JOURNAL OF THE
Q R P
RESEARCH SOCIETY

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

INTO HARNESS AGAIN! Thanks in no small measure, I am sure, to the combined good wishes of you all, I and the editorial "staff" of this journal had a holiday that was really deserving of the capital letters FB in every possible way. Only one thing could have made it more ideal and that would have been a cheque from Mr Littlewood large enough to enable us to stay in our favourite Isle of Wight and grow turnips for the rest of our days. But holidays always come to an end!

And that reminds us that this issue brings to an end our fourth year of publication -- we first appeared in September 1949. In the coming December, moreover, we shall be producing our 50th issue which we should very much like to make something of a record number. If you all rally round to provide the gen as you have done for this special Antenna Number it should certainly be a bumper one!

Much thanks are due to all those members who have contributed in any way to the obvious success which underlies those remarks. We anticipate still greater success in the future. "A giant oak from an acorn grew" -- and a four year-old oak has a lot to look forward to!

:::::::::::::::::::: SOCIETY NEWS & ACTIVITY ::::::::::::::::::

Peter Golledge, VQ2W (N.Rhodesia) is still using 20 watts (and has managed 54 countries to date), but he is really getting down to business on a QRO Tx to provide comfortable and regular contact with many of his old friends. The present rig will then be used at 1.5 watt whenever condx and opportunities are favourable. The same old 1-V-1 (1N5-1N5-1C5) Rx is still giving faithful service. To his disgust Peter has been forced into the position of local "radio serviceman", but says he's going to put a stop to that as soon as he tactfully can! He has a number of pertinent suggestions on the subject of QRP contests which we shall pass on to the Committee. Thanks for your letter, OM. It's grand to hear from you and know you still remember us.

Monty Banks, GC2CNC (Jersey) has "done us very proud" this month with a variety of gen, but even greater thanks are due to him for the way he put over a most interesting talk on QRP (at very short notice) at a recent meeting of the Kingston & District Radio Society. The K&D RS is "open house" to Monty in future any time he happens that way. Come over again soon, Monty -- we look forward to your visits here too.

TOPS C.W. CLUB: It is interesting to note that the latest list of TOPS Club members includes 20 of our own QRP RS members.

Leonard (A.L.F.) West (Habbaniya, Iraq) will be returning to G-land in three or four weeks. He doesn't mention if this is just leave or demob, but it was a very pleasant surprise to hear from him again after a long silence and we do wish him all the very best whichever it is. His letter was all the more welcome as it contained a great many sound suggestions on the subject of IF circuitry relevant to the H-Q Rx. This we shall include as a whole directly space permits. Tnx, OM.

Jack N.Hancock, G3JNH (Byfleet, Surrey) deserves a resounding pat on the back as our latest member to achieve a call -- and a pinch or two in recognition of his very crafty wangle in collecting "3JNH"!

Jack is using a VFO/Buffer Doubler/PA with 8 watts on Top Band, and 5 on 80, the Rx being a Collins TCS12 and the antenna a 132 ft end fed.

Guy Moser, G3HMR (Windermere) also gets a welcome as a new Full Member. Guy is RSGB Area Rep for Westmorland and has already worked G4XC, G3HCW and G3AFL by way of introducing himself to fellow members. We are indebted to him for the gen on a handy little Xtal calibrator which will appear in the mag shortly.

Ken Norvall, G3IFN (Woolwich) is working on a trans-receiver for 160 and 80 and is also experimenting with 144 Mc/s. He wants to see, as well, how long it will take to work all G on 1/7 of a watt, so any member who hears '3IFN will, we hope, oblige by making it a contact.

Brian Read (Liverpool) has the answer to two of his three queries mentioned last month. Norman Bason confirms that UA9 is in Zone 17 and that DJ is the new prefix for Germany following the exhaustion of the DL series calls. Peter VQ2W also confirms the latter statement.

Ravensbourne Amateur Radio Club, G3HEV (Bromley, Kent) are looking out for a QRP contact with the Kingston and D.A.R.S (QRP Section) and are VFO on 160, fone or CW, on Wednesday evenings from 8.30 pm. (Come on, Kingston -- get cracking, chaps!). They also have several 435 Mc/s T/R units on the stocks, as well as an experimental development of GC2CNC's rig published in our June issue, and have promised to keep us posted on results.

Ted Stonestreet (Willesden Green) has re-built "Old Faithful", the one bottle super-regen which originally appeared in our very first issue and has dared me to publish the 2 metre logs resulting therefrom each month. I have accepted his challenge gladly and hope that it may induce other members to try and beat it. Ted is also making up a radiation metre on the lines of GC2CNC's recent description with a view to carrying out exhaustive re-radiation tests on the super. Meanwhile he is carefully QRT during TV times, "just incase".

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THE EARLS COURT RADIO EXHIB: OPENS NEXT MONTH -- GOT YOUR QRP BADGE ?

A.W.Gutteridge (St Helens, Lancs) is arranging a personal QSO with Arthur Looney, following the latter's open invitation to QRP RS members in the May issue. (Incase anyone else visiting the district is interested the QRA is 81 Alstonfield Rd, Knotty Ash, Liverpool 14)

H.J.Hinks (Christchurch), another recruit to our full-membership list this month, numbered among his activities, before retirement, the interesting occupation of lecturer in radio technology. Now his interest centres around battery operated gear -- and I've a very strong idea that H.J.H. is going to prove a very useful asset to the Society.

Bob Eldridge, VE7BS (Vancouver) comes in again with another FB letter. He is now with the British Colombia Television Service and is enjoying his work immensely. Radio gear, he says, is very scarce in Vancouver and second-hand prices are pretty high with no signs of the attractive adverts you see in the U.S. mags, purchases from the States being heavily taxed unless you spend 48 hours over the border when you can bring home 100 $ worth tax free. (Grand to hear from you, BOB; we all look forward to your letters here, OM)

George Partridge, G3CED (Broadstairs) is always QRT at this time of year and we don't look for any sigs from him until the season slows down a bit (which is no excuse for us not having answered ur last, OM!) Bob, VE7BS, asks us to pass on R for ur letter, George, and to say he will be writing soon.

Harry Wells (Waltham Cross) sends us the Stop Press news that both he and Andrew passed the May RAE and are now pressing on for the morse test. The Tx, moreover, is almost ready! (Am most sincerely pleased at this news, OMs, and shall be looking out for early information of your calls. Good luck!)

D.J.Williams (Blaenavon, Mon) has had a change of address which has left him, temporarily, with a none too efficient "hook-up" aerial. He has also scrapped his O-V-O and O-V-2 Rxs, the replacement being a O-V-1 which seems to be giving excellent results. (Tell us about the permanent antenna when you've got it up, OM).

Norman Bacon (Isle of Man) is another who is suffering semi-QRT due to seasonal commitments and has only managed to "snatch half an hour in the shack now and again". Norman hopes that the result of this Special Antenna Number will be a continued discussion of the subject on the lines of that which has developed round the "H-Q Rx" (We'd like to see that, too, but, by-and-large, it is up to our readers. The gen will come to hand if the interest is there).

Peter Huntsman (Hexham-on-Tyne) held a private field day with Bob Whitfield on the 28th June. They invaded Hexham race course (with carefully obtained permission) which is nearly 800 ft asl, taking with them a O-V-1 (2 x HL2) and erecting a 132 ft antenna 25 ft up, running approximately N/S. Results of only four hours listening were 30 countries in ten zones. They feel that, with a little more experience, they will back a winner next time they try this NB outing.

Sam Hall, G2AOL (Otford, Kent) is still battling away at 40 for the "200" contest and finding it very hard going. He has raised his input from 1.8 to 2 watts in the hope that "every little helps", but QRP/QRO tests have shown him that a change from .5 to 10 watts input gives an improvement of only 2 "S" points, although, of course, QSB is much improved.

E.Bridgewater (Catterick) expects to be drafted abroad for 18 months almost any time now, and is afraid it means the end of his radio activities for the time. (You can still keep in touch through the mag, OM. And the best of luck wherever you may go).

Dartmouth & District A.R.Society have been active at weekends on 7, 14 and 21 Mc/s but have found condx generally poor. During a recent portable event they established contact with two VE1s and a VP9, running 4.5 watts input. The antenna used was a halfwave dipole sloping N. They have proved that, with a 1 watt input Tx, much more consistent results are obtained with the dipole sloping that when it is horizontal. QRP contacts are sought. Their freqs, 7025 and 7003 Kc/s, and their power 1 watt. A log appears elsewhere in this issue. (Tnx, OMs).

:::::::::::::::::: THE COLLECTIVE AGENCY, by H.J.H. ::::::::::::

Textbooks state that the higher the receiving aerial is the better; that a transmitting aerial makes a good receiving aerial. Accept these statements if you must, but recognise that a high aerial which has greater signal input, also collects more atmospheric noise than would a lower one. Also that selectivity is reduced when an aerial is long. Furthermore, if DBs are gained by a high aerial they may well be more than lost in the down leads.

The atmospheric noise may be broadly classified as clicks and grinders. The former, propagated horizontally, are most noticeable during cooler periods of the year. Grinders are strong in the temporate zones during summer months from noon to sunrise. They interfere with reception far more than the clicks, and are vertically polarised. Ignition noises are mostly vertically polarised too. So why not keep the download short? In fact, if it's DX you are after a low angle of reception (or radiation) assists.

Crossed and screened leads are useful in reducing electrical interference, but it is inadvisable to employ dissimilar horizontal spans with twin downleads.

Tuning the aerial is "equal to another valve" and resonance may be sought when using a superhet, but not with an O-V-1 as damping will affect a regenerative detector. Nevertheless, "near resonance" conditions can be an advantage, both from gain and selectivity points of view.

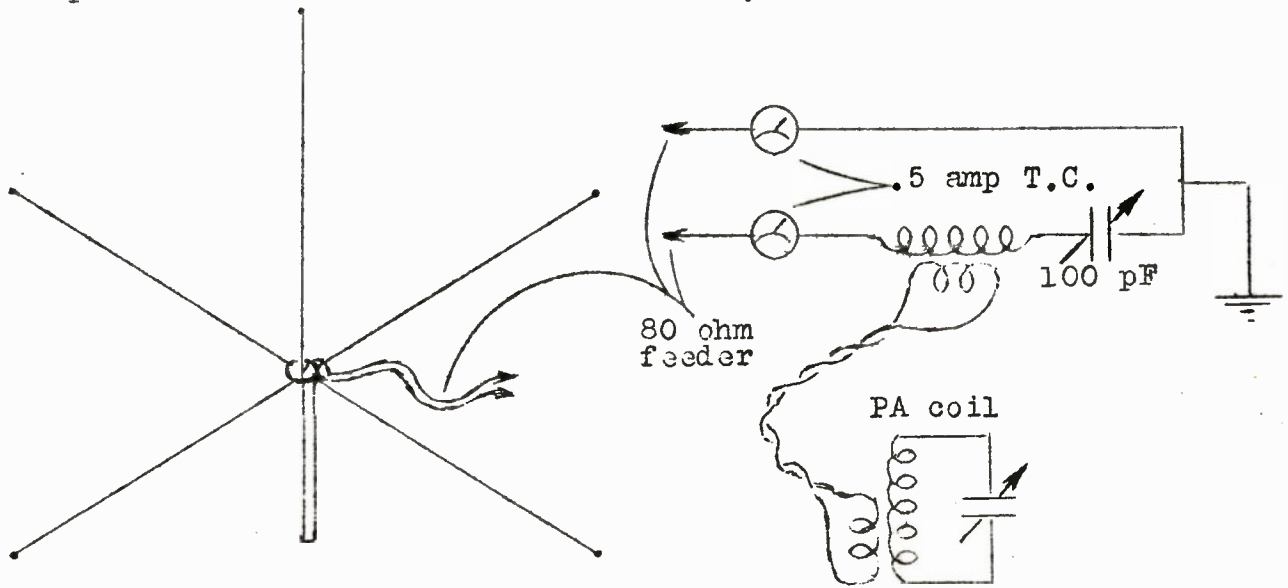
Aim to get above the electrical interference, but no more. Then design the rest to suit, obviating leakage, background noise etc. In a country location, quite a low aerial is effective -- in fact one no more than eight feet off the ground is giving yeoman service, and under a galvanised iron roof at that!

Textbooks deal with basic principles -- not practical variants.

It is left to the reader to design a "good aerial".
PLEASE TELL US OF YOUR EFFORTS AND EXPERIENCES.

:::::::::::: A GROUND PLANE FOR 14, by VQ2W ::::::::::::::::::::

From Chingola in N.Rhodesia, ~~Bob Eldridge~~ Peter Gulledge, VQ2W (alias G3AGQ) sends us details of a 14 Mc/s ground plane which has given him some very satisfactory results in the poor condx prevailing recently. He obtained the original gen from an article in QST, but, here, he skips the graphs, formulae and three pages of calculations which he struggled through to arrive at the dimensions. He shows it as constructed and adds the encouraging remark that "it is so simple that it can be easily duplicated". The only unusual feature is the stub, used to raise the impedance to match the 80 ohms feeder.



The dimensions are:-- Vertical . . . . . 16' 3", 14 swg
Radials, each. . . 17' 1", 14 swg
Stub . . . . . 4' 11", 80 ohm twin feeder.
Feeder . . . . . any length, ditto.

The aerial is mounted on a 20 ft bamboo clamped to the chimney stack with the feed point approx 15 ft high. The stub and feeder are, of course, connected in parallel, one side to the vertical and the other to the junction of the radials. The stub is shorted at the far end and allowed to hang. The coupler is Bob's normal dipole coupler as shown in the second sketch. When using 2-pin plugs and sockets for the antenna feeder and coupler to PA link it is easily forgotten that there is a right and a wrong way of connecting them, a reversal of one or both will often show a big increase in aerial current and PA loading.

On this antenna, with 20 watts input, Bob has had consistent European QSOs and has also worked PY, DU, JA, W5, TF etc, while, using 1.5 watts, he has had several good short skip contacts with ZS stations.

:::::::::::::::: MORE ABOUT ANTENNAE, by GC2CNC ::::::::::::::::

The main object of this article is to encourage the construction of efficient beam antennae at a low cost and by those people who normally avoid directional aerials because of the snags involved. It has also been written at the request of a fellow ham who has been experimenting with aerials.

At the outset let it be noted that the antennae described are not necessarily the most highly efficient. They have been chosen purely on account of their simplicity.

As far as the writer can see, objections to the Yagi centre round the measurements, ie, lengths and spacings of elements, and also the calculation of radiation resistance. The Yagi fires a signal in a given direction and, as such, it is imperative that gear for rotating it

should be available, although this would not apply so much in the cases of the Channel Islands or Northern Scotland and where the majority of stations are to the north or south. Finally, it is practically a "must" that tube should be used for the antenna and this alone presents financial and constructional difficulties.

Stacked arrays avoid these difficulties, and whilst it is true that rotating them would afford greater scope, the fixed arrays do allow transmission and reception of signals in TWO directions, namely back and front.

In all cases it is suggested that 14 or 16 guage enamelled copper wire should be used for the elements and for the internal connections, and that good insulators should be used, particularly at the centre of each pair of elements.

The measurements given are for the 145 Mc/s band, but there is no apparent reason why it should not be possible to divide by three and use the arrays on 435 Mc/s; also, in the itcase of the three-tier stack, it should be possible to use the array on 28 Mc/s by using 33 ft for the element lengths and 16 ft 6 ins for the spacings.

In the stacked array all elements measure 40" each, so that a pair of elements are 80" whilst all pairs are spaced by 39". The transposed feeders are 4" apart, and this is most easily effected by fitting insulated spacers at the element junctions.

Three arrays are shown in the diagrams, and it will be noted that the radiation resistance differs in each case. Since it is realised that the average Ham would use feeder in the region of 300 ohms or 80 ohms, a table has been prepared giving the values of suitable ¼-wave matching transformers, It is suggested, however, that a matching unit should be made up according to the diagram and adjusted to meet individual requirements.

This matching transformer is made from similar wire as used in the array, BUT it must be taut, Two 19½" lengths are cut, the ends of one length being anchored to stand-off insualtors whilst the other

length is fixed to a pair of feed-through insulators or single hole fixing stand-off insulators. It is most important that the distance from the base of the insulators to the wire should be equal in both cases. A piece of thin wood, approximately 22" by 6" is obtained and 2 slots are cut according to the diagram. The first 19" length of wire is then mounted on it's insulators to the wood whilst the second length is fitted through it's single-hole fixing insulators into the pair of slots, being tightened by wing nuts and spacing washers. The top ends are connected to the stacked arrays and the bottom ends to the feeders. It will now be obvious that, by shifting the moveable length closer to or away from the fixed length, the impedance of the matching transformer will be varied. When the correct spacing has been found the wood can be finally narrowed.

To assemble an array it is necessary to suspend it between two masts, or houses, and this can be accomplished through the use of thin strong waxed rope. The diagram shows how this is possible. The twelve-tier stack may at first sight appear to be a "tall-order", but where two very tall structures of the order of 60' are available there seems no reason why such an array should not be made.

Lastly, in the table showing radiation resistances and quarter wave matching transformers, no claims are made for exact mathematical accuracy, and all figures are close approximations which, for the average usage, will suffice. For readers who are not satisfied with the average figures in the table, the actual quarter-wave matching section may be calculated by the formula:--

$$\sqrt{Zr \times Zs} = Zo$$

where Zr is the impedance of the antenna, Zs the impedance of feeders and Zo the impedance of the quarter-wave matching section. Where Zs comes out at the same figure as Zr (in other words, whenever the impedance of the feeders and antenna are equal) no special transformer

is needed. In order to avoid further complications standard feeder of the appropriate impedance may be used for the matching transformer instead of making the wire/insulator job. For instance, when using 80 ohm feeders to a radiation resistance of 300 ohms, the quarter-wave matching , calculated at 150 ohms, may be a 19½" length of 150 ohm feeder.

NUMBER OF TIERS.	RADIATION RESISTANCE (ohms)	IMPEDANCE OF QUARTER - WAVE MATCHING SECTION FOR FEEDERS OF:-			
		80 ohms	100 ohms	150 ohms	300 ohms
3	600	225	250	300	425
4	450	190	210	260	360
5	360	170	190	240	330
6	300	150	170	210	300
7	257	140	160	190	
8	225	130	150	180	
9	200	125	140	170	
10	180	120	130	160	
11	164	115	130	160	
12	150	110	120	150	

For diagrams please see pages 12 and 13

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FUTURE FEATURES:- The response to our request for Antenna gen has been so great that we cannot possibly get all contributions into this issue. Further articles will appear in our next issue, together with the first of an important and informative series, "DESIGN OF QRP SUPERHETS", by David White. Also on the "waiting list" is a QRP Tx by GC3CNC, a Field Strength Meter, a Crystal Oscillator, a 435 Mc/s T/R Unit and other vy FB material. To those who's contributions have not yet been published

we offer our sincere thanks for their interest and response and our assurance that the delay is caused purely by lack of space.
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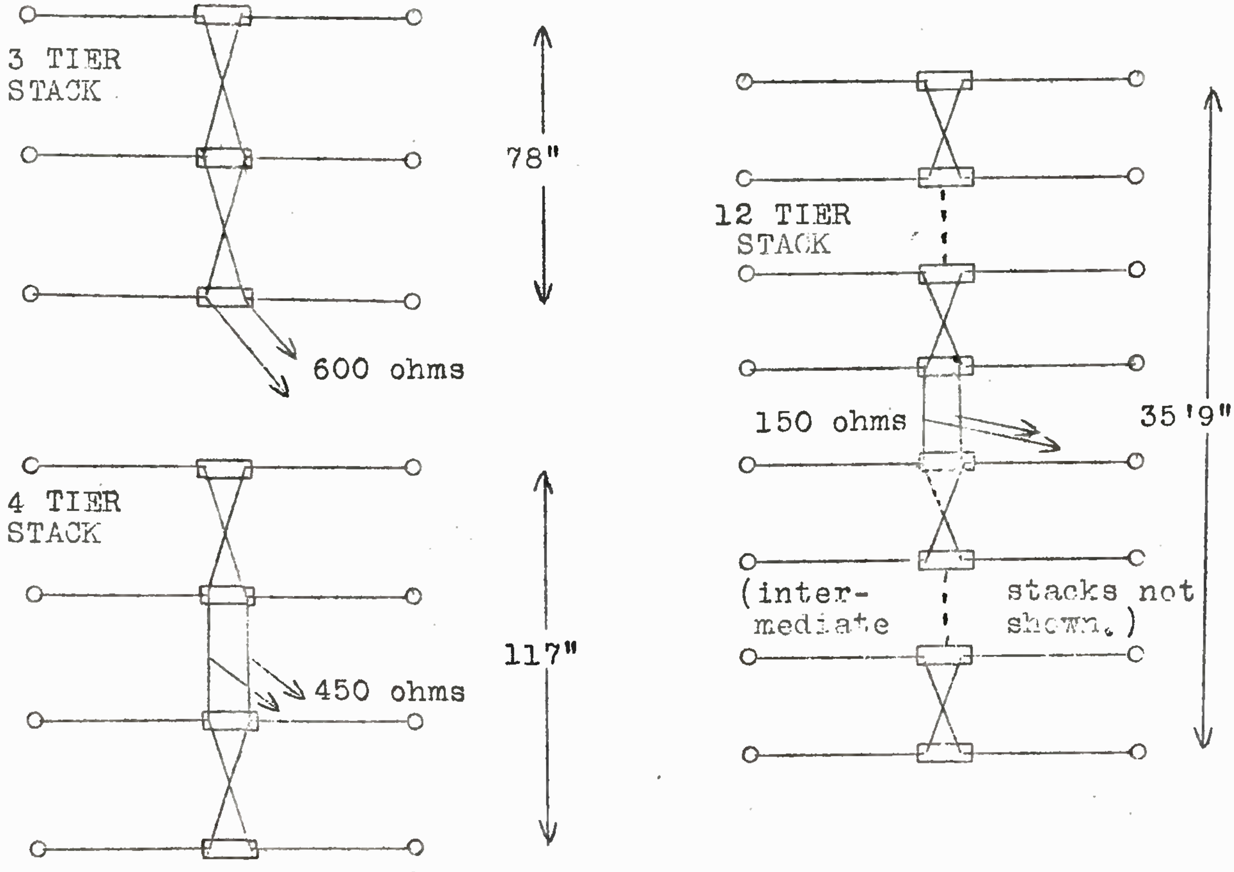
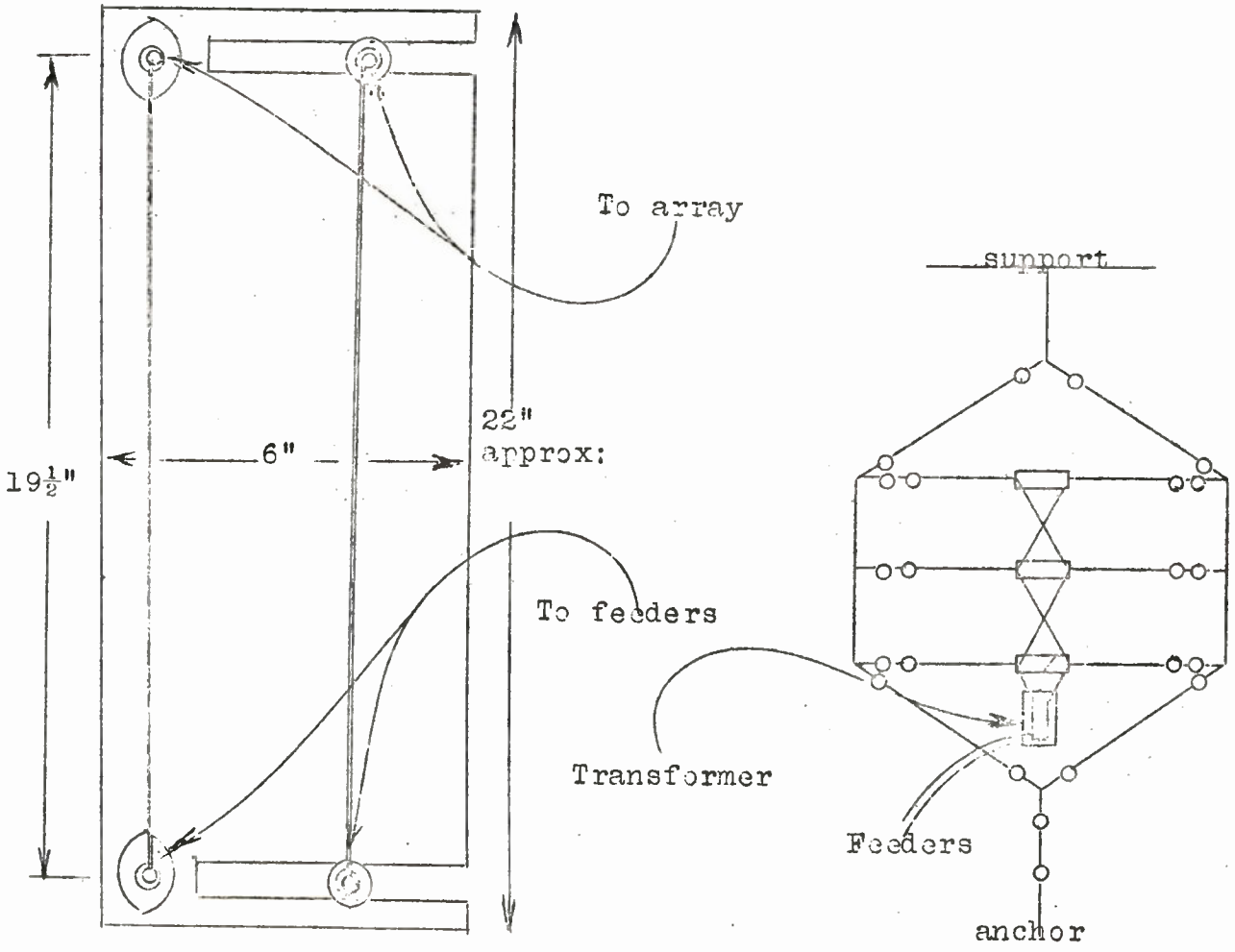
DIAGRAMS ILLUSTRATING "MORE ABOUT ANTENNAE", by GC2CNC:--





C O N G R A T U L A T I O N S

- - - - To Evert and Mrs Kaleveld (PAØXE) on the birth of a second son, ERIK ROLAND KALEVELD, at Rotterdam on 15th August 1953, sincerest congratulations from every member of the Society, with especial wishes for his rapid and happy development to a state of QRO from all at HQ.

:::::::::::::::::::::::: THE KALEVELD CUP ::::::::::::::::::::::::

What better introduction could we find than the above paragraph to the announcement that the 1953 KALEVELD CUP CONTEST is at hand again.

It will be remembered that the cup was won in 1951 by Monty Banks, GC2CNC, and in 1952 by Bob Eldridge(VE7BS - ex G3AGQ) on whose behalf we have been holding the cup at HQ. The 1953 rules have been revised, after lengthy consideration, by the Society Contests Committee, and now stand as follows :--

(1) The duration of the contest shall be from 0001 hrs, Saturday Oct 3rd to 2359 hrs Sunday Oct 11th.

(2) The logs of ALL contacts during that period must be submitted, the three best contacts (selected by the Committee), forming the basis of the individual scores.

(3) Contacts may be on ANY band, but must all be on CW.

(4) Maximum power on any contact must not exceed 5 watts, and no QSO with a readability of less than R4 will count.

(5) Every eligible QSO must cover a minimum time of 10 minutes (no maximum time being stipulated) and points will be calculated on the basis of miles multiplied by minutes.

(6) In case of doubt or need for verification in any way, contestants may be called upon to provide proof of contacts claimed.

(7) A description of the equipment used during the contest must be submitted with the completed logs.

The logs will be checked by the Contests Committee and the KALEVELD CUP will be presented to the winner, to be held for one year. It will be noticed that the "overs" rule and band multipliers have been deleted this year. All that is now required is YOUR entry -- if you are on the air during October 3rd / 11th, send in your log. You stand as good a chance as the next chap, and you can have a go wherever you are, in England or overseas.

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

	COUNTRIES					C		GRAND
	3.6	7	14	21	28	Total	Zones	TOTAL
1: P.Huntsman	14	36	108	27	4	114	32	146
2: E.W.Gardiner	25	8	100	55	5	113	29	142
3: A.E.Stonestreet	20	25	91	-	8	103	29	132
4: N.Bason	14	25	98	8	-	101	30	131
5: B J Read	6	24	83	-	-	95	31	126
6: R.Whitfield	22	7	75	26	6	84	24	108

Peter Huntsmen's score, actually, has risen to 133 countries & 34 zones, but we have not yet got details so we'll add it next month.

:::::::::::::::::: A QRP Rx LOG ON TWO ::::::::::::::::::

Ted Stonestreet sends us the following log of stations heard on his One-Lung S-R Rx. It is noteable, I believe, as being the first Two Metre log we have ever published. Unfortunately we have not space to include all the interesting detail Ted has supplied.

JUNE: G2AHT/A,HDZ,G3FYY,GDR,GHR,GSE,HAZ,ICU,MI,G4KD.

JULY: G2AHD,AHT/A,FTS,HDZ,G3GSE,FIY,HBW,MI,G4KD.

We'll try and include more detail next month, so let's have YOUR TWO METRE LOG as well, OM, and make it e regular feature!

THE QRP "200" CONTEST

ALL TIME RECORD:	COUNTIES WORKED (Mc/s):-- 1.8	3.5	7	TOTAL
1: G2AOL	62	52	11	125
2: G2BOF	53	39	20	112
3: G3HJL	1	45	-	46
1953 ONLY RECORD:				
1: G2BOF	53	39	20	112
2: G2AOL	59	43	9	111
3: G3HJL	1	19	-	20

TOP BAND SWL PANEL

	COUNTRIES		COUNTIES		TOTAL	
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)	44	(44)	51	(51)
D.G.Gordon (Bournemouth)	5	(-)	45	(10)	50	(10)
H.G.Wells (Waltham Cross)	7	(-)	39	(-)	46	(-)
E.Gardiner (Diss, Norfolk)	4	(-)	35	(-)	39	(-)

THE SEVENTH ANNUAL R S G B AMATEUR RADIO EXHIBITION WILL BE OPEN NOVEMBER 25 - 28, 1953, AT THE ROYAL HOTEL, WOBURN PLACE, LONDON, W.C.1. As usual it will be the scene of many reunions among our members and if YOU want to be recognised by others in the Society you MUST have your "green diamond" up. The Society badge costs only 2/6 post free and is a small, fine quality job in good enamel on gilt. See you there?