

**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

“Q. R. P.”

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- FIFTH YEAR -
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..... PUBLISHED IN 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.

..... E D I T O R I A L

First, A VERY HAPPY CHRISTMAS TO YOU ALL! This is the fifth time I have been able to wish you all the most sincere Christmas greetings and, as I have, in that time, been able to make personal contact with so many of you, and have got to know so many more quite intimately by your constant letters, I feel this year that my good wishes to you are a much more personal affair. All the very best, QMs, and a truly prosperous New Year!

November formed a fitting climax to the year's activity, providing the outstanding Kaleveld Cup results reported in our last issue, and ending with a most notorious gathering of QRP Society members at the RSGB Exhibition on Saturday Nov 28th. A full report of that occasion occupies the following pages.

These exhibitions, however, always have one disastrous effect upon me -- I always come away come away hating every piece of ugly, ungainly, shabby-looking gear upon the shelves of my own shack, and filled with a shocking urge to scrap the lot and either give up radio altogether or start afresh from the power unit upwards with brand new components which I can't afford. It's most unsettling!

.....: THE RSGB EXHIBITION :.....

Our general impression -- and I think it was shared by most other members of the QRP RS -- was that this year the Amateur Exhibition was quite the best which has been staged so far. The percentage of exhibits that were of true amateur interest was much higher than in previous years and, to our great satisfaction, prices seemed considerably easier for components. Taking a general view we should still like to see more exhibits of current components and we feel that there is a definite need for the presence of one or two stands in the hands of some factor such as Berry's, Premier, or Southern Radio of Salisbury who can show us examples of components from all the main manufacturers. Denco's exhibit was of particular interest in this way and we missed the presence of Eddystone and other similar firms who have been there in the past.

Among the various exhibits which we found particularly noteworthy were (1) a small transistor receiver operating a miniature loudspeaker from a 9 volt grid bias battery on the GWC stand. At the moment this rig is preset on one mediumwave programme, but it is still in an experimental condition so it was undoubtedly a preview of things to come. (2) On the Philpott's stand we noted some very nice small crackle finished aluminium cabinets with chassis and hinged lids and were quite astounded at the very reasonable prices. Philpott's were also showing a really beautiful range of aluminium "suit-case" type cabinets with neat leather carrying handles for portable gear, and again the cost was so relatively little that we dare not mention it here in case we heard wrongly! We are writing to Philpott's for fuller details of both these items which we shall pass on to you next month. (3) On the RSGB VHF stand we noticed quite a knot of our own members admiring a really beautiful little 420 Mc/s receiver and another 145 Mc/s example both of which went a long way to causing the present painful dissatisfaction which we feel with our own shack equipment.

But, undoubtedly, the outstanding recollection of the 1953 RSGB

exhibition, so far as your editor is concerned, was provided by the continuous flow of "green diamonds" which sprinkled the hall from end to end. Never before have we had such a gathering of the clan. Altogether, during the afternoon, I made personal contact with 25 of our members; and we made history by annexing a complete corner of the Tea Rooms as a QRP Refreshment Centre where much rag was chewed along with the char and wads. Perhaps the outstanding incident here was the meeting for the first time (after so much postal work in connection with the Contests Committee) of Peter Huntsman and Harry Wells. Harry of course is fairly local, but Peter (and brother Ronnie) had made the journey from Hexham-on-Tyne over night specially for the "show" and were travelling back the same night.

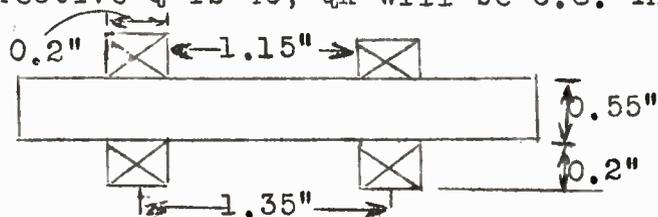
For an impromptue affair it was unforgettable. Next year we must repeat it under properly organised conditions..

..... DESIGN OF QRP SUPER-HETS
by David White

THE I F AMPLIFIER (continued)

If it is desired to make the IFTs at home, winding details for an IFT which was originally designed as a compromise between the requirements of the first and last IFTs will be found below.

If f_0 is 465 Kc/s, C is 120 pF and L is 1.0 mH, then, assuming effective Q is 40, Q_k will be 0.8. Therefore K will be .02.



Dimensions are 240 turns of 34 d.s.c. per coil. Both coils are identical and are pile wound but, if the winding is not too neat by commercial comparison, it will not matter a great deal.

It is suggested that, to adjust this transformer to our purposes, a $\frac{1}{2}$ " diameter former should be used with one or two turns of paper under each coil so that their relative positions may be easily changed by sliding them along the former. The spacing specified will probably do for the detector IFT, but for the others the spacing can be increased by 10 to 20 per cent.

If it is desired to set the IFTs to give optimum results the following arrangement should be used. The IFT is placed between two IF amplifiers, or between an IF amplifier and a diode detector, depending how the IFT is to be used. A signal is fed to the first IF amplifier at the appropriate frequency and the output from the detector is measured. The coupling is decreased by increasing the coil spacing until the output rises to a maximum. This will be equivalent to $Q\omega K = 1$ which is critical coupling. If the spacing is further increased until the output drops to approx 0.8 of the maximum, then $Q\omega K \approx 0.5$. It may be necessary to retrim the IFT as the coupling is varied.

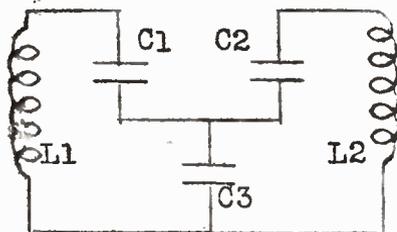
It is not necessary for the coupling to be by mutual inductance. The circuit shown below will act as an IFT and the coefficient of coupling is easily calculated which definitely is not the case with mutual inductance coupling.

In this case

$$K = \frac{\sqrt{C1 \times C2}}{C3}$$

Or if $C1 = C2 = C$ (when $L1 = L2$)

$$K = \frac{C}{C3}$$



Since K will be very small (of the order 0.01) the effect of C3 in series with C1 and C2 will be negligible as far as the frequency is concerned and the values of tuning capacitance may be taken as equal to C1 and C2. Variation of C1 and C2 should not be used to trim the IFT as this will upset K. Instead iron dust cored inductances should be used for tuning.

The practical arrangement is shown below. Suitable values for 465 Kc/s will be

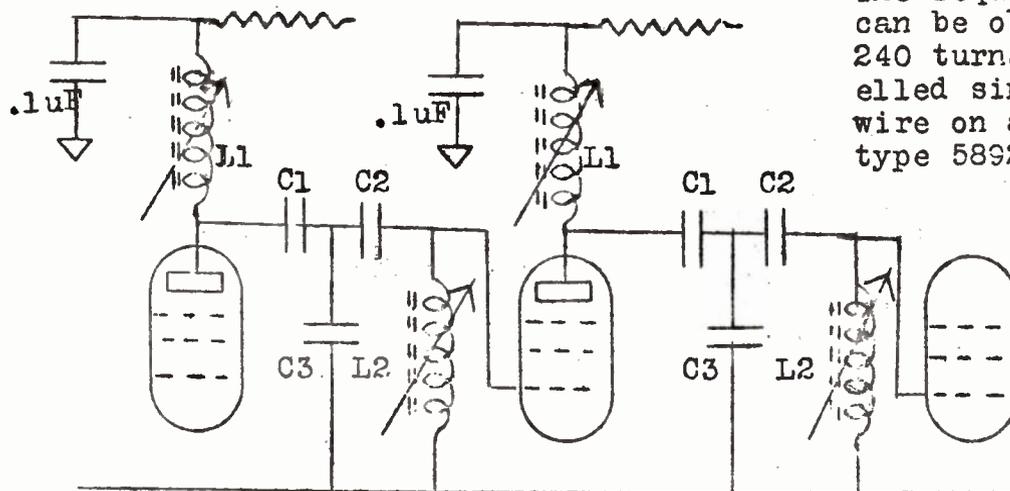
$$C1 = C2 = 150 \text{ pF}$$

$$L1 = L2 = 775 \text{ uH}$$

assuming $Q_t = 75$ then $K = \frac{.5}{75} = .066$

then $C3 = \frac{C}{K} = \frac{150}{.066} = .02 \text{ uF}$

The required inductance can be obtained by winding 240 turns of 36 swg enamelled single silk covered wire on an Aladdin former type 5892 which is 11/32" diameter and using the appropriate dust core. The winding length should be 3". Neat layer winding will suffice although wave winding would be preferable.



No inductive coupling is required so that the coils should either be mounted in separate cans or in the same can at right angles to each other. The can should have its minimum dimensions at least 3x the coil diameter.

The above type of coupling is unsuitable for feeding a diode detector without considerable circuit rearrangement.

(Suitable detector circuit arrangements will be discussed next month -- Ed.)

JACK COWLES, VK6EJ (Western Australia) was most impressed by the reception he was accorded by hams, both in Colombo on the way out, and in VK6. He says it is yet another demonstration of the world wide link of the Ham Spirit. He has not had a chance to get active yet as there are no mains available and HT batteries are such a shocking price (a 45 volt heavy duty dry batt costs 35/2). He hopes very soon to get a 32 volt house lighting plant laid on and run the Tx from a genemotor.

TED STONESTREET (Willesden Green) has been off his favourite Two Metres this month as he has lent his Rx to a friend who, having acquired a 624 Tx/Rx unit, was unable to get the Rx side functioning. They got the 624 Rx working at last, but the noise level was so terrific by comparison with Ted's job that I shouldn't be surprised if he hasn't lost it for good!

BOB KENNY, ex-G3AAU, has emigrated to Canada; the new QTH being Toronto, we understand.

ROY MILLARD (Brentford) has taken over the editorship of the WFSRA organ, "Skywire"

PETER & RONNIE HUNTSMAN (Hexham-on-Tyne) arrived home safely after their fleeting visit south for the RSGB Exhibition which they seem to have enjoyed immensely. It certainly gave many of us great pleasure to make personal contact with them and we know (not that any of us ever doubted it) that the Contests Committee is in the hands of a most energetic chairman!

TRAV TURNER, G2HAW (Hounslow) has not done a lot of radio, having been on the sick list for 14 months, but he is now on the "up grade" and hopes for greater activity on top and 80 with one watt. (Good luck, Trav, keep on getting better, OM - Ed)

C.E. GAUNT (London, SW 14) is embarking on a series of experiments with crystals despite great antenna handicaps (We feel that you may be

in for a pleasant surprise, OM, as we have heard of a lot of similar activity lately and the results have usually surprised the sceptics!

GEORGE TILLET (Hornchurch) says regretfully that his all dry S-H design failed to provide any joy. It was followed by a rebuild using the layout of Bob Brooker's 2 volt S-H ("QRP" No 13, Oct 1950) which was used as the field day Rx (by which club George does not mention, but we suspect East London) and proved fb. Two metres holds George's attention mainly and he has a convertor, a S-R Rx and another new Rx under construction and tests.

"PAFF" BEFS G3IQY (London SE 4) is very seldom able to get on the air as he is living away from home, but he is as keen as ever and is looking forward to greater opportunities.

BRIAN SMITH (Westgate-on-Sea) joined the Society early in 1952 and, being unable to afford a subscription, has religiously sent along individual payment for every issue of the mag each month since then. Brian is 15 and pays up out of his pocket money. We think that is REAL enthusiasm here at HQ! (WHAT ABOUT IT, CHAPS -- if 20 of you sent in 6d each it would make a fine Christmas present of a years' sub for an unusually keen youngster!) (PS:- Needless to say this idea comes from HQ, not from Brian!)

A.L.F. WEST (Wilton, Wilts) finds himself stationed at Abingdon, after a long spell abroad, and manages to get occasional weekends at home. These he is spending mainly in sorting out the partly dismantled and partly assembled chassis and the oddments that defy identification in his long deserted shack.

SAM HALL, G2AOL (Otford, Kent) had a spell of duty away from home just when 7 Mc/s was fairly good -- and it had lapsed "to normal" when he got back. Hence no "200" entry last month. (Bad luck, OM. Don't worry about sub reminders -- that's what the form is for, and I won't let you forget!)

GEORGE PARTRIDGE, G3CED (Broadstairs) managed to get up to the Exhibition on the opening day, but is most regretful that it couldn't have been on the Saturday. George says that the Spares Service is

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really getting under way again. George has had some shocking QRM to contend with, one way and another, this summer.

HARRY WELLS, G3JZQ (Waltham Cross) collected his callsign last month but our space was so much occupied that we were not able to get in the appropriate announcement, despite our pleasure at his success. He has already got out to some purpose, having worked Hexham for GDx and OK1 for EDx, and had a nice QSO with Fred, 3HJL.

TOM CARTER (Sandhurst, Kent) has a number of ideas to put forward for the improvement of our Student Scheme (That will be most welcome, Tom, as this must be our year of greatest effort for advancement ever)

ALLAN HERRIDGE, G3IDG (Balham) has received a VERON Code Proficiency Cert for 20 wpm. He is now working 5 watts for inter-G and 10 only where essential. The line up, now, is 6SN7 Clapp VFO/untuned BA -- 6AG7 CO/tuned BD -- 807 PA/PD. The modulator is EF37a - 6SL7 - PP EL33. The antenna is a 46'6" T2ED used on 160, 80, 40 and 10 metres.

E. S. SMITH (Eltham, SE 9) deserves a hand clap from HQ -- he has been thoughtful enough to send us back all his "QRP" covers as he files his copies. (Thanks, OM, we appreciate the thought)

E. W. GARDINER (Diss, Norfolk) had a stroke of luck this month for his Top Band log by gaining a new country and three new counties in one 3-way QSO between GM3IGW, G3FW and G3EKX.

NORMAN BASON (Peel, I.O.M) was tempted to try Derek Williams' idea of hitching onto the XYL's cloths line and "could hardly tell the difference between that and the long wire". (We were going to be a bit brutal about your long wire, OM, but, as it's Christmas we will only remark that it may be an extra fine cloths line.)

ARTHUR LOONEY (Liverpool 14) had a visit recently from one of our roving RAF members, Bert Gutteridge, who took along a friend, G3IGU, and by all accounts the three of them had a most enjoyable meeting. Arthur is one of our "budding" VHF enthusiasts.

R. C. TAYLOR, G3JAL (Thornton Heath) is running just under 3 watts

to a 6V6 CO, pi-coupled to a 100 ft wire for Top Band. The Rx is a 3 valve S-H using X41 mixer, SP41 IF and MH4 detector. He is hoping soon to be active on Two, and the next rig on the "line" after that will be a trans-receiver for Top Band portable.

DAVID WHITE, G3JKA (Kingston) is at present using an SP61 Clapp and EF50 PA with another stage to be added shortly. Input is 2.5 watts and the aerial about 40 feet indoors. The Rx is a BC 342. Top band is the exclusive territory so far.

"DECK" GARFAD, Ipswich, is still faithful to his old O-V-O with 20 volts HT and a gaslighter battery. He has got 53 QSLs towards the 100 for his PACC certificate, 24 towards "Heard all States" and has recently collected the Dutch HTC certificate (I know many a QRO SWL who would envy that lot, OM, but I don't know an awful lot who can show your patience, nor yet your skill with one bottle). Deck asks us to pass his 73 to Jack Cowles, XYL and Paddy (The QRA for your info, Deck, is simply "Bencubbin, Western Australia").

RAY BUTCHER, G03FSN (Jersey) has confined his main activities lately to getting married, the ceremony being well supported by QRP representation in the persons of G02CNC and G03FMV. Monty was appointed cameraman, and we only regret that we are not able to reproduce pictures in the mag as we have no doubt that he made the most of his opportunities! All the very best wishes to Ray and Val!

.....: A 145 Mc/s RECORD :.....

Monty, G02CNC, claims the first G0 / F contact on 145. On Nov 17th the band opened wide and a QSO produced F90K (Nantes) at 135 miles. We are particularly gratified to report that the antenna used was the antenna used was the six element stack described some months ago in "Q, R P". It was used indoors, moreover, which sets the final proof of it's fire power.

Congratulations indeed, Monty!

.....: KINGSTON & D.A.R.S., QRP SECTION: (REPORT FROM G3JNB)

At a meeting on Wednesday 25th November the members discussed plans for the future. Subjects touched upon included power input, DF, construction costs, operating, UHF and portable work. A Sunday QRP net (detailed below) commenced on 29th November. The main interest of all members is, at the moment, centred on the organisation of a Special QRP Contest, open only to members of the K.D.A.R.S., for which the Editor of "QRP" has very generously donated a trophy. Details of the contest are in the process of debate. All members visited the RSGB Exhibition, several having a most enjoyable 'rag-chew' with John and fellow QRP enthusiasts. Many useful tips were exchanged, G3JNB and SWL Reg Henson carting away enough gen from the stands to last them till next time! David White has further strengthened the Section by the acquisition of his call, G3JKA and is active with QRP. Reg Henson is juggling with an 18 set, recently obtained through G3CED's excellent Spares Service -- the set is one of the rare 80 metre models and shows great possibilities for Field Days. Geoff Baskerville is wielding his MCRL in conjunction with a trusty O-V-1, but is handicapped by being on DC mains. The Section Control Station, G3JNB, is fully active on Top Band with a 6SN7 Clapp VFO, EF50 BA, 6V6 PA, running at inputs from 1 to 8 watts, the antenna being a 132 ft long wire rather badly bent about the garden. Meetings of the Section are, at the moment, entirely flexible so as to allow members to discuss new developments with minimum delay. Enthusiasts in the Kingston area are invited to contact Vic Brand at 137 Surbiton Hill Park, Surbiton, Surrey.

KINGSTON & D.A.R.S., QRP SECTION NET Sunday Afternoons.

Frequency: 1900 Kc/s or as near as QRM allows.

Time: Commencing 1430 hrs GMT. CALL: "CQ/QRP de G3JNB".

Power: 5 watts max for stations in the Home Counties.

CONTROL STATION: G3JNB. SWL Reports welcomed.

ALL QRP stations are invited to participate -- ROLL UP CHAPS!

..... THE 1954 COUNCIL

Our President, Mr Arthur Milne, G2MI, has notified his desire to relinquish Presidency of the Society in view of the extreme pressure of work in which he will be involved during his forthcoming tour of Presidency of the RSCB,

We would take this opportunity to offer him our most sincere thanks for the invaluable benefits which he has bestowed upon us during his past two years at the head of our Society. We would further assure him that we do appreciate the interest which he has always taken in our activities, and that we hope that interest will remain undimmed during many years to come.

The return of ballot forms for the position of Press Officer add up to a substantial lead in favour of Vic Brand, G3JNB (the actual lead being 1/3 of the votes submitted). Our thanks therefore become due to G3FAU for his hard work in a very thankless task during the passed year.

- Thus, the COUNCIL FOR 1954 BECOMES: --
- /// PRESIDENT - - - - - Mr Ernest Banks, GC2CNC
- /// IMMEDIATE PASSED PRESIDENT- - - - - Mr A.O.Milne, G2MI
- /// CHAIRMAN - - - - - Capt A.M.H.Fergus, G2ZC
- /// CONTESTS COMMITTEE - - - - - Mr Peter Huntsman
- /// Mr Harry Wekls, G3JZQ
- /// Mr F.R.Bailey, G3HJL
- /// Mr A.E.Stonestreet.
- /// PRESS OFFICER - - - - - Mr Vic Brand, G3JNB
- /// SPARES SERVICE MANAGER - - - - - Mr G.Partridge, G3CED
- /// STUDENT SCHEME MANAGER - - - - - Mr T.H.Carter
- /// SECRETARY, TREASURER, EDITOR - - - - - Mr John Whitehead

This council promises to be an exceptionally strong and active one and we can assure them that they will need both those attributes to the

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full as we are about to enter what should most certainly prove to be our year of greatest development. This is no idle boast for already plans exist, ready to be finally polished and touched up by our Council, on a number of interesting schemes. Last year our Contests Committee did a magnificent job of work under the leadership of our President Elect. I would like to feel that, in the coming year, the whole Council will work together with an equal cooperation and enthusiasm.

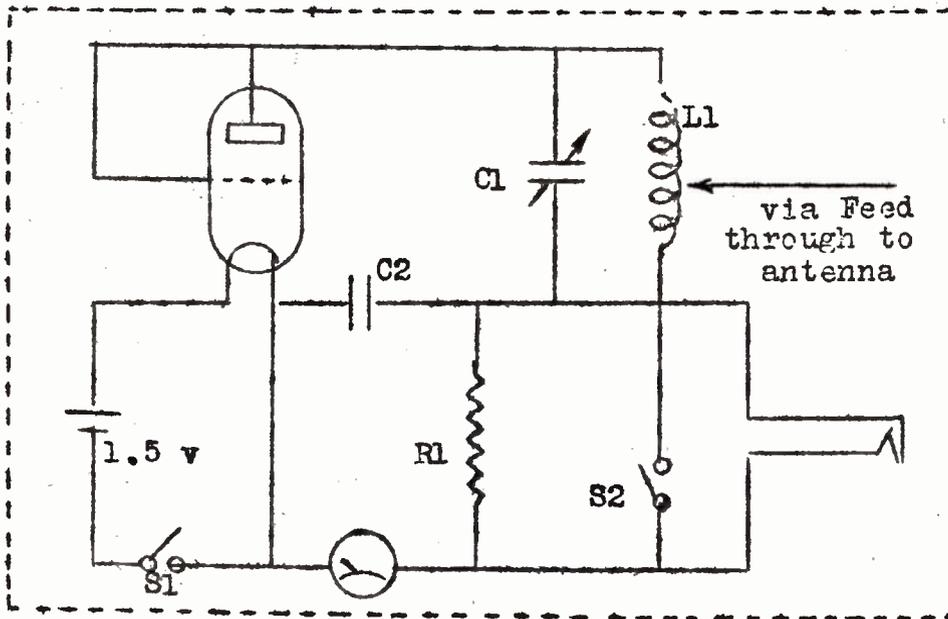
..... "CHECK THAT ANTENNA!" -- by GC2CNC

The simplicity of this piece of "essential" shack equipment may, perhaps, be the very reason why it is not more often in evidence. It's circuit diagram, size, cost and general appearance do not at once catch the eye as being a highly versatile piece of gear. In fact, however, the tiny unit, assembled in a metal case measuring no more than 4" cube, with a metal lid, can be used for --

- (a): Monitoring telephony transmissions
- (b): Checking frequencies
- (c): Checking antenna field strengths
- (d): Checking for stray RF
- (e): Checking tuned circuits for correct frequency.

The component values for the diagram shown on the opposite page are as follows --

V, any 1.4vlt triode. C1, 100 pF. C2, 1000 pF. R1, 5,000 ohms. Meter, 0.1 mA fsd. S2, switch to cut out resistor which is in circuit when monitoring telephony. L1 is wound on a standard 4-pin former as follows -- (a) For 28 & 14 Mc/s: 20 swg enamelled wire, 6 turns double spacing, centre tapped for antenna. (b) For 7 & 3.5 Mc/s: 20 swg enamelled, 18 turns single spaced, tapped 6 turns from end marked x. (c) For 1.8 Mc/s, 22 swg enamelled, 50 turns tapped 12 turns from end marked x. Antenna brought to insulator on metal case.



CIRCUIT OF THE
GC 2 CMC
CHECK
METER

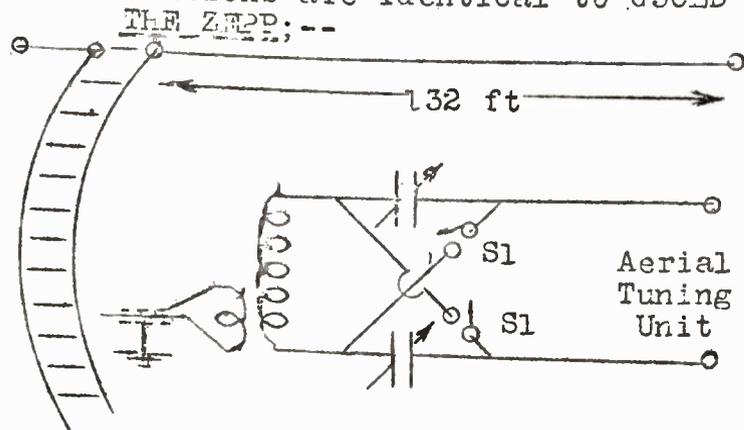
.....: MORE ABOUT THE T2FD, by G3HZW :.....:??

With reference to the T2FD aerial mentioned in the October issue I thought you might like details of my station as it is completely TVI proofed on all bands even up to 35 watts input. I do not use conventional tuned filters but rely upon harmonic suppression by:-

- (a) Low frequency multiplier HT (100 volts max)
- (b) Just sufficient drive to the PA
- (c) Coaxial low impedance output to a lightly coupled aerial tuning unit.
- (d) Accurately matched feeders and aerial.

The two main aerials in present use are a 132 ft Zepp and a low impedance input type T2FD, both of which have been very satisfactory

THE T2FD:-- To further TVI reduction I have used a balanced 80 ohm input and terminating resistance of carbon (5 watt). Otherwise the dimensions are identical to G3CED's T2FD.



The feeders are 44 ft in length and the spreaders are 10" AM ceramic type. S1 is a parallel/series switch. All wire is heavy gauge, 14 or 12 swg cadmium copper.

With the above dimensions I have found that a very balanced input in the aerial current meters of about 0.4 amps for 15 watts on almost all bands tested (excluding 21 Mc/s).

.....: TOP BAND SWL PANEL :.....

	<u>COUNTRIES</u>	<u>COUNTIES</u>	<u>TOTAL</u>
W.B.Baker (Berwick-on-Tweed)	8 (7)	60 (39)	68 (46)
P.Huntsman (Hexham-on-Tyne)	11 (11)	51 (51)	62 (62)
N.Bason (Isle of Man)	8 (8)	50 (50)	62 (62)
D.G.Gordon (Bournemouth)	5 (5)	46 (40)	51 (45)
H.G.Wells (Waltham Cross)	7 (-)	39 (-)	46 (-)
E.Gaidiner (Diss, Norfolk)	4 (4)	35 (24)	39 (28)

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

	COUNTRIES					C Total	Zones	GRAND TOTAL
	3.5	7	14	31	28			
1: P. Huntsman	20	55	138	32	9	145	35	180
2: E. W. Gardiner	30	16	107	64	5	121	30	151
3: N. Bason	17	33	111	19	-	114	33	147
4: A. E. Stonestreet	20	27	98	-	8	110	30	140
5: BJ Read	6	24	83	-	-	95	31	126
6: D. Gordon	25	15	68	25	7	82	27	109
7: R. Whitfield	22	7	75	26	6	84	24	108

..... THE QRP "200" CONTEST

ALL TIME RECORD:	COUNTRIES WORKED (Mc/s):--			TOTAL
	1.8	3.5	7	
1: G2ACL	67	62	36	165
2: G2POF	62	56	38	156
3: G3HJL	2	50	-	52
<u>1953 ONLY RECORD:</u>				
1: G2ACL	64	57	36	157
2: G2POF	59	53	28	130
3: G3HJL	2	24	-	26

THE GREEN DIAMOND "QRP" BADGES PROVED THEIR WORTH AT THE RSGB EXHIBITION. You can still get one from the Secretary for 2/6 post free.

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

This log, which should have appeared last month, was forced out by the unusual amount of urgent matter which had to be included in that issue. Interest in Two, however, has spread so rapidly since we began reporting these logs that we make no excuse for the inclusion of this one a month late.

STATION HEARD	DATE	TIME	WORKING		REMARKS	Wx.
			HEARD	NOT HEARD		
G3GHR	10th	2300	-	-	Clear sig,	Foggy
G2HDZ	14th	2300	G8OU			Dull
G2HOZ	18th	2300	G3MI			slight fog
G3FYY	"	2310		G2BPC	Called CQ	
G3FYY	20th	2300	-	G8SC	No contact.	Slight fog
G3FYY	"	2305	-	G5TP	No contact.	" "
G3GBE	"	2305	-	G5TP		
G5BC	24th	2345	-	-	Called CQ	Foggy

.....: POST SCRIPT :.....

And so we come to the end of another year. Progress has certainly been a little slower and, in line with all the other facets of Ham Radio, membership has dropped back quite considerably. But we have, none the less, established ourselves still more firmly in the affections of the true QRP enthusiasts. And, as we have already said in this issue, we are on the doorstep of a year which, if all our plans bear fruit, will increase our capacity and our prestige out of all recognition. Our original motto, "Crescit eundo" (We grow as we go) will mark 1954.