

**JOURNAL OF THE
Q R P
RESEARCH SOCIETY**

EDITED BY: - J. WHITEHEAD
THE RETREAT, RYDENS AVENUE
WALTON-ON-THAMES, SURREY
Telephone: - - WALTON 1619



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JOURNAL OF THE
Q R P
RESEARCH SOCIETY

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Q R P

..... Published the last week of each month

PRESIDENT: Mr A.O.Milne, G2MI. CHAIRMAN: Capt A.M.H.Fergus, G2ZC
HON-SECRETARY, TREASURER, EDITOR:
John Whitehead, 92 Ryden's Avenue, Walton-on-Thames, Surrey.

..... EDITORIAL

The year of office of our 1953 Council is rapidly drawing to a close. In next month's issue we shall be sending out voting forms upon which all our Full Members will be requested to carry out the usual indication of their desires for the council of 1954. The results of the election will be published in the December issue and the new council will take over on January 1st. In the mean time WE REQUIRE TO RECEIVE, NOT LATER THAN SATURDAY, NOVEMBER 14th, ANY NOMINATIONS WHICH FULL MEMBERS of the Society desire put forward for the forthcoming election. Before sending in such nominations they should ascertain that the member concerned is willing and able to stand for election.

We have already received some nominations, but it is essential, if all members are to have their voice in matters of Society control, that they should place any nominations in our hands in time to be included in the voting lists.

Finally, this would seem an ideal opportunity to register our great appreciation of the work done by the 1953 Council, with especial thanks for the valued and unremitting effort of the Contests Committee.

The Converter or Frequency Changer

A study of a recently published table (Radio Designer's Handbook, 4th Edition, page 925) leads to the conclusion that valves of the 6K8 type would be most suitable for our purpose. (Note that the 6K8 is NOT equivalent to the ECH35). However, the 6K8 has a rather low conversion conductance and results as good, if not better, may be obtained by using the 6SA7 or 6BE6. In 1.4 volt battery valves the 1R5 is the usual type to use and, with careful design, good results can be obtained.

Two types of converter will be distinguished -- (a) Outer grid oscillator injection (usually oscillator to G3 on Hexodes), and (b) inner grid oscillator injection (oscillator to G1 on Hexodes).

(a): The only commonly available valves of this type are the ECH 35 or ECH 42 and their equivalents, but if a 7S7 can be obtained it should show an appreciable improvement over the ECH35. If, again, an ECH21 can be found the improvement should be still greater.

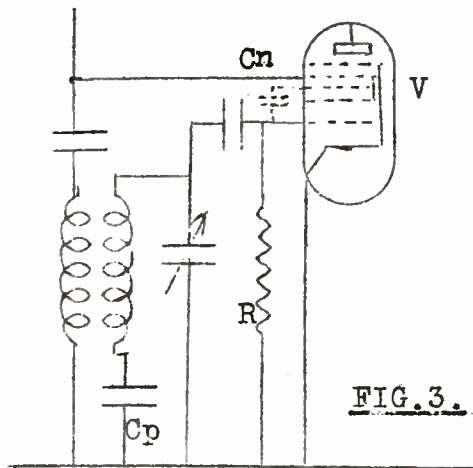
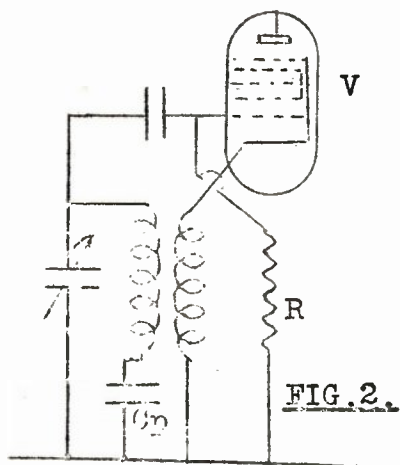
With valves of this type, if the external coupling between G1 and G3 is kept to a minimum, best results for sensitivity will be obtained with the oscillator frequency higher than the signal freq.

(b): Into this type fall the 6K8, 6SA7, 6BE6 and most other pentagrids, including, of course, the 1R5.

To obtain maximum sensitivity without neutralizing the oscillator frequency should be lower than the signal frequency. For satisfactory performance on short waves the 6BE6 should have the lowest possible external capacitative coupling between grids 1 and 3.

Figs 2 and 3 show two possible circuits for the use with 6SA7 and 6BE6 valves. On short waves with the circuit of Fig 3 neutralizing will be necessary to avoid pulling.

For short wave operation of the 1R5 the circuit of Fig 4 gives good results. G1 is used for best results and is of the order 2.5 to



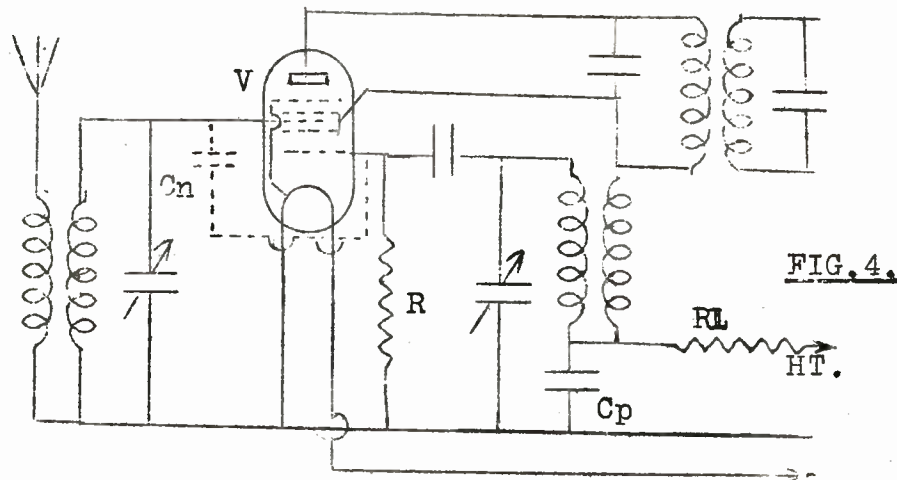
In both figures
2 and 3 --

V: 6SA7 or
6BE6.

R: 20 K.

Cp: Padder.

Cn: Neutralizing
condenser.



In figure 4 --

V: 1R5

R: 30 K.

Cp: Padder

Cn: Neutralizing
condenser.

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5 pF. The value of R may be reduced to 30 K or lower for maximum sensitivity.

Improvements may be obtained by using harmonic mixing. For this the oscillator frequency is half the frequency that would otherwise be used. Pulling is eliminated and neutralizing is not used.

In the above circuit RL should be of a value to reduce the screen volts to that required.

Two volt frequency changers.

The suggested arrangement here is to use the VP2B with a separate local oscillator. The oscillator volts should be injected into G3. The VP2B has a high Ra and should give a good conversion gain. A neutralizing capacity can be connected between G1 and G3.

NOTE THAT IN ALL CASES WHERE NEUTRALIZING IS USED THE APPLICATION OF A G C WILL TEND TO CAUSE DETUNING OF THE OSCILLATOR ON SHORT WAVES.

In general the manufacturers figures for operating conditions should be observed, but if extra sensitivity is required some experiment is permissible. The value of grid bias voltage can be lowered or the screen volts raised or both. Raising the screen volts will tend to worsen the signal to noise ratio and it will need a compromise.

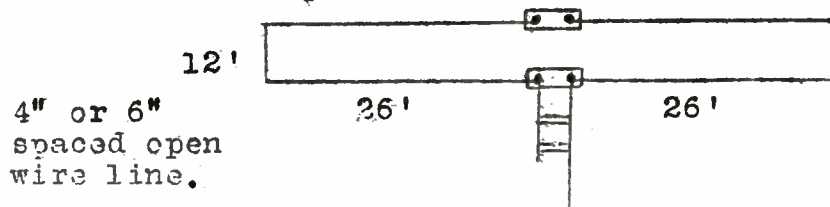
Choice of Oscillator Frequency.

Another consideration affecting the choice of oscillator frequency is that of image rejection. Taking a typical case of a receiver for 14 Mc/s with 465 Kc/s IF, if the oscillator is on the high side the image band falls in the 19 metre broadcast band, and therefore the oscillator should be operated on the low frequency side of the signal to reduce the images. This does not present any major tracking difficulties if the Rx is covering the amateur band only.

(Next month will commence a consideration of IF amplifiers -- Ed)

.....: A MULTI - BAND ANTENNA :.....

Den Auton has sent us the gen on an RCA multi-band folded dipole which, he says, looks the ideal thing for anyone who has room for a 52 ft flat top.



On 80 it is a high angle radiator with less directivity than a normal dipole. On 40 it gives a lower angle than a dipole and tends to end fire. For 20 it approximates to a beam because it provides $2\frac{1}{2}$ waves in-phase on one side against two in-phase half waves on the other side, best DX results being achieved broadside. On 10 it is full wave in-phase on one side and full wave on the other, giving a complex pattern with some good low angle lobes for DX. Coupler / tuner can be the usual tuned line coupler, balanced (Collins) pi-coupler, etc, Den acknowledges receipt of this gen from GWWJ who says that it is OK for 80 and 10 with the top radiator only 20 ft high and that it should be really fb for 20 metres.

.....: THE 2FD :.....

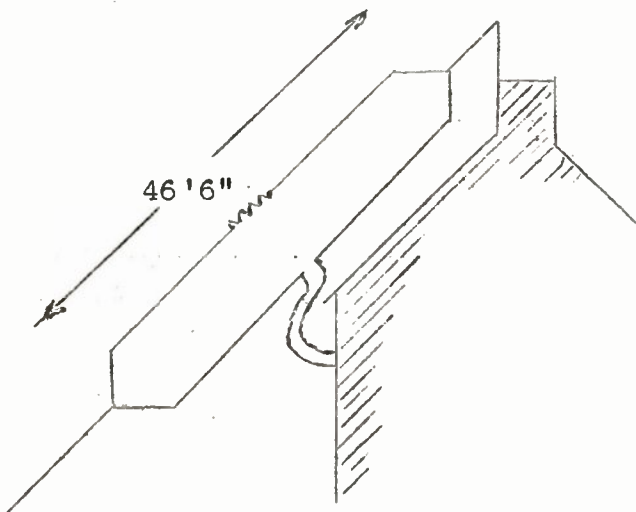
Both G3CED and G3HCW are using newly erected T2FD antennae. George, G3FD tells us that the type was originated by W3HH and was described in the Nov 1951 "QST". The title of the rig is somewhat reminiscent of a call sign, but actually the numeral indicates that there should be two "Ts" -- i.e., "TTFD" which stands for tilted,

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terminated, folded dipole". It has omni-directional properties on three or four bands according to the size to which it is cut. The ver-

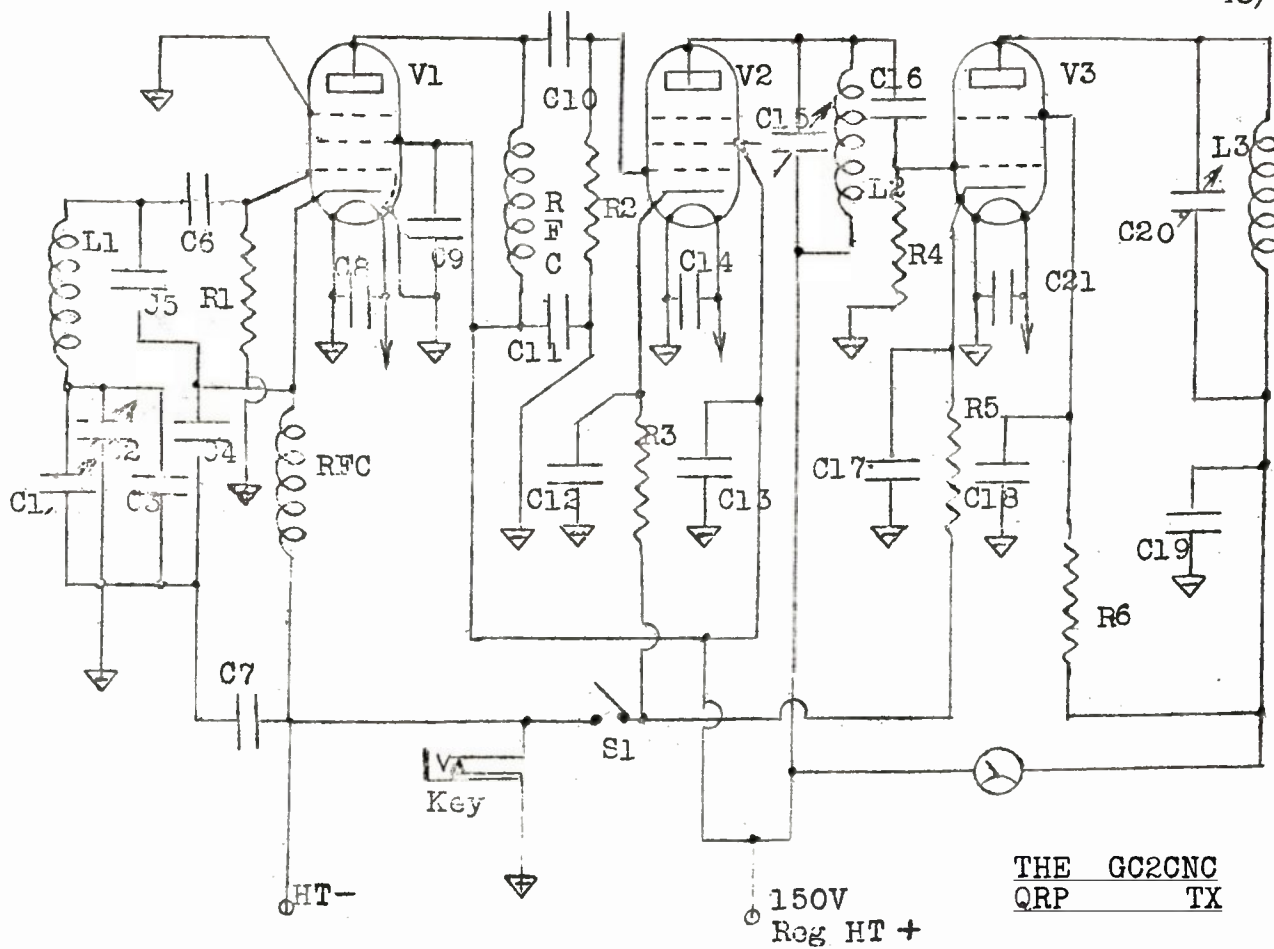
sion at 3CED occupies very little space being suspended from a mast on the chimney stack giving a max height of about 42 ft and sloping down to 12 ft above the ground. The overall length of the dipole is 46'6", the wires being spaced 1'5" apart by polthene ended cane spreaders. The feeders are 300 ohm ribbon and the resistance is a 300 ohm wire wound vitreous type of not less than 35% of the input power in watts.

On 40 metres, with 5 watts, George has worked 599 with MF2AH (also using 5 W) as well as GI, EI, GM, G, F, DL, OZ, SM, YU, OK, I, etc.



.....: THE GC2CNC QRP TRANSMITTER :.....

The results achieved with this QRP Tx will, undoubtedly, be well known to all of you. Monty, GC2CNC, is one of the foremost QRP practitioners of the present day; he is, however, one of those extremely unostentatious characters who normally will talk of anything but their own successes. It has taken us a long time to extract this gen from him and even now we have not got half as much as we should like. However, here is the circuit and component values of the rig that has won more credit for our Society than almost any other piece of apparatus.



THE GC2CNC
QRP TX

Component values:--

C1, 15 pF -- C2, 100 pF -- C3, 40 pF mica -- C4, C5, .001 -- C6, 100 pF
 C7, .01 uF mica -- C8, C14, C21, 500 pF mica -- C9, .01 -- C10, 100 pF
 C11, C12, .01 -- C13, .01 -- C15, 100 pF -- C16, 100 pF -- C17, .01 --
 C18, .01 -- C19, .01 -- C20, 100 pF -- R1, .1 meg -- R2, .1 meg -- R3,
 400 ohms, 1 watt -- R4, .1 meg -- R5, 400 ohms, 1 watt -- R6, 10 K --
 S1, stand-by switch -- V1, 6AG7 -- V2, V3, 6V6 -- L1, 95 turns No32 dsc
 close wound on 1" dia former -- L2, L3, to be wound on similar formers
 according to which band it is desired to work. It is useless giving
 coil winding details as most hams have varied wires available and
 unless similar wire is used the frequency range will vary. L2 and L3
 could be wound on standard 1½" dia plug in formers, in which case band
 changing becomes easy.

It is very important that all heaters should be by-passed with
 the 500 pF micas indicated. The first 6V6 may be a 6F6 if desired.
 There is no sign of chirp through keying the oscillator.

.....: SOCIETY NEWS AND ACTIVITY :.....

Jack Harris (G2BOF), Sutton, is finding the upper reaches of the
 "200" increasingly hard going and condx on 7 Mc/s anything but helpful
 of late. His average has been 500 QSOs in 15 months to produce 149
 counties on QRP, and he has decided to get down to 144 Mc/s as soon as
 he has reached his "200", and already has the RF section of the conver-
 tor under construction as per "Upper Spectrum" article.

George Partridge (G3CEE), Broadstairs, has been completely out of
 circulation throughout the summer owing to exceptionally heavy business
 QRM coupled with gastro-enteritis which his XYL unwillingly shared with
 him. George asks me to pass on his VERY SINCERE APOLOGIES FOR HIS LONG
 NEGLECT OF THE SPARES SERVICE AND FOR FAILING TO ANSWER LETTERS from
 members and prospective members. (We certainly miss your activity, OM,
 but I am sure that, in the circumstances, everyone will understand and

wish you speedy recovery to normal conditions -- both of you!)

E.W.Gardiner, Diss, Norfolk, managed a little /P listening during his holidays. The junior op (Adrian, 9½ years) has begun to show interest which must be very encouraging for the OM himself (It's the right age to begin, too!)

R.S.Wilkinson, Hull, who is a trawler operator (Redifon equipment) has been studying Top Band condx in his off duty time from off the W side of Ireland, from Iceland and from the White Sea areas. He reports the best signal so far has been from G6ZR (559/569 at 2145) received at sea off Patricks fjord. Ron is getting his QRP Tx under way when at home and hopes soon to get his call through.

Ted Stonestreet, Willesden Green, apologises for no 2-metre log this month. His QTH is still on gas-only lighting and he explains that as, nearly every time he swings the beam round, he knocks the shack gas mantle for six, he is now in the habit of working the Rx in semi darkness and sorting out his rough log notes afterwards. This time, unfortunately, the rough notes were used to light the fire before transcription! Ted has found that the old, friendly "ham-spirit" is much to the fore on Two. "What a difference," he says, "to the beds on other bands!"

Norman Bason, Peel, I.O.M., has started a regular correspondence with Ted Stonestreet on Two-metre matters and hopes soon to have an Rx working. (You will be ideally situated, OM, for EI calls, and EI is a hotbed of two-metre activity.)

A.L.F.West, Wilton, Wilts, arrived home at the end of last month after two years abroad in the RAF. We hope very much to make personal contact with Alf now he is home as he is one of our foundation members. We hope, too, that he will be as active, once he has settled down, as he used to be before going overseas.

H.J.Hinks, Christchurch, Hants, sends us an interesting cutting from The T & R Bulletin of May 1935 : "An amazing instance of low power Dx working has been brought to our notice by Mr

Tenner (ZC6FF). For some weeks during March and April this station was in daily contact with VE1BV, and on one schedule contact was still maintained after power had been reduced by ZC6FF to 0.3 watt. The power supply was from a 45 volt dry battery and the valve an LP2".

Bob Eldridge (VFVB), Vancouver, has got settled into his own QTH at last and hopes to be on the air this winter though he has been too busy to do much about a shack so far. Bob has had a look round the local "junk" shops and reports that components seem reasonable but not in any great variety while the only surplus snips seem to be RCA TA12G and AT12 transmitters. One interesting and easily obtainable item is printed electronic circuits, such as complete audio RCC networks, about the size of a postage stamp and not much thicker, costing half a dollar in a very large selection of different combinations. Transistors are unobtainable yet, though they can be got in the States for about 20 dollars a time.

A.M.H. Fergus (G2ZC) Farnham, points out that probably the best means of identification at the RSGB Exhibition (and similar "Does") is to pin a card onto the lapel with the call sign, BRS, or just "QRP" in LARGE, clear letters that can be read easily at a little distance.

Allan Herdige (G3JTG), Balham, SW 12, has just completed his first two years on the air with 506 QSOs with 264 stations in 9 countries on 1.8, 3.5, 7 and 28 Mc/s, the input never exceeding 10 watts.

Sam Hall (G2AOL), Otford, Kent, has found conditions very rewarding on 40 recently and his "200" has benefitted accordingly. He has heard "his deadly rival", G2BCF, on several occasions, and recently had 599 from Monty, G2CNC, for 10 watts input. Sam's latest antenna is extremely unconventional being a 260 ft job, running completely round the bungalow below the eaves before diving off down the garden at the bottom of which it turns at right angles for another span. Like so many other unconventional things it works!

G. Whitfield (G3FTQ), Doncaster, is only able to get on the air at week ends, domestic QRM permitting, and he is slowly improving the main

rig and building some test equipment.

Peter Huntsman, Hexham-on-Tyne, has hunted back (sorry, Peter, that was purely accidental and NOT intended as a funny) to the July 1950 issue of "QRP" for gen on antenna matching units. He chose the one shown as Fig 2 and reports as follows: "On 20 and 40 the unit works very well but on 160 it is excellent. Last Thursday (8th October) about 2200 hrs I tried the Top Band with and without the tuning unit. Without the unit I could only hear 10 stations, but with the unit in circuit I could hear 32 stations and a lot of them were 479 to 599. All I have to do is to find a station in the centre of the band, set the reaction control so that the Rx is just oscillating, then tune the unit until oscillation ceases and...up come the stations. Since I started using the unit I have been able to raise my counties verified up to 27 and I have heard 43 stns in 8 countries".

Ian Glen, temporarily at Cold Hesledon RAF camp, is counting the days to his demob, and has already planned his rebuilding activities which will commence with a stabilised power unit for which the metal work has already been "bashed". It is a long time since we heard regular news of Ian and we shall look forward to plenty of activity when he "comes out".

Arthur Gae (G2UK), Oulton Broad, Suffolk, is standing for nomination to the 1954 RSGB Council and his election would be particularly beneficial to our Society since he has had so very much to do with our early development and has kept in most interested touch with us ever since. His exceptional experience and ready advice has more than once guided our policy to it's present satisfactory position. As a very valued member of this Society we wish him every success.

Evert Kaleveld (PAØXE), Rotterdam, finds his Dx interest has somewhat waned (as we prophesied a long time ago would be the case), and has done quite a lot of QRP work recently. His interest is now centring on 15 metres which he says is opening up well and seems to offer excellent QRP prospects. (Hope to see you at the RSGB Exhibition, Evert).

Stanley White (G3CMO), Poole, is another valuable recruit to our ranks this month as he is an electronic engineer professionally.

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.....: MONTHLY REPORT OF THE DARTMOUTH & DISTRICT SOCIETY :.....

Conditions have not been too good on the whole during the times we have been able to operate, but we have managed to beg one or two nice ones for QRP! I must tell you how we enjoy reading the monthly magazine, and how we most heartily endorse the remarks made by GC2CNC in his article "The W and QRP". One point of interest, though -- a few days ago I (B. Farleigh, G4RJ, Hon Sec -- Ed) was in QSO with WLWZ (an amateur who uses very moderate power) and he asked me to stand by for his QRP rig. After a few moments I heard him call and carry on the QSO at RST 559 (2 'S' points lower than his QRO) and I was amazed to learn that he was pumping just 4 watts into his half wave dipole -- pity there are not a few more like WLWZ.

Our club now has it's own transmitting licence under the callsign of G3JEV and we took part in the QRP contest last week; unfortunately we were unable to operate much during daylight hours, but we did make several contacts as you will see by the log. Operation was mainly on 7 Mc/s due to poor condx on 14Mc/s, except on the first day of the contest when condx on 14 were good

QRP LOG FOR SEPTEMBER: -- Sept 7th (14 Mc/s) KV4AA. Sept 13th (14 Mc/s) OE7AP, SM7KJ, OZ3LF, OH7OA. Sept 20th (7Mc/s) DJ1JX, DJ1BK. Sept 22nd/27th (7 Mc/s) SP1KAA, OK1KTV, ON4FK, F8YW, DL2UF. (14 Mc/s) VK3GU, OH8NH. Input throughout was 5 watts. Antennae, for 14 Mc/s, two dipoles in phase, and for 7 Mc/s, single half wave dipole. Reports varied from 449 (in the case of MK3GU) to 599.

(Hon Sec - B. Farleigh, G4RJ, "Montpelier", Lower Contour Rd, Kingswear, Devon.)

.....: THE KINGSTON & DISTRICT QRP SECTION :.....

The QRP Section of the K&DARS is on the air again after a major rebuild, 1st Op being Vic Brand, G3JNB, the rig being 6SN7 clapp VFO/

cash fol- EFD BA - 6V3 PA: input is 7 watts max, the antenna a 132 ft long wire and the Rx an HRO. Times of operating are rather restricted at present, but most Sunday evenings will find them on the alert for a call. (Incidentally, congratulations on the new card, Vic -- vy fb!)

.....: THE 1953 QRP C-Z PANEL :.....

	COUNTRIES					C	Zones	GRAND
	3,5	7	14	21	28	Total		TOTAL
1: P.Huntsman	15	39	130	32	9	134	34	168
2: E.W.Gardiner	26	16	103	59	5	116	29	145
3: N.Bason	14	32	104	16	-	109	32	141
4: A.E.Stonestreet	20	26	95	-	8	107	30	137
5: B.J.Read	6	24	83	-	-	95	31	126
6: D.Gordon	25	15	88	26	7	82	27	109
7: R.Whitfield	22	7	75	26	6	84	24	108

As I have said many times before, this C-Z panel is the best supported contest which we have ever run, but it is significant that activity is much less pronounced this year than during 1952. In Oct last year we had 12 members participating in the C-Z but the scores were not a lot higher. By comparison Peter Huntsman then claimed a total of 189, B.J.Read 143, E.W.Gardiner 137, R.Whitfield 133, A.E. Stonestreet 126, D.G.Gordon 122, N.Bason 96 -- giving an average of a little under 134 for 1952 against rather over 133 for this year. It is apparently a case of some personal variation of condx -- probably less listening time being available which we know is true in the case of Peter, whereas Norman Bason is 45 total up this year against his 1952 effort.

Well, there are two more panels to go--GET IN THERE, CHAPS!

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..... THE QRP "200" CONTEST

<u>ALL TIME RECORD:</u>	<u>COUNTIES WORKED (Mc/s): --</u>			<u>TOTAL.</u>
	<u>1.8</u>	<u>3.5</u>	<u>7</u>	
1: G2BOF	62	56	38	156
2: G2AOL	65	60	28	153
3: G3HJL	2	50	-	52

<u>1953 ONLY RECORD:</u>				
1: G2AOL	62	54	31	143
2: G2BOF	59	53	28	130
3: G3HJL	2	24	-	26

..... TOP BAND SWL PANEL

W.B.Baker (Berwick-on-Tweed)	8 (7)	60 (39)	68 (46)
P.Huntsman (Hexham-on-Tyne)	9 (9)	45 (45)	54 (54)
N.Bason (Isle of Man)	7 (7)	46 (46)	53 (53)
D.G.Gordon (Bournemouth)	5 (5)	46 (40)	51 (45)
H.G.Wells (Waltham Cross)	7 (-)	39 (-)	46 (-)
E.Gardiner (Diss, Norfolk)	4 (3)	35 (18)	39 (21)

THIS WILL BE THE LAST REMINDER ABOUT BADGES BEFORE THE EXHIBITION, OMs.
They are still available, post free, 2/6 from the Hon Sec.

.....: SEPTEMBER 2 METRE LOG -- A.E.Stonestreet:.....:.....:

Good old Ted! -- Despite the conflagration mentioned in our Activity columns he has managed to slavage some details of his month on VHF. Obviously it is a very sketchy and incomplete record, but it is welcome none the less.

STATION HEARD	DATE	TIME	WORKING		QSA/ REMARKS
			HEARD	NOT HEARD	
G3AMP		1900	-	G3ECV	
G3HDE		2330	-	G2RT/A	
G3FYY		2330	-	G3DVD	
G3FYY		2345	G8SK	-	
G3GSE		1415	-	G5AM/P	
G2ANP	5th	1615	G3JMA	-	JMA vy weak
G3FYY		2340	G3GSE		
G3FYY		2345	G3ISA		
G2AIW		2345	G3CZY/A		
G3FXG	8th	2310	-	-	
G3BLP	"	2315	-	-	
G3GDR	"	2345	-	-	
G8ITR	"	0025	G3FYY		
G3HBW	"	2335	Calling CQ	on 70 CM/s	
G3EDZ	30th	0020	-	G3FUL	
G3FYY	"	2320	G4AU	-	
G3FOU	"	2320	Calling CQ		QRM to above

Hope the OCTOBER log has come through without loss or damage? You have certainly roused my interest in Two, OM, and I am planning to get down there to join you as soon as a rig can be arranged.

.....: THE H Q Rx :.....

Having discussed with David White the conclusion of his article on QRP Superhets and ascertained that he has some even more revolutionary ideas to forward than we had cooked up ourselves, we have decided to postpone further development on our Rx until we have had a chance to absorb his advice. We shall not be idle, however, for a mains 1-V-1 is on the stocks already -- but more of that later!

.....: Q R P DIRECTORY :.....

FULLY ACTIVE MEMBERS (continued): --

WRAIGHT, W.H., 39 Thornhill Place, Maidstone, Kent.
 YULE, G.H.M. (G3IED) 70 Aylesbury St., Neasden, London, NW 10
 YOUNG, L.G. (G5GG) 63 Paddington Grove, Bournemouth, Hants.

NON-ACTIVE MEMBERS: --

ANDERSON, J., 15 Langley Avenue, Coseley, Bilston, Staffs.
 AVIGOR, R. (4X4CJ) - awaiting notification of new address -
 BANKS, W.J., 56 Bromley St, Workington, Cumberland.
 BAKER, H.G. (G3EBL) 17, Trafalgar Avenue, Worcester Park, Surrey.
 BOLLARD, J.S., 57 Sanghall Rd, Chester.
 BOLTON, J.J.W., 109 Prince Albert Sq., Earlswood, Redhill, Surrey,
 BRADY, J., 5-30 William St., Kadywood, Birmingham, 15
 BROOKER, R.J. (G3HBI) 77 The Cottages, Rosendale Rd, Herne Hill, SE
 BROWNE, J. (G4XC) 48 Roberts St., Grimsby, Lincs, (24
 CAMERON, A.E., "Roma", 10 Poor Park Rd, Northwood, Middx.
 CARR, C.J.T., 23 Pegwell Avenue, Pegwell Bay, Ramsgate, Kent.
 CARTER, W.S. (G5QI), The Ards Lodge, Dorridge Rd, Birmingham.
 CHAMBERLAIN, W.E.C., 8 Forstal Villas, Egerton, Ashford, Kent.
 CHURCH, R.A., Kiltan Farm Estate, Kilver, Somerset.

(To be continued)