



SPRAT

THE JOURNAL OF THE G-QRP CLUB
DEVOTED TO LOW-POWER COMMUNICATION

ISSUE NR. 25

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Winter 1980/1

1981 QRP GUIDE
Pullout

STOP PRESS NEWS:
The Club Has Just Enrolled Its 1,000th Member

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For SSB & VHF

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QRP News

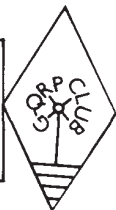


WA2JOC Bill Dickerson

Bill is a leading member of QRP ARCI.



Rev. George Dobbs [G3RJV]
17 Aspen Drive, Chelmsley Wood,
Birmingham. B37 7QX [021-770-5918]



Dear Member,

An exciting issue, but with so much news and information that I cannot find room to comment, except to say - Read it carefully. Note that those who have moved away from the DL AGCW contests with the new rules might like their new QRP Party, details in this issue.

Writing, as I am, at nearly 2am, in early December !
May I wish you all A GOOD YEARS QRP IN 1981.

73 fer nw

G3RJV

G4DQP TROPHY TO BE AWARDED FOR WINTER SPORTS

Vince Lewis, G4DQP, has kindly donated a Trophy to the Club. It will be awarded annually to the station who, using simple wire antennas not exceeding 10m in height, makes the most outstanding contribution to the Winter Sports held in any particular year. In deciding who receives the Award your Committee will take into account factors such as the power used, type of equipment, the amount of interest provided for other members and so on. The first Award will be made in respect of the 1980 Winter Sports (Logs to G8PG). On behalf of all members the Committee thank Vince for this magnificent gesture.

AGCW-DL QRP/QRP Party

This is a new event being promoted by AGCW-DL, the organisers of the very popular Winter and Summer QRP Contests. It is being held from 1300 to 1900z on 1st May 1981, cw only on 3.5 and 7MHz. There are two classes, A - 5watts input/2½ watts output and B -25 watts input/12½ watts output. Exchange is RST, serial number and class, i.e. 599001/A. Scoring is one point per QSO with your own country, and two points outside your country. QSOs with stations in Class A count double. The multiplier is each DXCC country and each band score is arrived at by multiplying the multiplier against the QSO points. The overall score is obtained by adding the two band totals together. Logs to be submitted by 31st May to Werner Hennig, DF5DD, Mastholter Strasse 16, D-4780 Lippstadt, West Germany.

NEW MORSE PRACTICE TAPES from Computer CW (similar to Datong) groups of letters and figures. Speeds of 12-14, 14-17, 17-20 and 20-24 w.p.m. Send blank C60 or C90 tape, return postage and a note of speed(s) required to Gareth Jones GW4KJW, 24 Underhill Cres. Abergavenny, Wales.

SUBS DUE. 000-090 178-200 254-270 351-392 466-521 691-771.

All due before March 31st. at new rates please.
Cheques to G-QRP Club. Send, stating club number to : Alan Lake G4DVW,
7 Middleton Close, Nuthall. Nottingham.

EXCHANGE WANTED: For HW8, have 2 metre TR2200G, fitted 320,21,22,23,24.
R5,6,7, and 8Ø with nicads and charger. 0784-56567 (evenings and weekends)
G3NTM - QTHR.

WANTED HW7 or PM2 Transceiver. GW8PLV - QTHR.

FOR SALE: HW8 with IRT, built-in MFJ Filter, S meter modification plus
external 10W PA units. £85. G3NKS - QTHR. Cheltenham (0242) 41099.

STILL WANTED: RX section for B2. Any condition, will rebuild
G4GDR Swindon 762970

HELP: Does anyone know anything about the piezoelectric properties of
liquids? If so write to EI1DA - QTHR.

40 METRE SLOPER SYSTEM

Chris Page G4BUE

In the thirteenth edition of The ARRL Handbook, a 40 metre "sloper" system antenna is described by K1THQ. Although primarily intended for use on 40 and 80 metres, the system would make an ideal set up for the three HF bands for amateurs unable to erect beams or quads, especially for QRP use. Requiring only one centre support

it is a directive antenna with up to 20dbs front to back ratio and several dBS of forward gain. Its advantages over the dipole inverted vee, loops etc., are quite considerable, although it is obviously not as good as beams and quads. The complete four sloper system is illustrated in fig. 1, and the measurements for the HF bands are shown in the table below. The sloping dipoles are cut exactly to half wavelength and fed with 52 ohm coaxial cable. The length of each feeder is critical as the three slopers not in use act as reflectors. The feed lines go to a relay box, which should be fixed to the centre support. The wiring for the relay box is shown in fig. 2 and for the control box at the operating position in fig. 3.

The Complete System

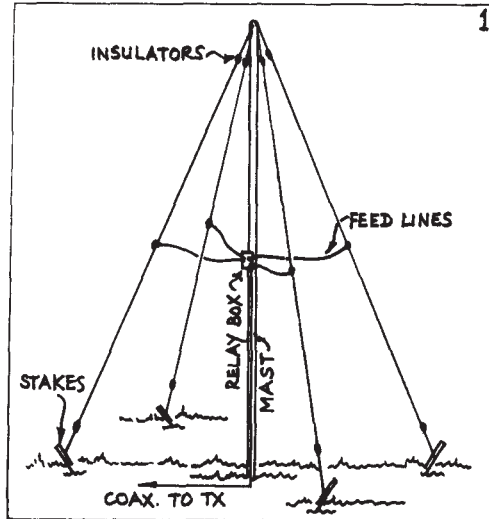


Fig. 1

Table of Measurements (feet)

<u>Band</u>	<u>Antenna length</u>	<u>Feeder Length</u>	<u>Ideal Mast Height</u>	<u>Minimum Mast Height</u>
80	131.4	72	100	40
40	66.6	36	60	30
20	33.3	18	40	25
15	22.2	13.5	35	20
10	16.8	9	30	15

Relay Box Diagram

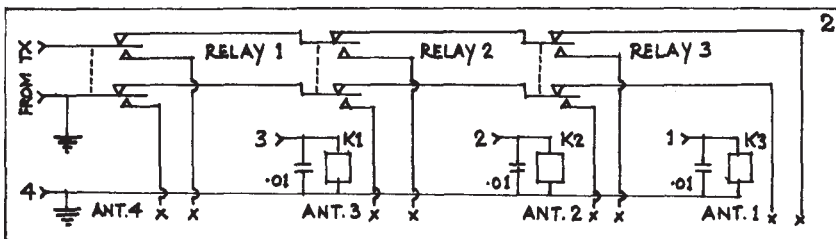


Fig. 2

The four sloping dipoles should be arranged for NW, NE, SW and SE as far as possible. It will be found that the SWR of each sloper is in the region of 2/3 to 1, but no attempt should be made to obtain a better SWR by altering the lengths of the antennas or the front to back ration will reduce.

Although I have no experience of a sloper system being used for the HF bands, I see no reason why they should not work as good as they have done on the LF bands. Although the centre support should be as high as possible, even with a 25 feet support the feed points for a 20 metre system will be quite high. Alternatively, a small mast on top of the chimney of the house could be used, and the slopers dropped down each side of the house. By using thin wire they should be quite inconspicuous. When systems for 3.5MHz and 7MHz have been hung from the same mast no interaction between the two has been experienced, and it should, therefore, be possible to hang two (or more) HF systems off the same support, and use one control box but two (or more) relay boxes. If space does not permit four slopers for one system to be erected, then three or even two can be erected, these appearing to be much better than a single sloping dipole.

Control Box at Operating Position

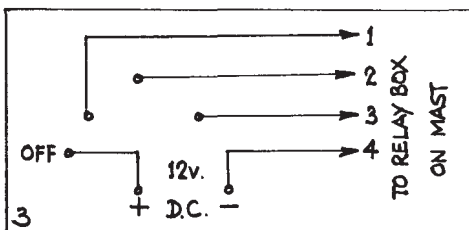


Fig. 3

Fig. 4 illustrates the top view of the system, but of course the directions maybe altered to coincide with favoured directions of the operator or to fit into a garden, etc.

Top View of System

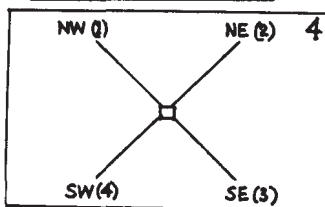


Fig. 4

Once the system has been erected, the front to back ratio can be obtained by using each antenna in turn whilst a QSO is in progress, and comparing the different signal reports received. Alternatively some idea can be obtained by watching an S meter whilst each antenna is selected to receive a DX station. Another advantage of the system is that QRM is attenuated when attempting to work DXstations or weak QRP stations.

The original sloper system at G4BUE was at a previous QTH for QRO use. Then sufficient garden was available for a 7MHz system to be hung from a 60 feet crank up tower. The system worked very well indeed, even when the tower was lowered to 25 feet in bad weather. At this height the feed point of the slopers was only a few feet above ground, and the lower half of the antenna almost lying on the ground. See Method 'A' in Fig. 5.

World QRP Federation

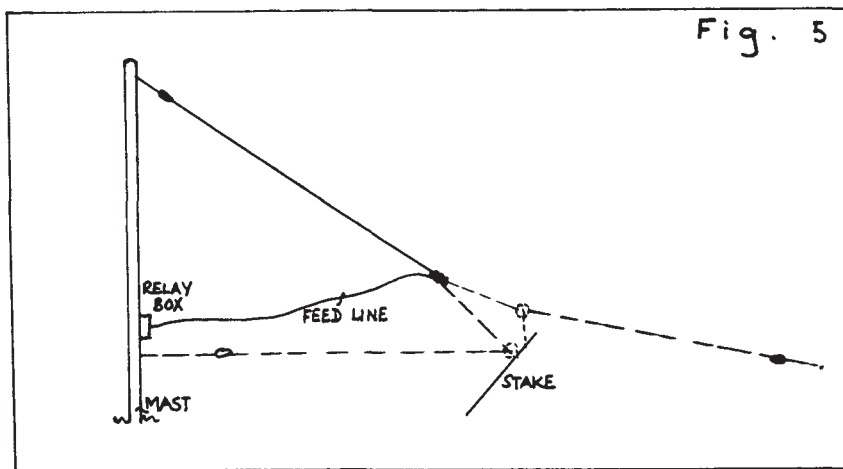
A world-wide Federation of QRP Clubs and Clubs which run organised QRP Sections is being founded, the initiative coming from G QRP Club. Invitations have so far been sent to the Benelux QRP Group, DL AGCW, Grupo QRP Do Brasil, Michigan QRP Club, QRP ARCI, SCAG, Scarborough ARS, and TOPS CW Club. At the time of writing (late November) definite acceptance has been received from DL AGCW and Michigan QRP Club, and it is understood that acceptances will be received later from QRP ARCI, SCAG and TOPS CW Club. The new Federation (short title WQF) will act as a forum for the discussion of world-wide QRP affairs, as a body which can speak for QRP operators at international level, and as a co-ordinating body for various world-wide QRP activities. With such a world-ranging potential membership it will be some months before WQF is fully operational, but important inter-continental discussions have already taken place. Any correspondence re WQF should be addressed to G8PG.

Having discovered that the system works well on 7MHz with the tower at only 25 feet, I then tried a system for 3.5MHz from the 60 feet tower. The feed point to the 3.5MHz slopers was only a few feet above ground and the set up was in method 'B' of Fig. 5. This again was very successful enabling me to work DX that previous 3.5MHz antennas had not been able to do.

These results encouraged me to experiment further with slopers at my present QTH, but this time for QRP use. The HF beam at G4BUE is supported by the tower at a height of 35 feet (a condition of my planning permission prevents me from using the tower higher during daylight hours!). An inverted vee for 7MHz is hung from my TV mast on the house at a height of 30 feet, and whilst this is satisfactory for high angle local work, it proved very difficult to work DX with it.

Two slopers were constructed and hung from the tower just below the beam. One slopes to the NW to the USA and the other to the NE and Asiatic Russia. Due to the small size of my present garden it was not possible to string out the slopers as I had done previously, but I folded them back on themselves towards the tower, as in method 'B' of Fig. 5. The results have been quite staggering. During the 1979 CQ WW CW Contest I worked 39 stations in the USA on 7MHz with five watts input from the Argonaut, and during the 1980 ARRL CW Contest I worked 63 USA stations in 16 States, VE, UA9 and UL7.

One bonus of the system has been when working QRP stations in The U.K. or Western Europe using vertical antennas. The sloper system gives an increase of up to three S points on both transmit and receive over the inverted vee. Some of the biggest LF signals out of the USA use switchable sloping dipoles, including systems for 1.8MHz!! I would be very interested to hear from members who have used this system, or try it on the HF bands.

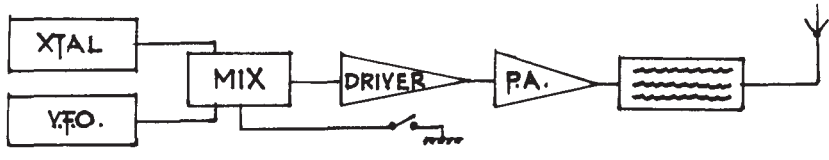


THREE VERTICALS - ONE FEEDER

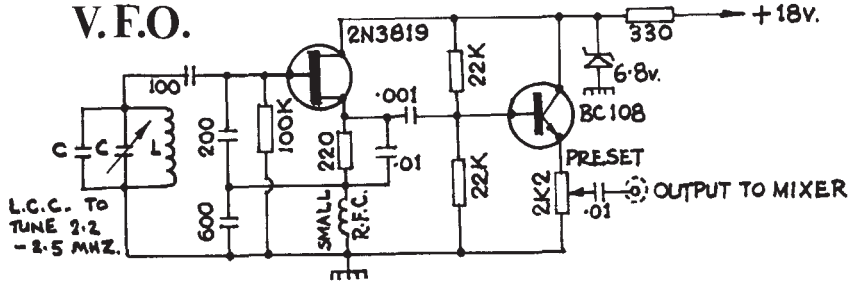
OKIDKW

My antennas are erected on the roof of an apartment building in Prague, and work against a ground plane of 36 radials laid on the roof, which is flat. On 28 and 21 MHz I use full-size quarter wave verticals, and on 14 MHz a G3XAP threequarter wave antenna (this is an inverted L but with the far end of the L brought back to ground plane level. Was originally described in "Radio Communication"). The three antennas are fed via a common 50 ohm co-axial feeder and individual air spaced matching capacitors which are adjusted to give minimum swr. There is some interaction between antennas when adjusting these capacitors, but it is not difficult to adjust them so that each of the three antennas has a low swr (in my case 1.2:1 or better). These antennas have given excellent results , including all continents worked with QRP on 28 and 21 MHz, and Europeans worked with powers as low as 4 mw.

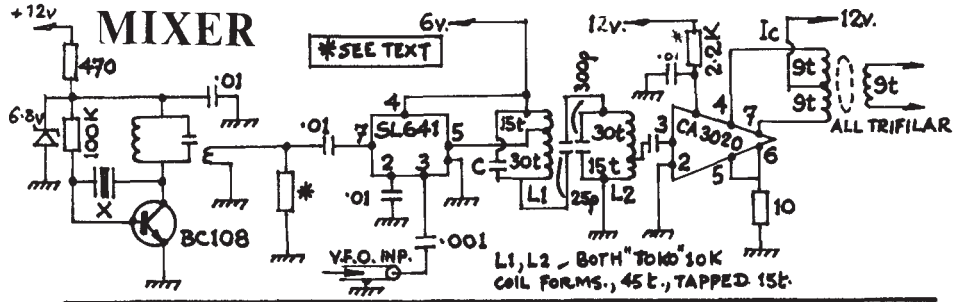
FULL B-K TOP BAND TX—G3ROO



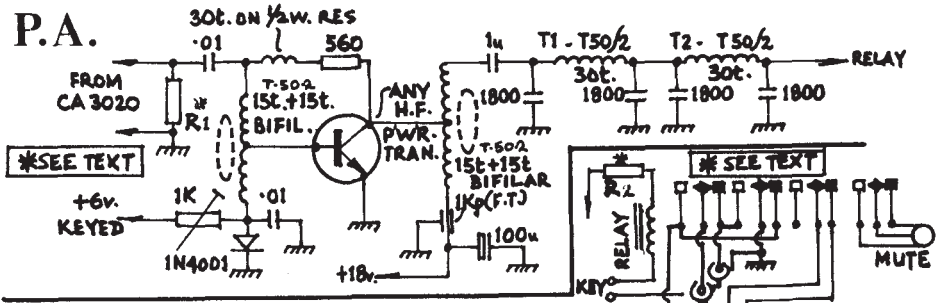
V.F.O.



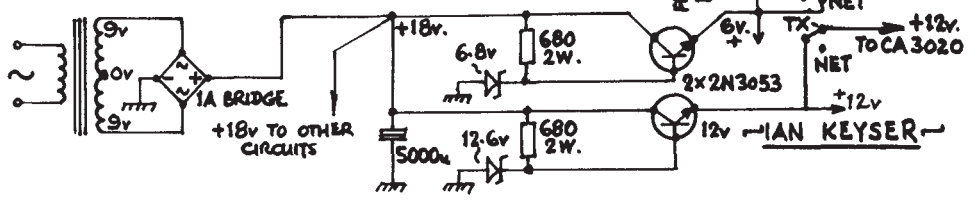
MIXER



P.A.



KEYING, P.S.U., SWITCHING



FULL B-K TOP BAND TX:

This TX is designed for 160m but by changing the VFO/XTAL OSC, L1, L2 and T1 and T2 it will work on any band as all other circuits are broadband. However on 14,21 and 28 the 10 ohm resistor in the CA3020 circuit must be reduced to 1 ohm.

The circuit can also be made linear for SSB use. Just replace the xtal osc for a simple Bal Mod, Mic Amp and Filter and adjust PA bias for I_c 300 - 400 mA.

Although there is no click filter reports are all no clicks and crisp keying.

NOTES: 2.2K in CA3020 circuit is nominal - adjust for no signal I_c 10mA.

R1 - adjust for I_c of 10mA no signal in PA (400mA for SSB) start 1K.

R2 - to limit current thru' relay to safe level (N.B. a 6v relay on 18v supply is faster than an 18v relay)

Do You Know That....

Some hard to obtain antenna and ATU components are available from the German company Annecke GmbH, Jakleinstr.48, 7100 Heilbronn-Bockingen. Their catalogue (in German) includes items like rollercoasters, ATUs, Toroid coils with wipers for QRP ATUs, SWR Meter PCBs etc. Perhaps some German membebr may be able to help us with translation of the catalogue or how to order these parts ?

John Birkett, 26 The Strait, Lincoln. is offering balanced mixer ICs CA3028A (often used in US designs for direct conversion receivers) at 50p each. John usually requires 20p postage per mailed parcel.

Do you know that HL Smith 287/289 Edgware Road, London. W2. will make up custom cases to order in aluminium. Just make a neat sketch with all the sizes marked, indicating the gauge of metal required. They will return the case with an invoice. These cases are cheaper than any of the commercially available standard size boxes. G3R00 uses these cases and they are very nicely made. The sort of service that might stop if its not used enough, so lets keep the service going.

Award News

Congratulations to the following new Award holders.

QRP Countries; 100 SMoGKF, OE1SBA; 50 GM3MXN; 25 G4IEE, G4EFJ, CT4CH, G4INM, G4DQP, I7CCF.

Worked G QRP Club; 120 GM30XX, G4BUE; 60 G4CQK; 40 G4DQP; 20 G3DOP, G3SYC, GM3MXN, I7CCF.

Two-way QRP; 10 G4EFJ, GM3MXN, G4DQP, I7CCF, CT4CH.

QRP WAC; G4INM, SMoFSM, G8PG, GM3MXN, G4CQK

HELP US TO HELP YOU

When applying for Club Awards always; sort cards into call sign order; when you have sorted the cards make a list of them and enclose it with your application (if you are applying for more than one Award send a list for each); enclose a signed power declaration; enclose a self addressed envelope for the return of your cards; enclose either 50p sterling (in UK stamps), 3 IRC, or 1dollar USA or Canadian to cover postage. Finally, check your list of countries against the latest DXCC list. - UA1.UA3.UA9 and UA0 count as two countries. not four".

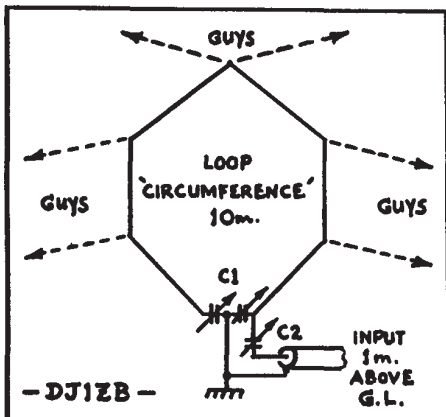
THE G2NJ TROPHY

This year the Trophy will be awarded for the best technical article published in SPRAT during the past three years. YOUR VOTES will decide who the winner is, so please drop a line to G8PG and tell him which article you liked best.

PARTRIDGE TROPHY

We now await entries from ordinary mortals using back yard antennas - see page 13 of the Spring 1980 issue of SPRAT for details. This could be your chance to hold this fine Trophy for a year. Logs to G8PG please by 1st February.

WANTED: HW7 or P4 series transceiver for 20m. Details to G5Ls 0206 36687



CAPACITIVE TUNING FOR LOOP AERIALS

Ha Jo Brandt DJ1ZB

Reference the loop aerial described in the Winter issue of *SPRAT*, capacitive matching may be used as an alternative (Ref 1). During 1968 I experimented with a loop aerial using the matching arrangement shown in Fig 1. C1, a 500p twin gang capacitor tunes the loop, and it is matched to the co-axial cable by means of a capacitive current divider which includes C2, a 50p air spaced capacitor (direct matching to the output stage of a TTX is also possible using this method). With this arrangement an swr of 1:1 is easily obtained. Once the setting of C2 for a particular band has been found it need not be retuned, but movement of frequency within the band will require readjustment of C1 to keep the loop in tune. This is because the loop is a very high Q circuit. I agree that most of the losses in the loop are due to the skin effect of the antenna conductor, so the larger the conductor surface the lower the losses. My loop was made from 17 cm wide copper foil, designed for screen windings in high power transformers. The circumference of the loop should be between $1/3$ and $1/4$ wavelength at the highest frequency to be used. Note that very high voltages are built up across the ends of the loop. Ordinary air spaced capacitors will usually handle QRP, but if flashover occurs use two sections in series to increase the voltage rating. The loop radiates at both high and low angles on sky wave, and is omnidirectional for this mode. Ground wave radiation is in the figure-of-eight pattern found with receiving loops. The aerial provides useful short and medium range communication where space is limited. For the higher frequencies I believe that even a short, loaded, vertical aerial would give better results and be simpler to erect and operate.

Ref 1. Down-to-earth Army Antenna, *Electronics*, August 21 1967

First Annual January SSB QSO Party

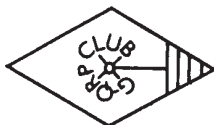
Another new event, this one being promoted by The ARCI QRP Club of the USA for SSB only. The period is from 2000z on 17 January to 0200z on 19 January. Exchange RS, members give Club number and non members give power, and State/Province or Country. QSOs with members count three points, non members two points, and non W/VE QSOs count four points. If you use an input power of 5.1 to 25 watts you claim a power multiplier of 2, between 1.1 and 5 a multiplier of 3, and less than 1.1 watts a multiplier of 4. Final score is the QSO points multiplied by the number of States/Provinces/Countries multiplied by the power multiplier. Logs by 25 March to Ed Lappi, WD4L00, 203 Lynn Drive, Carrboro, N.C., 27510, U.S.A.

AGCW-DL Activity Weekends for QRP 1981

The AGCW-DL, like The G-QRP-Club are now promoting QRP Activity Week-ends, and have two planned for 1981. They are over 28/29 March and 31 October/1 November. Times as follows :- 80m - 1600 to 1800; 40m - 1000 to 1400; 20m - 1100 to 1200 and 1800 to 2000; 15m - 1000 to 1100 and 1300 to 1600; 10m - 1300 to 1600. All times GMT and on the CW/SSB QRP Frequencies.

QRP GUIDE FOR 1981

A SPRAT Pullout



QRP DIARY 1981

- 17/18.1.81 AGCW-DL Winter QRP Contest
- 17/19.1.81 QRP ARCI SSB QSO Party
- 28.2.81/1.3.81 G-QRP-C CW Activity Week-end
- 29.3.81 Italian QRP Club 144MHz CW Spring Contest
- 28/29.3.81 AGCW -DL QRP Activity Week-end
- 28/29.3.81 CQ SSB WPX Contest with QRP Section
- 12.4.80 R.S.G.B. Low Power Contest
- 25/26.4.81 Italian QRP Club SSB Field Lay
- 1.5.81 AGCW - DL QRP/QRP QSO Party
- 3.5.81 R.S.G.B. RR CW Contest with QRP Section
- 17.5.81 R.S.G.B. RR SSB Contest with QRP Section
- 30/31.5.81 CQ CW WPX Contest with QRP Section
- 24.5.81 R.S.G.B. 144MHz Low Power Contest
- 18/19.7.81 AGCW - DL Summer QRP Contest
- 19.7.81 R.S.G.B. 3.5MHz Field Day
- 25/26.7.81 Italian QRP Club Phone QRP Contest
- 2.8.81 R.S.G.B. 144MHz QRP Contest
- 29/30.8.81 Italian QRP Club CW QRP Contest
- 12/13.9.81 G-QRP-C CW Activity Week-end
- 18.10.81 R.S.G.B. 21MHz CW Contest with QRP Section
- 24/25.10.81 CQ WW SSB Contest with QRP Section
- 31.10/1.11.81 AGCW-DL QRP Activity Week-end
- 21/22.11.81 Italian QRP Club 2nd Alternative Energies Contest
- 28/29.11.81 CQ WW CW Contest with QRP Section
- 26/31.12.81 G-QRP-C QRP Winter Sports

QRP CW ACTIVITY WEEK-ENDS - 1981

GMT

28th February/1st March

12th/13th September

0900 - 1000	3560
1000 - 1100	14060
1100 - 1200	21060/28060
1200 - 1300	7030

1400 - 1500	14060
1500 - 1600	7030
1600 - 1700	21060/28060
1700 - 1800	3560

1900 - 2000	7030
2000 - 2100	21060/28060
2100 - 2200	14060
2200 - 2300	3560

G-QRP-CLUB WINTER SPORTS 1981

GMT

Daily from 26th/31st December

0900 - 1000	14060
1000 - 1100	21060/28060
1100 - 1200	7030
1200 - 1300	3560

1300 - 1400	7030
1400 - 1500	3560
1500 - 1730	21060/28060
1730 - 2000	14060

2000 - 2100	7030
2100 - 2200	3560
2200 - 2300	14060

Reports on the Activity Week-ends would be welcomed by G4BUE and for the Winter Sports should be sent to Gus Taylor, G8PG, 37 Pickerill Road, Greasby, Wirral, Merseyside, L49 3ND, England.

In addition to the above, members of G-QRP-Club have a weekly Activity Period on Sundays from 1100-1230 and from 1400-1530 GMT on the International QRP frequencies (3560, 7030, 14060, 21060 and 28060). All radio amateurs interested in QRP are invited to join in.

G QRP CLUB Members List December 1st 1980

G2	AHS	FMW	JFM	LYU	PZP	VBS	ZDE	BCY	CSM	DVW	EXF	GED	GZJ	ICC	JKO	G8(VHF)			
Bs	AIP	FNM	JIS	MBW	RDU	VFA	ZEE	BHO	CUF	DXN	EYS	GER	GZS	IDG	JNK		AAL	RVD	
CP	AMF	FTQ	JKB	MDQ	RFE	VKM	ZGN	BJS	CUY	DYF	EZF	GFK	HAQ	IDL	JRE		APR	SEQ	
MJ	AMO	FUH	JKY	MPW	RGF	VMU	ZHP	BJZ	CVE	EAM	FAI	GHM	HED	IEE	JUC		ASW	SHR	
ASF	ANQ	FVD	JPX	NEO	RIS	VRM	ZKU	BKQ	CWS	EAN	FAM	GIE	HEP	IIN	JQX		AXO	TAK	
BON	ASE	GAQ	JRD	NHC	RJF	VTD	ZLA	BLG	CZB	EAX	FBA	GIQ	HEY	ILU	JZO		BVH	TBF	
BOF	AVN	GBD	JSP	NIJ	RJV	VTT	ZLT	BLM	CZX	EBO	FBZ	GIU	HFP	IKR	KGY		BZT	TOZ	
BYP	AWO	GET	JXQ	NJC	ROO	VTZ	ZNK	BQC	DBN	EDG	FCU	GJA	HFS	IMG	KOV		EAS	UAT	
CAS	BGR	GGL	KAN	NKS	RRD	WBO	ZOF	BSS	DBU	EEM	FEI	GJW	HLP	IMH	KQG		FGY	UFY	
CAV	BOK	GQE	KDL	NPJ	RYP	WFO	ZOH	BUE	DDX	EFJ	FJF	GJY	HKD	INM	KVQ		GRT	UQY	
CCQ	BRL	GSY	KPE	NQE	SCE	WHU	ZPF	BVU	DES	EHT	FKH	GLQ	HHB	ISO	G5		IGZ	UXH	
CGL	CCB	GUV	KFS	NRO	SGY	WMN	ZQA	BWP	DGX	EHU	FLO	GKC	HIH	ISU			BH	IQT	VJJ
CKM	CED	GWI	KFZ	NTD	SMV	WXL	ZWH	BXL	DHF	EJN	FLQ	GMI	HMC	ITA			FF	KEN	VNB
CVA	CEL	HCM	KII	NTM	SSJ	WOV	ZXC	BXN	DLJ	EJT	FMD	GOF	HME	ITC			IC	KMV	WEW
CVV	CLL	CDL	KJJ	OAZ	SVO	WWS	ZXK	BZB	DKS	EKH	FMH	GOT	HNE	IUP			LS	KNA	VOQ
CYN	CWL	HKO	KKQ	OEP	SYC	WYF		CCB	DMB	ELZ	FMK	GOY	HNI	IVJ			OW	LPO	XIP
FRZ	CWX	HMF	KPP	OIN	TBT	WEA	G4	CCW	DMH	ENK	FNL	GRP	HNR	IVP			CRD	LVZ	XQA
FWA	DBU	HQQ	KPT	OJM	TKO	XFG	AL	CEJ	DNP	ENW	FRE	GQL	HOR	IVY			CSU	LXJ	XSC
HCP	DMC	HRD	KQT	OKY	TKU	XMI	HG	CFW	DOP	EOE	FQE	GRR	HPQ	IWC			DQK	NGY	
CII	DNF	HZM	KRR	OQJ	TML	XPM	LV	CIA	DOU	EQC	FQQ	GSA	HPB	IYE				NJZ	
HKU	DOP	IEB	KSK	OSJ	TOG	XVF	OO	CIB	DPY	ERE	FSP	GSC	HQE	JAJ		NLQ			
HKZ	DPS	IGM	KTX	PDL	TPI	YCC	AEM	CHL	DQA	ERO	FST	GTU	HQJ	JBL	AB	OOG			
HLL	DRP	IGU	LBT	PEQ	TVU	YGI	AHF	CKG	DQF	ERT	FVE	GUV	HQV	JBR	AAL	OQX			
	DVL	IGX	LDO	PLB	UBZ	YJM	AJV	CKI	DQP	ESF	FXI	GVH	HSG	JDB		OWL			
G3	DWV	ILO	LGX	PKQ	UHQ	YLL	ANF	CLD	DRB	ETJ	FZO	GWI	HSO	JDC		G8	OXM		
AM	EDW	IQF	LHJ	PQB	URU	YNA	ASL	CLN	DRW	ETS	FZS	GWV	HTM	JDF	DV	PW			
CJ	ENB	IRM	LJF	PTO	UWZ	YOV	ATN	CLR	DRZ	EUW	GBE	GVA	HTP	JEA	IB	PUD			
RD	EPU	IRW	LXQ	PVQ	UXE	YUQ	AWQ	CMY	DTB	EYA	GBR	GYM	HWU	JIM/	KB	PWJ			
VA	ESB	IVF	LYE	PXS	UYM	YVZ	AYN	CQK	DTE	EYD	GCU	GYQ	HWZ	JJN	PG	RCA			
ADB	FCK	JAD	LYK	PYU	UZI	YXB	AYS	CRI	DUT	EYE	GDR	GZI	HYY	JLL	VN	ROO			

GD	4ELM	3CIJ
3FXN	4FDD	3DEX
GI	4FNE	3ELM
2DZG	4FPR	3HAI
3GTR	4GIF	3SSY
3NZZ	4GNB	3YBB
3VYY	4HBT	3YWE
3XZN	4HBM	3ZFY
4CBG	4IIR	4EYG
4FFL	4ITH	4GJI
4GNT	4IZJ	4KJW
4HVI	4JCY	
4HXL	4JJG	8GBJ
4IVI	4JMU	8GLG
GM	4JNF	8HZW
3KMG		8PBO
3KNX	8FHV	8UG
3MXN	8JQF	
3OXX	8ODL	
3RFR	8WFE	
3RKU	8WMU	
3SPT		
3WIG		
3XNE		
3ZTA		
4CIP		
4CXP		
4EFR		
4ELV		

Overseas Members

USA

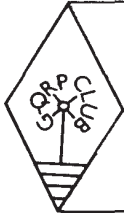
1	3	K1DDC	AF3S	WD4FZU	W6YVK	W8JGK	WD9CIX
		K1EQA/6	KA3EIN	WD4NGD	WA6POC	W8LCU	WD9EAF
		K1GKR	W3AEC	WN4AEC	WB6MKM	W8JCS	Ø
		KA1BPC	W3QF	5	WD6BYN	WB8BHU	KØTBB
		KA1CZF	W3TF	AB5L	N6WR	WB8OWM	KØUBA
		KA1DYN	W3FQT	K5BOT	N6BVZ	WB8PJR	KAØDGN
		N1AQK	WA3BME	KA5AEK	N6CDQ	WD8AZF	KAØEGJ
		W1EXZ	WA3FNK	K5NT	7	WD8BMQ	WØGK
		W1FB	WA3MWR	K5VOL/9	K7BD	WD8LJF	WØON
		W1S2J	WA3TKU	KA5AMD	K7BWE	WD8NOY	WØCGA
		WA1JVY	WA3YZH	KA5EDG	W7EL	9	WØPFR
		WA1THQ	WB3AAA	KA5ELD	WA7ZBL	AA9N	WAØYED
		WA1EKP	4	KB5B	WB7BZQ	AE9G	WBØHMN
		AI2H	K4AJF	KB5OX	WB7BZR	K9PNG	WBØAJI
		KA2ETN	K4BNI	KB5EPU	WB7QMA	K9ZMH	WBØOKY
		W2BKH	K4DFP	N5AMQ	8	KA9B	WBØROT
		W2BYO	K4HTK	W5QJM	K8AEM	W9AYA	WBØNGS
		W2LTG	K4JHP	WA5TFU/Ø	K8EEG	W9JKF	WBØMKY
		W2YJR	K4KCK	WB5CVE	K8IF	W9PNE	WDØEAO
		WA2JOC	K4NRM	WB5NGB	K8LJQ	W9SCH	WDØEDH
		WA2KSM	KC4IG	WB5VXH	K8MK	WA9FPP/1	
		WA2LZZ	WA4ØTL	WD5BUG	K8BUE	WA9KFR	
		WB2EUF	WA4YMQ	6	K8DDI	WB9FRU	
		WB2ONA	WA4YRN	KA6FRM	K8EDG	WB9LGZ	KL7IBT
		WB2QCH	KB4IP	W6IRA	K8HAN	WB9QPS	WL7AHR
		WB2RZU	N4GR	W6PQZ	N8BF	WB9BKU	
			WD4FXX	W6KQ	N8ALE	WB9VIC	

Europe

C31DV	EI1DA	OE1SBA	SM4DXL
	EI3CY		SM5ENX
CT1DP	EI3DY	OH2KF	SM5JBM
CT4CH	EI3EA	OH5WH	SM6SUZ
	EI6BA		SM6PQE
DA1JS	EI6DH	OK1DKW	SM7BNG
DF5KD	EI7DN	OK2BMA	SM7EHK
DJ1ZB	EI8CA		SM7GUY
DJ4HR	EIØCF	ON4PQ	SMØFSM
DK5QK		ON5AG	SMØGHU
DJ7ST	F3IM	ON5LJ	SMØGKF
DK2EV	F6GLP	ON6GA	SMØGMG
DK2NV	F9YZ	ON6KE	SMØIIN
DK2TK	FOHX	ON6NF	
DK5RY		ON6WJ	SP5AGU
DK6AJ	HB9AK	ON7CH	
DK9TZ	HB9ALF	ON7IR	
DL7DO	HB9ASJ		
DL7MAM	HB9BCO	OZ3XH	
	HB9IK	OZ8SO	
EA1QJ			
EA5ME	IV3BOZ	PA3ABA	
EA7AAW	I3ESX	PA3AJU	
	I3IDU	PA3BDB	
EA8EY	I5WUO	PAØCWA	
EA8OA	I7CCF	PAØCMF	
	I7NFE	PAØDST	
	I7SBY	PAØGG	
	IØSKK	PAØYF	

World

PY2EGM	V35MG
PY2PNE	
PY2TU	ZC4AU
VE1BFL	ZE1CQ
VE2EZI	ZE3JO
VE3JFH	
VE3KTZ	ZL1AF
VE3LDW	ZL1AO
VE4QL	ZL1BTT
VE5JQ	ZL1BHT
VE6AAN	ZL1BLJ
VE7CKF	ZL1HV
VE7DHM	ZL2AUJ
VE7DZR	ZL2BJ5
	ZL3WL
VK3NQG	ZL4IZ
VK3VEU	
VK5ADG	3B8BJ
VK5ME	



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WHO DOES WHAT:

SPRAT material, change of QTH, General Mail to G3RJV, Subscriptions to G4DVW, Award applications to G8PG, Members News and QSLs to G4BUE, SSB matters to G3R00, VHF matters to G4DHF, Datasheets from G3R00. PLEASE QUOTE YOUR MEMBERSHIP NUMBER WHEN WRITING TO CLUB OFFICERS.

Subscriptions

We regret to announce an increase in subscription from Jan. 1st. 1980. A 20% increase in SPRAT printing costs plus the recent postage increase force a considerable increase, which we hope to hold for some time.

The NEW RATES ARE:

U.K. £3.50 per annum.

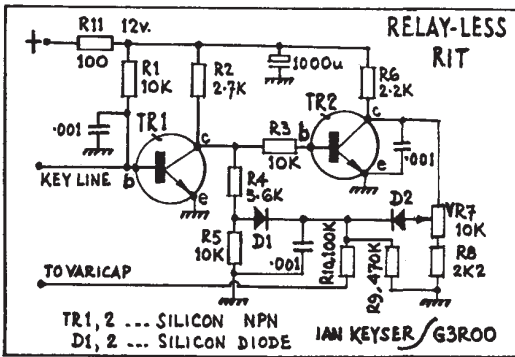
U.S. \$9.00 per annum.

OTHER COUNTRIES: Local Currency Equivalent. NO I.R.C.s PLEASE.

We hope that all members will feel able to remain in the club at the new rates.

Datasheet Service

The popular club datasheet scheme has now been taken over by G3R00 (our SSB Manager). These sheets which are photocopies of articles of QRP interest from various sources are available to any member who writes, enclosing a large S.A.E. and five pence per title to cover sundry expenses. G3R00 can supply a list of current sheets. IAN KEYSER (G3R00) ROSEMOUNT, CHURCH WHITFIELD, DOVER, KENT. (please quote membership number when ordering)



RELAYLESS RIT

Ian Keyser G3ROO

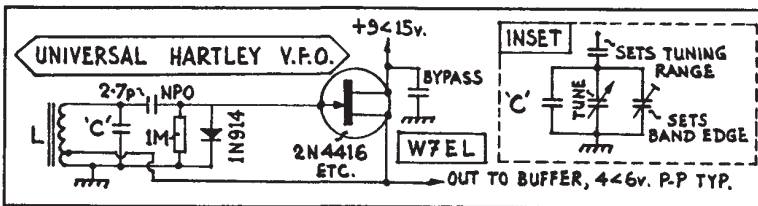
I was recently asked how an IRT system could be accomplished without the use of a relay, and be keyed by the keying line. This circuit was designed and the only demands on the keying line are that in the key up mode, the line must rise above two volts, and in the key down it must be below two volts. In some cases, this range could be considerably less. The cost is about the same as a good 12v relay, and it is quieter.

Key - up Mode

R1 causes Ib of 1mA turning TR1 hard on, and reducing the collector voltage to near zero. Therefore no base current. TR2 allowing the collector to rise to ten volts (potential divider R6 Rv7 Rs). The anode of D2 takes up the potential of the slider of Rv7, between three and nine volts. The anode of E2 is at zero volts (the collector of TR1 is at zero), and therefore L1 is back biased. The varicap bias is 0.6 volt below the slider of Rv7 due to the voltage drop across D2.

Key - down Mode

TR1 turns off and Vc therefore rises to about eight volts (compound divider R2, R4, R5, R3 and base of TR1) and the anode of E1 rises to about six volts. Approximately 1mA of base current in TR2 turning it hard on and Vc drops to zero, and therefore the slider drops to zero. E2 is back biased, and therefore the bias to the diode is 0.6 volts below the anode of D1, as E1 is now forward biased.



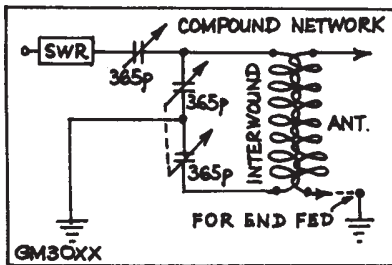
L: wind tightly on type 6 powdered iron toroid core of -37 to -50 size (or 50), e.g. T-44-6. After winding, boil for one minute in water, and allow to cool in air. Tap a quarter of the way from the bottom. X1 should be about 150 ohms at the operating frequency.

C: Xc should be about 150 ohms at the operating frequency. If desired, some or all maybe connected from tap to ground, but C connected to tap must be 16 times as large

Use air or NPO ceramic dielectric. Can temp. compensate by replacing some of the C with polystyrene or neg. TC ceramic units.

Do not build on PC board over ground plane. Stray capacitors with board as a dielectric have very poor temperature characteristics.

Typical performance (40m): Warm up drift 100 - 200Hz (downward), about half occurs in the first one to two minutes. Frequency will change 50-80Hz/volt of supply change.



QRP Z MATCH ATU

George Burt GM30XX

Having a centre fed zepp with a 44 feet top and trying to make an ATU to match it on all bands was quite a problem, what with a series or parallel tuning and trying to adjust the taps for best match, was not easy.

Looking through an old hand book I came across a Z match and it looked just what was needed.

L1 and L2 are wound on two inch plastic drain pipe and using 4mm plugs and sockets, a set of plug in coils were made for all bands. L1 is wound with 1.5mm solid wire and L2 with plastic covered flex. L2 is fully interleaved or layer wound with L1 and should be nearly the same number of turns. It is now possible to load up on all bands, and it also works fine as an end fed system.

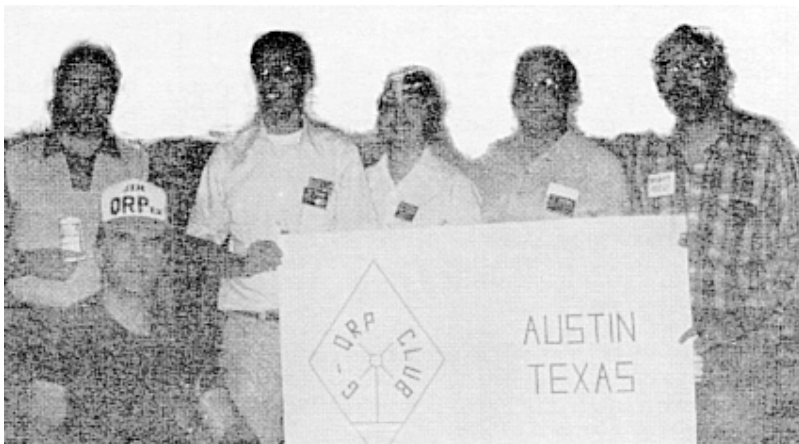
For further details refer to the third edition of The R.S.G.B. Handbook of Radio Communication, July 1976.

CLUB MEMBERS MEET IN TEXAS

All five members, and one potential new member, of The Austin, Texas, Chapter of G-QRP-C turned out for their first in person meeting in mid October in what is to become at least an annual event.

Members, who meet almost daily on the air informally, declared the October event a success, despite the fact the weatherman blessed it with light rain and a good breeze. Highlight of the meeting was the reading of a letter of congratulations from G3RJV.

In keeping with the finest democratic traditions, all five members unanimously were elected President of The Austin Chapter, with terms to run concurrently. Members agreed also to monitor the International QRP frequencies whenever possible, especially 21060 and 28060, as an aid to those wishing to work the Capitals of the 50 U.S. States.



Attending The Austin, Texas, Chapter of The G-QRP-Club meeting were (from left) David Farris K5NT, Jim Lammers (in hat) KA5HEK, Ed Popp K5BOT, Dan Sanderson W5HSN, John Bacak N5AMQ and Fred Bonavita W5QJM.

WANTED: HRO Bandspread Coils, also cans and one assembly. A.D. Hitchcock
38 West Road, Spondon, Derby.

SSB Manager Ian Keyser G3R00

Well, just a few words about myself, the job, and what we hope to achieve. Firstly the name is Ian Keyser, G3R00. Main interest is construction and SSB QRPing. The problem at the present is the attitude to SSB QRPing. Most CW men think that it is more difficult to get contacts on SSB, this myth, like many others, we hope to dismiss over the next year. To this end I need you to write to me and let me know what you have managed to do, and what you managed it with. Next is the construction side, what have you built for SSB? We very rarely get any SSB constructional details and therefore SSB gets forgotten to an even greater degree! Finally I intend to make sure that we get our mode on a level pegging with CW! How can we compete with only 3.6 Watts PEP?

73's 'till next edition and WRITE,

CALLING SSB QRP OPERATORS: The Benelux QRP Club net is on Sturdays (3640) 0830 (summer) 0930 (winter) and invites G QRP Club members to call in after the net - listen for PAØWRA or PAØJHS.

VHF Manager David Johnson G4DHF

This column is aimed at stimulating activity on the V.H.F. bands; an area which has tended to be rather neglected by QRP enthusiasts, primarily due to the fact that it is generally considered harder to generate a clean, stable signal on these frequencies than on the HF bands. There is also the problem of mode occupancy; SSB and FM predominate activity, with CW being used to full advantage only when conditions are particularly favourable.

It is intended to use the space provided to propagate your ideas on circuit design and construction. Although full scale designs for transmitters and receivers would be welcomed, simple 'snippets' of circuits and 'prime movers' (Xtal, VXO, VFO etc.) will form the bulk of material. It will be a column of your ideas and findings, and so it will rely upon you to supply a feedback of ideas that may possibly be of use to others who may be experimenting in the same areas. There is ample scope for experimentation and QRP activation on the 70 MHz, 144 MHz, and 432MHz bands which have the attraction of lack of QRM, plenty of frequency space, less demands upon selectivity in very simple receivers, and the use of small, high gain aerials which make portable operation particularly practical. Such a practical application of simple techniques will rapidly increase activity on what would under normal conditions be considered as dead or inactive bands.

Details of awards and activity/contest dates will be published in future editions of 'Sprat'. Please write to QTH in Pullout section or QTHR.

Club QSL Cards

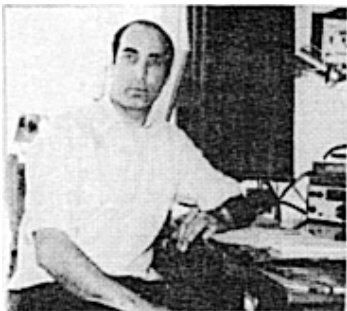
A very distinctive Club QSL Card is an advanced state of preparation. Full details will appear in the next issue, and a leaflet describing the cards is in preparation. Those who require advanced information, for early ordering, please send a SAE to Alan Lake, G4DVW, our treasurer.

Wanted: Codar AT5, with or without PSU. Finbar O'Connor EIØCF, Malin Head Radio, Malin Head, Lifford, Co. Donegal, Eire.

WANTED: Radio Communication Handbook. Any Edition State price inc postage. GW8HZW - QTHR.

WANTED: Wireless World March 1967 and Ham Radio December 1968, Circuit or manual for Eddystone 740 RX (for copying) For sale: Radio Electronics (USA) Magazine. G8MFHV.

REQUIRED TO PURCHASE: HW8 Transceiver by certified disabled amateur G4GOF : QTHR.



MEMBERS NEWS

Chris Page G4BUE

As reported elsewhere in Sprat, this edition sees a slight re-organisation in the presentation of Sprat. Ian Keyser, G3ROO and David Johnson, G4DHF take over responsibility for SSB and VHF matters respectively. Please refer all your news on SSB and VHF to them in the future, and everything else to me.

Do you prefer the recent method of running the weekly cw activity periods whereby activity is encouraged on all QRP frequencies between 1100 - 1230 and 1400 - 1530 on Sundays, or do you prefer to go back to the old system? Let me know what you want so we can make an announcement in the Spring Sprat.

The third cw Activity Week-end seems to have been successful in the number of member active despite the poor conditions on the HF bands. I7CCF found 17 members, GM30XX 29 members and 16 countries on two-way QRP, DL7MAM worked 7 members whilst experimenting with short helical vertical antennas. Petr, OK1DKW was only QRV for three hours with temporary antennas. He lost his main antennas in some recent high winds. Uli, DK9TZ heard 8 members and DJ1ZB worked four new members with a two band version of his Lagos QRPeter on 14/21MHz. Ha-Jo concluded that he must improve the receive selectivity for copying QRP stations on the crowded bands. Tom, G4INM used his modded FT7 at 4 watts input, but said he will have more time for QRP in 1981, as he will be retiring - lucky chap! Tony, G4FAI found most of the activity to be on 14MHz

GM3RKD says he has some 1MHz crystals which he will give to members upon receipt of a SAE. He also has a few 1.5 and 10MHz crystals. Brian, G3SYC asks that members write their Club number on their QSL cards, and also the fact that the QSO was two-way QRP, that is if both sides were using 5 watts or less. Brian also mentions his disappointment at only meeting Club members G3YCC and G4FCU at the Leicester Exhibition on the Saturday. Your scribe was there on the Thursday with G4DVW, G3RJV, G4DHF and G3ROO. The meeting adjourned to a local drinking establishment afterwards amongst much QRP rag-chewing.

Those members who read Short Wave Magazine will have seen the "SCD" QRP Transceiver in the January 1980 edition designed by George, G3RJV. This rig has been built by G4GVH who has used it to a 18AVT and worked members in the UK, DL, F, PA and ON. Cyril has also built a homebrew transmitter for 14MHz. Bill, G4EHT also built the SCD, and despite obtaining plenty of RF, he could not get any of it on 3.5MHz. He obtained some Amidon toroids (as recommended by G3RJV) and now has all his RF where it should be. He wrote to me ten minutes after completing his first QSO with it, with member G3HIS, receiving a 449. G3IEB has found his SCD works very well, and G3NTE uses the SCD and all accessories on 3.5MHz. Alan has had over 100 QSOs with the rig and operates from an 8x5ft caravan in his garden. David, G4HMC has also built the SCD running the PA at 65mA with 12 volts. He has been pleasantly surprised at the high number of contacts he has achieved with it. Contacts have been on 14/7MHz, with the best QSO listed as an OK station on 7MHz.

Members have been using the Autumn conditions to improve their DXCC country scores. G4HZC worked JR3QZE with the 21MHz Mizuho QRP rig, recently reviewed in Sprat by G3RJV. W9PNE has worked 117 countries, GM30XX worked 154 all on CW, whilst SMØGKF has worked 112 all on SSB. Rune has recently applied to Ade, K8EG for the QRP DXCC Trophy. Felix, I7CCF is on 94 worked, Albert G4CQK on 91 including HR, LU, VK, VP8 and VS6 on SSB. G3RJV, between secretarial and Church duties found KV4AA and VU2BK to improve his country score.

New member PY2FNE has sent details of the QRP scene in Brazil, where there is a very active QRP club. 55 countries and 40 States towards WAS have been worked with 5 watts input. Carlos says he has worked Club members on 21MHz, but doesn't say who! Rocky, W9SCH has worked 26 countries with 1 watt output to a 80m zeppelin antenna on 21/28MHz. G4EHT has erected a new antenna, a TA32 beam at 15 feet. Bill has worked W and VE with it and the HW8. G5CRD has been greatly surprised at the amount of recent activity around 7030 on Sundays. Marvin is QRV with his HW7 and recently worked a K1 from Rhode Island who was running 5 watts. With his all homebrew station, George GM30XX has recently worked 8R1, 5T5, CO, HKØ, YB, HM and his best one, A35. Eric, G2CGL has worked VE, PY, VP9, UAØ, JA and ZL all with his HW8 and a dipole

at 18 feet.

Bill, WA2JOC has been experimenting with low power using his Argonaut. This resulted in a QSO with an I station, whilst Bill was running half a mW, as measured with a Heathkit IM-18 and RF probe. He has found that the efficiency of the Argonaut PA is around 1% when used at the microwatt levels, a discovery also made by your scribe when he did the same thing. IØSKK uses a solid state transmitter on 7MHz, and with 500mW input has worked 10 countries. Al is also active on 14MHz with an IC202, which he operates from a /P QTH 8/9000 feet when he is mountaineering. Colin, G3VTI has been using his Argonaut to work DX in the shape of VU,KP4,KV4,HH on 14MHz and OX on 28MHz, all with his G5RV at 50 feet. Colin has kindly offered to translate the magazine of The Benelux QRP Club, which has many interesting articles in it.

A first letter from EIØCF says how pleased he was with his new Argonaut, but a second letter reported that Finbar had built the JU6 transceiver, and being so taken with it has decided to sell his Argonaut. Finbar says he would like to correspond with other members who have built the JU6. SM6FQE uses a HW8 to a TA33, and has worked 50 countries. Ola would like to get in touch with anyone who has a transverter design to enable the HW8 to be used on 28MHz. Dick, K4BNI uses an argonaut to an inverted vee and has recently worked YU,J6,HB,DL,F,EA9,CE and YV. Graham, G4IDG is mainly QRV on 21MHz with a 120V at 5w. His best EX is ZD8 and VK8. He recently worked SM and OE crossband 4m/10m, which is rather interesting.

Like your scribe, WA6POC likes QRP contesting. In the recent CQ SSB Contest Lick worked 21 zones and 43 countries in a single band 28MHz effort. His QSOs included 160 with Japan. Bill WA2JOC is listed second in the 1979 SSB Contest QRP Section, and is the only Club member in the top ten. But in the CW Contest, five of the top ten are taken by Club members: G4BUE, OK1DKW, SM5CCT, WA6POC, and VE5JQ. Well done.

G4FAI mentions the HA Contest in which he made 31 QSOs. He was determined to work at least one HA station, which he did with only one hour of the week long contest remaining. Larry, G5IC emphasises the need for absolutely perfect CW when having QRP QSOs, regardless of the speed. A couple of years back Larry was listening with an indoor antenna (7 ft high), when he heard ZL1BLJ calling CQ QRP, with no takers. Larry said that if Mike had not been sending perfect cw at about 8 words per minute he would never have copied his call sign. Larry sent Mike a report to find that it was the first time Mike's signals had been copied in the U.K. Mike was using an Argonaut to a Hustler vertical.

Richard, WA1TRY is known as the "QRP fanatic" amongst his local club, as he talked them into entering their Field Day with QRP. They used Argonauts to a quad, and a 540 feet vee beam on two 40 feet ladders. They hear they have come 4th overall, so Richard's suggestion turned out to be a popular one. Peter, HB9IK has sent along details of QRP Contesting in Switzerland under the heading of 'National Mountain Day'. This event is held annually and goes back to the early days. The /P site must be at a minimum of 800m high and the complete equipment must weigh not more than 3000g. Since the transistor age, rigs around the 300g have been made.

G3SYC collects Collins mechanical filters, especially the F455 F05 types. When Ben CT4CH is not QRPing at home he is cross the Atlantic aboard large ships. He has a QRO rig aboard. When he is at home he is QRV most week-ends with CT1DP on 21285 between 0900 - 1000. Congratulations to Gus, G8PG, he has worked VK6WT to complete his WAC. SP5AGU has worked 96 countries since 1978 all on 14MHz CW, and AA9N is also on 96 worked.

Several members mention taking part in The ARCI October QSO Party. W6SKQ made 112 QSOs with his Argonaut and 2 el. quad, W9PNE made 176 QSOs, and is another member who is retiring in 1981. AA9N worked 21/14MHz and mentions the very courteous operating (unlike QRO) with a definite air of co-operation and humour. On this side of the water GM30XX had 19 QRP QSOs on 28MHz, and your scribe stuck to 21MHz for 26 5w QSOs, including members, K8IF, AA9N, W9PNE, and (after a bit of a struggle) W6SKQ. K8IF mentions a new net on Monday nights on 14060 at 2400z for QRP stations.

Space has beaten me (again), many thanks for all your letters. Please keep them coming with your QSL cards for members (over 100 cards distributed with this Sprat). Don't forget the first Activity Week-end for 1981 (28/2-1/3), times and frequencies elsewhere in Sprat. Let me know how your Winter goes.

Best 73 and good QRP DXing,

Chris Page - G4BUE

New Members

934 PY2EGM S.Machado, P.O.Box 58050, 01 397 Sao Paulo, Brazil.
 935 G4KGY T.Lawford, 3 Alfred Close, Thanington, Canterbury, Kent.
 936 M.Prince, 5 Paul Close, Aldershot, Hants, GU11 3BN.
 937 G4HFS M.Davies, 7 Newbolt Close, Paulerspury, Towcester, Northampton.
 938 G4DRW G.Smith, 18 Hamilton Way, Acomb, York, YO24LE.
 939 G4HWU B.Osborne, 3 Pershore Gardens, Normoss, Blackpool, Lancs.
 940 G3WMN J.Carter, Springfield, Mill Lane, West Winch, Kings Lynn, PE33
 941 EI3DY M.Staunton, Glenina, Enniskerry Rd., Standyard, Co.Dublin. ^{OLT.}
 942 M.Lynch, 248 Balcurris Rd., Ballymun, Dublin 11, Eire.
 943 C.Lindars, 41 Blenheim Gardens, Wallington, Surrey.
 944 GW3SSY D.Jones, 7 Church Close, Llangynidr, Nr.Crickhowell, Powys,
 945 GI4HVI T.Hamilton, Barra, 11 Norwell Park, Castlerock, Coleraine, ^{NPS INY.}
 946 G3WHU G.Parrott, 3 Manor Rd., Westminster Park, Chester. ^{BT 51 4TS, N.IRE}
 947 WB5CVE F.Schlabit, 6901 Thornwood Court, Austin, Texas 78744, USA.
 948 G3JPX F.Sherlock, 8 Tudor Rd., Canvey Island, Essex.
 949 G3AM P.Beer, Fordwater, Bude Rd., Hartland, Bideford, N.Devon.
 950 G4HHB R.Kingstone, 2 Tindal Cl., Burgess Hill, Sussex, RH150LB.
 951 GI4HXL L.Manderson, 12 Holland Gardens, Ballyhackamore, Belfast, N.Ire.
 952 G8SEQ J.Beech, 14 Hollow Crescent, Radford, Coventry, CV6 1NT.
 953 R.Rylatt, Kingsbridge, Cross Lane, Findon, Nr.Worthing, Sussex.
 954 E.Gray, Star Rt. Box 108-B, Whitmore, CA96096, USA.
 955 PY2FNE C.Moura, P.O.Box 98, 11100 Santos, S.P., Brazil.
 956 A.Gill, 14 Shrewsbury Rd., Church Stretton, Salop, SY6 6JB.
 957 G4KOV H.Wright, Sandpiper Cottage, Standard Rd., Wells-Next-the-Sea,
 958 G8VJJ A.Haas, 9 Little Grove Field, Harlow, Essex. ^{Norfolk.}
 959 G8RCA R.Ratcliffe, 12 Palmer Close, Nine Mile Ride, Wokingham, Berks.
 960 G3JRD R.Dancy, Altair, Rye Rd., Sandhurst, Hawkshurst, Kent, TN18 5PH.
 961 G4GYA R.Williscroft, 91 Parkfield Crescent, Twogates, Tamworth, Staffs.
 962 G3NQU A.Dick, Baonacre, St. Gennys, Bude, Cornwall, Ex23 0NN.
 963 G4HNE D.Fitton, 4 Peets Lane, Southport, Merseyside, PR9 7PP.
 964 J.Proctor, 5 Bank Top Hamlet, Whickham, Newcastle-upon-Tyne.
 965 G5DQK M.Rossiter, D184032Q, S1H Mess, HMS Collingwood, Fareham,
 966 G4EQC B.Smith, 11 Tean Close, Burntwood, Walsall, W57 9JS. ^{Hampshire.}
 967 G8OWL J. Murphy, Flat 5, 23 Rotton Park Rd., Edgbaston, Birmingham.
 968 G30QJ S.Hoddon, 63 Knights Lane, Kingsthorpe, Northampton, NN2 6QN.
 969 G3ZLT L.Thursting, 59 Woodlands Ave., West Byfleet, Weybridge, Surrey.
 970 G4HEY R.Dempster, The Villa, Marston, Stafford, ST18 9SK.
 971 G3IGX L.Cowling, 6 Sarabeth Drive, Tunley, Bath, BA31EA.
 972 C.Standing, 13 Maze Hill, Greenwich, London, SE10 9XG.
 973 G3ZHP D.Marsden, 40 Highgate Ave., Lepton, Huddersfield, W.Yorks.
 974 G4DLJ B.Whawell, 24 Greenbank Dr., Stoneyford Rd., ^{HD8 0EE}
 Sutton-in-Ashfield, Notts.

891 G8TOZ I.T.Tutt, 6 Dunster Close, Brighton, East Sussex, BN17ED
892 G4EDG S.Taylor, 4 Highwood Close, Courtenay Road, Newton Abbot, Devon.
893 G4HOM F.Garratt, 297 Bancroft, Glascote Heath, Tamworth, Staffs.
894 G3WWS M.Southall, 61 Grange Close, Horam, Heathfield, Sussex.
895 G4GQL 41 Benton Rd, Ilford, Essex, IG1 4AV.(A.Schiffman)
896 G3GUV T.Griffin, 164 Eggleston View, Darlington, DL3 9SJ.
897 KA3EIN M.Lagrotteria, 114 Glade Blvd., Walkersville, MD 21793, USA.
898 G3LHJ D.Webber, 14A Keyberry Park, Newton Abbot, Devon, TQ12 1BZ.
899 WB7BZQ/MN Mr.R.Wightman,) SV 'Isle of Wight', P.O.Box 1078,
900 WB7BZR/MM Mrs.R.Wightman,) Seattle, WA98111, USA.
901 K8IF T.Davis, 9920 Musch Rd., Brighton, MI 48116, USA.
902 G3WXL 4 Oak Farm Gardens, Headcorn, Ashford, Kent.
903 G3UXE 19 Norfolk Road, Maidstone, Kent. (D.Conelly)
904 G4DUT 8 Curzon Road, Maidstone, Kent. (D.Elliott)
905 G4HG G.Jessup, 8 Sycamore Crescent, Maidstone, Kent.
906 G8VND Martin Swan, 18 Paragon Place, West Pottergate, Norwich.
907 EI3CY E.Crowley, 38 Coolnevaun, Stillorgan, Co. Dublin, Ireland.
908 D.Wood, 45 Hilton Road, Willenhall, West Midlands.
909 VE6AAN C.Byers, 717 25th Ave., N.W., Calgary, Alberta, Canada, T2M2RY
910 ZL1BTT C.Mackay, 84 Grancis Street, Takapuna Auckland 9, New Zealand.
911 EI8CE A.McGrath, Tinhalla, Carrick-on-Suir, Co.Waterford, Eire.
912 J.Gerard, 6 Park Hill, Dersingham, Kings Lynn, Norfolk.
913 Capt.D.Evans, Nigella, 159 Steynton Rd., Milford Haven, Dyfed.
914 EABEY A.Martin, c/Molinos de Viento, 2 - 2^o. Santa Cruz de La Palma, I.Canaries, Esp.
915 D.Malcovatie, Via Politecnico 9, 20121 Milano, It.
916 G3RGF R.Young, 138 Main Rd., Danbury, Chelmsford, Essex, CM34DT.
917 ZLIAF I. Ogier, 147 Otaika Rd., Whangarei, New Zealand.
918 KA5AEK J.Lammers, 9009 Comburg Dr., Austin, Texas 78758, USA.
919 K5NT D.Farris, 2309 Falcon Hill Dr., Austin, Texas 78745, USA.
920 G4CHL P.Howe, 57 Old Road East, Gravesent, DA12 1NW.
921 G4HQE C.Morle, Brook House, Woodhill Ave., Gerrards Cross, Bucks.
922 G8XSC A.Ashoown, Cobwebs, Mulderness Lane, Hadlow Down, Uckfield, Sussex.
923 T.Collins, 76 Hermitage Lane, Aylesford, Kent.
924 G8UFY D.Frederick, 11 Angley Walk, Cranbrook, Kent.
925 R.Field, Luckhurst Farm, Headcorn, Ashford, Kent, TN27 9HL.
927 G4KJJ J.Smith, 12 Longmeade Gardens, Wilmslow, Cheshire, SK9 1DA.
928 G3SCE K.Gair, 30 Farrance Rd., Chadwell Heath, Romford, RM6 6ED.
929 G.Szczepanski, 241 Hartford Rd., Davenham, Northwich, Cheshire.
930 ON7CH G.Charita, Patershoek 1, 2700 Sint Niklass, Belgium.
931 D.Wilkes, Signals Troop, 41 Commando, Royal Marines, BFPO 811.
932 G.Grayland, 39 Dollar Street, Cirencester, Glos. GL7 2AS.
933 KA9B W.Wedlund, 1538 Oakland Dr., Long Lake, Illinois 60041, USA.

975 EA7AAM E.Arenas, P.O.Box 3153, Malaga, Spain.
 976 G8XQA P.Lineham, 10Streets Brook Rd., Shirley, Solihull, B903PL.
 977 G8LPI R.Bray, 58 Redlands Rd., Solihull, W.Midlands, B91 2LT.
 978 G4JDC R.Maskill, 107 Swallows Meadow, Shirley, Solihull, W.Midlands.
 979 W4QYED 1701 19th Street, Glenwood Springs, Colorado, 81601, USA.
 980 G2BYP J.Mackay, 11 Lansdowne Grove, Hillcrest, Whitehaven, Cumbria.
 981 G2ASF Coventry ARS, c/o 33 Chapel St., Bishops Itchington, Leamington
 982 G8BZT D.Allen, 156 Middlecotes, Tile Hill, Coventry, CV49AZ. Spa.
 983 S.Foster, 91 Copthorne Rd., Leatherhead, Surrey.
 984 G4ASL S.Ayling, Flat E52, Du Cane Court, Balham High Rd., London.
 985 R.Astley, 33 Colman Rd., Norwich, NR4 7AL.
 986 A.Lineham, 7 College Lane, Stratford-on-Avon, Warwickshire.
 987 EI3EA G.O'Sullivan, 28 O'Malley Park, Limerick, Eire.
 988 R.Mitchel, P.O.Box 60607, Fairbanks, Alaska 99706, USA.
 989 G3AVN P.Parker, 134 Worston Road, Highbridge, Burnham-on-Sea,
 990 G4KUU Dr. W. Young, 16 Buccleuch Close, Guisborough, Cleveland. Somerset.
 991 G4KKB K.Blamey, 40 Primrose Close, Flitwick, Bedford, MK45 1PL.
 992 G4DFV D.Walters, 41 Stanley Road, Mansfield, Notts. NG18 5AA.
 993 R.A.Burrows, 40 Faimile Rd., Christchurch, Dorset, BH23 2LL.
 994 G4HHT J.Ward, 12 Pilling Close, Walsgrave, Coventry, CV2 2HR.
 995 G3OZC J.Holstead, 72 Woodlands Ave., Blackburn, Lancs., BB2 5NN.
 996 A.J.Innes, 82 St. Pauls Parade, Cusworth Park, Doncaster.
 997 P.Johnson, Bestwood, Station Rd., Stallingborough, Grimsby.
 998 G3OVJ V.J.Teague, Hurstwood, 63 Ludlow Rd., Church Stretton, Shrops.
 999 T.Donnelly, House 50, 30 Kennishead Ave., Thornligbank, Glasgow.
 1000 G3HCT Brooklands, Ullenhall, Solihull, WestMidlands, B95 5NW.
 (John Bazley - Past President of the RSGB and Council Member)

MEMBERSHIP CHANGES:

NEW QTH:

116 G4FKH 120 Linnet Drive, Chelmsford, Essex, CM2 8AG.
 197 OZ8SO Finnsvej 10-1, DK - 9900, Fredericshavn, Denmark.
 293 33 Coatsbv Rd, Hollycroft, Kimberley, Notts, NG16 2TH.
 316 SM6FQE Propellervagen 2j, S-33300 Falkenberg, Sweden.
 322 G4FNL 38 Highbank, Brighton, E.Sussex, BN1 5GB.
 333 G4EBO 25 Belvedere Rd., Exmouth, Devon.
 451 946 London Rd., Alvaston, Derby, DE2 8PZ.
 475 27 Lincoln Way, Colchester, Essex, CO1 2RJ.
 431 GM4FDD 95 Morningside Avenue, Aberdeen, AB1 7NU, Scotland.
 453 GM4GIF 63 James St., Helensburgh, Dunbartonshire, G84 9XG.
 481 G4EYS 15 Toulmin Road, Hatfield Peverel, Chelmsford, Essex.
 550 G4HSO 15 Grosvenor Rd, Dudley, W. Midlands, DY3 2PS.
 670 'Badgers' 37 Nursery Rd., Alesford, Hants, CO24 9JW.
 818 AF35 1760 Franklin St., Apt. 1, Denver, Co. 80218, USA.
 874 Paul Newman, c/o Mrs. A. Bromley, 6 Kingsway,
 1 Kingscliff St., Kingscriff, N.S.W., Australia.

CALLSIGN CHANGES:

329 is now G4JEA
 553 is now G4JQX (ex G8ND)
 367 is G8ROO not G8PRU
 286 is G4EQB.



SEASON'S GREETINGS
 FROM
 SHOREHAM COPY CENTRE
 3 JOHN STREET SHOREHAM