SPRAT

THE JOURNAL OF THE G-QRP CLUB

DEVOTED·TO·LOW·POWER·COMMUNICATION

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Jack F9YZ - Winner of the Silver Tern Trophy

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

This summer has been the most social since I first became involved with the club. Since the HF Convention in Oxford, I have met more members in three months than probably since the club began. G QRP Club members are a friendly lot, but we are far flung. Getting together to talk about our hobby is great fun. Why not try to seek out club members local to you and meet from time to time. I have talked QRP too many times into the wee small hours this summer for it to be good for me...but its been worth it everytime.

The entries for the G3RJV Twenty Competition have now closed and this issue brings the first two of many interesting entries. Now that the closing date is here I have invited Paul, G3KFE, Editor of the Short Wave Magazine, an old friend of the club to judge the entries and the winner will be announced later.

This year the National Radio Amateur Show returns to its old venue at the Granby Halls in Leicester. This means that the small hotel we used for the after show meeting last year is too far away from the site. So we intend to meet after the last afternoon of the show (Saturday October 9th) in the friendly Chinese Eating House some of us used two years ago. If you intend to be at the show on that day, why not meet us at the main exit of Granby Halls at 6pm. For those who have a long journey home it will be a good chance to 'refuel' before the trip home, meet some members and talk about QRP. Bring your favourite homemade gear, we always like to look at it.

Because of work peessure and club work I have been almost inactive on the air since May, but hope to be back on the bands this winter. Dont forget to keep trying a call or a listen on the club calling frequencies.

hpe cu qrp 73 FER NW.

G3RJV

1850 3560 7030 14060 21060 28060 CW

Subscription Renewals

Renewal (Rates now £3.50 or $9.00) to Alan Lake, G4DVW, 7 Middleton Close, Nuthall, Nottingham. NG16 1BX. PLEASE QUOTE MEMBERSHIP NUMBER. Cheques to G QRP CLUB. European members may use Giro Cheques or Orders, overseas members can use direct bank credits in Stirling to G QRP CLUB c/o National Westminster Bank, Greenwood way, Chelmsley Wood, Birmingham. B37 5TN with an advice number to G4DVW to say payment has been made.

A REMINDER IS AUTOMATICALLY STAMPED ONTO SPRAT IN ORDER OF MEMBERSHIP NUMBER, IF YOU HAVE ALREADY PAID PLEASE IGNORE THIS NOTICE.

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A High Performance CW Filter *[for QRP Reception] W3NQN*

August 1982

INTRODUCTION

The enjoyment of your QRP CW operation can be considerably enhanced by the addition of a selective audio filter to your receiver. This is especially true if you regularly contact other QRP operators. Many high-performance commercial active CW filters are available, but the cost of these filters is usually prohibitive — they frequently cost more than half of the total investment in your station equipment!

Articles on active CW filters for home construction have appeared in recent amateur publications (QST, HAM RADIO and 73), but either the circuit complexity, the excessive construction time and cost, or the inadequate performance make these filters unattractive to the experienced QRP operator. This article will discuss a proven CW filter circuit that has been used with success by more than 400 amateurs.

Five resonant circuits provide selectivity comparable to that of the commonly available commercial filters, while cost is minimized by using surplus 88-mH inductors. The filter impedance is a close match to the audio output impedance of the typical transistorized QRP receiver, such as the Heath HW-8, thus eliminating the need for matching transformers. Although the center frequency and bandwidth of the filter are fixed, this is no problem because once these parameters are selected they need not be changed. The filter is unusually easy to build because ten of the eleven inductors remain in their cases while five capacitors are connected to the terminal strips on the cases. Full details regarding filter construction, performance and installation follow. Your G-QRP Editor is making arrangements to distribute surplus inductors to those wishing to construct this filter. See his instructions elsewhere in this issue.

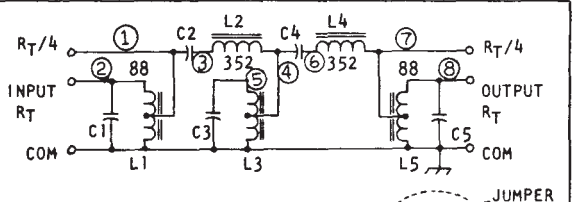

Figure 1. Schematic Diagram

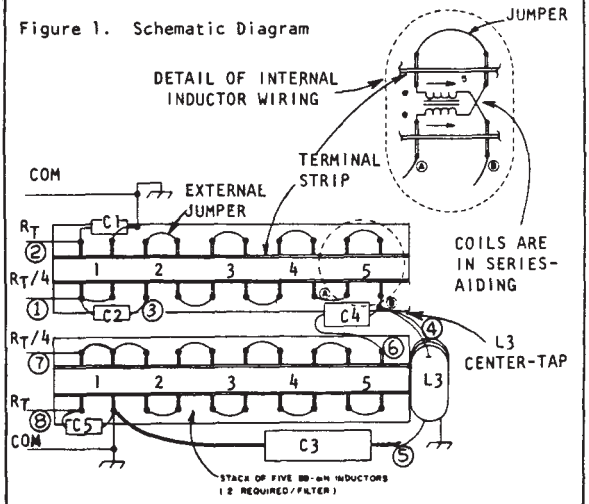

Figure 2. Pictorial Diagram.

Table 1. Inductor Resistances of Two-Stack CW Filter

Nodes From	Nodes To	Resistance* (ohms)	Inductors Involved
1	COMMON GROUND	3.2	1/2 of L1
2		6.4	L1
3		28.3	L2 + L3/2
4		2.8	1/2 of L3
5		5.6	L3
6		29.2	L4 + L5/2
7		3.2	1/2 of L5
8		6.4	L5
3	4	26	L2
6	7	26	L4

*Resistances are approximate.

SEE TABLE 2 ON FOLLOWING PAGE FOR FILTER COMPONENT VALUES.

Table 2. Bandpass CW Filter Values for L1 = 88 mH

NO.	F-CNTR (HZ)	C1,5 (UF)	C3 (UF)	C2,4 (NF)	L3 (MH)	R-TERM (OHMS)	BW-3 (HZ)	FL-3 (HZ)	FH-3 (HZ)	FL30 (HZ)	FH30 (HZ)	R.C. (%)
1	783	0.470	1.000	117.5	41.4	1299	248	668	916	597	1027	4.18
2	759	0.500	1.000	125.0	44.0	1319	249	644	893	576	999	6.30
3	717	0.560	1.200	140.0	41.1	1184	227	613	839	547	940	3.98
4	651	0.680	1.500	170.0	39.9	1054	202	557	760	497	852	3.22
5	592	0.820	1.800	205.0	40.1	963	185	507	692	452	776	3.34

NOTES:

1. All designs are based on L1 = L5 = 88 mH, and L2 = L4 = 4 X L1. Only those designs are listed in which C1, C5 and C3 are standard capacitor values. Use the tabulated capacitor and L3 values to obtain the desired center frequency.

2. The capacitance of C2,4 is in nanofarads (1 nF = .001 uF), and its value is always one quarter of C1. All other capacitor values are in microfarads (uF).

3. Inductor L3 is obtained by modifying an 88 or 44-mH inductor. Determine the required inductance of L3 from the table above. See Appendix A for inductor modification.

4. For optimum performance, the filter input and output should be terminated within ±10% of the listed R-TERM value. See the paragraph on Filter Installation Suggestions for further details.

5. The FL-3, FH-3, FL-30 and FH-30 frequencies in the table correspond to the lower and higher 3 and 30-dB calculated attenuation levels of the filter response. If these data are plotted on semi-log graph paper, the excellent filter skirt selectivity becomes obvious. The actual 3-dB bandwidth (about 10% less than BW-3 in Table 2) is wide enough to pass high-speed CW signals without ringing. The filter insertion loss at F-CNTR is about 2.5 dB.

FILTER SELECTION AND ASSEMBLY PROCEDURE

1. Select a filter having the desired center frequency from one of the designs in Table 2, and obtain the required capacitors. A matched capacitor set within ±2% of the design values is recommended to assure satisfactory filter performance. Design No. 2 is recommended for use with transceivers having a c.w. sidetone frequency of 750 Hz.

2. Arrange the inductor stacks as shown in Figure 2 and interconnect the inductor terminals. After the interconnections are completed, check the node-to-node d-c resistances listed in Table 1. The measured resistances should be within 25% of the tabulated values. If any gross differences are noted, find the cause of the discrepancy and correct the error. The encircled numbers in the schematic and pictorial diagrams of the filter (Figures 1 and 2) correspond to the "FROM" and "TO" numbers in Table 1.

3. Connect the capacitor leads to the proper terminals indicated in Figure 2.

4. Obtain one 88 or 44-mH inductor and modify it by removing the proper number of turns to get the value of L3 listed in Table 2. See Appendix A for applicable equations. Mount the inductor L3 on the end of one of the stacks as shown in Figure 2 using 3M mounting tape, and connect the inductor leads as shown. This completes the filter assembly.

CALCULATED INSERTION LOSS RESPONSE OF DESIGN NO. 2

The calculated insertion loss response (see Figure 3) is based on an inductor Q of 35 at 759 Hz, where the loss is 2.5 dB. This calculated response is a good indication of what the actual measured response will be because the inductor losses have been accounted for.

The 3-dB frequencies of the insertion loss response (Fig. 3) differ from the tabulated frequencies in Table 2, Design No. 2, because the tabulated data are based on perfect components. Inductor losses cause the actual 3-dB bandwidth to be about 7% less than the theoretical tabulated bandwidth.

The 30/3-dB and 60/3-dB BW ratios of Design No. 2 are about 1.97 and 3.66. For these calculations, the zero dB reference level is taken at the center frequency, and all other attenuation levels are measured relative to the zero dB reference.

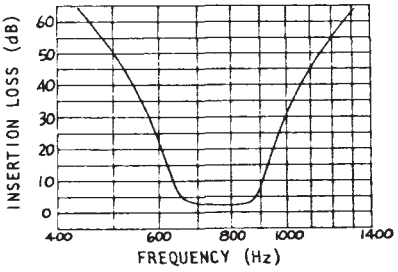

Figure 3. Calculated Insertion Loss of Filter Design No. 2.

FILTER INSTALLATION SUGGESTIONS

For center frequencies between 592 and 783 Hz, the termination impedances (R-TERM) required at the filter input and output terminals vary between 960 and 1320 ohms. Suitable terminations can be obtained with resistive pads or with a combination of pads and transformers. For example:

1. For receivers having a 600 or 1000-ohm audio output impedance and a similar impedance headset, connect a resistor of proper value in series with the filter input so the sum of the added resistance and the audio output impedance equals the desired filter termination within 10%. Do the same for the filter output, basing the added resistance on the headset impedance. Increase the receiver audio gain to compensate for the slight loss of audio level caused by the added resistors.

2. For receivers and headsets having an 8-ohm impedance level, connect 8/1000 or 8/1200-ohm transformers between the receiver audio output jack and the filter input. Do the same between the filter output and the 8-ohm headset. Add resistive padding as required.

Figure 4 shows a schematic diagram of a typical installation in an 8-ohm system for filter Design No. 2. The 470-ohm resistor is selected by trial so equal headset audio level is obtained with or without the filter in the circuit. The DPDT switch is needed so the filter can be switched in or out of the audio system.

T1 & T2 = 8/1200 ohms

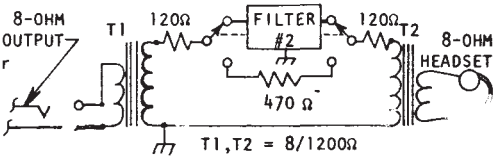

Figure 4. Typical Filter Installation

APPENDIX A

One 88 or 44-mH inductor (both bifilar wound with red & green wires) is modified as follows to get the required L3 value. Remove the number of turn-pairs given in the following equation where T_p = turn-pairs to remove and L_s = desired inductance (mH) in the series connection. Connect red *start* lead to green *finish* lead for L3 center-tap.

(a) 88 mH: $T_p = 361.6 - 39.6\sqrt{L_s}$

(b) 44 mH: $T_p = 268 - 40.5\sqrt{L_s}$

For example, to get 44.0 mH from one 88-mH inductor remove 99 turn-pairs. Total turns removed = 2 X 99 = 198 turns.

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W3NQN CW Filter — *CLUB INDUCTOR OFFER*

When submitting his article for SPRAT, Ed offered to make the stacks of inductors available to club members at a nominal cost. A batch of the stacks arrived at my QTH when Colin, G3VTT, was staying with me. That evening, with Norman, G4LQF, we built and tested a filter (768 Hz centre freq.) We were all very impressed by the performance, especially on the noisy nighttime end of 40m. It looks a dream on the 'scope - rubbish turned into a sine wave. Colin and Norman took a set of inductors to build their own filters.

The main problem is the high shipping cost of these inductor stacks from the USA, they are heavy! Ed is supplying stacks of 5 88mH inductors at only £1 a stack, but our price reflects the postage. We are working on getting a UK source. Does the Post Office use these inductors for line loading in the UK?

THE CLUB CAN OFFER:

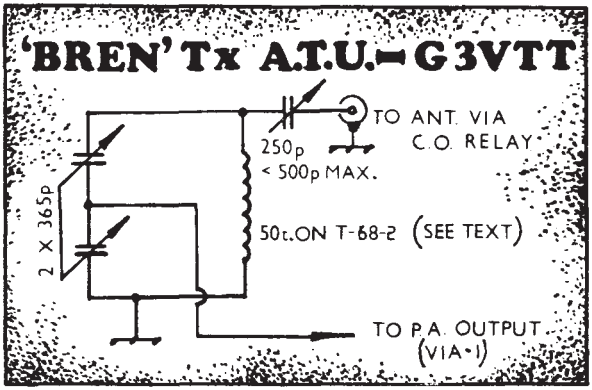
Complete Set of Inductors (two stacks of 5 plus one extra to modify for L3) for £2.25

I have a very few sets of accurately matched capacitors (± 1%) for a filter at 750 Hz with specific L3 modification details for matching. Ideal for constructors unable to accurately match the capacitors required. While the stocks last at £2.50 per set.

UK INTERNAL POSTAGE EXTRA : 97p Per set of inductors.

U.S.MEMBERS CONTACT ED DIRECT.

Order from G3RJV, all cheques made out to: G.QRP CLUB.



An A.T.U. for 'BREN'

Colin Turner G3VTT

The 'Bren' transmitter is a simple DSB/CW transmitter which was included in Sprat f Autumn 1981 No 28 and also as a Data Sheet.

One or two members who have built this transmitter have contacted me about getting RF out of the PA.I believe that there may be members who are not using the station ATU after the PA and expect RF output.

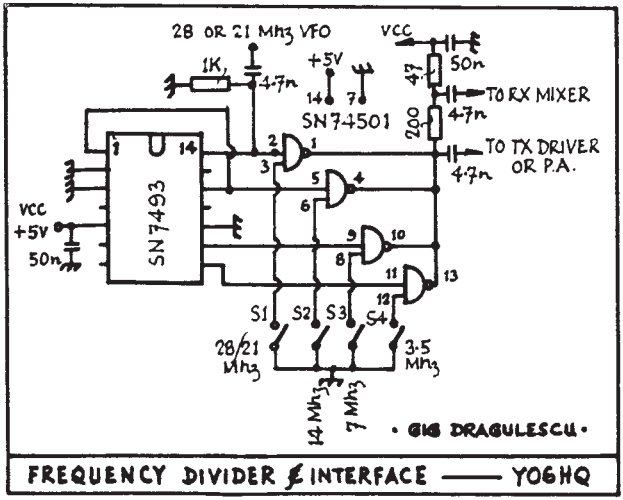
The design did not use a PA tank circuit on the grounds of simplicity and for the benefit of constructors I would recommend the ATU shown below.

This can of course be used as an intergral part of the transmitter and in fact this is the next modification to the design.

Either an air or toroidal core can be used,I would suggest some 45 or 50 turns of 22 SWG would suffice,if a toroid is desired the type T 68/2 would be the best type.

Incidentally the VFO and the balanced mixer must be built into an RF tight box to prevent VFO RF leakage and what amounts to AM,i.e. carrier reinjected,into the station RX.

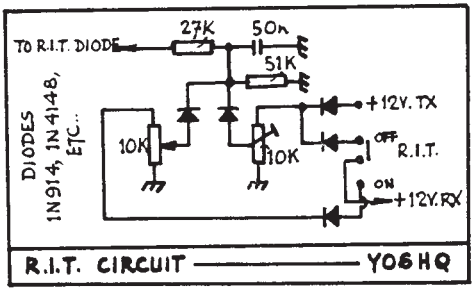
Try the Calling Channels.....



Transceiver Ideas

Gig Dragulescu

YO6HQ



My QRP rig is a direct conversion type, homebrew, transceiver. It consists of a 28MHz VFO (I have also a 21/28 MHz external VFX), a frequency divider built with the popular digital IC, the SN7493, followed by an interface with SN74501 to the receiver part as well as to a Class C QRPp PA/QRP Driver with 2N3866, (about 500mW). On QRP I use another Class C PA with BD 139 transistor which works well up to 21MHz. For 28MHz a better transistor is needed. The PA puts a good four watt signal on 14MHz.

In the receiver part is used an all band RF cascade amplifier stage, equipped with a BF 245, a CA3028 mixer and a two stage low noise AF pre-amplifier with BC 109 transistors, followed by a low pass LC filter, (about 2.7KHz pass band and about 50dB attenuation at 7KHz on 2K ohm load). The signals are then amplified into a uA 741 circuit with a conventional 2K headphone as load.

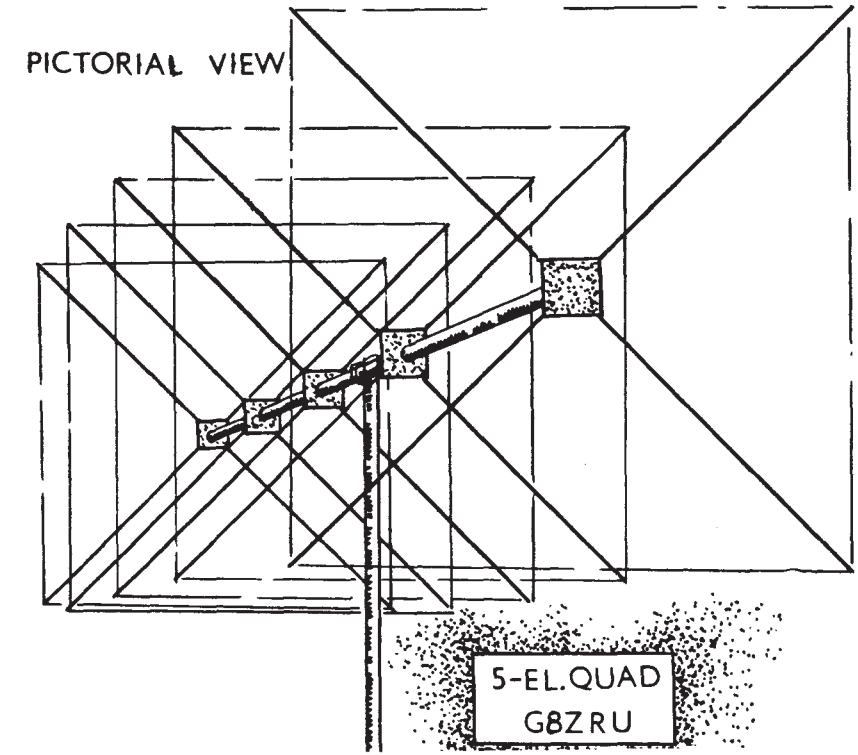
Here are two circuits, the frequency divider and interface, and the RIT circuit.

An alternative type for SN 74501 is SN 74503, but it has different pin connections
The switch positions are as follows :-

On = L
Off = H

	S1	S2	S3	S4
21/28 MHz	off	off	off	off
14 MHz	off	off	on	on
7 MHz	on	on	off	on
3.5 MHz	on	on	on	off

28 to 28.8 MHz means 3.5 to 3.6 MHz, etc.



THE S5Q VHF ANTENNA. A 5 ELEMENT QUAD FOR THE 2 METRE BAND By John Stevenson, G8ZRY

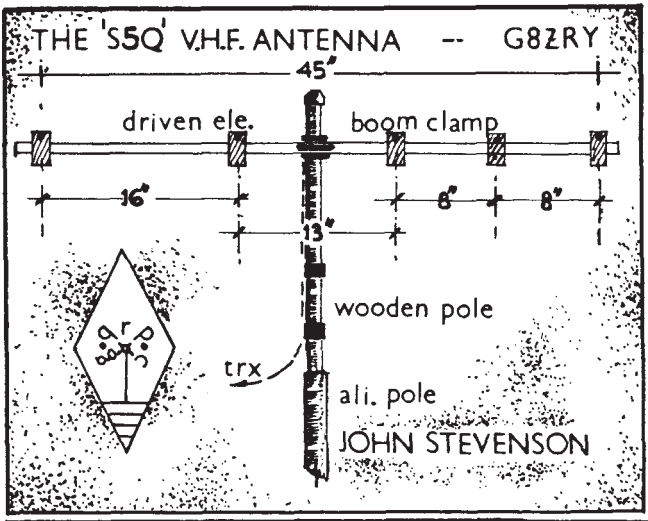
The S5Q works well for me, I hope it will do the same for any of the members who have a mind to build it. Standing beside me in the workshop this antenna will open the Dover repeater (approximately 70 miles) on one watt. I have also worked a contact in The Hague with the antenna in the workshop, so great things are expected when I get it out in free space this week-end. All the antennas I develope have the guy with little space and few bundles of QRK around, in mind, so the S5Q is simple to build, small and cheap.

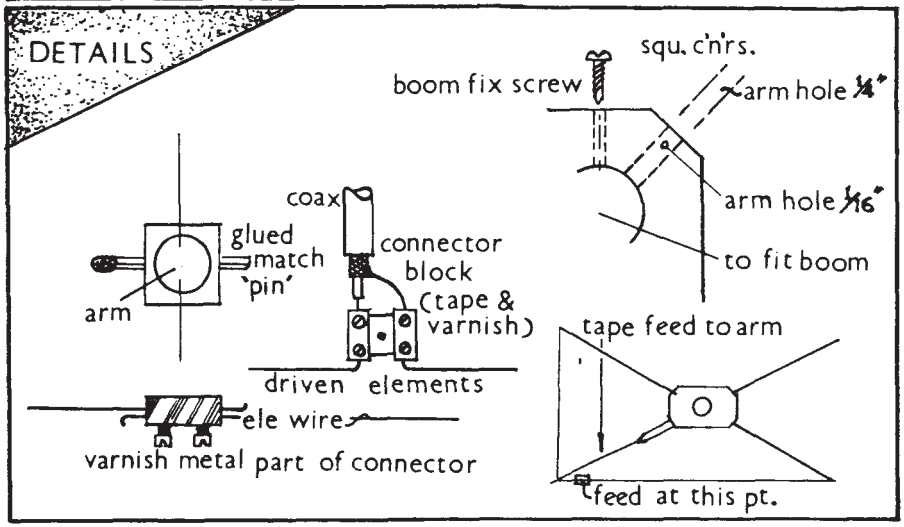
WHAT YOU WILL NEED TO BUILD THIS FANTASTIC ANTENNA!

5 x wood blocks, 2¾ x 2¾ x ⅝ inches.
1 x 4 feet length of 1 inch dowel, or a broom handle.
6 x 4 feet lengths of ¼ inch dowel.
26SWG enamelled copper wire.
1 strip of connector blocks.
PVC tape.
Glue and screws.
Tin of out door varnish.
Press tacks to set wires in position

Cover the boom with PVC tape, remembering the ends, apply two coats of varnish and leave to dry well. The wood blocks should have the corners squared off so that there is a flat area to drill. Mark off the centre of the block and drill a one inch hole, or to suit the boom. Drill a ¼ inch hole at each corner down into the centre hole. With the wood block flat, measure down ¼ inch from each corner to the centre and drill a 1/16 inch hole right through the block. These holes are to hold the arms in place. On one side of each block drill a ⅛ inch hole to the centre hole. These holes take the screws that hold the blocks to the boom. Two coats of varnish.

To obtain the spacing measure and mark the boom from one end, which will be the placing of the reflector. 16 - 13 - 8 - 8 inches. The space between the reflector and the driven element will thus be 16 inches and between the driven element and the first director 13 inches, and between the directors, 8 inches.

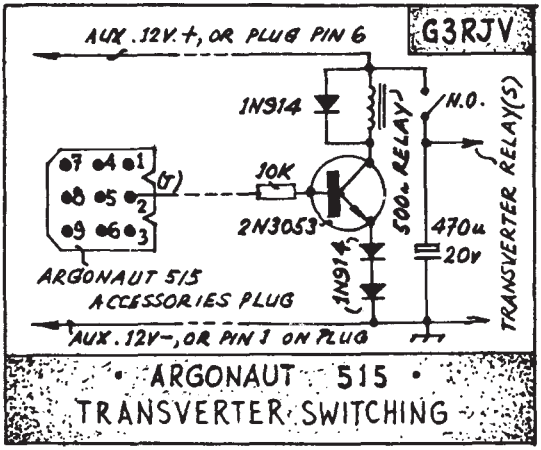




The length of the wire is 87 inches for the reflector, 77 for the directors and 83 for the driven element. To make the spider arms, cut the ¼ inch dowel into 20 x 16 inch lengths, cover with PVC tape and varnish twice and allow to dry well. The antenna should be fed with 50 ohm coax, which should be taped down the element arm to the connector block. The SWRis flat, not above 1.4:1.

Use press pins to set the wires in position on the arms, each side is approximately equal. Drill a small hole through the arms at those points and thread the wire through, remove the centre metal parts from the single connector blocks so that both screws hold the wire, and varnish the metal contact. When the elements are all mounted on the boom, pull arms lightly to make the wire taut, drill through the arms via 1/16 inch holes in the wood block, cover a match stick with wood glue and press through. When dry this will hold the arms solid. Screw wood blocks to the boom via ⅛ inch.

FOR SALE: WalkieTalkie (CB Ch.14/30) Cewert 10m FM? £30. Tom Williams,51 Alemain Dr. Winsford. Ches. ot swop amateur band gear.



Transverter Switching with the Argonaut 515

G3RJV

Using a transverter with the 515, if that transverter has relay changeover, can have minor problems. There is a transmit line (T) which is keyed on transmit but this is only ten volts and the changeover relays tend to clatter in and out of use. This was solved, when using the G3RJV 515, with the G4DHF Two Metre Transverter (Sprat 26/27) by using the T line to a switching transistor. The output is 'slugged' by the 470uF capacitor to give semi-breakin, which suits the relay changeover in the transverter. The 12 volts for the transistor can be taken from the 12v Aux. socket, or the Acessories socket. The relays now hold in during keying at 12 wpm and faster.

Gotta Olda Bottle....

Now that entries for the RJV 20 competition have closed, at the suggestion of Dave, G4EZF, we offer a new challenge to members:

Find the oldest valve you can lay your hands on and build an 80m transmitter. Then submit to G3RJV the following:

1) A log of 10 stations worked with the transmitter (under 5 watts D.C. input)
2) A circuit of the transmitter with all component values.
3) A clear black and white photograph of the transmitter.
4) A 100 word (max) signed statement of the valves origin, as imaginative and humourous as possible.....but at least 70% true!
5) a £2.00 ENTRY FEE WHICH WILL GO DIRECTLY TO R.A.I.B.C.

The prize will be an antique piece of electronic equipment with a suitably engraved plaque, donated by G4EZF. Certificates of merit will also be issued.

CLOSING DATE FOR ENTRIES: OCTOBER 1st, 1983.

CALLING MEMBERS WITH P.C.B. COPYING FACILITIES.

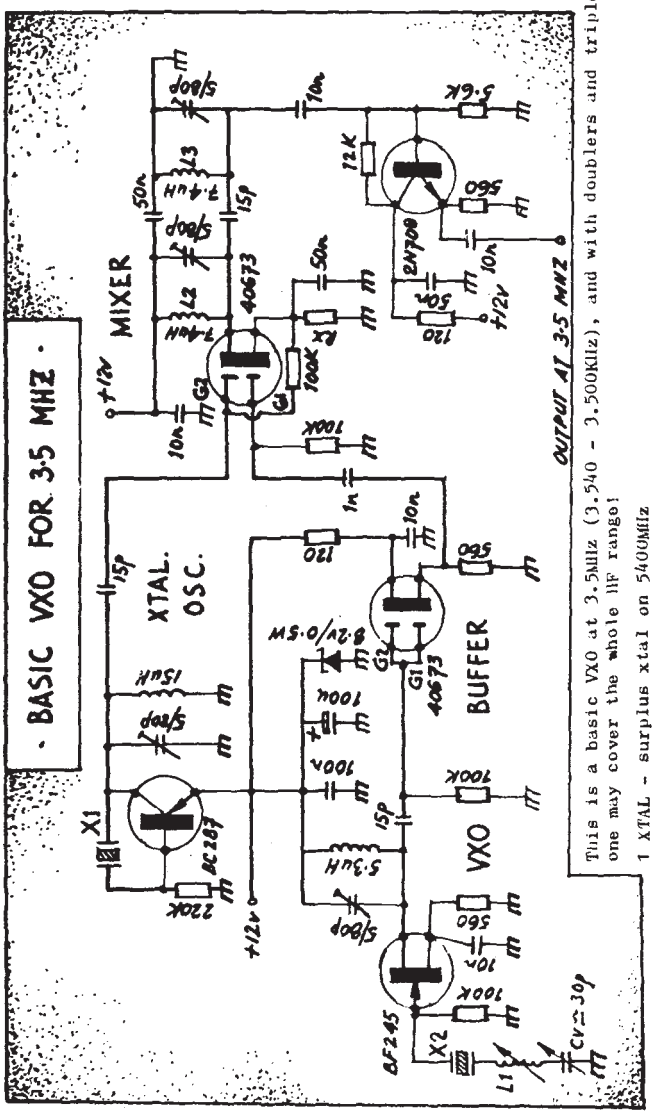
From time to time with have designs in SPRAT with P.C.B. layouts. It would be helpful if we could offer etched boards to members. If any member knows of a source of producing small or medium batches of etched boards at reasonable cost, will they please contact G3RJV

3 BAND MINI GROUNDPLANE. In the drawing on page 4 of SPRAT 31 the 15m coil has 40t of 26swg. In some copies of SPRAT the 40 is indistinct and may seem to be a number 10.

FOR SALE: G3TDZ SSB Polyphasing board, built and tested, with Rad Com articles £10 : E.W.McLean,GM4EWM,'Gormond,Walkers Cres.Lhanbryde.Elgin.Moray.IV30 3PB.

WANTED: One of the following in good condx: Heathkit DX100U, Labgear LG300 or Panda PR-120V: R.L.Payne,1 Ashby Rd.Daventry,Northants.NN11 5QD.

WANTED: An HW8 Transceiver - GI4MBO, 29 Bayview,Jonesborough,Newry. Co.Down. N.I.



FOR SALE: Telford TC7 Receiver with 2X converters and Pre-amp. Good FM RX, not too good for SSB.
Telford TC10 Mk2. Multimode transmitter, AM,FM,SSB,CW. Both of above in Mint Condx. Would swop for homebrew QRP TX/RX or small Top Band SSB transmitter or transceiver.
Oskerblock SWR-2000B with packing in mint condx. £25 or will swop W.H.Y.
WANTED: 7R7 or 7Q7 vlaves for a B2. Receiver type R209 in good condx and Army Set 18.
Adrian Heath G4GDR: tel. Swindon 762970. QTHR.

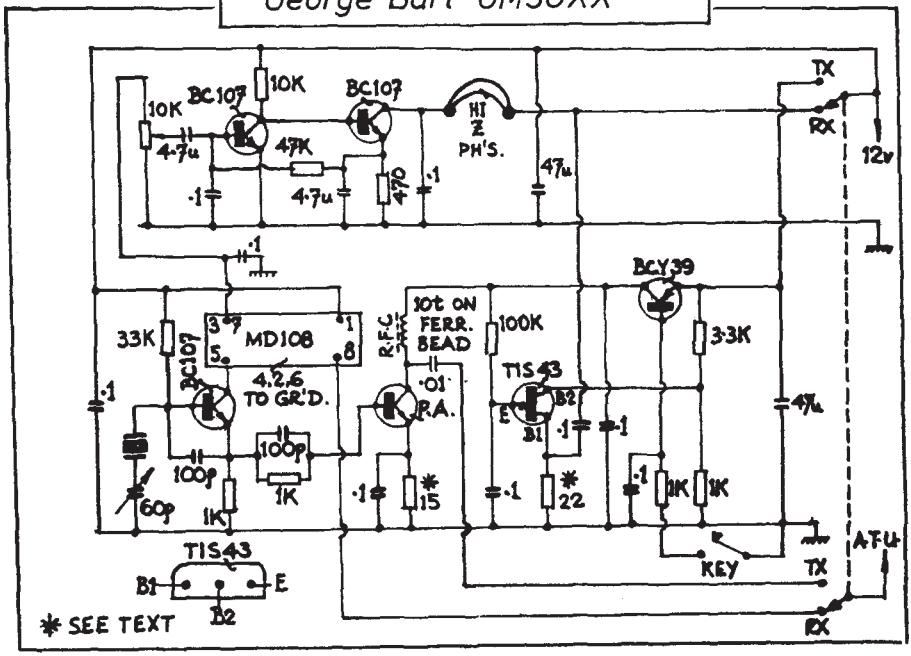
G3RJV TWENTY COMPETITION

DESIGN AND BUILD A TRANSCEIVER FOR THE 20M. BAND USING NO MORE THAN 20 COMPONENTS IN THE TRANSMITTER AND 20 COMPONENTS IN THE RECEIVER AND SUBMIT A LOG OF 20 DXCC COUNTRIES WORKED WITH THE EQUIPMENT.... (A COMPETITION TO MARK TWENTY YEARS OF THE G3RJV CALLSIGN)

THE SUPER OXO

An All-Bands Transceiver

George Burt GM3OXX

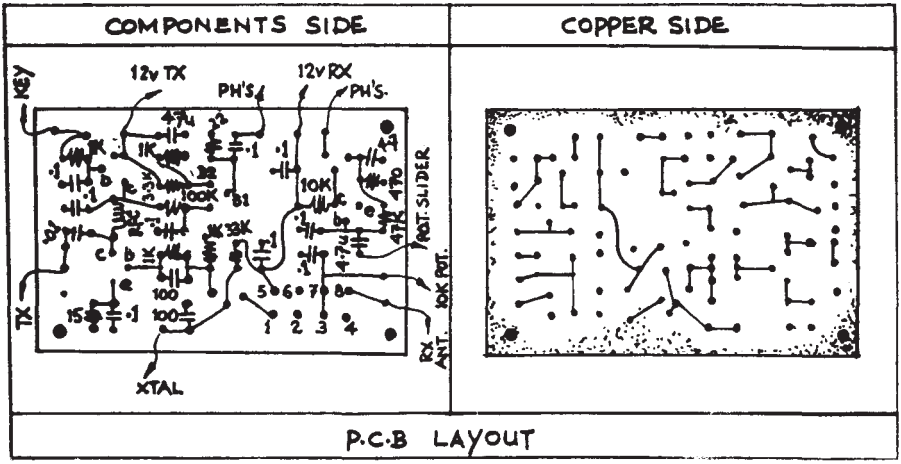


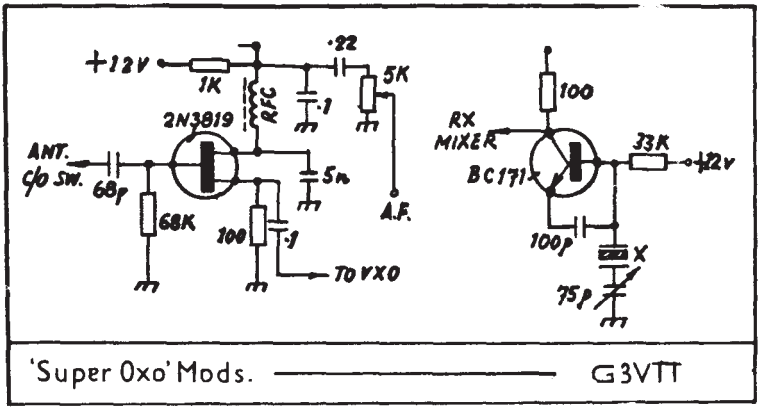
After building The OXO Transmitter and catching the simple bug, so when our editor puts out a challange for a simple transceiver of less than 40 components, out came the graph paper and drawing board.

The circuit is very simple, it is just an MD108 in the collector of the oscillator in The OXO Transmitter. It works very well as the MD108 likes to see 50 ohms in, so is ideal for coupling direct to the output of an ATU. Also it allows very little local oscillation to be present in the aerial.

The audio is a two stage DC coupled amplifier using high impedance phones.

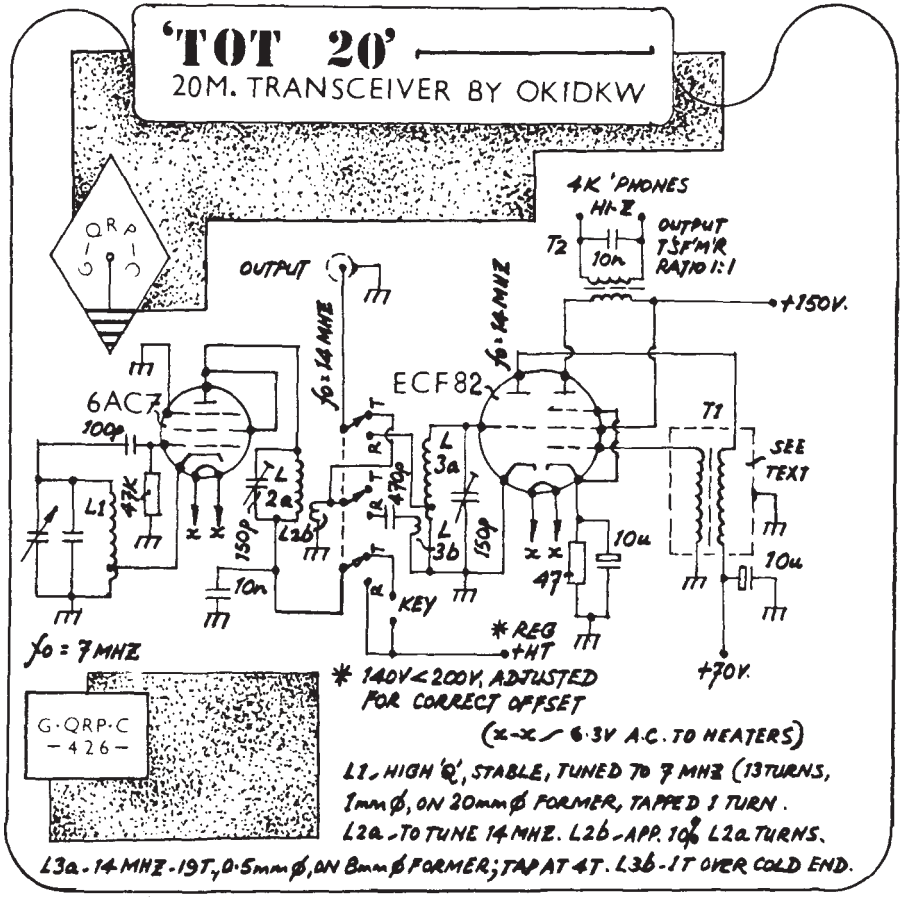
The power level has been brought up to two watts input by the adjustment of the PA emitter resistor. The only other adjustment is that of the output resistor on the TIS43, this is altered to provide a comfortable level of side tone in the head phones. Despite the fact that is is a simple VXO/DC/RX, in less than two days on 14MHz fifteen countries have been worked, and that is without the side tone fitted. I have put all my big rigs on the shelf, so the shack looks empty a The uper OXO is only 3½ x 3 x 2 inches high.

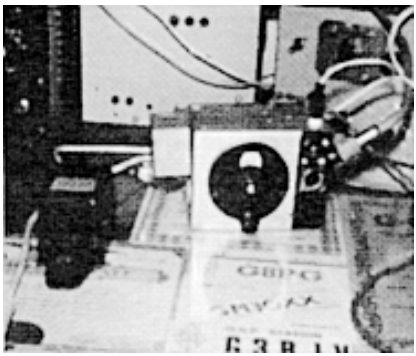




MODS TO THE SUPER OXO By Colin Turner, G3VTT

Guess what Colin did!? He fed his 12 volt supply into the antenna input of his Super OXO....goodbye expensive MD108. So he suggests adding a 0.1 or 0.01uF between the antenna input and the MD108 to avoid expensive mistakes. To overcome the lack of MD108, the circuit above was used as a mixer. It makes the rig use more than the 20/20 components, but is an idea for someone who wants to try it without the expense of the MD108.


'TOT 20'
20M. TRANSCEIVER BY OK1DKW
4K 'PHONES HI-Z
OUTPUT TSF'M'R RATIO 1:1
T2
10n
+150V.
OUTPUT
fo: 14 MHZ
fo: 14 MHZ
ECF82
6AC7
T1
SEE TEXT
100p
L1
47K
L 2a
L2b
150p
10n
470p
L 3a
L 3b
150p
10u
47Ω
10u
+70V.
KEY
* REG +HT
fo = 7 MHZ
* 140V < 200V, ADJUSTED FOR CORRECT OFFSET
(x-x ~ 6·3V A.C. TO HEATERS)
G·QRP·C -426-
L1 - HIGH 'Q', STABLE, TUNED TO 7 MHZ (13 TURNS, 1mm ø, ON 20mm ø FORMER, TAPPED 1 TURN.
L2a - TO TUNE 14 MHZ. L2b - APP. 10% L2a TURNS.
L3a - 14 MHZ - 19T, 0·5mm ø, ON 8mm ø FORMER; TAP AT 4T. L3b - 1T OVER COLD END.



An RJV Twenty Circuit

THE TOT 20

Peter Doudera OK1DKW

[A 20M. Transceiver]

The original conditions for the 20 plus 20 components (G3RJV Contest) did not seem too difficult, so I thought I should try a more tough approach and altered the conditions in the following way :- "Design and build a transceiver for the 20 metre band in less than 20 days, using not more than 20 components as the overall number of components for the whole transceiver, these components must have been available 20 years ago, and work at least 20 DXCC countries with this transceiver in less than 20 days with a 20 metre long antenna."

Well, the designing and experimenting took place in the first 20 days of November 1981, including experimenting with the one valve receiver that I had previously built. Finally I chose a direct conversion receiver and a solo oscillator transmitter and started to call the transceiver "TOT 20", which stands for "Totally 20 components".

The transmitter itself is just a solo VFO with one 6AC7 used as a triode, which gives some 150 to 300mW output to the antenna, depending on the supply voltage. In reveive mode it also serves as a local oscillator. In receive the triode part of ECF82 serves as additive mixer and pentode as an audio amplifier, coupled by means of a transformer. The transformer is an important part of the receiver and should be screened so that it does not pick up the AC mains hum. It contributes to the gain and thus sensitivity of the receiver and the higher primary/secondary ratio the better, while the primary should be around 500 to 2000 ohms. In my junk box I found an old screened transformer suitable for this purpose and its primary has some 1 Kohm and the secondary some 20 Kohm. The R/T switch is a three pole switched as in the circuit diagram. I had no such switcher however, so used an ordinary mains switch and kept the key depressed while in the receive position!

Sensitivity of the receiver is around 10uV for 10dB signal to noise, the maximum absolute sensitivity being around 2uV, which, in my opinion, is reasonable for the power of the transmitter. As there is just the solo oscillator good care must be taken to adjust the right frequency off-set between receive and transmitter frequency. This depends on many factors, such as supply voltage, tuning of the anode LC circuit, coupling to the antenna and receiver LC circuit, etc. Even if once adjusted properly, the off-set should be checked before each operating period on an external receiver. The note of the transmitter is not perfectly stable, but I always got T9. Well, what can one want from a two valve VFO receiver? The main criterion was the number of components and for 20 of these, it works well.

My log of the contacts made with TOT 20 and with my 20 metres long end fed antenna between 21st November and 4th December shows 21 DXCC countries. The CQ WW CW Contest helped me work 11 of them.

This is not my last word in the 20 Project. I have built a transistor version, called the "TOT 30", plus an outboard 700mW output PA, and now I only have to work the 20 countries with it. TOT 30 is a VXO controlled rig using 3 x 7MHz crystals.

Try QRP On 10metre FM Rich Arland G5CSU

In 1977 The F.C.C. granted expansion of the existing 11 metre C.B. frequencies in The United States. The original 23 channels were expanded to 40. This presented a host of problems. Many manufacturers utilised a firm in Japan called Cybernet to provide their basic boards for their C.B. sets. Cybernet had devised a way to modify the 23 channel boards to produce the new 40 channels by strapping the PLL chip. The F.C.C. would have none of this and would not type-accept the modified Cybernet boards. Hence, many manufacturers, including Hy-Gain, Krako, Etc., found themselves in grave financial trouble since they could not sell 23 channel rigs after 1st January 1978 and had warehouses full of modified 23 to 40 channel C.B. sets which were not type-accepted. The majority of these boards and rigs were 'dumped' on the electronics market at very reasonable prices. The market was soon flooded with 23 and 40 channel boards and complete 23 channel units at prices as low as 25 Dollars for a complete top-of-the-line C.B. rig.

A group of East Coast (U.S.) amateurs pionerred the conversion work and produced the first article on 'standardised' 10 metre FM conversions, which appeared in January 1980 "73" Magazine. Several additional articles appeared in QST and 73 later providing somewhat easier conversions, but the first in-depth article on 10 FM conversions was the one in January 1980 "73".

Since then K9EID has published his 10 Metre FM Handbook which is a must for anyone doing anything with the C.B. boards. Dave Ingram, K4TWJ published a book on 10 FM, but in keeping with the majority of his books is just so much 'pap and pablum' with nothing much in the way of home brewing.

So much for the history. Just exactly what does one need to do to get one of these 15 Dollar boards onto 10 FM? Well, the first step in conversion is to replace the 11.8MHz crystal in the VCO with one in the 12.5MHz range to move the VCO up in freequency. Depending on where you want 29.6 (the international calling frequency) to fall will govern what crystal you choose for the replacement crystal. These boards can be placed on 28.0 for CW or used as Oscar receivers (my converted CB to 10 FM board is sensitive enough that RS-7 satellite will break squelch with the CW beacon on 29.5MHz). For a 10 FM conversion, a 12.571 Mhz crystal is used and this places 29.6 on channel 30. This is handy for several reasons. This is just about the centre of the VCO tuning range and if a 40 channel C.B. switch is available, it can be wired into the board and used to step through from 29.6 to 29.69 in 10KHz steps. Otherwise a diode matrix or DIP switches must be used to programme the desired frequency. Below channel 30 the frequency progression is not linear and jumps around due to the original band plan of the 11 metre band. (This is assuming that you are going to use a 40 channel switch.) If a diode matrix is used, a 12 position rotary switch can be employed and 24 channels can be made available by doing a sneaky trick. Programme the original 12 switch positions to cover 20 KHz channels and add a toggle switch to add 10KHz to the selected frequency. This will give full coverage on the FM portion and down into the satellite band.

The 10 FM band plan calls for 29.5 and 29.6 to be used as calling frequencies and simplex frequencies only. Above 29.6 every 20KHz is a repeater output. The repeater inputs are 100KHz lower from 29.52 to 29.58. In reality, there are hundreds of 10 metre FM repeaters worldwide and the crowding is unbelievable when the band is open. Hence, repeater outputs are found every 10KHz above 29.6 with inputs 100KHz lower. Now it can be seen why it is nice to have coverage from 29.5 to 29.69 in 10KHz steps. Repeater offset is accomplished by switching a 10.795MHz cystal into the IF during transmit in place of normal 10.695MHz crystal.

Now that we have the VCO modified to produce the necessary outputs to get the board onto 29.6 it is necessary to retune the VCO circuitry. This is very easy. Connect a VOM or VTVM to TP-8 (VCO output) and tune the VCO transformer until the tracking voltage drops to 1.5 to 2 volts DC. If the channel switch is hooked up, step through the channels while watching the DC voltage at TP-8 and see that the DC voltage varies discreately as each channel is selected.

Terminate the transmitter in 50 ohms and peak up the various slugs to get about four watts output. You are now on 29.6 FM. The receiver is peaked using a GDO or signal generator. Audio from the speaker (un-grounded during transmit) is fed into TP-8 via a 50K trimpot and a 0.1uF capacitor and 100K resistor in parallel to provide pre-emphassis. Deviation is accomplished by adjusting the 50K trimpot at TP-8. You now can transmit FM on 29.6 and slope detect. Now this is not quite so bad, as my first 10 QSOs on 10 FM were done in just this way. These included some DX in The States on simplex using five watts to an inverted vee antenna. Crude but effective!!

All that remains is to get the receiver to hear FM. Not too difficult in todays IC oriented world. A CA3065 or MC1358 can be used to detect the FM signal from the output of the first IF amplifier and produce audio which is fed back onto the board via the volume control. This works great and is very simple. Volume and squelch are 'on board' functions already in place. The existing squelch circuitry (level activated) is made more sensitive by replacing R151 with a 150K to 220K resistor. Squelch tails are eliminated by replacing C212 with a 4.7uF electrolytic capacitor. Bypassing the existing modulation transformer and putting 12 volts DC into the final amplifier brings the power output up to five or six watts. Replacing the final with a 2SC1307 and putting the 'old' final (2SC1306) in the driver transistor slot and retuning gives anywhere from 12 to 15 watts output. Add a meter (few parts are needed) and a microphone and you have a homebrewed 10 metre FM rig for a fraction of the cost of an Azden or FT901/2.

10 metre FM is neat. With 2 metres and 70 Cms being taken over by seemingly "everybody and their dog", it is nice to go down to the DC bands and still have good local area communications. When the band is open 10 FM really swings. I have worked all sorts of DX both simplex and repeaters. The K3SP/R repeater in Maryland come up everytime the band is open. K3SP/R is on 29.62 and is a monster signal. WR2AIR in New York is on 29.68 and is another big signal. 2 metres or 70 Cms to 10 metre cross links are very common in The United States. It is not unusual to talk to an amateur who is using his handie talkie via a cross link. I recently worked a K6 in Las Vegas on a series of cross links into the K3SP/R machine. Not bad for a couple of watts. Fred, G3IAG was heard on one of his recent trips to EA land. While I could not work Fred I did manage to work 4Z4ZQ and a 5Z4 that he was in QSO with.

This was simplex and the power was about five or six watts into a converted (shortened) C.B. vertical antenna.

All in all, 10 metre FM is a fun band and mode. It really adapts well to QRP operations. The total cost (in this country) of buying a board and putting a 10 metre rig on the air would be around £35 (including V.A.T. and Duty). The G-QRP-CLUB has an opportunity to obtain 40 channel C.B. boards, crystals, handbooks and crystal filters de-modulation kits for a very reasonable price from a Stateside source. If enough interest is generated by members, it would be possible for The Club to procure the necessary boards, crystals, de-modulation kits, FM crystal filters and 10 Metre FM Handbooks (K9EID) for sale through the Club Treasury. More on that from George, G3RJV. I hope to see some of you on 29.6 soon.

TRY 10M. QRP F.M. CLUB OFFER

The club is able to obtain full kits for building 10M FM Transceivers as described by Rich. The kits will include: 40 Channel CB Board, Crystal Filter, 12MHz Crystal, 10.795MHz Crystal, CA3065 Demod Kit and K9EID 10m FM Handbook - everything required for a full transceiver. The cost is £30.50. (inc duty and VAT) This cost applies to 25 boards, so please send cheques (G QRP Club) to G3RJV. The first 25 applicants will receive kits, should not enough members request the kits, the cheques will be returned. In any case these cheques will not be cashed until enough requests have been received (say end of October....for your bank account safety!) and the boards will be sent as soon as possible. USA Members please obtain your kits from Heil Sound and Manufacturing, Heil Industrial Boulevard, Marrissa, ILL 62257, prices on application.

SSB News Ian Keyser G3ROO

The first thing for me to comment on this time is to apologise for the lack of news in the last SPRAT. This was due to several reasons, amongst which was the lack of letters from members, and this situation has not rectified itself this time either. I have received only one letter from John, LA2QAA to say that things are going badly for him at present, but he hopes to get on the air again soon, maybe even with a G callsign. Well John, if you do manage it, welcome home matie! I know that the bands have been very bad indeed, but let me know what is happening as others want to know where to listen for you.

News from ROO is that activity has been very low due to many problems, but I have been on 14333 and worked a few old friends, but 3560 has been neglected due to lack of suitable aerials. 10MHz has seen my callsign, but the activity on this great band has dropped to a very low level, even the French SSB lads at the top end of the band are not being interfered with by the law breaking dot brigade.

A great time was had at Oxford, and many faces were identified with names and call signs, it went so quickly that there was not enough time to have a good chat. It must have done wonders for The Club though. The amount of interest shown and the number of new members truly overwhelmed me.

Gus, G8PG has managed to get the issue of the SSB power level re-opened, and a vote for 20 watts PEP is now on the agenda. This will not effect our levels which will remain at five watts CW and ten watts PEP, as they have been for the last year, but it does mean that The G-QRP-CLUB is back in the original situation of having its levels set at half the international level.

Concerning The Summer QRP Contest, I was on holiday in F land, but had the FT707 there to listen in on things. Well, I do not know if it was conditions or my aerial system, but the bands seemed terrible....very low activity indeed.

Finally, on a lighter tone, comments have been made about my call sign being heard on CW. These have originated from our CW representative, but I must tell you that on a visit to Chris's QTH I asked if he had a microphone.....well, he drew this rusty lump of metal with a frayed lead from the drawer....Oh well, no wonder that he had to revert to CW to get a few contacts!!!

73's for now,

Ian

VHF Section

TO QRP OR NOT TO QRP By David Johnson, G4DHF

Since taking office as V.H.F. Manager, I can only assume that V.H.F. QRP is of minimal interest to the membership. Although I do not believe this to be true. I must assume through the lack of correspondence that the complete lack of interest shown by members to be a sympton of the present commercial syndrome.

No interest whatsoever has been expressed in the construction contest, and only one entry (thank you G4FRE) was received in the 1981 QRP Contest. It would appear that those of you who are technically able do not wish to spend time in sharing your ideas with other Club members via this journal. Perhaps the challenge of constructing V.H.F. equipment (which presents greater problems than those on HF) has waned in all but the very few now that so many prettily packaged, ultra convenient wonder machines are commercailly available. What is even more tragic is that I hear so many of these machines on SSB which very obviously suffer from non-linearity and incorrect alignment. In most cases their owners quite simply have no idea what is going on inside their 'singing wonderbox'.

The development of The G-QRP-Club must surely be one of the most significant developments in amateur radio in recent years. It has promoted keeping the amateur involved in the technology he uses, and further the art of radio communication. The phenominal growth in home brew HF equipment active on the lower frequencies is testiment to the success of The Club, and the excellent contributions to 'Sprat' by its membership. The emphasis is on contribution. All too many clubs and societies have grown and failed because the attitude of the bulk of membership has been one of "What's in it for me?", rather than "What can in contribute?"

For my own part, by the time that this is published I shall be engaged in moon bounce tests on two metres with my home brew system. I therefore believe that I should stand down, and encourage someone who is wholly dedicated to V.H.F. QRP to take office. I wish him every success, and shall contribute from time to time, and hope that members will decide that if they would like a section representing their V.H.F. interests to continue, they will actively support it with constructional ideas, comments and reports.

G3RJV: Many thanks to David for his efforts on behalf of the club. John (G8SEQ) has agreed to take over as VHF Manager. All VHF mail and items to G8SEQ (QTHR)

Communication and Award News G8PG

FIRST BRAZILIAN BEACON IS FOR QRP PROPAGATION STUDIES

The first beacon in Brazil commenced operation on May 16th. Details are as follows; Callsign PY2AMI, QRG 28399 KHz; Mode cw with call sent every 20 seconds; power 10w; QTH Americana, 80 miles from Sao Paulo. Built by PY2VRX and PY2FUZ for studying low power propagation paths. All reports appreciated and should go to; PY2AMI, Project Beacon, PO Box 31, 13470-Americana-Sao Paulo, Brazil. QSL sent if irc enclosed. Please support this QRP research project.

G4EBO WINS SECOND SILVER TERN AWARD

Our sincere congratulations to G4EBO on becoming the second station to qualify for the Silver Tern Award. He is the first U.K. station to receive to Award, and the first station to make it with 100% cw. The TX was an HW7,used with a separate communication receiver. Well done indeed !

NEW QRP MASTER

Jack, F9YZ (incidently the first man to win a Silver Tern) has qualified for the QRP Master Award. Nice work mon ami !

AWARD NEWS

Congratulations to the following Members on their new Awards.

QRP WAC. F9YZ, G4EBO, G3VTT, GM4HBG.

QRP Countries. 100 F9YZ, 75 GM4ELV, 50 G4JFN, GM4HBG ; 25 G5CSU.

Worked G QRP Club. 60 F9YZ; 40 G3IQF, 20 IoSKK, GM4ELV, G4JZO, GM4HBG.

Two Way QRP. 30 G8PG ; 20 GM4ELV, G4JFN, GM3RKO, F9YZ; 10 GM4HBG.

W.Q.F. News

WQF NEWS

It is anticipated that WQF will sponsor 1983 as a year of home construction, technical development, antenna experimentation and propagation research. As indicated above the question of ssb power is under active consideration. JARL QRP Club have recently given good publicity to QRP with a display of QSL cards and messages from the various WQF Representatives, shown at a Tokyo Hamfest. EA8 QRPp DX Club are now producing an excellent newsletter entitled "QRPp Boletin Informativo". JH1HTK, President of JARL QRP, will be returning to Japan at the end of August following his year-long stay at Eindhoven University. The WQF event on 17/18 July seemed to be very well supported and some good DX was worked.

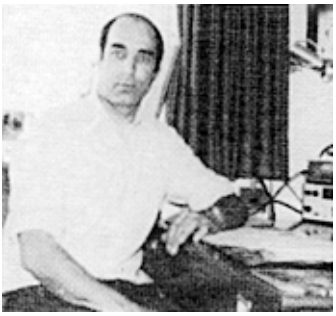
SSB POWER

This has moved more quickly than expected. A proposal that the upper limit be increased to 20w pep is now before the World QRP Federation for consideration. Note that this will not alter the 10w pep upper limit in our Award scheme.

GOT A COMPUTER WITH LOTS OF 'K' AND A PRINTER?

The club would like to store on computer a full list of members callsigns with membership numbers for printout once a year to compile the membership call sign list. Perhaps with an option for members to request up to date readouts (for a small charge) during the year. Anyone who can help please contact G3RJV.

MEMBERS NEWS



Chris Page
G4BUE

Those members who thought about going to The R.S.G.B. HF Convention at Oxford in June and then decided not to go, made a wrong decision! What a wonderful day. It was great to meet so many members who until then had just been callsigns. The display of home brew equipment brought praises from members and non-members alike. Still, for those of you who missed it, there will be another one next year! Looking forward to meeting some of you later in the year at the Leicester Exhibition. I shall be there on the Saturday with Georges, G3RJV and GM3OXX and some of the gang. We are hoping to have a get to-gether afterwards, details elsewhere in Sprat.

The social scene has been in full swing this Summer. In addition to a visit from G3VTT and G3ROO (who was very rude about your scribe's microphone!)we had the RJV household for a few days in July. The result is that your scribe has gone from house constructing to radio constructing, after receiving a three day apprenticeship from the maestro himself.

QRP Field Day/Summer QRP Contest seems to have had very bad conditions judging by your comments, but most members who took part enjoyed themselves. G3DNF stuck to 21MHz but found the lack of USA multipliers prevented him from obtaining a big score. G8PG stayed on 14MHz and did much better. G5CSU made 21 QSOs and a short note from K8IF mentions the turn out as 'being OK', but the signals poor. GM3OXX said he had a good time despite the bad conditions, but ON6WJ who operated /P from his Club site seems to have done better. Jos worked four continents amongst his 100 QSOs. He was using a 375 feet long wire at 40 feet.

The WPX Contests were entered by several members. OK1DKW made 400 QSOs in the CW one to score 215K points, whilst W9PNE made 169K in the SSB event. EA2SN made a very respectable 195 QSOs on a single band 28MHz effort. Whilst on contests a reminder from Tony, G4FAI that The HA QRP Contest is being held again from 0000z on 1st November to 2400 on the 7th, that being on 3.5MHz of course. the rules being the same as previous years.

Want to work two-way QRP with Nigeria? Wait for Yeri (member 1231) who will be taking his RAE shortly. In the meantime Carlos, PY2FNE is active on 21060 looking for Club members in Europe. He will be trying at 0000z on the following days:- 16 and 30th October, 13th and 29th November and 13th and 29th December. EA6HS has been active with a HW8 and was worked by G4EBO recently.

I7CCF has recently worked JR4INF on 21MHz with his 100mW rig, this being addition to the QSO with Brice, W9PNE. G8PG is now up to 93 worked adding FG7 and KP4 recently, and SMØFSM has now reached 140, adding 5H and 5Z4. He wrote to me on his 10 year anniversary of having obtained his licence and says he is very proud of the fact that he has never operated with more than five watts - a true QRPer Per. G4KKI has now got an outdoor aerial up, a double zepp. Bill worked VK2ALH with it, and then heard GM3OXX working the VK straight afterwards. Welcome back to the bands G3SZW! Ron has just purchased a new Argonaut after being QRT for 10 years. His first QSO was with a W3 and as he says "I guess, I'm hooked"!

W6SKQ tells of his effort in The A.R.R.L. Field Day in June. With two others they were QRV with 509/515 Argonauts from car batteries and operated both CW and SSB to work 165 ARRL Sections. Bob describes the /P QTH as being 8,100 feet high in Southern California. Sounds great until you hear that there was a solar flare after one hour of the contest which took 18 hours to settle down.

A strongly worded letter from LA2QAA hits out at the increase of deliberate QRM on the bands. John says that he is disgusted at some of the operating and feels that the future of our hobby may be in danger. He points out that this does not apply to Club members. As a Club, we have always tried to set good operating

standards, and I feel that the kind of QRM that John is talking about is one of the major reasons why so many members turn to QRP.

OK1DKW will be on the air more now, as he has finished his studies and final examinations. He has recently started working at Prague Airport. Best of luck Petr. G4MEW has just worked ZS1FJ in Cape Town with his Argonaut and GW3SB antenna design from the Spring SPRAT. Charles lives on the 6th floor of a 12 floor block of flats so antenna farming is out. He used a reflector, similarly wound, and spaced quarter wavelength away from the antenna, which he was just able to get in the bedroom. Well done Charles. G4GDR has now built a PSU for his Mk128 rig, which he runs at 1 watt. Adrian would like to hear from other members using this rig.

G3RJV had a /P session from a friends house in Matlock in May, using his /P 14MHz rig. Six nights operating netted 20 countries, including PY, KV4 and W1-4. The /P antenna in use must be one of the oddest ever - a conventional dipole, but strung between the frame of an upstairs window and a tree 150 feet away! There was no closer support than the tree, so kite line was used to extend the end of the dipole over waste land to the tree. By the way the KV4 that George worked was Dick, KV4AA, who has given KV4 contacts to many QRPers the world over. I was very saddened to hear of his passing last week, 14025 will never be the same without Dick.

G4EBO has been continuing to work some great DX with his HW7. KH6, 9U5, and JT have been added to bring the total to 80 countries with the HW7. F9YZ has a thing about VK9s - he has worked three of them, the three recent dxpeditions.

On a different tack, Bert, G3RHI would like to get in touch with any members interested in coherent CW, and Colin G3VTT asks me to mention that he still has plenty of crystals for sale. They are 1MHz, 1.5MHz and 6.2MHz, and are all at 50p each, plus a SAE. Colins other interest is cycling, but did you know he has a challenger within The Club? I hear that GM3OXX cycled 30 miles both ways to have an eyeball QSO with GM3RKO and GM4HBG. Keep up with that Colin!!

W9PNE has recently treated himself to a Icom 720A transceiver, and has been raving about the receiver in it. Brice says that signals which are hardly readable on the Argonaut are Q5 on the Icom. He has hardly used the transmitter part of the rig, except to try and run it at five watts! Brice will shortly be putting up a TH5DX on top of his 50 feet tower; what with that and the new receiver there should not be any members that Brice should miss calling him.

An interesting item in the September 1929 RSGB "Bulletin" was spotted the other day, I quote:- "In an article 'Low Power at G6CL', John Clarricoats described the results of his low power experiments over a period of three years. Using 4.5 watts U1UA (USSR) and NU1BKE (USA) were worked in January 1927 on 45 metres. Many contacts were made later that year with F.L.Hogg's station in Iceland. More than 750 stations were worked using 1 watt to a twin A.O.G. aerial. In 1928 25 U.S. and Canadian stations were worked between March 4 and 29 using 5 to 7 watts from a small 300 volt accumulator. The valve in use was a Telefunken RE504. In May 1928 NU1ASY was worked on 23 metres with 6 watts input, and in April 1929 Yokohama (JA) with an input of 4.8 watts. For European work it is now definately established that signals are louder when using 3 watts than 7 watts on the 14MHz band". What can one say? It seems there were people around just like us in 1928!

GW4LZA is having lots of fun with The OXO, which he has just built. He has a new QTH on Anglesey and uses a G5RV at present. He is going to try the G4BUE sloper system for 21MHz. G8PG has done the HB9IK RIT mod to his HW8 and says the QSO rate has noticeably increased. George, G3IEB has been crystal pulling, based on the DJ1ZB Lagos QRPeter design. He has achieved a pull of 10.118 to 10.145 on the 10MHz band. G4NNJ is building an 80 metre transmitter from the G3IVF design in an early edition of Sprat.

That about sums it up for the Summer, let me know how your autumn goes, letters and QSL cards for the Winter Sprat to reach me by 20th November please. See you at Leicester?

Best 73 and QRP DXing,

Chris Page

Membership Changes:

CHANGES OF ADDRESS:

039 G3UYM 36 Grange Close, Hitchin, Herts. SG4 9HD
260 G3DNP Garden Flat, 263 Goldhurst Terr. London. NW6 3EP
401 WD4FZU 2676 Second St. Sarasota, Florida, 33577. U.S.A.
405 G4GJW 91 Alpha Rd. Chingford. London. E4.
414 PA3ABA Verwersstr, 104. 5211 HZ S-Hertogenbosch. The Netherlands.
431 GM4FDD 95 Morningside Ave. Aberdeen. AB1 7NU.
432 I7CCF Via V.Vecchi 71, 70059 Trani BA. Italy.
448 Z23JO P.O. Box 2462, Harare. Zimbabwe.
457 G4GCU 15 Wilton Green,Lazenby, Middlesborough.Cleveland.
492 G3ZOH 5 Conifer Close, Orpinton. Kent.
501 G4EJI 9 Laurel Close, Pestwood, Bucks, HP16 9DX.
580 J.R.Farne, 16 Thornhill Terr. Sunderland. Tyne and Wear. SR2 7JL.
620 K. Mallet, 23 The Street, Worlington, Bury St. Edmunds. Suffolk. IP28 8RU.
621 G4MBP 7 Grovelands Close, Cheltenham. Glos. GL53 8BS.
668 K4AJF 2175 Frankford Ave. APT D202. Panama City. Florida. 32405. U.S.A.
718 G3JBA 17 Moresby Close, Westlea Down, Swindon. Wilts. SN5 7BX.
736 GM4ELV Flat 8, 1 Crown Gardens, Glasgow. G12.
776 WA3TNK The State sould be MD (not IND)
848 G4JNW 8 Union St. Scarborough. North Yorks.
1005 G4HMD 11 Batchwood Lane, Northwood, Middlesex. HA6 3AU.
1103 GI4LLO House number is 65 Millisle Road.
1144 G4IQD 1 Treve Ave. Harrow. Middlesex. HA1 4AL.
1228 G4NKM 3 Southvale Rd. Blackheath. London. SE3 0TP.
1325 G4CRN Westhill,Bear Lane,Longdon,Tewkesbury, Glos. GL20 6BB.
1407 G3UFZ 3 Manor Road, Galmpton,Brixham,Devon.TQ5 0PB.

NEW CALLSIGNS:

480 now G4IBK, 543 now G4OPQ (was G8UOG) 572 now G8VYJ 863 now G4OWY
993 now G6DUN 1152 now EA8ADV (was EC8GB) 1158 now G6ISD
1205 now G4OFB (was G8UUK) 1218 now G4OSE 1301 now G4OOA (was G8XBD)
1374 now N3CUD (was N3CCT - name Perkins not Perkings) 1384 now G6KCS

RESIGNED:

096, 287, 381, 435, 823, 1178,

PLEASE NOTIFY CHANGES IN QTH OR CALLSIGN TO G3RJV, QUOTING MEMBERSHIP NUMBER.

New Members:

1376	G3RUG	E. Twiss, 6 Bramway, Bramhall, Stockport, Cheshire.
1377		K. Lomas, 7 Pedmore Lane, Pedmore, Stourbridge, W.Midlands.
1378	G4LWF	P. Green, 10 Moorfoot Ave., Hayley Green, Halesowen, W.Midlands.
1379	DF6IA	V. Wandrey, Duerkheimerstrasse 20, D-6804 Ilvesheim, Neckar, W.Germany.
1380	G4KJB	G6AAA, Ibstock ARS, Hastings Arms, Ibstock, Leicester.
1381	G6FSR	D. Jenkins, 24 Lime Grove, Lichfield, Staffs.
1382	G4NUI	B. Fewkes, 12 Firfield Ave., Birstall, Leicester.
1383	KA1GPG	J. Kveppers, 39 Kellogg St., Ridgefield, Conn. Zip 067877, USA.
1384		P. McEwen, 30 Lomond Court, Condorrat, Cumbernauld, Glasgow.
1385	G3IGI	L. Hall, 24 Calthorpe Road, Walsall, W55 3LX.
1386	K2JT	J. Mead, 50 Harmon Dr., Paramus, N.J. 07652, USA.
1387	G6CUN	G. Foster, 23 Coberley Rd., Cheltenham, Glos. GL51 6DF.
1388	G4MLI	J. Mitchell, Trevescan, Tintagel, Cornwall.
1389	GM4JLR	J. Riddell, 2274 Paisley Rd. West, Cardonald, Glasgow, G52 3QL
1390	G5RV	R. Varney, 82 Folders Lane, Burgess Hill, W. Sussex, RH15, ODX.

1391	G5EEC	D. Gerber, 48AGS PSC Box 1481, RAF Lakenheath, Brandon, Suffolk.
1392	G3YMM	T. Campbell Davis, 9 Cloister Rd., North Acton, London, W3 ODE.
1393		J. Churchill, Yew Tree Cottage, Grove Laen, Redlynch, Salisbury, Wilts.
1394	G8ZPE	C. Bottoms, Treboro House, Ullenhall, Solihull, W.Midlands.
1395	G4KDW	I. Davidson, 24 Queenswood Drive, Hitchin, Herts.
1396	G3COQ	D. Oswald, 12 Ellendene Drive, Pamington, Nr. Tewkesbury, Glos.
1397	G4LYC	P. Collett, 7 Saxon Rise, Earls Barton, Northampton.
1398	G3VMT	T. Poole, 64 Humber Close, Thatcham, Berks, RG13 3DT.
1399		W. Kelsey, 13 Southcot Way, Penn, Bucks.
1400	G4FIK	D. Chambers, 10 Sandy Mount, Bearsted, Maidstone, Kent.
1401	G4DUS	B. Pickford, 130 The Drive, Rickmansworth, Herts.
1402	G8EJK	S. Skinner, Avalon, 34 Lansdown, Stroud, Glos.
1403	G4CEW	J. Crooks, 32 Mount View Road, Olivers Battery, Winchester, SO22 4JJ.
1404		A. Prins, Southfield, Solomons Tump, Huntley, Glos.
1405	G8YUD	R. Forway 24 Church End, Hilton, Huntingdon, Cambs.
1406		S. Davies, 111 Southend, Garsington, Oxford, OXX9 9DC
1407		D. Saxton, Nevara, 2 Nine Acres Close, Charlbury, Oxford, OX7 3RB.
1408	GW4CNM	H. Roberts, Hywel, 12 Stow Park Circle, Newport, NPT 4HF. Gwent.
1409	G3GSR	G. Arnold, 5 Chapel Close, Corfe Mullen, Wimborne, Dorset, BH21 3SH.
1410	G4CEB	J. Gilbert, 5 Snowden Drive, Tilehurst, Reading, Berks. RG3 5XU.
1411	G8LWY	E. Batts, 27 Cranmer Court, Richmond Rd., Kingston-upon-Thames, Surrey.
1412	KA1SR	R. Koziomkowski, 5 Watson Drive, Portsmouth, R.I.02871, USA.
1413	YU2JK	M. Svaco, Francinova 54, Djurdjevac 43350, Yugoslavia.
1414		I. Blair, 8 Peglar St., Brynhyfrid, Swansea, W. Glam.
1415	G3TTB	P. Clegg, 17 Maybrick Road, Hornchurch, Essex, RM112AY.
1416	G4LMN	D. Piper, 161 Newmarket Rd., Norwich, Norfolk, NR4 6SY.
1417	KA8NRC	A. Luscre, 4380 N.Norman Drive, Stow, Ohio 44224, USA.
1418		D.J.Evans, St. Paul's Vicarage, 73 Baytree Rd., Brixton, London.
1419	VE7BMR	J. Petrus, 21 South Thulin St., Campbell River, B.C. V9W 2J8, Canada.
1420	GM8GUX	J. Thomson, 2 Wilton Hill, Hawick, Roxburghshire, TD9 8BA, Scotland.
1421	G3RMI	B. Arnold, 2 Sands Lane, Bratton, Westbury, Wilts.
1422	G8UBG	A. Cater, 23 Fourth Ave., Wellinborough, Northamptonshire.
1423	G4KTI	R. Tayler, 63 Peace Road, Stanway, Colchester, CO3 5HL.
1424	G4NJK	R. Elliott, 7 Station Rd., Okehampton, Devon, Ex20 1DY.
1425	W5NQN	E. Wetherhold, 102 Archwood Ave., Annapolis, MD 21401, USA.
1426	G4GMU	T. Maton, 282 Rundells, Harlow, Essex, CM18 7HJ.
1427	G4OJN	A. Semark, 22 Morris Ave., Billericay, Essex, CM112W.
1428	G4OJF	G. Ball, 37 Greenwood Tweedmouth, Berwick-upon-Tweed, TD15 2EB.
1429	G4GKW	F. Harwood, 11 Downs View Road, Maidstone, Kent, ME14 2JD.
1430	G6HTH	C. Hall, 20 Glebe Lane, Maidstone, Kent, ME16 9BD.

Please quote your number in mail...

1431		S. Mallion, 45 Wheeler St., Maidstone, Kent.
1432	G4MLU	J. Gudgeon, 'Endways', Stoke Bruerne, Towcaster, Northants. NN12 7SJ.
1433	GI3HXH	J. Cosgrove, 22 Culmore Rd., Londonderry, BT48 7RS.
1434	DL3GBQ	M. Folberth, Kastanienweg 5, D-7230 Schramberg 11, W. Germany.
1435	G3RDO	B. Matson, 36 Windmill Rise, Woodhouse Eaves, Loughb rough, Leics.
1436	G3NJM	A. Robinson, Mariners' Farm, Lower Rainham Road, Gillingham, Kent.
1437	G4FKR	R. Hammond, Thackeray Cottage, Crawley, Nr. Winchester, Hants.
1438	G3NSG	J. Tyas, 2 Craven St., Barnoldswick, Nr. Colne, Lancs. BB8 6AY.
1439	G4FOL	J. Bell, 36 Grainger Close, Brighton Hill, Basingstoke, Hants.
1440	DK3YU	E. Lange, Augsburger Strasse 60, 8034 Germering, Germany.
1441	DF7DV	R. Pilger, Bad Kissingen Strasse 48, 8000 Muenchen 80 W.Germany.
1442	G4LZZ	A. Siemieniago, 3 Skye Close, Highworth, Swindon, Wilts. SN6 7HR
1443	HB9BWR	K. Kobel, Portstreet 30, CH - 2503 Biel, Switzerland.
1444	G3YQB	D. Rankin, 6 Woodfield, Lacey Green, Aylesbury, Bucks.
1445	G4DED	G. Day, 38 Woodstock Road, Begbroke, Oxford.
1446	G3HWJ	R. Warren, 30 Vicarage Gardens, Scunthorpe, Sth. Humberside, DN15 7AZ.
1447	GM4OSS	S. Campbell, 3 Ladeside Road, Kilmaurs, Ayrshire, KA3 2TB, Scotland.
1448	G4NBI	L. Everton, 18 Markham Road, Sutton Coldfield, W.Midlands, B73 6QR.
1449		A. Stori, V.Costiglione 14, 40124 Bologne, Italy.
1450	G3TEV	M. Mills, 3 Tylers Way, Chalford Hill, Stroud, Glos.
1452		R. Exley, 1 Loweswater Road, Shipton Road, York, YO3 6TN.
1452	G4ENA	P. Asquith, Well Cottage, Selsley Hill, Stroud, Glos.
1453	GM3VTH	D. Coutts, 9 Portland Gdns, Kirkaldy, Fife, KY2 6XY.
1454	GW4OXB	T. Morgan, 1 Jersey Street, Hafod, Swansea, SA1 2HF.
1455		R. Breasdale, 'Millcroft', Midway South Crosland, Huddersfield, W.Yorks.
1456	HA5PI	Z. Egyed, H - 1095, Budapest IX, Mester u. 12. III. 2., Hungary.
1457		J. McCallum 'The Limes', Hainton, Lincoln, Lincs. LN3 6LN.
1458	SM7KNM	M. Naslund, Henrik Smithsgatan 15A, S - 211 56 Malmo, Sweden.
1459	G4NEG	W. Glew, 6 Belwood Vullas, Beltoft, Belton, Nr. Doncaster.
1460	WØVS/KH6	J. Droege, 1923A Hapuu Lp, Wahiawa, HI 96786, USA.
1461	G4PCL	B. Walker, 41 High Street, Tibshelf, Derbyshire.
1462	G3RGC	T. Matthews, 38 Foxhill, Wybers Wood, Grimsby, Sth. Humberside.
1463		P. Wrenn, 54 Warwick Crest, Arthur Road, Edgbaston, Birmingham.

OBITUARY - SM5CO, Holger "Alex" Alexandersson (1156)

The Club regret to announce the passing of Alex, SM5CO, who died in April at the age of 76. He was very active until his death. He ran his Argonaut on solar power and always adopted the new things that technology came up with.

STOP PRESS QTH CHANGE:

017 G3DOP 25 Croft Parc, The Lizard, Nr. Helston. Cornwall.

ATTENTION ANY MEMBERS INTERESTED IN APPLICATIONS FOR THE LIMITED LICENCES FOR THE 50MHz BAND. Please contact G4LDY, A.J. Haas, 9 Little Grove Field, Harlow Essex. for united club member action in licence application...as soon as Possible.