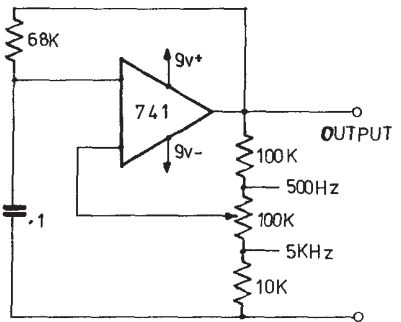


1KHz Amplifier [Twin-T]



D.I.L. Package

Reprinted from SPALDING RADIO NEWS.



500Hz-5KHz  $\square$ Wave Generator.

## DATA SHEET SERVICE

With thanks again to Gwyn, F4KH, the club is able to offer the following data sheets - please either send a stamp or a large SASAE to G3RJV.

CLUB AWARDS SCHEME : Reprint from SPRAT.  
THE PARTRIDGE SHIELD ; Special club award for small aerials, SPRAT reprint.  
AWARDS SCHEME FOR THE QRP/ARCI : awards by the US based QRP (100w) Club.  
THE TUCKER TIN: Simple valve QRP SSB transmitter.  
THE TUCKER TIN MKII: Transistor simple SSB QRP Transmitter. Plus PCB layout  
TRANSISTOR PA DESIGN-THE SAFE WAY: A paper by DJ1ZB-technical design of PA  
LOW POWER, DELUXE, CW TRANSCEIVER: 1.5w design for 14MHz.  
FOUR WATT WIDE BAND LINEAR: Amplifier for range 300kHz to 30MHz.  
MFJ AUDIO FILTER: Circuit and operation details of this popular filter.  
MINIATURE SOLID STATE V.F.O.: Seiler or Vackar circuits.  
HW7 MODIFICATIONS: The WICER article from QST.  
NEW FRONT END FOR THE HW7: QST article for new RX front end by KH6HKZ.  
SIMPLE HW7 MODIFICATIONS: Reprint of members ideas from SPRAT.  
THE G3IGU 80m CW TRANSCEIVER: Reprint of popular SPRAT article.  
TUNA TIN TWO: Half watt CW xtal cont. transmitter.  
HERRING AID FIVE: Companion direct conversion RX to above.  
VEST POCKET QRP RIG/MICROMITTER: Two circuits for single transistor TXes.

### NEW SHEETS:

THE S.S.T.1.: CW transceiver-xtal controlled with direct con RX for 7MHz.  
THE ULTRAMOUNTAINEER: 7MHz xtal cont.dir.con.RX, transceiver, miniature.  
FULL BREAKIN AND RIT FOR THE HW8: QST article by K6TG.  
HW8 MODIFICATIONS: Articles from CQ by K8EEG.  
A.T.U. FOR HW7 (or similar): Reprint from SPRAT No.2.

### AVAILABLE AGAIN:

SIDEBAND MINITUNER: Simple direct conversion RX for 80/40m.  
G8EPE 2 METRE TRANSMITTER: 3 watt, A.M. transmitter.

\* \* \* \* \*

## SWL NOTES

The number of SWL members has steady increased in the club, so we wish to reflect this interest in SPRAT. It is hoped that regular SWL items can be included in SPRAT, both newsy and technical. SWLs are asked to submit any details or material to Hal Collard, 95 Hart Rd. Thundersley, Benfleet, Essex.

May I draw the attention of SWLs to the datasheet for the Sideband Minituner, listed above, which can form a simple project for a two amateur band receiver for any SWL. Also to the DL AGCW award for QRP SWL work mentioned elsewhere in this issue, and naturally to the SWL award offered by our own club - the first claim has yet to be made. A new members list, including callsigns reference list will be issued soon, but any SWL can obtain, from G3RJV, a copy of the Jan. 1977 callsign list in the meantime. Members running QRP do value a good SWL report. G3RJV recently had a very full and useful SWL report for 80m from an SM SWL.

### CLUB TAPE MORSE COURSE:

Ken, G3EPU, has run into equipment difficulties for making copies of these tapes. The club would be most grateful for any SWL or licenced member who could offer to make copy recording of these tapes. They are on C90 cassettes (two) and all that is required is for two recorders with interconnections (interface as they say today!). Members requesting tapes will supply blanks for the copies, and the club will refund postage costs to anyone who can do this useful job. It may also be useful, but not totally essential, if reel to reel copies could also be made. Any offers in this direction to G3RJV.

## Next Issue

A NEW QRP SSB TRANSMITTER DESIGN BY GM3XNE - Art Smyth.

# CLUB NEWS:

## CLUB ACCOUNTS FOR YEAR ENDING OCTOBER 10th 1977.

<u>Postage:</u> SPRAT, Enquiries, Overseas etc.	£153.38	<u>Income:</u> Subscriptions, Advertisements, Bank carried Forward.	£527.73
<u>SPRAT:</u> Paper, Printing Stencils and Members List.	£251.18		
<u>Office Expenses:</u> Filing Cabinet, Heavy Duty Stapler, Files, typewriter work Rotring Equipment.	£77.53	<u>Bank:</u> Credit on 10.10.77.	£26.41
<u>R.S.G.B.</u> Affiliation, World Call Book.	£13.10		
<u>Bank Charges:</u>	£6.13		
<u>Expenditure:</u>	£501.32		£501.32

Prepared G.C.Dobbs  
Checked J.E.Simmons  
4.12.77.

NOTES: Over the last year, the club has, on paper, just broken even. Although after the summer issue, the account was overdrawn and had it not been for a large influx of members and a combined issue of SPRAT, we would have run into trouble to produce a full issue for autumn 1977.

In the early days of the club the production costs of SPRAT were very low due mainly to being able to use, free of charge, the duplication equipment of a friend. However when the numbers rose to over 200 and each issue entailing a complete day's work in Grimsby, and the good will of the friend in using his office for a whole day at the weekend - it was decided to have SPRAT produced by a Nottingham firm of duplication specialists. Also as the numbers increased, G3RJV began for the first time to make an accurate recording of postage costs, previously quite a lot of mail had been at RJV's own expense. The numbers also demanded a rethink of operation procedure for dealing with about 700 letters a year. A secondhand filing cabinet has been purchased, with a extra heavy duty stapling machine (RJV's old one fell apart with fatigue!) also some Rotring stencils and equipment were purchased for making up SPRAT. In a valiant attempt to revive the overworked RJV typewriter, some club monies were spent on a complete overall, however recently RJV has purchased another machine.

Since the club first began, we have grown from a handful of people to over 350 members. Also a check has shown that paper (A4) used for SPRAT has exactly doubled in that time and postage has gone up on three occasions. After thought a couple of conclusions have emerged:-

- 1) THE CLUB ANNUAL SUBSCRIPTION WILL BECOME £2.00 (or overseas equivalent) as from this time. Will overseas members pay in currency rather than IRCs, as these have a bad exchange rate.
- 2) Alan Lake, G4DWW, is to become HON. TREASURER. At the moment Alan handles all club subs renewals, and exactly how much further his work will extend has yet to be decided. I think we would all like to thank Alan for his work so far with the club.



G-QRP-CLUB NEW MEMBERS LIST:

294	WB6WKM	Richard M. Letrich. 3686 Kirk Rd. San Jose, CA 95124. U.S.A.	General QRP
295	WD9EAF	Larry S. Hamre Box 331, Osseo. Wisconsin. 54758. U.S.A.	General QRP
296	G3PEQ	A.T. Campbell 25 Woodslan Rd. Hassocks. Sussex.	General QRP
297	G8LVZ	22 Corringway, Ealing LONDON. W5 3AA Leonard Salem.	TR2200 Homebrew.
298		M. Jones. 9 Harcourt Rd. Llandudno.	QRP CW SWL
299	W6IRA	Gary H. Price 733 Blue Sage Dr. Sunnyvale CA 94086 U.S.A.	
300	W6PQZ	John K. Akiyama 1161 North Ridge Place, Monterey Park, CA 91754. U.S.A.	General QRP work Holder QRP DXCC SSB.
301	WB8IGU	Howard Hawkins 2905 Leon Ave. Lansing, Mich. 48906. U.S.A.	General QRP
302	G4DVI	M. Small 6 Grasmere Ave, Heaton Chapel. Stockport. Ches. SK4 5HV.	General QRP
303	PAØINA G5BQX	Frans Th. Oosthoek Vluchtenburgstraat 34, Middelburg Zeeland Holland.	HW8 3500,
304	G3FKM	John Allaway 10 Knightlow Rd. Birmingham. B17 8QB	Hon Member. Contrib. to Month On The Air in Rad Com.
305	WD4EGN	Chuck Tankersley 6113 Chanterelle Court, Stone Mountain, Georgia. 30087 USA.	Argonaut.
306	G3KQT	Ron Gorman 1 Bramble Cl. Macclesfield, Ches. SK10 3AX.	2 mtrs
307	G3SCY	97 Gunners Rd. Shoeburyness Essex. Clive L.F. Seldon.	General QRP
308	G3GGL	Graeme Wormald Livery House, Sandbourne Dr. Bewdley. Worcs. DY12 1BN.	General QRP Mayor of Bewdley!
309	W7KJ	John Reddie 15247 Dayton Ave. N. Seattle. WA 98133. U.S.A.	Argonaut
310	?	James L. Turnbull 712 Crowell Lane, Johnson City, Tennessee 37601, U.S.A.	HW8 (Novice)

NEW MEMBERS CONT:

311	WB4Z0J	Warren Flynn Routed, Brett Lane, Temple, Georgia. 30179. U.S.A.	HW8 Vice Pres. QRPARCI.
312	G3YVZ	Tom Gardner 220 Grace St. Newcastle. NE6 2RR.	General QRP
313	G4CWS	Chris Wood 40 Parklands Dr. N. Ferriby. N.Humberside. HU14 3EY	CW on 2m & 10m
314	G3JFM	E.F.Moore 74 Wannock Ave. Lower Willingdon. Eastbourne. Sussex.BN20 9RH.	160m homebrew & TR2002
315	G3OJM	Charles Mahoney 22 Pendrill St. Beverley Rd. HULL. HU3 1UU.	General QRP
316	SM6FQE	Ola Lundh Bjorkstigen 13, S-311 00 Falkenberg, Sweden.	HW7
317	G3HCM	Dennis Dumbleton 'Hillcrest' 70 St. Martins Rd. Finham. Coventry. CV3 6EU.	HW7
318	<del>G3NPA</del>	Joseph Alan Jones 9 Martin Cl. Irby. Wirral. Merseyside.	General QRP
319	W3AEC	Thomas F. Kelly, 2713 Pinecreek Place. Washington D.C. 20028. U.S.A.	Argonaut + Hustler 4BTW
320	WA3MWR	George A. Kerrick 4 Willow Hill Farm Bd. West Chester, PA. 19380. U.S.A.	Recent QRP convert!
321	SMØIIN	George Wood Kungshamra 31/107, 171 70 Solna Sweden.	Argonaut American in SM land.
322	G4FNL	Graham Bubloz 38 Highbank, Brighton. Sussex. BN1 5GB.	AT <sup>5</sup> & B40
323	G8JCY	Rob Thornton 69 Ockley Lane, Keymer, Hassocks. Sussex. BN6 8BD.	VHF studying CW
324	G5BH	Michael H. Coleman 55 Dafforne Rd. London SW17 8TY.	80m CW & 2m
325	SMØGHU	Anders Kallberg Jungfruv 8. S-18235 Danderyd Sweden.	HW8 CW QRP
326	G3IRM	Peter Lumb 14 Linton Gdns, Bury St. Edmunds, Suffolk. IP33 2DZ.	DX bands QRP
327		Charles Mercer 333 Lonsdale Rd. Stevenage. Herts.	QRP SWL
328	G3KRR	Cedric M. Freer 105 Greensward Lane, Hockley Essex. SS5 5HG.	General - CW

NEW MEMBERS CONT:

329	G8MUA Alan Jeffreys 186 Hollywood Ave, Newcastle upon Tyne. NE3 5BU	General QRP
330	Alfred F. Dean 29A Lowther Rd. Wokingham. Berks.	Home construction /P SWL
331	G3YJM Eon Taylor 186 Cedar St. Blackburn. Lancs. BB1 9QT.	General QRP
332	G3JIS Robert Vaughan Heaton 20 Tewkesbury Ave, Davyhulme, Urmston. Manchester. M31 1RJ.	Home Const. 80m CW.
333	G4EBO William Eric Gibbs c/o Room 539, Y Hotel, George Williams House, 112 Gt. Russell St. London. WC1B 3NQ	14/21 MHz CW QRP
334	G4GER M.F.A. Jackson 15 Robinson Close, Carterton. Oxon. OX8 3PG	HW7
335	G4GJY Sidney Simmonds 430 Kenilworth Rd. Balsall Common, Nr. Coventry. Warks.	General QRP
336	G3AIP Hugh W. Hodges 46 Hengistbury Rd. Southbourne. Bournemouth. BH6 4DQ.	General & Home Const.
337	SM1YE Bertil Wiklund Vastgotagatan.10,S-621 00 VISBY. Sweden.	Homebrew TX - 80/40/20 Hammerlund HQ 100
338	WB2QOH Donald Kalinowski 3 College Ave, Poughkeepsie. NY 12603. U.S.A.	Home built equipment.
339	WD8LJF Charles Williams 15202 Ackerson Dr. Battle Creek, Mich. 49017. U.S.A.	General QRP
340	G4GBR Philip B. Parnaby Fern Bank, Wetheral Pasture. Carlisle.	HW7 80m 3w homebrew.
341	GM80DL Michael James Thomson 44A Dalhouse Rd. Broughty Ferry, Dundee.	2M QRP Homebuilt equip.
342	SM5ENX Lennart Svensson 5 ie Bjurhovdagangen 43, S-72353 Vasteras. Sweden.	HW8, 80m dipole, 12AVQ
343	G3VBS Thomas Merrills 14 Cross St. Springhead, Oldham. Lancs.	General QRP

NEW MEMBERS (CONT)

- 344 WA2JOC William W. Dikerson Editor of QRPARCI Journal  
65 John St. Red Bank HW7 - 36 Countries.  
New Jersey. 07701. U.S.A.
- 345 GM4CXP Derrick Dance 160m (300mW)  
Station House, Maxton, VHF/UHF  
Roxburghshire. TD6 ORW.
- 346 G8APR William Bradley VHF, HF, QRP & CW  
1 Kildare Cres, Kirkholt,  
Rochdale, Great Manchester. OL11 2RY.
- 347 G4CTE Patrick John Bradshaw Digital HF Trans Homebrew.  
'Greenacres' Sutton Rd. Truathorpe, 10m Study.  
Mablethorpe. Lincs. LN12 2AL.
- 348 G3PVQ James Edward Merrett CW, /P, small aerials.  
145 Fawnbrake Ave, Herne Hill,  
LONDON. SE24 OBG.
- 349 G4GMI Jonathan Peter Seddon DSB & SSB (3rd method)  
36 St. Christopher's, Handsworth Rd.  
BIRMINGHAM. B20 1BP.
- 350 William Gareth Jones VHF/UHF Microwave  
24 Underhill Cres, Abergavenny,  
Gwent, S. Wales. NP7 6DF.

CHANGES OF QTH:

New QTH List:

- 024 G3IQF 88 Marlow Bottom, Marlow, Bucks. SL7,3PH.  
094 G4DXN 17 Glencairn Park Rd. Cheltenham. Glos. SL50 2ND.  
101 BR531172 20 Blair Walk, Immingham. S.Humberside.  
135 VE7CKF 806 Eighteenth Ave, West. Vancouver, B.C. Canada. V5Z 1W3.  
181 G3YGI 55 Lakeside Ave, Lydney. Glos. GL15 5QA.  
185 G4ETJ 8 North Town Cl. North Town Rd. Maidenhead. Berks. (correction)  
189 G3OKY 35 Castledine Rd. Penge. LONDON. SE20 8PL.

NEW CLUB CALL:

- 242 John Spinks, 13 Heather Way, Great Moulton. Norfolk. NR15 2HP  
is now G4GIE.

RESIGNATION:

- 236 G3LYE has now left the hobby and resigned from the club.

IMPORTANT CORRECTIONS:

Because of a "double insertion" error on my part, membership numbers from 273 to 292 will have to move UP one number: So correct numbers are:

- 275-G4FCU, 276-G3SVO, 277-G3OA, 278-SM4DXL, 279-DJ5QK, 280-G4EKH, 281-G4EPW  
282-G4G4DQP, 283-W. Eastman, 284-R. Burgoyne, 285-G3DMC, 286-S. Turner,  
287- G8VN, 288-G4FAI, 289-GM4HAM, 290-J. Hague, 292-G4FZO, 293-G4CKG.

I regret these changes, and hope that no inconvenience, for example QSL card markings, have resulted.

LATE ADDITION:

- 251 G2HCP 2 Brighton Ave, Lytham St, Annes Construction.  
Lancashire. QRP CW on HF bands.  
(Charles F. Derek Steeden)