

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

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JOURNAL OF THE
Q, R P SOCIETY



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Deadline for publication in next issue is the 12th of next month.

..... WALTON AMATEUR RADIO EXHIBITION

This issue of our magazine will be on the QRP Society stand at the exhibition which we have had the privilege of organising in Walton this month.

It would seem therefore to offer an ideal opportunity to record our very sincere thanks to the many organizations and to the dozens of individuals who have made our task into a very real pleasure.

That old term, "The Ham Spirit", has been kicked around so carelessly that it has become thoroughly trite, but the past month has proved that the meaning of it is still as live and active as ever. The willing help that we have had from all sides in putting on this exhibition has turned a really formidable task into delightful experience.

We should like to name here all those to whom our thanks are due but space permits us only that one sincere & genuine word -- THANKS!

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.....: DESIGN OF QRP SUPER-HETS,
by DAVID WHITE, G3JKA

THE FDR4 RECEIVER, ADDENDA:-- We regret that in last months description of this Rx we failed to quote the valve types. These are-- V1, 1R5; V2, 3, 4, 1T4. The resistor passing to earth from the junction of C10 and the grid of V3 is R5 (see the V2 section of the diagram on page 6)

REFLEX OPERATION:-

This is the name given to simultaneous operation of a valve at two frequencies, usually RF (or IF) and audio.

Circuits using this principle were common in the earlier days of radio when the gain available from a single valve was less than that possible now.

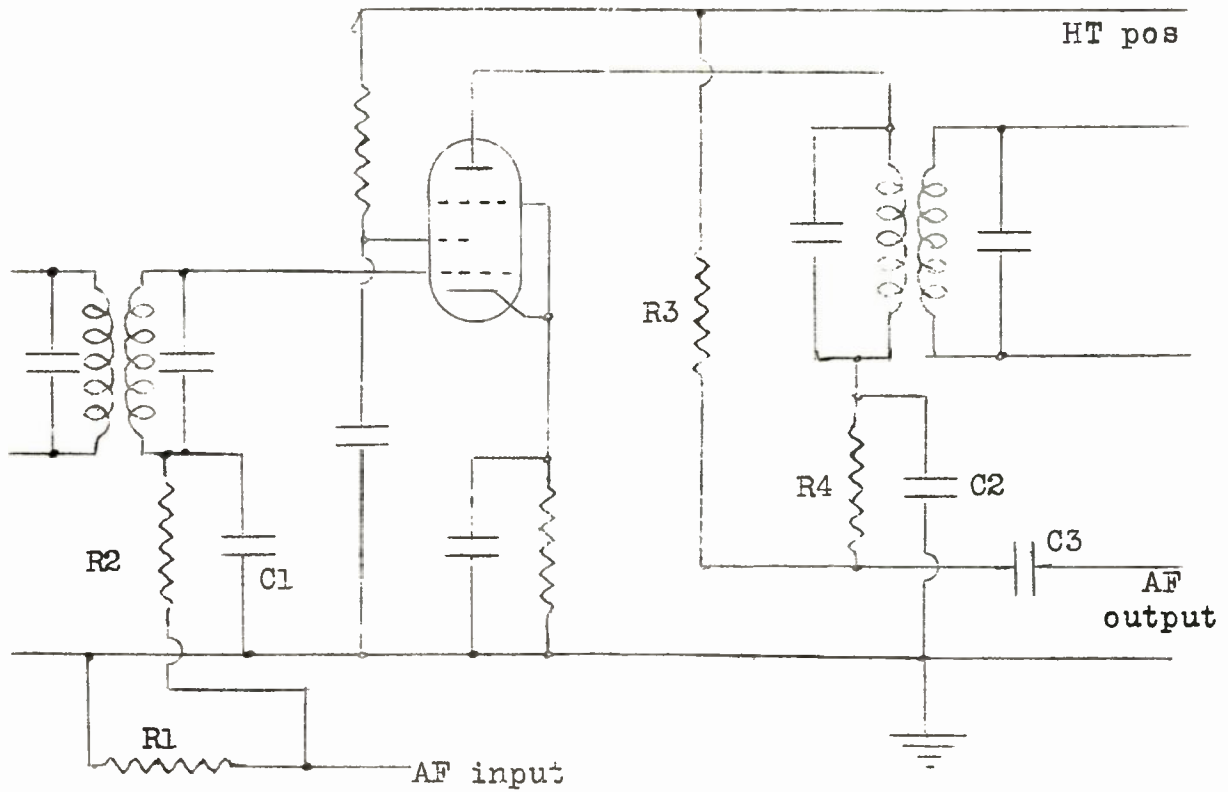
The chief objection to the use of Reflex operation in domestic sets appears to be an effect known as "minimum volume" or "play through" which means that strong signals cannot be eliminated by turning down the gain, a fault which is hardly likely to worry QRP enthusiasts. Both signals are applied in series to the grid, and then removed from the output one by one.

The values shown in the diagram on page 3 are suitable for use with an IF of 465 Kc/s. It is not possible to use high-gain valves in this circuit since it will be difficult to avoid regeneration and possibly oscillation in the reflex stage. The principles employed in sorting out the signals at the anode are similar to those used in regenerative detectors.

The screen of a pentode may also be used, being decoupled from RF but not from AF, and having an AF load coupled out to the next stage in the normal way.

VALUES: C1, .001uF; C2, 500pF; C3, .01uF; R1, 1 meg; R2, 100K; R3, 20K; R4, 10K.

AN I.F. / A.F. REFLEX STAGE



.....: GRP SOCIETY SPARES SERVICE:

(ALL correspondence direct to Manager: G3CED, 17 Ethel Rd, Broadstairs)

CONDENSERS: 2/6 each, 6 uF 1000 VDCW; 2/- each, 0.25 uF 2500 VDCW, .8 uF 600 VDCW, 8 uF 500 VDCW; 1/6 each, Butterfly variable; 9d each, 1 uF 500 VDCW; 7d each, 1 uF 250 VDCW, .125 uF plus .05 uF 400 VDCW, .01 uF plus .01 uF 600 VDCW, .1 uF 600VDCW, .05 uF 600 VDCW; 6d each, .5 uF 350 VDCW, .1 uF 65 VAC, .01 uF plus 3 uF 600 VDCW; 3d each, .25 uF Trop 350 VDCW; 3/- each, 16 plus 16 uF 450 VDCW.

KNOBS: $\frac{1}{4}$ " dia spindle -- 21 at 3d each.

VALVEHOLDERS: 3 dozen assorted at 3d each.

SWITCHES: 2/6 each, 4 pole C/O toggle, 4 pole 2 way & off wafer; 1/6 each, 4 pole C/O wafer; 1/3 each, 4 pole C/O toggle with off posn, 2 bank 3p 3w wafer, 1 bank 2p 4w wafer, 1 bank 1p 1lw wafer, 2 pole on/off toggle, 2p on/off button switch, 2p C/O wafer; 1/- each, SPST toggle, 2 pole on/off toggle.

POTENTIOMETERS: 1/- each, .01 meg $\frac{1}{4}$ " spindle $\frac{1}{2}$ " long, 2 meg $\frac{1}{4}$ " sindle (long) plus on/off switch, 500 ohm Colvern WW $\frac{1}{4}$ " sp, .5 meg $\frac{1}{4}$ " sp 1" long, .5 meg $\frac{1}{4}$ " sp 1" long plus on/off switch.

MISC BARGAINS: 6E Indicator unit chassis with VCR97, 20/-; RF24 unit less case but with 3 gang tuning condenser, 10/-; APN4 chassis, some components removed, 7/6; TU5B tuning unit, rough outside, 12/6; 207A tuning unit, neons removed (microwave unit with Klystron), 10/-; various relays, 2/6 each; London sound & vision TRF receiver, 15/-; Partly constructed 6 valve 4 waveband Rx approx 8/200 metres, coils, W/C switch & cct, wired to DDT with valves, 20/-; Carbon mike trannys, new, 60:1 ratio, 4/- each.

VALVES: 814, 20/-; 813, 40/-; 307, 5/-; DET19, 1/6; KT8C, 5/-; TT11, 3/-; PT15, 5/-; 866, 10/-; GU50, 10/-; U19/23, 10/-; 5U4, 5/-; U52, 5/-; "1", 4/-; 6B8, 6C5, 6F6, 6J5, 6J7, 6K8, 6L6M, 6L6G, 6Q7, 6SJ7, 6SN7, 6V6, 6X5, X65, KT66, all at 4/- each; VT99, EF50, ML4, L63, SP61.

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VR54, VR92, CV1053, CV1863, 274/A, 278/A, TH4A, Pen4DD, ACSI, 6H6, all at 1/6 each.

METERS ALL AT 5/- EACH: 2" sq, 0/5 mA, 0/150 MA, 0/10 mA, 0/200 mA, 0/500 mA; 3" sq, 0/5000 V; 3" round, 0/100 mA, 0/30 mA.

TRANSFORMERS: UM1, 20/-; DT1, 15/-;

MAINS TRANSFORMERS: Woden 350v 6.3v 5v, 20/-; 450v 5v, 20/-; 6.3v 5v, 10/-; Woden 10v, 15/-; 1000-750-500-0-500-750-1000v at 500mA, 40/-.

EDDYSTONE FULL VISION DIALS, 15/-

POWER PACKS: All 19" rack mtg, 350v 6.3v, 60/-; 750v 6.3v, 100/-; 1000v 10v, 100/-.

PLEASE SEND BLANK P.O. PLUS BLANK STAMPED ENVELOPE TO SPARES
MANAGER:- G.A.Partridge, G3CED, 17 Ethel Road, Broadstairs, Kent.

MEET YOUR SPARES MANAGER AT THE WALTON EXHIBITION

..... STRAIGHT FROM THE STATES
by WOPRM

("Wx here still pretty miserable", says Bud, "but at last we have gotten some badly needed rain" -- WE would gladly trade a few feet of rain for an hour or two of your sunshine, Bud -- Ed)

I'm sure that many of you fellows have the same problem that is mine: no antenna space! At last I hope I have overcome this with the new vertical just up. Basically it is an 18 foot "fishing" pole with 240 feet No 22 insulated wire close wound down the pole. This is mounted on the roof, the bottom being 35 ft high. A 20 ft lead-in is coupled to a pi-network tuner. It loads very nice on 20-40-80 and 160 metres. On 20 it out-performs the Zepp by 1 to 2 S points. On 40 and 80 it is as good or better than the Zepp. On 160 I worked W9JXJ in Chicago with RST 589 with 20 watts input. There are many variations of this type of
(PLEASE TURN TO PAGE 8)

(CONTINUED FROM PAGE 4)

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G.H.M.YULE, G3IED, is using a 6L6 CO with 6 watts input, pi-coupled to an end-fed long wire. He is operating with crystals on 3512 and 3520 Kc/s and would very much appreciate contacts with other Soc members.

G.WHITFIELD, G3ETQ, is another recruit to the rapidly increasing ranks of our transistor-interested members. For a licenced member 3ETQ has taken the unusual line of starting activities with a TRX. This, he says, is poor in selectivity and critical as to control settings, but that once a signal is received at reasonable strength the stability is excellent. He has a TTX already under way.

GREENFORD COUNTY GRAMMAR SCHOOL RADIO GROUP have constructed and calibrated two excellent multi-meters using ex-1155 meter movements. The next job, under the guidance of their science master, Mr R.C.Sutcliffe, is an all-wave sig genny and information is requested on converting an 1191A to AC mains operation. CAN ANY MEMBER PLEASE HELP?

ALLAN HERRIDGE, G3IDG, is now on 14020 Kc/s CC, using a 6AG7 CO and QV04-7 PA at 10 watts with a T2FD aerial. Allan is anxious for contacts other members on this frequency.

PETER & RONNIE HUNTSMAN have both taken the RAE exam held in Edinburgh on Oct 2nd and, having found the paper "not too bad" are now keenly waiting results. Peter says that, if a call does materialise, he will continue to use the O-V-2 as, even if the BC348 is more selective, it cannot compare in overall performance with the TRF on account of the noise level. Peter is taking over managership of our TRF Receiver Group so will any interested member please contact him direct (QRA: 2 Lincoln Terrace, Hexham-on-Tyne, Northumberland).

JOE STEPHENSON has built the O-V-2 "Huntsman" and reports that it is an excellent job for CW.

THANKS to all members who have sent in QSLs for the backcloth of our Exhibition satnd. They have helped us to make a really fine and impressive job of it -- 6' x 3' on a black ground with the QRP diamond centrally in gold. Hope photos will appear in some of the mags.

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antenna but all work well and are non-directional. Be glad to send complete information to anyone interested.

20 metres is still very poor here. 40 seems to be the best Dx band with such as: LU4ZI Antarctic, LU7ZM South Orkney Is (S9 sig), KG6FAA Guam, XE1KO, OA4BN, FP8AP -- all heard between 7000 and 7015 Kc/s.

Notes from October QST: ZD3BFC active from Gambia with 20 watts SX28 and long wire VR2BZ active from Union Islands with 5 watts from Tongareva in the Manihiki group G3IDG, Allan, with 10 wts on 28 Mc/s working G, GM, DL, HB, YU JA6AA and VP6AF run 10 watts input FP8AP and HZ1HZ run 20 watts input. . . . OD5LJ uses a 6L6 final.

73, Bud, WØPRM.

(Thanks from all of us for these fb reports, Bud, we appreciate them -- Will reply direct next month when have got this exhibition over and can settle back to normal. Hope the damaged thumb is better.)

.....: A 1.4V 1-V-1
by J.A. STEPHENSON of the TRF GROUP

(Construction of this receiver was completed in September 1953. It has been under continuous test during the ensuing twelve months with extremely satisfactory results and can be recommended as a basis for a "main" receiver or for a portable job, the dimensions, without any miniaturisation, being only 12" x 8" x 8").

Before proceeding with my comments on this set there are two points I must make clear -- first, that I have omitted the LT wiring to avoid complication of the diagram, and, secondly, that the chassis layout follows the usual L shape normally adopted when ganged tuning is employed. The HF and detector stages were designed on the right instead of the more usual left of the chassis simply because it was handier to

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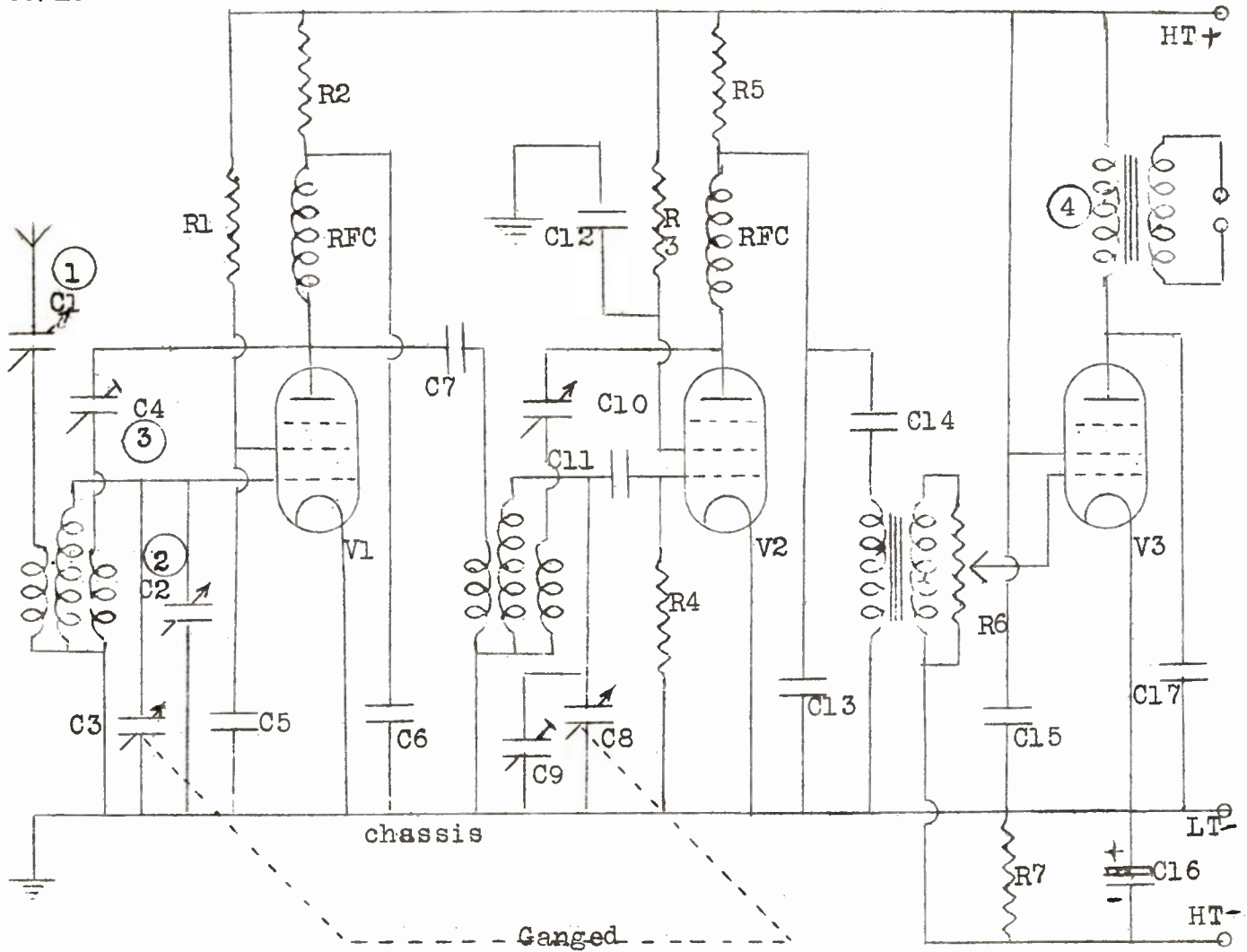
the aerial feeder and further away from an adjacent BC receiver. Experience has taught me to keep aerial leads and HF circuits of SW gear as far from BC sets as possible!

The 1-V-1 was first built without the parts which are numbered 1 to 4 on the circuit diagram and was used with a pi-coupler. Parts 1 & 2, the aerial series condenser and panel operated trimmer, were added first and were found to be more efficient than the coupler which was scrapped. Part 3, providing reaction to the HF valve, has been found to have affected a marked improvement on the selectivity of the set & has also improved the gain of this valve. Part 4, transformer coupling, was added to increase the gain of the LF valve. The transformer is an antique out of an old Cossor "Melody Maker" and, contrary to widely held opinions the use of a transformer does not result in any noticeable loss of quality, neither does it cause instability in the LF stage. Indeed, during my experiments, I have used a transformer coupled add-on amplifier after this set with quite good results using an even more ancient Igranic transformer (born 1923).

Parts 3 and 4 have more than doubled the output of the receiver. Part 3, however, has one disadvantage. If the set is tuned to aircraft around 2900 Kc/s Radio Moscow is often very prominent.

Eddystone 4-pin plug in coils are used and cover approximately 1 to 28 Mc/s. The set is not so efficient with the highest frequency range (15 to 28 Mc/s) but it is very good over the other ranges, having received amateurs in over 100 different countries, and Radio Pakistan (on 7 Mc/s) is our regular winter evening listening when not on the Ham Bands.

I am situated in a valley and my QTH is screened by hills on the north, south and east. My aerial is a long wire, 63 ft long, 25 ft high at the house end and only 18 ft up at the bottom of the "garden" with the lead-in from the far end back to the house (like a V laid on its side). The additional 4 ft to make a 67 footer is coiled up and



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fastened to the inside wall out of sight. As I am situated within 30 yards of a busy main road where there is a frequent trolley-bus service I get severe interference and, with the volume turned up at all, this is unbearable on the phones, so all my listening is done on the LS.

COMPONENT VALUES:-- C1, 100 pF - C2, 27 pF - C3, C8, 160 pF - C4, 50 pF - C5, .01 uF - C6, .001 uF - C7, 200 pF - C9, 3/30 pF - C10, 100 pF - C11, 100 pF - C12, .01 uF - C13, 300 pF - C14, .01 uF - C15, 1.0 uF - C16, 25 uF - C17, .001 uF - R1, 47 K - R2, 5 K - R3, 2 meg - R4, 2 meg - R5, 0.2 meg - R6, 1 meg pot - R7, 1 K - V1, DF91 - V2, DAF91 - V3, DL94.

.....: SOCIETY CONTEST REPORTS :.....

THE "200" CONTEST (for the GC2CNC cup now held by G2BOF) for the largest number of British Counties worked during the year (Jan to Dec) on 1.8, 3.5, 7.0 Mc/s with a maximum power of two watts.

		<u>1.8 Mc/s</u>	<u>3.5 Mc/s</u>	<u>7.0 Mc/s</u>	<u>TOTAL</u>
1:	G2AOL - - - - -	57	39	33	129
2:	G2BOF - - - - -	61	21	15	97
3:	G3JKO - - - - -	30	45	5	80
4:	G3HJL - - - - -	6	27	-	33
5:	G3EUE - - - - -	-	21	-	21
6:	G3JZQ - - - - -	13	-	-	13
7:	GC2CNC/TTX - - - - -	11	-	-	11
8:	G2BOF/TTX - - - - -	8	-	-	8

THE VQ2W CONTEST for Overseas Division members using a maximum of 20 watts. Ten points are given for the first two contacts on any band at any mileage; subsequent contacts count 1 point up to 1000 miles 2 points up to 2000 miles and 3 points over 2000 miles per band. Final placings are the average of each members returns.

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	REPORT No	SCORE TO DATE	THIS MONTH.	AVERAGE TO DATE
M.Dranesfield, G3JKO	3	155.7	-	155.7

THE COUNTIES CERTIFICATE CONTEST for the ALL TIME total of 200 counties (composed of a minimum of 50 on each of the set bands), working under the rules of the "200" contest above.

		1.8 Mc/s	3.5 Mc/s	7.0 Mc/s	TOTAL
1:	G2BOF - - - - -	80	62	46	188
2:	G3HJL - - - - -	12	70	-	82
3:	G3JKO - - - - -	30	45	5	80
4:	G3BUE - - - - -	-	21	-	21
5:	G3JZQ - - - - -	13	-	-	13
6:	GC2CNC/ <u>TTX</u> - - - - -	11	-	-	11
7:	G2BOF/ <u>TTX</u> - - - - -	8	-	-	8

THE V H F RECEPTION CONTEST is an all time cumulative event for stations heard on 145 Mc/s only. Scoring is number of stns x miles. Total HT consumption of the RX must not exceed 3 watts and stns must be counted only once in each month.

	Stns Hrd	Miles	Points	Previous	SCORE
G.V.Haylock (G2DHV)	-	-	-	6327	6327
A.Stonestreet	-	-	-	782	782
D. G. Gordon	2	36	72	282	354
E. Banks (GC2CNC)	-	-	-	234	234

WHEN SENDING IN REPORTS FOR ANY QRP SOCIETY CONTEST, PLEASE USE THE SAME FORM IN WHICH THEY APPEAR ON THESE PAGES AND PLEASE DO SEND THE ENTRIES ON SEPERATE SHEETS OF PAPER FROM THE OTHER CORRESPONDENCE.

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THE C - Z CONTEST (For the Partridge Cup now held by Peter Huntsman) is for the highest annual (Jan to Dec) score of countries and zones heard on five bands with receivers of not more than 1½ watts total HT consumption. The runner-up received one years free sub to the Society (presented by Peter Huntsman)

	<u>3.5</u>	<u>7</u>	<u>14</u>	<u>21</u>	<u>28</u>	<u>TOTAL</u>	<u>ZONES</u>	<u>C plus Z</u>
Peter Huntsman - - -	26	67	116	26	28	136	35	171
E.W.Gardiner - - -	12	4	92	45	5	105	26	131
Joe Stephenson - - -	22	5	96	2	-	100	25	125
Norman Bason - - -	20	28	81	-	-	91	30	121
D. G. Gordon - - -	16	7	83	27	6	88	27	115

THE TOP BAND PANEL is an annual contest (Jan to Dec) for the highest score of countries and counties heard on 160 metres with receivers consuming not more than 1½ watts HT.

	<u>COUNTRIES</u>	<u>COUNTIES</u>	<u>TOTAL</u>
Peter Huntsman	10	46	56
D.G.Gordon	6	45	51
Norman Bason	7	44	51
E. W. Gardiner	5	18	23

.....: THREE ELEMENT BEAM :.....
by GC2CNC

The three element beam is one of the most efficient aerial arrays and, probably, one of the easiest to erect in more or less restricted space. As shown by the accompanying radiation pattern it is strongly directional and, therefore, is best made rotary -- mounted on a framework which can be turned in a horizontal plane. There are many cases

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of course, where circumstances will allow the beam to be fixed -- such as the coast station where the bulk of signals arrive from one direction or the station which is interested in contacts with one main zone or region, and in these cases the beam only requires to be strung to the supports through insulators.

Where space or local restrictions prevent the erection of an outdoor antenna, the beam can still provide almost ideal conditions up in the attic space.

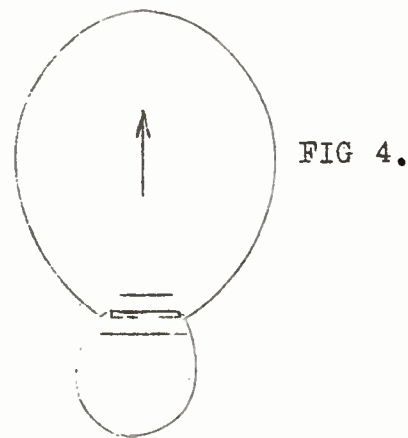
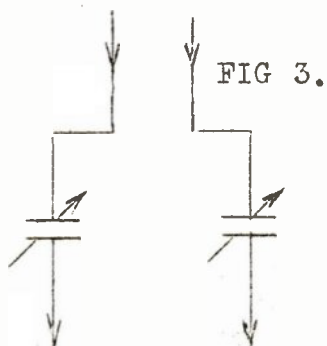
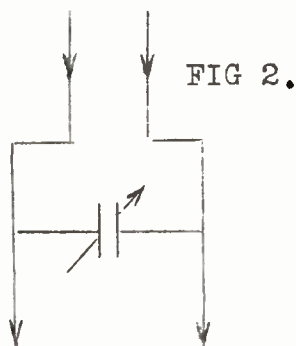
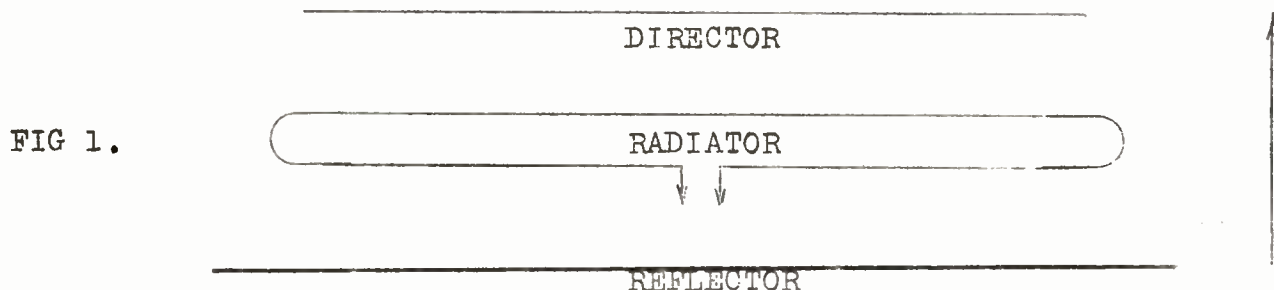


Fig 1 shows the layout of the elements themselves. The director and the reflector may be made from Electron Aerial wire. The radiator is very simply made from 300 ohm flat "feeder" line with the ends joined and carefully soldered and one side cut in the centre and joined to 80 ohm (approx) feeder line.

The dimensions for the elements are as follows:--

<u>LENGTHS</u>	<u>For 28 Mc/s</u>	<u>For 14 Mc/s</u>
Reflector	17' 6"	35' 0"
Radiator	16' 7 $\frac{3}{4}$ "	33' 3 $\frac{1}{2}$ "
Director	16' 0 $\frac{1}{4}$ "	32' 0 $\frac{1}{2}$ "
<u>SPACINGS</u>		
Director/Radiator	3' 6"	7' 0"
Radiator/Reflector	4' 4 $\frac{1}{2}$ "	8' 9"

The 80 ohm feeder from the centre point of the radiator may be of any length and is taken to the units indicated in Fig 2 or Fig 3 which are alternative. These in turn are connected to the transmitter PA link or to the Rx input, providing that the latter is inductively coupled. In both cases the condensers shown should be of 100 to 200 pF capacity and should be the best possible components.

Fig 4 shows the approximate radiation pattern.

..... THE QRP SOCIETY TRF GROUP

Despite the alleged supremacy of the super-het principle in Rx design, the TRF, or "straight", receiver is still the favourite of a great many SWLs, both beginners and "old timers" alike. This is more especially so where QRP receivers are concerned since the TRF design allows of relatively greater efficiency with only one, two or three valves than does the S-II type.

Many beginners favour the TRF because it is cheaper and more simple to construct, and many experienced SWLs "stick to it" through

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thick and thin because they have found, after years of listening with both types of receiver, that the silent background of the TRF Rx gives them better Dx reception than does the S-H despite the superior selectivity of the latter.

We estimate that well over 50 % of our SWL members use the TRF type exclusively, and that another 25 % have a TRF always at hand for alternative use. The QRP Society TRF Group, of which we announced the formation earlier this year, has, therefore, the greatest individual following of any group or section within this Society and it will be of especial interest to all these members to know that, in order to get the Group organised on a live and active basis, we have appointed as

MANAGER:- Mr PETER HUNTSMAN, of 2 Lincoln Terrace, Hexham-on-Tyne.

It is particularly requested that all interested SWLs should write to him direct giving details of their individual interests and rigs. The Group will be given its allotted space in the mag and it is hoped that it will very quickly take its place as a coordinated function of the Society.

.....: NOMINATIONS FOR 1955 COUNCIL :.....

As usual our next issue (for November) will contain a ballot paper for the election of our Council for the coming year. It is very important that all members wishing to nominate candidates for election should send the names of such candidates to the Hon Sec to reach HQ NOT LATER than Saturday 13th November.

.....: REFERENCE BOOKLET No 1. :.....

"The Language Of Amateur Radio" -- a dictionary of amateur radio abbreviations, the correct use of the Q code, the QRK, QSA, RST and RSM codes -- Compiled by R.F.Hawksley, G3GBP - - - - - Post Free 1/-