



R S G B

OCTOBER, 1963

VOL. 39, No. 4

BULLETIN

JOURNAL OF THE RADIO SOCIETY OF GREAT BRITAIN



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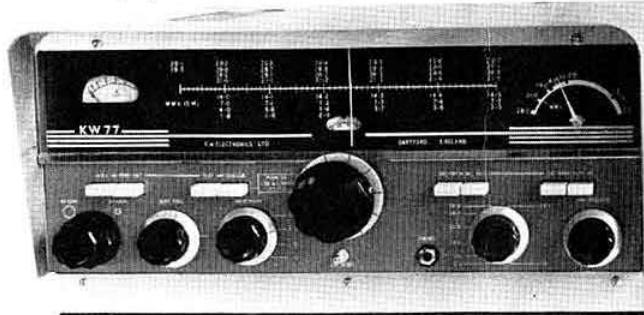
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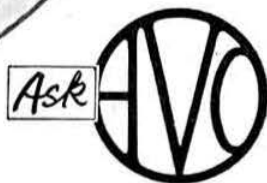
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October 1963

3/- Monthly

R.S.G.B. BULLETIN

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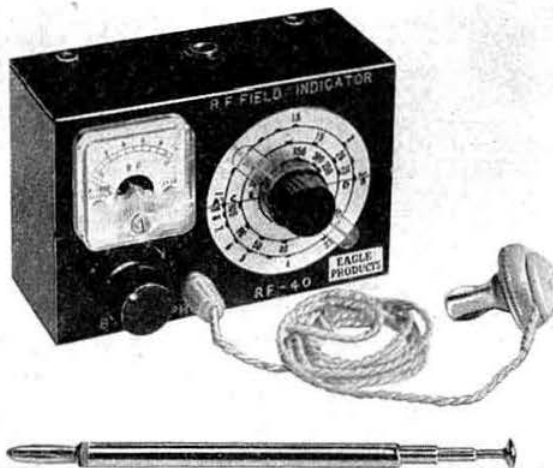
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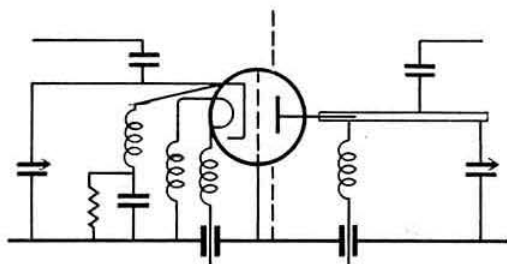
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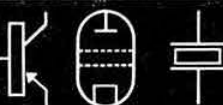


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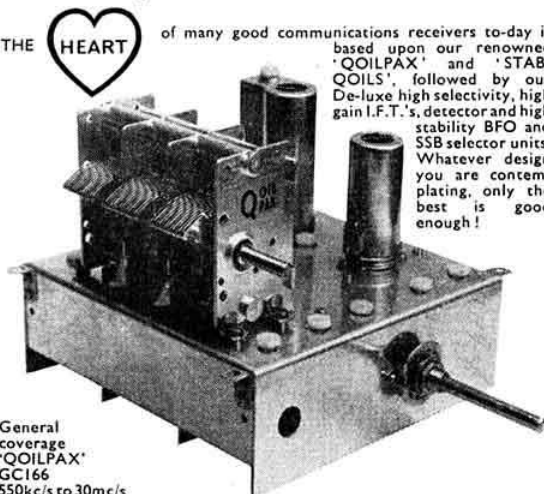
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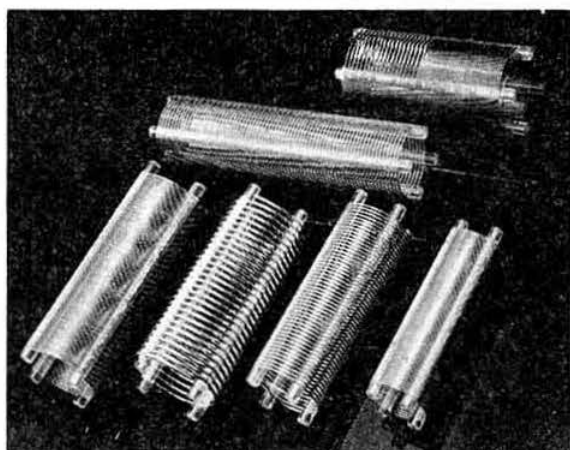
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AR8	5/6	DK96	7/3	EP73	5/6	KT44	5/9	PZ1-35	9/6	VMP4	
AR13	3/6	DL92	5/6	EP74	4/6	K763	4/6	PZ1-75	12/6	VP23	
AR14	3/6	DL93	5/6	EP75	5/6	K766	12/9	QF21	6/6	VP41	
AR12	2/6	DL94	6/6	EP76	5/6	K766	12/6	QF22	6/6	VR10	
AR17	7/6	DL96	7/6	EP77	5/6	KT70	8/6	Q893-10	5/6	VR16	
AR14	3/6	DL97	7/6	EP78	5/6	KT76	8/6	Q893-10	5/6	VR16	
AR14	3/6	DL98	7/6	EP79	5/6	KT76	8/6	Q893-10	5/6	VR16	
AR14	3/6	DL99	7/6	EP80	5/6	KT76	8/6	Q893-10	5/6	VR16	
ART1	6/6	EH148	2/6	EP92	3/6	KT241	6/6	R3	8/6	VT4C	
AR14	3/6	EL132	9/6	EP95	5/6	KT263	6/6	R310	25/6	VS20	
AT17	7/6	EL133	9/6	EP183	9/6	M8100	9/6	R235	10/6	W21	
AU7	5/6	EL145	30/6	EL148	9/6	M8100	9/6	R235	10/6	W21	
B84	10/6	EL154	12/6	EL162	3/9	M8142	12/6	SF12	3/9	X66	
B884	4/6	EZ134	10/6	EL134	12/6	M8190	5/6	SF41	2/6	Y63	
BT10	23/6	EK50	1/6	EL35	5/6	MH4	3/6	SPV1	2/6	Y65	
BT13	15/6	EK58C60	6/3	EL42	8/6	MH4	4/6	TL10	10/6	Z800U	
BTB9	20/6	EAC91	3/6	EL50	9/6	M8/EN	6/6	TV280-40	12/6	ZAI	
BT83	3/6	EAP42	8/6	EL84	6/3	N78	12/6	TV280-80	1A3		
C3L	2/6	EB34	1/6	EL85	9/6	NGT2	10/6	T150	50/6	1A3GT	
C4	6/6	EB35	3/6	EL91	6/6	OC34	6/6	T241	6/6	1A3GT	
IC	6/6	EB33	6/6	EL95	6/6	OC3	6/6	T250	6/6	1D8GT	
CL33	9/6	EB41	7/9	EM80	7/6	OD3	6/6	TP22	5/6	1E7GT	
CV71	3/6	EB30	6/6	EN84	8/6	OZ4	4/6	TP25	13/6	1P3	
CV77	6/6	EBF50	7/6	EN31	10/6	1P2	12/6	TT11	3/6	1GGGT	
CV85	1/6	EPB59	7/9	ESC208	6/6	PC34	6/6	TT11	3/6	1L4	
CV105	14/6	EL134	14/6	EL134	6/6	PC83	7/6	TR31	60/6	1L4	
CV264	12/6	EL70	5/6	EY86	7/6	PC939	10/6	TZ20-29	4/6	1L6	
CV4014	7/6	EC90	20/6	EY91	3/6	PCF80	6/6	TZ20	16/6	1J14	
CV4015	5/6	EC91	3/6	EZ40	6/6	PCF82	7/6	U12-14	8/6	1N43	
CV4025	10/6	EC81	4/6	EZ41	6/6	PCF82	8/6	U17	5/6	1N70	
CV4026	40/6	EC82	4/6	EZ42	6/6	PCF85	9/6	U25	9/6	1N70	
CY31	6/6	EC83	6/6	EZ81	6/6	PC184	7/6	U26	10/6	1R2	
D1	1/6	EC84	7/6	F0607	5/6	PC186	10/6	U26	11/6	1R4	
D41	3/3	EC85	8/6	F0601	5/6	PEN25	4/6	U27	8/6	1R5	
D77	4/6	CC391	4/6	F0603	4/6	PEN46	6/6	U32	5/6	1T4	
DA30	12/6	ECF80	7/6	GI2300	6/6	PC220A	3/9	UB1A	20/6	2A5	
DA37	6/6	ECF82	7/6	GI2360	6/6	PL31	3/6	UB1A	20/6	2A5	
DAF90	7/6	EH13	8/6	GI37K17	12/6	PL81	8/6	UB1A	7/6	2A6	
DD41	4/6	EH142	9/6	G50-2G	5/6	PL82	6/3	UF80	8/6	2A6	
DE75	8/6	EH81	7/6	GZ32	9/6	PL83	6/3	UF89	7/6	2A6A	
DE720	2/6	EL80	6/6	H63	7/6	PC	6/6	UH42	7/6	2A6	
DE720	2/6	EL80	6/6	H63	7/6	PC	6/6	UH42	7/6	2A6	
DF11	3/6	EL83	10/6	HK54	23/6	PT15	10/6	UL82	9/6	2A3	

Radio Society of Great Britain

(Incorporated 1926)

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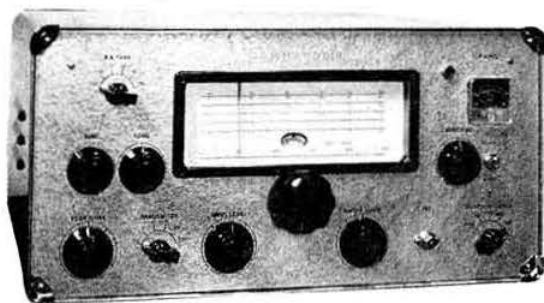
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Current Comment



discusses topics of the day

Exhibition Time Again

IN less than a month's time, the doors will open again on the Society's annual exhibition, first known as the Amateur Radio Exhibition, for a time as the Radio Hobbies Exhibition and now as the RSGB International Radio Communications Exhibition. But whatever the name, of one thing we can be sure: it will maintain its reputation for being the most interesting and friendly of shows and a major highlight of the Amateur Radio year.

It is, we suppose, just possible that a visitor could tour the Exhibition without talking to anyone else but it seems most unlikely, for it is so much more than just another display of equipment; it is the annual meeting place for radio amateurs and short wave listeners from all over the British Isles and from overseas as well. Not by any means merely a chance for a "good gossip" but a golden opportunity for the exchange of ideas between visitors and with the highly competent suppliers of equipment and components that are the materials from which amateur stations are fashioned.

The Exhibition could be regarded as being largely commercial, an annual opportunity for the manufacturers and their staffs—often radio amateurs themselves—to meet the customers and display their wares. As such, it serves a most useful purpose. But there are those who feel that the increasing use of commercial equipment is somehow incompatible with Amateur Radio. We suggest, however, that the manufacturers do not set the trends but seek to satisfy the demands of this ever-changing, ever-developing hobby which is now so complex that very few have the time to build all their own equipment.

On the Society's own stands many fine examples of home-built gear will be well worth studying for new ideas. Incidentally, the main RSGB stand will, this year, be one of the largest, in contrast to the one which aroused some unfavourable comment at the 1962 Exhibition.

Although it is now so close to opening day, it is practically impossible to give any preview of what will be on show, although the modern transceiver—a far cry, as Pat Hawker points out this month, from the transceivers of yesteryear—will be making an appearance on more than one stand. Other commercial products will cover the whole range of the amateur's

requirements for operation on h.f. and v.h.f. whether a.m., s.s.b. or c.w. is the favoured mode: transmitters, receivers, aerials and ancillary equipment. Appropriately in this Golden Jubilee Year, the Exhibition Committee itself is arranging what promises to be a fascinating display of wireless equipment tracing the development of radio from long before the Society came into being, in fact from 1880. And the live demonstrations of all the modern forms of amateur communication will bring the story right up to date.

The Exhibition will be held at the Seymour Hall, London, from October 30 to November 2 and will be open from 10 a.m. to 9 p.m. daily. We look forward to seeing you there.

J. A. R.

NORTHERN REGIONAL MEETING

Belgrade Hotel, Dialstone Lane,

Stockport, Cheshire

Sunday, October 27, 1963

Programme

Talk-in stations from	11.15 a.m.
Top BandG6NM	
Two metresG3AYT	
Assembly at the Hotel	12 noon
Lunch	1 p.m.
Official Regional Meeting	2.30 p.m.
Ladies Entertainment	2.30 p.m.
Afternoon Tea	5.30 p.m.
Evening Entertainment	7.30 p.m.
Light Supper	9 p.m.

A free car park will be available in the hotel grounds. Accommodation is available on both the Saturday and Sunday evenings; details may be obtained from the hotel management on request.

Tickets, price 21/- each, are available from Region 1 Representative, B. O'Brien G2AMV, 1 Waterpark Road, Prenton, Birkenhead, Cheshire, and Region 2 Representative, J. R. Petty, G4JW, 580 Redmires Road, Sheffield 10, Yorkshire, and are inclusive of all meals. No ticket applications will be considered after **October 20.**

The Council will be represented by Mr. E. G. Ingram, GM6IZ, Mr. R. F. Stevens, G2BVN, Mr. L. N. Goldsborough, G3ERB, and Mr. John Clarricoats, O.B.E., G6CL (General Secretary).

A Compact High-Gain Converter for 430 Mc/s

By H. L. GIBSON, A.M.I.E.E., B.R.S. 1224*

THE features of the converter described in this article are the use of two A.2521 grounded-grid amplifiers in cascade, an A.2521 quintupler in the frequency multiplier chain and conventional coils in all the tuned circuits. By switching crystals, the converter will cover the band 431.5-437.5 Mc/s while the variable i.f. amplifier need only tune over a 1 Mc/s band.

R.f. Stages

The aerial is taken to a tap on the input tuned circuit in the cathode of the first A.2521(V1). It is sometimes said that tuning of the input circuit is unnecessary with grounded grid stages, but if the best noise factor is to be obtained, not only is a tuned circuit necessary but the aerial matching and tuning is quite critical. The correct tuning position for the best noise factor is slightly below the signal frequency. Provided that the aerial is properly matched to its feeder, and a u.h.f. socket (in preference to a television type) is used on the converter for the aerial connection, the optimum position for the tap will not be far from the centre point.

The coupling between the first and second grounded grid stages consists of a tuned r.f. transformer comprising two

identical coils of $1\frac{1}{2}$ turns of 18 s.w.g. enamelled copper wire with a $\frac{3}{8}$ in. internal diameter, the turns and the coils being spaced by one wire diameter. There appears to be no significant advantage in using heavier gauge wire, which is more difficult to wind and mount, nor in silver plating the wire used. The coupling between the second r.f. stage (V2) and the crystal mixer (CR1) is identical except that the secondary is untuned.

All the r.f. chokes in the heater and cathode leads are air-cored, consisting of 23cm of 24 s.w.g. wire, formed by close winding on a $\frac{1}{2}$ in. diameter rod. Those in the anode circuits, however, are slightly damped by fully overwinding a $\frac{1}{2}$ watt 100 K ohm resistor with 24 s.w.g. wire.

Local Oscillator Chain

The local oscillator chain uses a double triode B.719/ECC85 (V5), the first triode operating as a Squier oscillator and the second as a quadrupler. This is followed by an A.2521 (V6) as quintupler multiplier to the final frequency. The aim in using high orders of multiplication has been to reduce the number of harmonics of the crystal frequency which can produce spurious responses. The anode circuit of V6 uses coils wound to the same specification as the signal frequency transformers, but the two coils are spaced by about 0.6 in. to assist in rejecting the unwanted harmonics which do exist.

Although any suitable crystal at about 20.3 Mc/s may be used, the writer used one of the 10XAC types which are available on the surplus market. These consist of a series of six evacuated glass units each containing two crystals: 10XAC/1 has crystals at 19.8875 and 19.8925 Mc/s, and

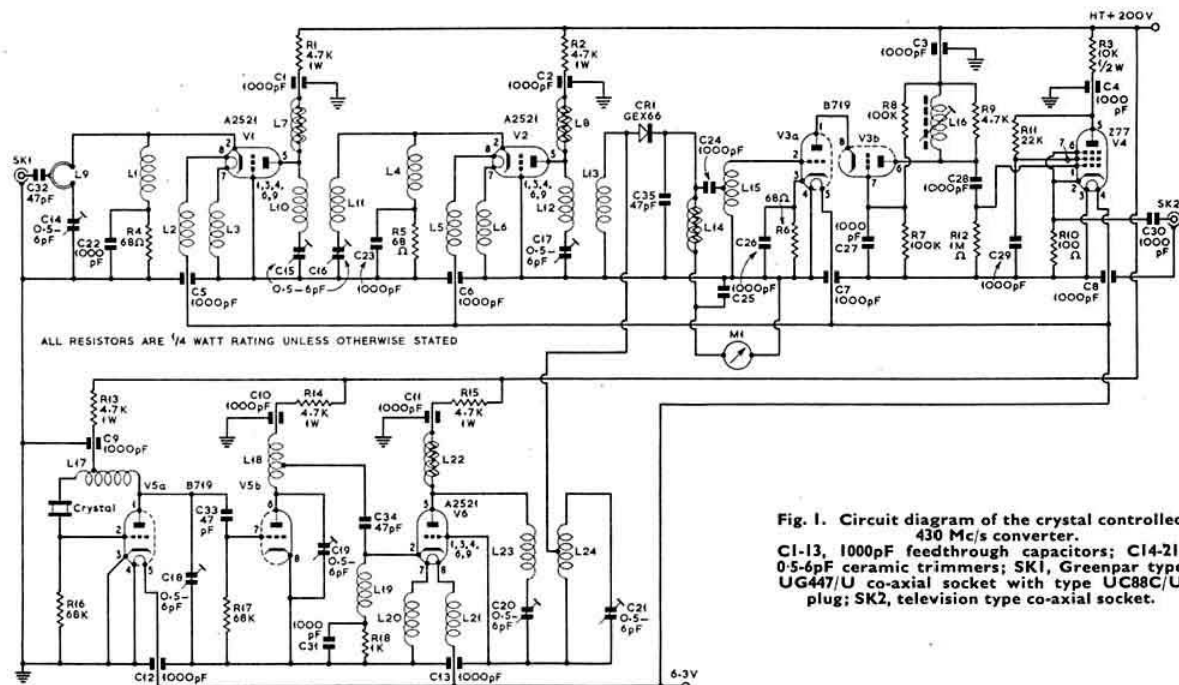
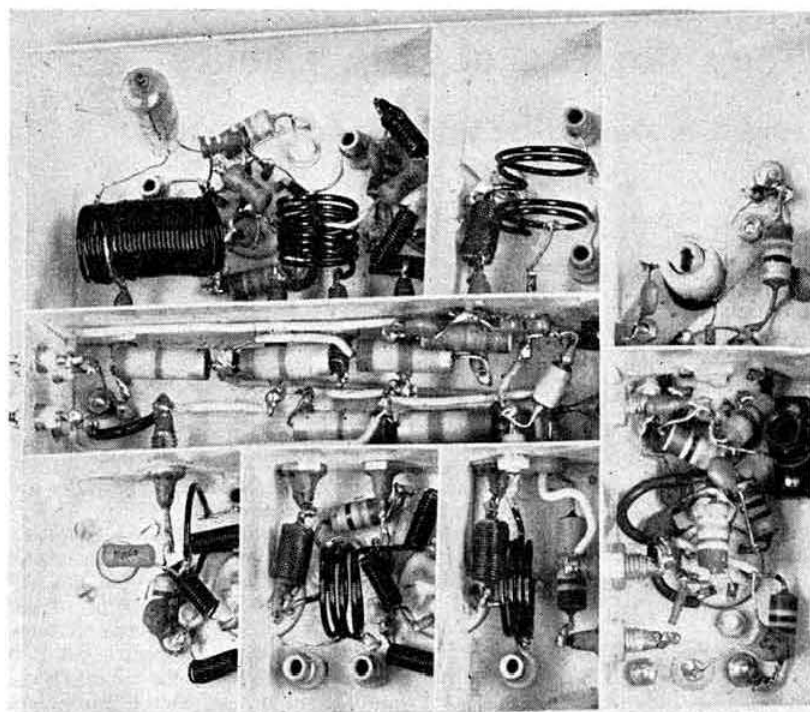


Fig. 1. Circuit diagram of the crystal controlled 430 Mc/s converter. C1-13, 1000pF feedthrough capacitors; C14-21, 0.5-6pF ceramic trimmers; SK1, Greenpar type UG447/U co-axial socket with type UC88C/U plug; SK2, television type co-axial socket.



An under-chassis view of the converter. The components may be identified by reference to Fig. 2.

the sequence continues with 50 kc/s between each crystal to the highest frequency of 20-4375 Mc/s (10XAC/6). Since a multiplication of 20 times is used in the oscillator chain, these crystals produce a series of frequencies spaced by 1 Mc/s in the 400 Mc/s region. By switching crystals, the whole of the telephony section of the 70cm band can be covered in a series of 1 Mc/s bands.

The tuned circuits in the multiplier chain will allow up to six crystals to be used without retuning, or suffering inadequate oscillator drive to the mixer. The use of the converter in this way makes the design of the tuned circuits in the following i.f. cascode amplifier considerably easier since they only have to cover a 1 Mc/s bandwidth.

Mixer and i.f. Amplifier

The outputs of the r.f. amplifier and the local oscillator are fed to the GEX66 mixer (CR1) and the i.f. output is

taken to a tap on the input coil of the B.719/ECC85 cascode amplifier (V3). This tap should be adjusted for best noise performance of the cascode stage but the position given in the Coil Table should normally be adequate since the generous amount of r.f. gain should normally make the noise contribution of the cascode stage negligible. A cathode follower is used to convert the output to low impedance before transfer to the tunable receiver. With some receivers, it may be desirable to reduce the gain of the cascode stage in order to avoid cross-modulation in the main receiver.

Construction

The converter is constructed on a chassis of 20 s.w.g. silver-plated brass measuring only 6 in. \times 5 in. \times 1.5 in. deep. It is divided into compartments by soldering cross screens to the main chassis. The screens across the A.2521 valveholders need to be particularly close fitting and all the grid tags of the valveholder should be soldered to the screen and not to the main chassis. It is prudent to put a scrap B9A valve into the holder while this is being done, so that the contacts are not

pulled out of alignment. P.t.f.e. valveholders were used throughout in the prototype.

A power supply compartment (Fig. 2) runs down the centre of the chassis and this contains the h.t. filter resistors and feed-through capacitors which transfer the supplies into the various compartments. The mixer crystal lies

(Continued on page 224)

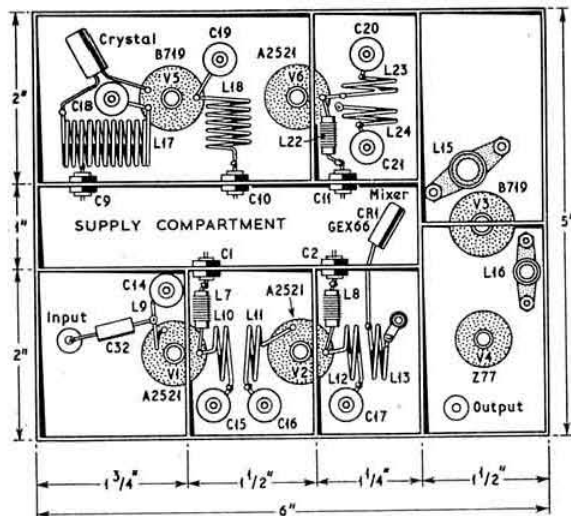


Fig. 2. Layout of the principal components in the 430 Mc/s converter.

COIL TABLE

- L1-6, 23cm 24 s.w.g., $\frac{1}{8}$ in. diam., air cored.
- L7, 8, 24 s.w.g., close wound on 100K ohm $\frac{1}{2}$ watt resistor.
- L9, $\frac{1}{2}$ turn 18 s.w.g., $\frac{1}{8}$ in. diam., air cored.
- L10-13, $1\frac{1}{2}$ turns 18 s.w.g., $\frac{1}{8}$ in. diam., air cored.
- L14, 44 s.w.g. d.s.c., close wound on 100K ohm $\frac{1}{2}$ watt resistor.
- L15, 25 turns 26 s.w.g., $\frac{1}{8}$ in. diam., tapped 7 turns from earthy end.
- L16, 23 turns 24 s.w.g., $\frac{1}{8}$ in. diam., ferrite slug tuned.
- L17, 25 turns 20 s.w.g., $\frac{1}{8}$ in. diam., tapped 5 turns from crystal end.
- L18, 6 $\frac{1}{2}$ turns 18 s.w.g., $\frac{1}{8}$ in. diam., tapped at 3 $\frac{1}{2}$ turns.
- L19, 3uH choke (Painton type 200151).
- L20, 21, 24cm 24 s.w.g., $\frac{1}{8}$ in. diam., air cored.
- L22, 26 s.w.g., close wound on 100K ohm $\frac{1}{2}$ watt resistor.
- L23, $1\frac{1}{2}$ turns 18 s.w.g., $\frac{1}{8}$ in. diam., air cored.
- L24, $1\frac{1}{2}$ turns 18 s.w.g., $\frac{1}{8}$ in. diam., tapped at $\frac{1}{2}$ turn, air cored.

Enamelled copper wire throughout, except where otherwise stated.

Some Notes on the Use of R.F. Chokes

By R. G. CHRISTIAN, A.M.I.E.E., A.M.Brit.I.R.E., G3GKS*

THE radio frequency choke is an extremely useful component which makes its appearance in a wide variety of circuits. In fact in some cases the operation of the circuit is vitally dependent on the use of one or more r.f. chokes although the chokes may have little effect on the design of the circuit and as a result tend to be regarded as of little consequence. This viewpoint is in some instances an incorrect one, particularly where the choke is regarded as an anode load when in fact it is not acting as such.

The purpose of this article is to examine whether the choke is being effectively used. In doing so the writer hopes to

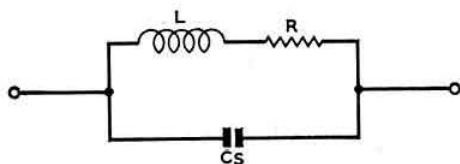


Fig. 1. Approximate equivalent circuit of an r.f. choke.

explain the reason for a complaint, often heard, that the multiband exciter or driver unit being used fails to provide sufficient drive on 10m whilst operating quite satisfactorily on the lower bands. The requirements of harmonic amplifiers for frequency calibrators are also discussed.

Theory of R.F. Chokes

The r.f. choke is wound to provide a certain inductance, usually of the order of several millihenries for medium frequency use. The winding resistance is generally rather large compared with that of a tuning coil with the result that the Q -factor is on the small side, but unless the choke is to be used as the inductance element in a tuned circuit, this low Q is not a disadvantage. The choke inevitably has some self-capacitance which may be minimized by winding it in several sections of "pies" so that the stray capacitance is effectively made up of several smaller capacitances in series. The stray capacitance is really distributed throughout the winding but for simplicity may be regarded as consisting of a "lumped" capacitance. The r.f. choke, shown in a circuit diagram as a pure inductance, is in fact acting as a circuit consisting of inductance L and resistance R , in parallel with a capacitance C_s as in Fig. 1. Some measurements made on a nominal 1.5 mH choke of well-known make showed that L was in fact 1.5 mH, C_s was about 1.4 pF and the Q ($= \omega L/R$) varied from 16 at 180 kc/s to 3.5 at 400 kc/s.

At very low frequencies the choke behaves very nearly as a pure inductance and produces a reactance of ωL which

increases with frequency. The actual reactance is modified by the presence of the capacitance C_s , and, to a much smaller extent, the resistance R . Neglecting the effect of the resistance, the effective inductance is modified from L to L^1 such that $L^1 = L / (1 - \omega^2 LC_s)$. In other words the effective inductance increases with frequency due to the stray capacitance. As the frequency is increased however the inductive and capacitive reactances will become equal (neglecting R) so producing parallel resonance. The parallel resonant frequency is given by $f_0 = 1 / (2\pi \sqrt{LC_s})$. In the case of the example quoted above, since $L = 1.5$ mH and $C_s = 1.4$ pF, the self-resonant frequency works out to 3.5 Mc/s and this value was confirmed by actual measurement of f_0 .

Above this self-resonant frequency the choke behaves as a capacitance of very small value but of course its reactance decreases with frequency. Due to the fact that the self-capacitance is really distributed, there is a possibility of self-resonance at several other frequencies. These may not cause ill-effects provided they are parallel resonances but it is possible for the capacitance of one part of the coil to produce series resonance with the inductance of another part. Since a series resonance provides a low-resistance path and as the duty of the choke is to provide a high impedance it follows that such resonances are to be avoided if possible, particularly in the bands being used.

For the purposes of this article, it will be assumed that only one simple parallel resonance exists. If this is so then at frequencies well above f_0 the choke will behave effectively as a capacitance C_s with a reactance $1/\omega C_s$. Most of the foregoing theory assumes that the choke is in complete isolation whereas in practice it must be considered as part of the circuit in which it is used.

Effective Use

Three examples of the effective use of an r.f. choke are shown in Fig. 2. In every case the choke is used to provide a d.c. path for the valve and in the case of Fig. 2(a) and (b) also provides a means of coupling the load to the valve. In any valve there will be stray capacitances associated with both grid and anode together with stray wiring capacitances. These capacitances may be considered, along with the self-capacitance of the choke, as part of the tuning capacitance C_1 in Fig. 2(a) and (b) and may in general be ignored on the assumption that C_1 is much larger than the total stray capacitance.

The choke behaves in these circuits as a low resistance path to d.c. and as a high inductive reactance at the frequency of operation. For example, our 1.5 mH choke has an inductive reactance of about 270 K ohms on 10m and since the load connected to the anode of the valve consists of a resonant circuit having an effective resistance much less than 270 K ohms the choke has practically no effect on the circuit. The same is true of the second choke RFC2 in Fig. 2(a), the stray capacitance effectively forming part of C_2 in the pi-

* 17 Orton Road, Childwall, Liverpool 16.

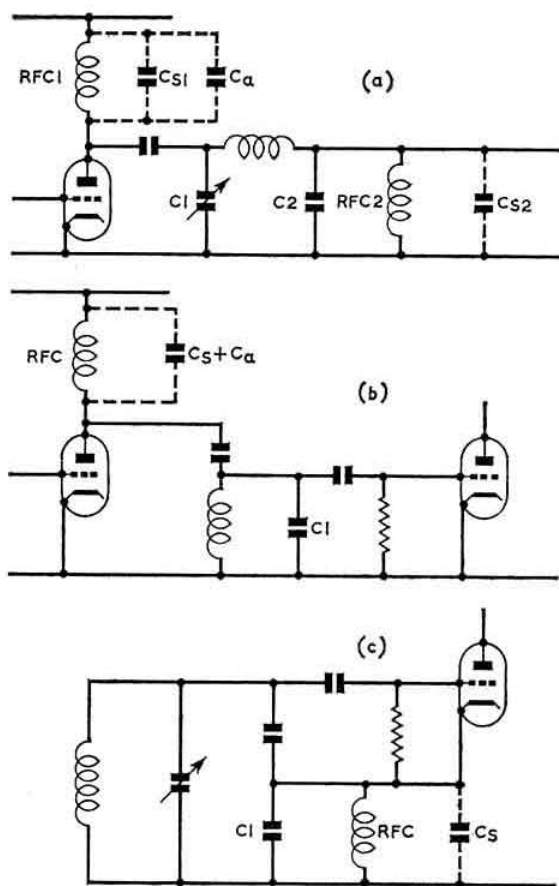


Fig. 2. Effective use of r.f. chokes. (a) Power amplifier with pi-coupler; (b) Choke coupled tuned load; (c) Colpitts oscillator.

network. Again in Fig. 2(c), the choke provides a d.c. path for the valve whilst its stray capacitance is effectively part of C_1 .

Ineffective Use

A common use of the r.f. choke is in the circuit of Fig. 3 which could be an amplifier or the anode circuit of an electron coupled oscillator. The choke provides a d.c. path for the anode current of the valve but it does not constitute the a.c. anode load. This is because of the stray capacitances C_s , the stray capacitance of the choke, C_a the output capacitance of V1, C_g the input capacitance of V2, and C_w the capacitance due to wiring and proximity of components, etc. If V1 and V2 are pentodes the total stray capacitance ($C = C_s + C_a + C_g + C_w$) may have a value of between 20 and 40 pF which may be considered as being effectively in parallel with the inductance L of the choke. The anode circuit will have a parallel resonance at $f_0 = 1/(2\pi\sqrt{LC})$ so that if $L = 1.5$ mH and $C = 30$ pF then $f_0 = 0.75$ Mc/s which is well below any of the amateur bands.

Below this frequency f_0 the anode load is inductive having an effective reactance of $\omega L^1 = \omega L / (1 - f^2/f_0^2)$ if we ignore

the resistance of the choke. At frequencies higher than f_0 the anode load is capacitive and has an effective reactance of approximately $1/\omega C$. The important conclusion we reach is that the anode load decreases as the frequency increases. Now the gain of V1, as a linear amplifier at least, is given approximately by $A = g_m/\omega C$ which means that the gain is inversely proportional to frequency. In other words the gain is halved each time the frequency is doubled. For a value of $C = 30$ pF the anode load is roughly 1400 ohms at 80m and falls to only 180 ohms at 10m.

Bearing in mind there is no resonance in the bands used, or so we assume, there can be no flywheel action as in a tuned class B or C amplifier, hence the output from V1 is going to decrease with frequency and could well be too small on the highest frequency bands. This effect could be the reason why very often a multiband driver stage using a choke in the anode circuit will not provide sufficient drive on 10 or even 15m yet gives ample drive on the lower frequency bands. If this occurs one possible solution might be to attempt to reduce the stray capacitances by changing component layout and by replacing V2 with a valve having a smaller input capacitance. It should be remembered that if V2 is made up of two valves in parallel, as is often the case with a p.a. stage, then the input capacitance is doubled. Substituting one larger single valve may be effective in reducing C_g . Should these methods fail to give sufficient drive probably the only solution is to replace L in the driver V1 by a suitable tuned circuit or wideband coupler. Replacing L by an r.f. choke of larger inductance will generally make the situation worse since a larger choke is likely to have a larger self-capacitance.

Harmonic Amplifiers

The circuit of Fig. 3 is often seen in crystal calibrators where it may form the output circuit of the crystal calibrator or it may in fact represent a buffer or harmonic amplifier. The amplitude of the harmonics generated by an oscillator or amplifier tend to decrease with increasing order of harmonic, e.g. the amplitude of the twenty-fifth harmonic tends to be weak compared with that of, say, the fifth. Now if the harmonic output is fed into a circuit of the type represented by V1 in Fig. 3, then the harmonic amplitudes will be further reduced relative to each other because the gain of V1 is inversely proportional to frequency.

It is convenient to consider a square wave applied to the grid of V1 because such a wave contains harmonics whose amplitudes decrease inversely as the order of the harmonic.

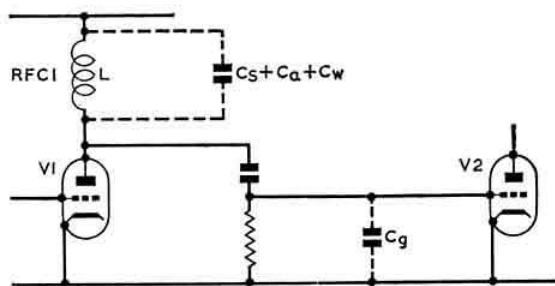


Fig. 3. Ineffective use of r.f. choke as a.c. load.

In other words, the fifth harmonic has five times the amplitude of the twenty-fifth harmonic. Since the gain of V1 is inversely proportional to frequency, it follows that in V1 our fifth harmonic is amplified five times as much as the twenty-fifth which is already only one fifth as strong as the fifth. Thus at the anode of V1 the fifth harmonic is now 25 times as strong as the twenty-fifth. Obviously the characteristic of V1 is not the best one, because weak harmonics are being made weaker relative to the strong ones.

What is required of V1 is that the gain should increase linearly with frequency so that at the anode of V1 the fifth and twenty-fifth harmonics have equal amplitudes. Even if the input to V1 is not a square wave, it will still be a wave in which the harmonic amplitudes decrease with order of harmonic and again the ideal gain characteristic of V1 is one that increases with frequency. One possible solution would be to reduce the value of L to a small value so that resonance with L and C occurs at a frequency higher than the highest harmonic required. For example if $C = 30$ pF and the

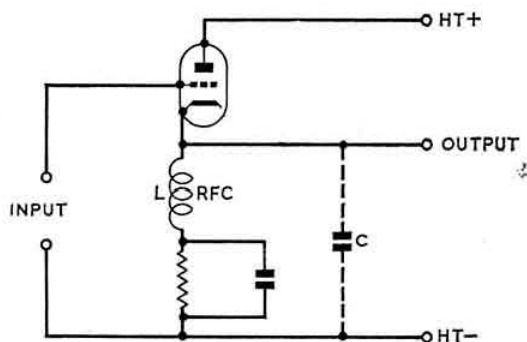


Fig. 4. Cathode follower harmonic amplifier.

highest harmonic required is 30 Mc/s then L could have a value $L = 1/\omega_0^2 C = 9.4 \mu\text{H}$. However, at low frequencies the reactance of L , and hence the anode load, is so small that the gain of the stage would be very much less than unity, e.g. at 1 Mc/s the $9.4 \mu\text{H}$ inductance has a reactance of only 59 ohms and if V1 had a mutual conductance of 10 mA/V the gain would be 0.59. This gain of course increases with frequency and at 20 Mc/s for example would be about 20 times as large. If such a system is used the stray capacitance C should be kept as small as possible so that L may be made as large as possible.

An alternative idea would be to use a cathode follower with a choke as the load as in Fig. 4, since the gain of a cathode follower is less affected by variations in load impedance and hence frequency than that of the common-cathode circuit of Fig. 3. The cathode load now consists of the choke in parallel with stray capacitances but these strays will be smaller than those in Fig. 3, thus the decrease in gain will be moderate. It should be borne in mind that the voltage gain of a cathode follower is always less than unity due to the entire output voltage being fed back in series with the input producing 100 per cent negative feedback. However, the power gain is much greater than unity due to the very high input and low output impedances. Since the circuit in this application will generally be feeding low impedance loads such as the aerial input of a receiver for example, the

fact that the voltage gain is less than unity will not be a serious disadvantage. The choke could of course be replaced by a small inductance as suggested previously for Fig. 3 in which case moderate compensation for the fall in harmonic amplitude would be achieved.

Inductive compensation as used in wideband amplifiers and the use of delay-lines as in distributed amplifiers are aimed at producing a level response, as opposed to a rising characteristic and are outside the scope of this article.

In concluding, the writer hopes that this article will induce some second thoughts about the much neglected r.f. choke and that consequently this essential component will merit a little more attention in circuit design.

NPL Measurements of Standard Frequency Transmissions

Measurements of the deviations of standard frequency transmissions have been made for a number of years by the Standards Division of the National Physical Laboratory. Publication of these values, which related to Rugby transmitters, MSF 60 kc/s and GBR 16 kc/s, and the Droitwich 200 kc/s transmitter of the BBC, were discontinued in July, 1962 when the journal in which they had appeared ceased to exist.

Arrangements have now been made between the Director of the National Physical Laboratory and the Council of the British Institution of Radio Engineers for these standard frequencies to be published each month in the Institution's Journal *The Radio and Electronic Engineer*. The first set of values relating to the month of June, 1963 was published in the July, 1963 issue.

A short communication from the National Physical Laboratory explaining the methods of measurements appears in *The Radio and Electronic Engineer* for July.

High-Gain Converter for 430 Mc/s (Continued from page 221)

across the end of the power supply compartment. The photograph was taken when only one oscillator crystal was in place, but subsequently a Trolex wafer switch and two other crystal units were squeezed in.

The converter requires an h.t. supply of 200 volts at 60mA, and a heater supply of 6.3 volts at 1.8 amp. The individual valve currents are:

Stage	Anode Current
Oscillator B.719	9.5mA (total)
Quintupler A.2521	8mA
R.f. Amplifier A.2521	15mA
I.f. Amplifier B.719	5mA
Z.77	5.5mA
Mixer GEX66	0.5mA

Performance

Measured under laboratory conditions, the following performance figures were obtained:

Centre frequency	433 Mc/s
R.f. gain before mixer	25db
Noise factor	7db
R.f. bandwidth	4 Mc/s
Image rejection	50db
Intermediate frequency	26.25 Mc/s

TECHNICAL TOPICS By PAT HAWKER, G3VA

Trend to Transceivers · Receiver Incremental Tuning · Super Gainers

Transistor Protection Circuits · The "Maria Maluca" Multiband

Variable Stabilized Supply · More or Less Sunspots? · Bridged-T Selective I.F.

Neon-tube Transmitters · Transistor Mains Unit · Capacitors in Heater Chains

WERE we asked to pick the most significant trend in current amateur radio equipment, the answer inevitably would be the rapid development of modern style h.f. and v.h.f. transceivers. A table in the April issue of 73 listed 13 different h.f. models using s.s.b. on sale in the United States, and others have appeared since. There are also many v.h.f. transceivers using a.m. techniques. Yet a few years back the term transceiver signified for most of us little more than a memory of the old 56 Mc/s super-regens and low power "walkie-talkies".

But then came the rapid growth of mobile operation and the realisation that s.s.b. offered many advantages for such work. Unlike the average a.m. transmitter-receiver combination, there is for s.s.b. considerable overlap in the component requirements such as crystal or mechanical bandpass filters and high-stability oscillators, making for economic advantages in fully integrated transceiver designs.

One of the first factory-built equipments to exploit these advantages was the Collins KWM series, beautifully engineered but at prices which put them beyond the reach of most amateurs. But these rigs did much more than just meet the need of mobile operators, they were equally practicable for fixed operation using a.c. power units.

Once the ice had been broken and the full possibilities became clear, other designs, both commercial and home-built, began to appear and simplifications introduced. This year has seen a great breakthrough in USA with designs being offered by more than a dozen manufacturers, many at prices well below what equivalent separate transmitters and receivers would cost,

For instance the three-band (3.5, 7 and 14 Mc/s) National NCX-3 with 200 watts p.e.p. plus c.w. and a.m. facilities, sells in the United States at a "suggested" price (trading practices over there often make it possible to acquire equipment at substantial discounts) of \$369 (about £130) with a.c. and mobile d.c. power packs each priced around £40 extra.

The total price is thus roughly the same as that asked by the same maker for the NC303 receiver (admittedly this covers more bands than the receiver section of the NCX-3) and this makes our point that h.f. transceivers have moved decisively into fully competitive price ranges. Kits such as the American Heath HW-12 single-band series and home-built designs bring prices down still further.

Just as the concept of the band-switched "table-topper" gradually changed our outlook on transmitter construction so we suggest will the s.s.b. transceivers prove an important influence on future outlook—and not only for s.s.b. operation.

Already the development work on such rigs is encouraging the adoption of the latest circuit techniques. We have several times referred to semiconductor switching of r.f. circuits (*TT* February, 1963 etc.) and variable-capacitance diodes (*TT* October, 1961 etc.). A review in *CQ* (August, 1963) of the recent Hallicrafters SR150 five-band 150-watt p.e.p. transceiver indicates how these techniques have been put to practical use.

Fig. 1 provides some details of the v.f.o. arrangement, showing how selection of upper and lower sideband operation and what Hallicrafters term "receiver incremental

The NCX-3 s.s.b. transceiver manufactured by National Radio Co. of the USA. The NCX-3 covers 3.5, 7 and 14 Mc/s and has provision for VOX control and c.w. break-in. The transceiver uses a 5.2 Mc/s crystal lattice filter and runs 200 watts on s.s.b. It is suitable for home or mobile use on a.m., s.s.b. or c.w.



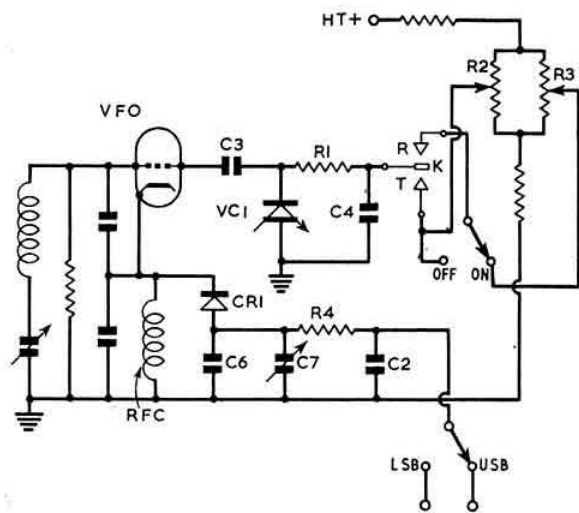


Fig. 1. Simplified diagram of the v.f.o. section of the Hallicrafters SR150 transceiver showing the use of diode switching and variable capacitance diodes for sideband selection, calibration adjustment and "receiver incremental tuning."

tuning" are achieved. The r.i.t. facility allows the receiver to be tuned independently of the transmitter over a range of approximately ± 2 kc/s with automatic return to the correct outgoing frequency when changing from receive to transmit (this is sometimes referred to as "bilateral" operation).

Although no component values are given in the *CQ* review, the scheme operates as follows:

The diode CR1 operates as a diode switch. When S2 is set for u.s.b. operation a positive potential is applied to the "anode" of CR1 which then conducts. This places C6/C7 across C2 and this changes the v.f.o. frequency, C7 being adjusted so that the correct v.f.o. shift is obtained. With S2 on l.s.b. a negative potential is applied as reverse bias to CR1 which thus becomes non-conductive and so "opens" the diode switch.

The voltage-variable-capacitance diode VC1 is used to provide both the r.i.t. facility and calibration adjustment. It will be observed that VC1 is connected in series with C3 across the tuned circuit of the v.f.o. With S1 "off" an adjustable d.c. positive potential is applied across VC1 from the CALIBRATION ADJUSTMENT control (R2). This potential is

in no way affected by the position of the receive/transmit changeover relay contact K1. R1 (and R4) isolate the r.f. circuits from the d.c. circuits with suitable decoupling capacitors. With S1 "on" the d.c. potential applied to VC1 on RECEIVE (but not on TRANSMIT) is adjusted by R3 instead of R2. This allows the receiver to be tuned independently over a small range. R3 is the r.i.t. control.

Diode switching is also used in the SR150 in conjunction with the crystal-controlled h.f. oscillator.

Super Gainers

Not everyone will feel confident of tackling a complete transceiver, at least not at present. But simple high-performance receivers can prove an interesting alternative undertaking. For many years we have been keen on the use of regenerative detectors in superhets, which are then often known as "super gainers." The idea is equally applicable to more elaborate receivers, particularly those intended primarily for c.w. reception. This subject is discussed at some length in *A Guide to Amateur Radio*.

A very straightforward three-valve super-gainer, the "Novice RS-3," is described by W1ICP in *QST* (July, 1963). This utilises a 6U8A frequency changer (to 1600 kc/s), with the pentode section of a second 6U8A as regenerative detector with anode tickler coil and screen voltage potentiometer for reaction control. The triode section of the second 6U8A is used as a.f. amplifier and there is a further 6AQ5 output stage. W1ICP considers that the set "will outperform any ready-built job costing twice as much."

In the December, 1961 *TT* we reported an interesting highly selective regenerative detector arrangement devised by W6MTY. He has now developed this circuit still further (see *CQ*, June, 1963) to provide a variable bandpass facility, and details of the modified arrangement are given in Fig. 2.

Transistor Protection

Some of the precautions which are advisable when handling transistors (correct polarity, use of heat and shock shunts when soldering or cutting leads, isolation of servicing instruments and avoidance of high-voltage ohmmeters and circuit testers etc.) were described in *TT* December, 1960. These main hazards are now widely understood and should present few problems to the amateur who takes reasonable care. But there are two types of operating hazard which are often ignored and which can cause destruction of transistors: these are overloading the first stage of a receiver when operating very close to a transmitter, and high collector voltages

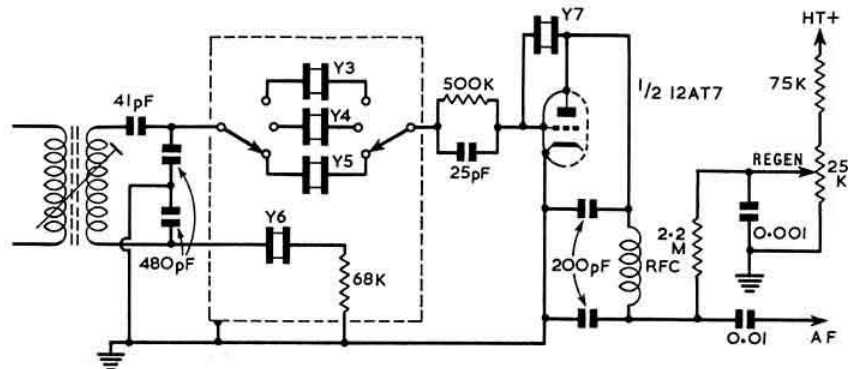


Fig. 2. W6MTY's variable selectivity regenerative detector for use in advanced "super gainer" type receiver. The crystal unit and valve should both be well screened to prevent pick-up of signals leaking round the filter. Y3 1598 kc/s (series resonance), Y4 1600.5 kc/s (series), Y5 1602 kc/s (series), Y6 1600 kc/s (series), Y7 1600 kc/s (parallel).

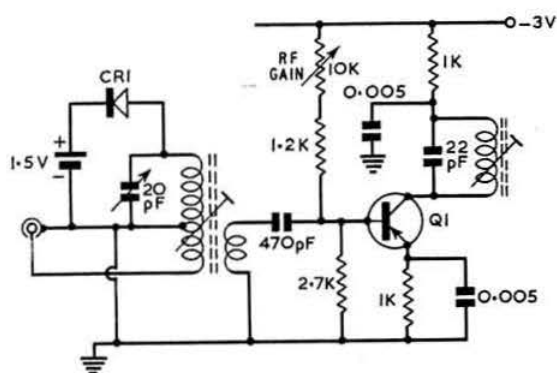


Fig. 3. The r.f. stage of a 50 Mc/s converter designed by W4GEB illustrating use of protective diode (CR1, 1N34) to prevent transistor damage from a local transmitter.

developed by power transistors when operating into an incorrect load.

Both these hazards can be largely overcome by the use of protective diodes. Fig. 3 shows the first stage of a 50 Mc/s converter by W4GEB (*QST*, July, 1963). A conventional crystal diode is connected in series with a small penlight 1.5-volt cell. The diode conducts when the r.f. peak voltages across the tuned circuit exceed about 1.5 volts. Even more protection could be provided by a second diode and cell connected in a reverse direction across the circuit, but W4GEB states that this has not been found necessary in practice. Incidentally a forward base-biasing circuit is used with the r.f. gain control.

A power transistor should never be operated without a load (or with a violently mismatched load) or short-circuits may result from the excessive collector voltages which will be developed. This condition can arise in certain circumstances with the increasingly popular arrangement of a transistor modulator used in conjunction with a valve power amplifier for mobile operation if for any reason over-modulation occurs (for example, due to an unusually low h.t. voltage on the p.a.). When over-modulation takes place the carrier is cut off and the load virtually removed at the very moment when the a.f. transistors are delivering maximum power. In the New Zealand magazine *Radio and Electrical Review* (March, 1963) an instance is reported of this leading to the destruction of a modulator transistor and it is suggested by "I.H.S." that a negative cycle loading network should be connected across the modulation transformer, as shown in Fig. 4. This network consists of a silicon diode (OA210) and a

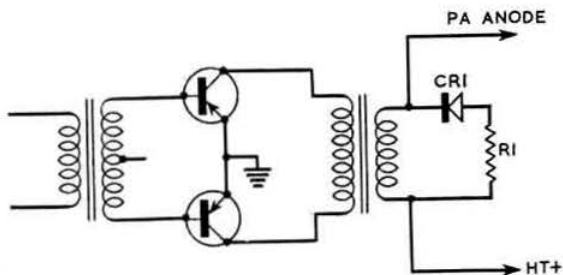


Fig. 4. Negative cycle loading of transistor modulator to avoid risk of damage to transistors due to overmodulation. CR1, OA210 or equivalent. R1 load resistor, see text.

load resistor R1 of approximately the same value as the nominal impedance of the power amplifier. The diode is connected in the sense so that when the anode side of the secondary is positive with respect to the h.t. side, the diode is non-conductive. But if the anode is driven negative the diode conducts and the load resistor is effectively connected across the secondary. The writer claims that the network also reduces the likelihood of overmodulation splatter being produced during normal operating. The p.i.v. rating of the diode need be only slightly greater than the maximum value of the d.c. voltage which is being modulated and R1 dissipation will normally need to be only about 10 per cent of the total modulated r.f. input.

The "Maria Maluca" Multiband Aerial

Aerials remain an endless topic of interest to amateurs, and we generally try to keep our eyes and ears open for news of developments in this field. But we must admit to never having heard of the intriguingly-named "Maria Maluca" multiband aerial developed by PY2BCD until we came across an article by F9VS in the combined August/September, 1963 issue of *Radio REF*, and we still remain

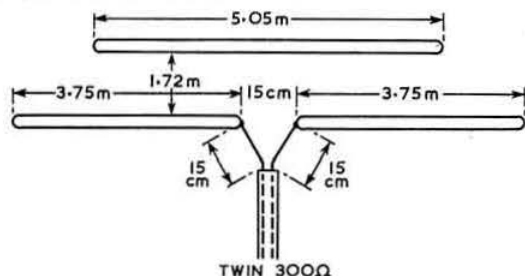


Fig. 5. The "Maria Maluca" multiband aerial devised by PY2BCD and as described by F9VS. Tuned 300-ohm feeder lengths either 10.07m, 18.06m or 23.40m for 0.9 velocity factor cable.

hazy as to the exact principles of operation which are not explained.

But F9VS writes with true Gallic enthusiasm of the results he has achieved with this system and we are therefore passing on the details he gives: see Fig. 5. Apparently the aerial works effectively on 28, 21, 14 and 7 Mc/s and even on 3.5 Mc/s if the 23.40-metre length of twin 300-ohm feeder is used. The resonant feeder dimensions are given for Amphenol line with a velocity factor of 0.9 as widely used in South America but F9VS states that with cable of say 0.86 velocity factor the length may have to be shortened slightly with the help of a grid dip meter. The coupling between the feeder line and the transmitter is given as two turns on the earthy side of the output coil with a 100 pF capacitor in parallel for tuning, but we are not certain whether this figure applies only to 21 Mc/s.

F9VS does not offer any explanation of why the name "Maria Maluca" was chosen but clearly it will enliven amateur radio if future aerials and circuits are similarly dedicated to YLs and XYLs. We can see the time will come when equipment reports may be on the lines of "Well, OM, we are running 100 watts to a Brigitte Bardot, with a Jane Mansfield aerial and I'm receiving you on a transistorised Elizabeth Taylor."

Compact Voltage Regulator

Most of the published designs for stabilized power packs with variable output voltage are fairly husky units, but there

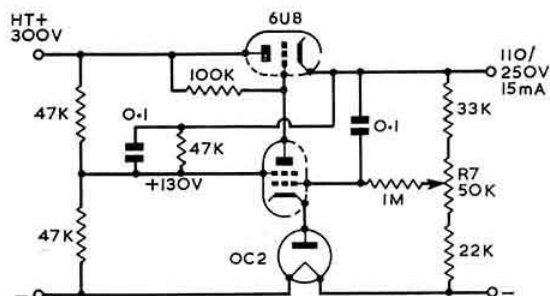
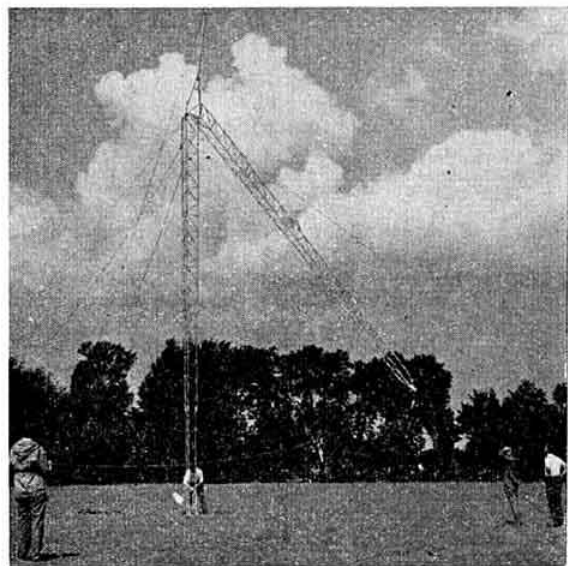


Fig. 6. Compact stabilized power supply with wide-range output at low currents up to 15 mA.

is quite often a call for a stable supply at low output. A unit by D. H. Rogers in *Electronic Design* (June 7, 1963) provides an adjustable output with a claimed stability of 1 per cent between 110 and 250 volts at up to 15 mA using a 6U8 and OC2 stabilizer. Details are shown in Fig. 6.

Sunspots—More or Less?

It is perhaps a humbling thought that despite all the advances in h.f. equipment the future prospects for DX working still depend to a considerable extent upon a factor over which we have no control and only limited knowledge. This is the degree of sunspot activity likely to be experienced



No, this is not NFD but a recent demonstration of the latest commercial log-periodic h.f. aerial system. The photograph shows the erection of a transportable wide-band (covering 4-30 Mc/s continuously), high gain (10 to 13 db over isotropic, and 14 db front-to-back ratio) array which can be completely erected by five men in under two hours. Although a fixed array, the line of fire can be quickly changed without lowering the 75 ft. fold-over aluminium tower. The total weight of all equipment including the tower is under 440 pounds. The array can be transported in three boxes and two 10 ft. tower packages (see *Electronics Weekly*, September 11, 1963). Sounds like every NFD operator's dream. Any snags? The space required including all guys is about 180 ft. by a maximum of 303 ft., and puts it out of the suburban garden category. And, oh yes, the price tag is around £3,000! But seriously, the demonstration left us with the feeling that single support log periodics should be regarded as a definite possibility for the amateur looking for a versatile all-band fixed array.

(Photo by courtesy of Granger Associates)

during the next couple of sunspot cycles. After the record breaking maxima of 1947 (sunspot number about 152) and 1957 (201—by far the highest figure ever recorded), many experts believed that we were in for a long period of low activity (see *TT*, February, 1962). But the actual course of events in the present cycle has led some to doubt whether things will be as bad as was feared. W2PTM in the July *QST* suggests that the next two peaks will continue recent trends and be even higher and could give unprecedented DX conditions in 1968 and 1980.

A rather more conservative (and authoritative) forecast has been made by D. G. King-Hele of the Royal Aircraft Establishment (see *Electronics Weekly*, July 31, 1963). He puts the next peak as occurring in 1967 with a smoothed sunspot number of around 150 or very nearly the same as for 1947. Although he stresses that no satisfactory method of making predictions beyond the present cycle has yet been established, he believes the present cycle will end in 1964.1, with the following cycle lasting 10 years with maximum at 1967.4 and minimum at 1974.6.

So those 28 Mc/s beams may come into their own again by about the winter of 1965/66.

Bridged-T Selective Amplifier

A rather novel method of using a bridged-T network in conjunction with negative feedback to obtain a highly selective transistorized i.f. amplifier is outlined by Leonard E. Geisler in *Electronic Design* (August 2, 1963) providing an effect akin to that of a *Q*-multiplier. Fig. 7 shows the circuit although no component values were given in the original source.

Q1 amplifies the broadly-tuned input signal with part of the collector output circuit fed normally to the following stage. But the major portion of the output is connected to the base of Q2 via a bridged-T network passing all frequencies except that of the tuned circuit (preferably high *Q*). A signal from the emitter of Q2 goes to the base of Q1 where it cancels incoming signals except those falling within the passband of the bridged-T circuit. The operating point and gain of the feedback path is governed by R4. R2 controls the sharpness of the selectivity of the bridged-T network, and hence of the amplifier. Since Q2 provides less than unity gain oscillation does not occur and the circuit thus differs from the more usual *Q*-multiplier.

In the world of semiconductor devices progress is being

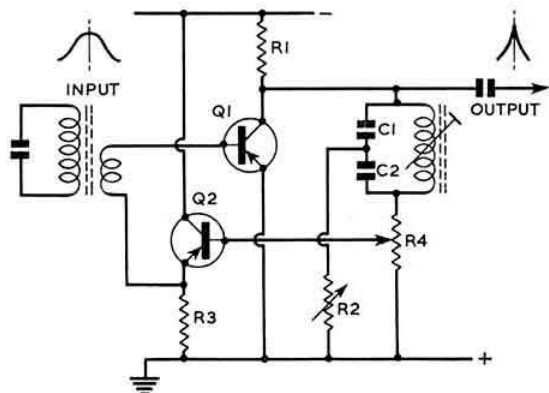


Fig. 7. Bridged-T network used to obtain high selectivity i.f. amplification.

made in field effect transistors; these interesting units differ from conventional transistors in having very high input resistance (up to 100 Megohms) which thus makes the input circuits more akin to those used with valves. At the present stage of development the gain of field transistors tends to be rather low and such units are often used in conjunction with standard transistors to provide both moderate gain and high input resistance. At present also, prices are high, though these can be expected to come down with further development. Types available in the United States cost from the equivalent of several pounds upwards.

Neon-Tube Transmitters

The brief note on the neon transmitters which were used in the early 'twenties included in the Jubilee (July) issue has prompted G8ON to suggest that—particularly in view of the development of the Zener diode, a modern equivalent to

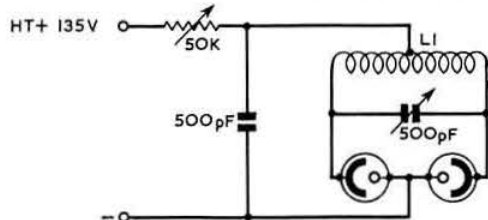


Fig. 8. A medium-frequency dual neon r.f. oscillator circuit from a 1931 issue of *QST*.

the neon tube—it might be interesting to examine afresh some of the techniques then used.

Although we have been unable to trace any circuit details of the early low power transmitters of the 'twenties, we have uncovered some notes on experimental neon oscillator circuits in the March and June, 1931 issues of *QST*. The basis of all these was the relaxation type oscillator which is still well known for providing sidetone a.f. signals for c.w. operation. It is perhaps not always realized that such oscillators are not limited to a.f. but can be made to work at r.f., the upper frequency limit being largely determined by the finite time required for ionization and de-ionization of the neon tubes used. Fig. 8 shows a twin neon oscillator said to cover the medium wave band, and similar to one used in a four neon A2 transmitter stated to be capable of working up to about 3.5 Mc/s. The m.f. circuit specified 0.5 watt neons but the transmitter used 2.5 watt types, with two neons as an a.f. oscillator to modulate the r.f. stage. We also believe, although we have so far been unable to trace any actual circuits, that crystal-controlled neon oscillators were developed. Apparently all the neon rigs were essentially single-stage r.f. units, there being no question of neon-tube amplifiers.

It seems quite possible that this type of r.f. oscillator could find some modern applications—and if not, at least G8ON has encouraged us to establish some sort of new record for *TT* in drawing on 32-year-old articles!

From our Postbag

An interesting letter from G3SFW/T gives details of a small mains unit which he has developed for use with a Heathkit Mohican receiver. This employs an accumulator-floating system rather like that mentioned in the August *TT*. He says that the unit works extremely well, giving up to

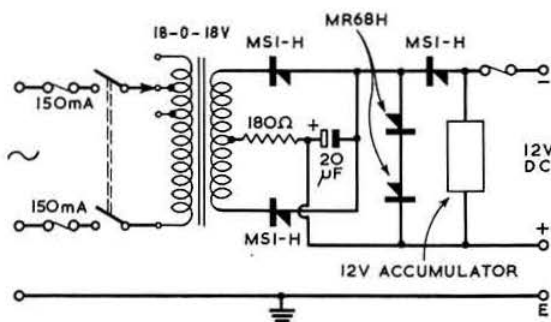


Fig. 9. A battery/mains power unit developed by G3SFW/T for use with the Heathkit Mohican transistorized receiver. Diodes are by AEI. Voltage across MR68H Zener diodes 13.6 volts. Minimum voltage drop across MS1-H diodes 0.6 volts.

1 amp for short periods with negligible voltage drop, while the six Fi-cord miniature accumulators (maximum charging current about 25 mA, which drops to 1 or 2 mA when fully charged) cannot be overloaded because of the action of the zener diodes.

G3SFW/T has also developed a frequency synthesizer in which all frequencies are derived from a single high-stability 1 Mc/s crystal and which will be used to provide 1 and 10 kc/s steps throughout the 144 and 420 Mc/s bands. Although complex (54 transistors and 28 semiconductor diodes) he believes this represents a better approach to frequency synthesis than using a number of different crystals. The total cost of such a unit, he claims, is by no means excessive since the circuits are tolerant of transistor spreads and surplus transistors are very cheap.

A practical snag which arises when using capacitors for voltage dropping in heater chains (*TT*, August) has been pointed out by W2GHK who is president of Hammarlund and who came over for the Golden Jubilee (and is returning for this year's Communications Exhibition).

He writes: "One problem with this technique is that the instant the equipment is turned on, the capacitor looks like a short circuit and the surge current through the valve heaters can very often be damaging. This situation is worsened when the voltage of the drop across the capacitor is relatively high compared to the voltage drop required across the valve or valves. I have done some experimenting with this circuit and found this limitation to be a problem, particularly with some of the newer low current drain valves."

This problem could be overcome with a thermistor but that re-introduces heat and complications, so it looks as though resistor droppers will be with us for a long time to come. This type of surge however has little effect on the use of capacitors in bias supplies as discussed in August.

G3IAG takes up the matter of transistor transmitter costs pointing out that appreciable h.f. power can be obtained from transistors costing under £5 (he gives as examples Texas Instruments 2N1046 and 2N1908). The considerably higher prices which we quoted in the August *TT* were of course for v.h.f. types and we fully agree that some watts of h.f. power can now be obtained from units which are reasonably economical. Useful types are also available from STC and Mullard. G3IAG has been experimenting with several hundred feet of bell wire close wound on a bamboo rod to make a short 1.8 Mc/s aerial and reports promising results.

Single Sideband

By G. R. B. THORNLEY, G2DAF*

IT is now twelve years or so since a handful of enthusiasts pioneered the single sideband suppressed carrier method as a practicable method of amateur communication. In those days there was no source of ready-made crystal band-pass filters, audio phase shift networks, sophisticated all-band exciters, or selectable sideband receivers. Basic knowledge was limited, many of the present day techniques we now take for granted were untried and unknown, and problems had of necessity to be solved the hard way—mainly on a basis of “suck it and see.”

To-day, it would be fair to say that the great majority of single sideband transmissions meet fully the basic requirements in regard to carrier and sideband suppression, low intermodulation distortion products, clean readable speech, and flexibility and ease of control. Some transmitters are commercially made but the majority in use are home constructed and performance-wise are a credit to the skill, knowledge and patience of home constructors in general.

There is, however, one parameter that is not yet fully met, and that is the very difficult problem of “absolute” frequency stability. That this is so is amply demonstrated by a spell of listening on the amateur bands, and it is commonplace to hear such remarks as, “Sorry OM—I have just switched on from cold,” “Yes, I know I drift for the first 10 minutes or so,” “Sorry, I will re-net. I get this drift because of mains voltage variation,” or “Yes, my stability was all right until I put the transmitter into this cabinet. I will have to do something about the temperature compensation.”

Stability Requirements

Obviously, much work has gone into the problem of frequency stability, not only by amateurs, but by professional engineers as well. There is no such thing as an “ultimate” circuit without drift—if there had been, this circuit would have been adopted as a standard many years ago. Certain circuits and methods of construction exhibit less drift than others, and desirable configurations are generally well known. However, the frequency accuracy requirements for single sideband communications are much more stringent than those for other communication systems. A frequency error in carrier reinsertion of 20 c/s or less will give good voice reproduction. Errors of 50 c/s result in noticeable distortion, and intelligibility is impaired when the frequency error is 150 c/s or greater.

To meet the stringent frequency control requirements, early commercial h.f. s.s.b. systems used various methods of automatic control of the reinserted carrier at the receiver. Either a pilot-tone or carrier was transmitted along with the sidebands, and the receiver frequency was synchronized with the transmitter frequency. No stabilization of the transmitter frequency was used other than that obtained by using crystal-controlled oscillators.

The first single sideband radiotelephony system did not use automatic frequency control and was able to accom-

plish its purpose because the operating frequency of about 60 kc/s was low enough to obtain a reasonable oscillator stability. Although oscillators have long been available with sufficient frequency stability and accuracy for use in high frequency s.s.b. equipment, these oscillators have been bulky, fragile and limited in frequency channels. They were used principally as laboratory frequency standards. Improvements in the crystal art, development of circuit technique, and new components have made available the means to obtain h.f. receivers and transmitters capable of multichannel operation with sufficient frequency accuracy and stability for independent operation of the receiver.

In commercial operation the advantages obtained through the use of independent absolute frequency control are considerable. The bandwidth required for a communication channel is minimized because there is no need for the synchronizing signal and the frequency tolerance. The relationship between transmitter and receiver carriers is absolute and indestructible, and is immune to any type or degree of interference, resulting in maximum fidelity of the received signal.

Development of Frequency Control

It is of some interest to trace the development of frequency control circuits and the technical and economic forces that caused their evolution. In the early days of radio the tunable LC oscillator provided a simple and serviceable answer to the problem of generating channel frequencies. The lower frequency end of the spectrum and amplitude modulation were in use and the spectrum was not unduly crowded. Later crowding of the spectrum was alleviated by closer channel spacing and expansion into the higher frequency regions. The increased frequency accuracy required was provided by crystal oscillators, and a multiplicity of channels was provided by a like number of crystals. During World War 2 the requirement of delivering the right crystal to the right place at the right time became a major Service problem, and it became apparent that the simple m.o.-p.a. transmitter would no longer provide the desired flexibility.

A choice of one of hundreds of channels was required at the flick of a switch, guard bands were narrowed, v.h.f. bands were pressed into service and under these forces the multiple crystal synthesizer soon evolved. The principle is simple—the output frequencies of several crystal oscillators are mixed together to produce the desired output frequency. Each oscillator is provided with a means of selecting one of ten or more crystals so that a large number of channel frequencies may be synthesized. This principle is shown in Fig. 1.

It will be apparent that with the correct choice of crystals it is possible to get desired frequency steps over any required frequency range so that the crystal synthesizer may take the place of the v.f.o. and control an amateur transmitter. To the sceptical who may feel that a sophisticated piece of equipment such as this is outside the province of any amateur, it is of interest to note that W1RF has successfully built a “continuous coverage with crystal control” sideband transmitter using the synthesizer system that was described as “The Ultimate Exciter” in the October 1962 issue of QST.

Further commercial development of this principle has resulted in the more practical type of frequency synthesizer

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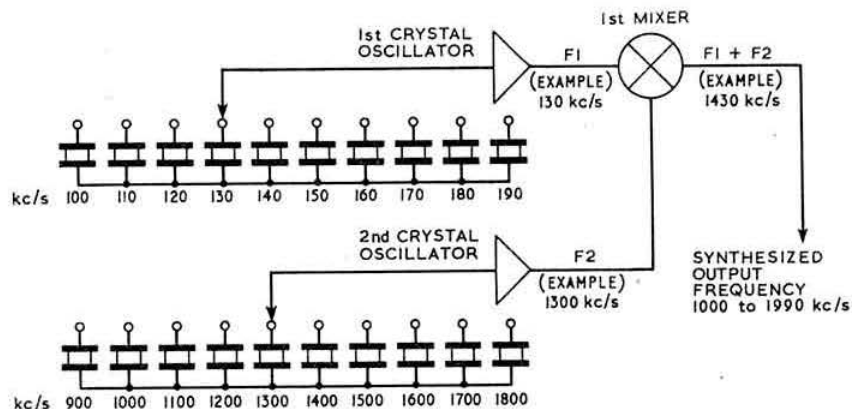


Fig. 1. Multiple crystal frequency synthesizer.

in which harmonics and sub-harmonics of a single standard crystal are combined to provide a multiplicity of output signals which are all harmonically related to a sub-harmonic of the standard oscillator. A representative block diagram of this method is shown in Fig. 2. For amateur-band use it would be necessary to divide down in smaller steps than 10 kc/s, and better still if continuous coverage could be obtained using some form of "rubberized" crystal control.

Two or three years ago the writer undertook some experimental work on these lines, using a 100 kc/s crystal as the standard oscillator, and proved experimentally (at least to his own satisfaction) that it was possible to select any one of a spectrum of 2 kc/s "pips" over a range of 3.0 to 3.5 Mc/s (the v.f.o. range of the G2DAF s.s.b. transmitter) with a "tuning" range of plus or minus 1 kc/s, with the stability of direct h.f. crystal control. The project was never taken to its final conclusion and used to control the station transmitter because of the problem of building a suitable crystal bandpass filter. However, suitable mechanical filters are now readily available and as this method may be of interest to the experimentally minded it will be described in *Single Sideband* next month.

Further Notes on the G2DAF Linear Amplifier

Since the publication of the article "The G2DAF Linear Amplifier" in the April, 1963 issue of the BULLETIN many s.s.b. workers have adopted this method of p.a. operation using a wide variety of valves. One well-known 80m band operator, impressed with the performance of his initial effort and fired by typical amateur enthusiasm, has constructed a total of 15 amplifiers using nine different p.a. valve types!

From reports received it is apparent that all the usual tetrode and pentode valve types from a 6V6 to a PL172 (including the surplus 715B and the television EL38) work

satisfactorily. There does appear however to be one exception and information has been received from three different sources that the TT21 will not work in the G2DAF circuit. Why this should be so is not known, and the writer would hasten to add that he has no personal experience with this valve and does not know whether the difficulty experienced is actually due to the valve characteristics or has been caused by some other unusual circumstances. If any reader is successfully operating TT21s in the G2DAF circuit, his experience and comments will be of considerable interest.

The only other unforeseen difficulty has occurred with certain 813 valves. When the amplifier is driven, the p.a. anode current goes up to 300 or 400 mA, depending on the h.t. voltage, and when drive is removed it does not go down again to the resting anode current value: at the same time the grid-current meter reads zero and the screen-current meter zero or even some negative value. When this was first reported the writer was fortunate in finding that one of his three 813 type valves exhibited the same symptoms, and this provided the opportunity to do some investigating with the oscilloscope.

This phenomenon has only occurred with war time surplus

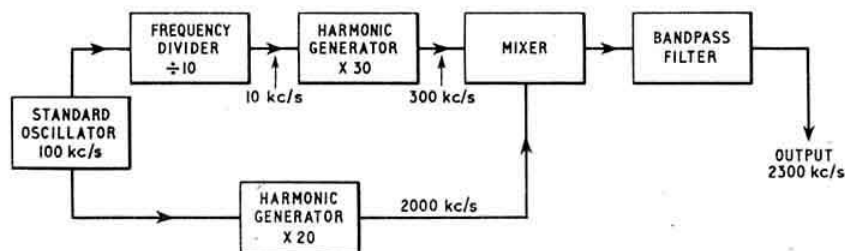
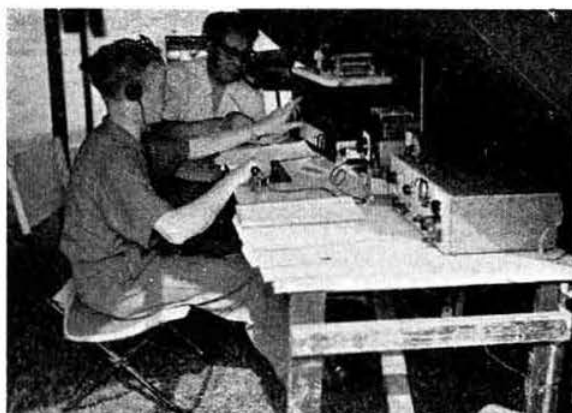


Fig. 2. Single crystal frequency synthesizer.

valves—possibly 20 or more years old. It is thought to be due to secondary emission from the screen-grid, caused by gradual failure of the vacuum due to leakage past the base and anode seals, and liberation of gas from the electrode structure.

The cure for this is the same as that for secondary emission with 4X150A or 4X250B valves: connect a two watt non-inductive resistor between the screen rail and the chassis as shown in Fig. 12 in the original article. This resistor is not critical and may be any convenient value between 20 and 50 K ohms.

Many amateurs are using other types of p.a. valves obtained as surplus or second hand and whose past history is unknown. Some of these may be soft and exhibit the same symptoms. It is therefore strongly recommended that this screen return resistor is incorporated in the design in all G2DAF-type amplifiers.



The Dorking and District ARS A station G3CZU/P with G3HZJ and G3IAM on duty. The transmitter comprised a transistor v.f.o. driving a 2E26 in the p.a.



At Ayrshire Group's B station, GM4QK/P, the equipment included an Eddystone 888A receiver, a home-built transmitter employing a Geloso v.f.o. and dipoles for 20 and 40m.



One of the operators for Cardiff Group, which gained second place, was GW3NWQ, seen here operating GW3HCH's receiver at GW5BI/P.



Members of Manchester and District Radio Society's advance party at this year's NFD site in Heaton Park. Committee Member G3PJK is on the extreme left and Publicity Manager Pete Singleton next to him in dark shirt. The cable on the right of the picture was connected to a petrol-electric generator placed out of earshot down the hill.



G3BCM (left) operating Croydon Group's B station, G6LX/P, while G3FWR copes with the logging.



G3HTI operating and G3PJS logging at the Grimsby Amateur Radio Society's station G4XC/P.

National Field Day 1963

NFD Shield	Port Talbot Group (GW4CG/P and GW5VX/P)	2276 points
Gravesend Trophy	Cardiff Group (GW5BI/P and GW4FW/P)	2082 points
Scottish NFD Trophy	Ayrshire Group (GM5KF/P and GM4QK/P)	1055 points
Bristol Trophy	Basildon and District Amateur Radio Society (G3OIT/P)	866 points
Leading 1.8 Mc/s Station	Port Talbot Group (GW4CG/P)	432 points
Leading 3.5 Mc/s Station	Cardiff Group (GW4FW/P)	617 points
Leading 7 Mc/s Station	Stourbridge and District Amateur Radio Society (G6OI/P)	465 points
Leading 14 Mc/s Station	Port Talbot Group (GW5VX/P)	715 points
Leading 21 Mc/s Station	Belfast Group (G13OFT/P)	324 points
Leading 28 Mc/s Station	Croydon Group (G6LX/P)	39 points
Overseas station contributing most points to competitors		5B4OS/P—Cyprus Amateur Radio Society (Famagusta Group)
Most useful check log from non-transmitting British Isles member		M. Harrison, B.R.S. 24733.

COMPARED with last year's event, the 1963 National Field Day produced a 10 per cent increase in the number of entrants, with leading scores showing a similar improvement. The total number of points on the two l.f. bands was slightly up and 21 Mc/s showed a sharp increase. On 7 Mc/s, however, there was a drop of about 20 per cent while the two remaining bands broke even.

The winner of the NFD Shield was Port Talbot (GW4CG/P and GW5VX/P) with a total score of 2,276 points. Last year, the Group did not compete (it ran into serious generator trouble) but was fourth in 1961 and fifth the previous year. The Gravesend Trophy for the runner-up went to Cardiff Group (GW5BI/P and GW4FW/P) with a total of 2,082 points, 194 behind the winner. Cardiff have shown steady improvement having been twenty-eighth in 1961 and fifth last year. Third position, with 1,908 points, went to Gravesend Amateur Radio Society (G6VC/P and G6BQ/P), always among the leaders. Cannock Chase Amateur Radio Society (G3ABG/P and G4CP/P) was fourth, 12 points lower, while Stourbridge and District Amateur Radio Society (G8GF/P and G6OI/P), winner for the previous two years, occupies fifth place.

The Scottish NFD Trophy was won by the Ayrshire Group (GM5KF/P and GM4QK/P) with a score of 1,055 points, a margin of 99 over the Glasgow Group (GM3HBY/P and GM3AXX/P).

A newcomer to the event, Basildon and District Amateur Radio Society (G3OIT/P), won the Bristol Trophy for a single station entry with a score of 866 points from last year's winner, Wolverton District Radio Club (G4CK/P), who amassed 854 points followed by Norwich and District Radio Club (G3OIR/P), 21 points lower.

Band Results

As regards individual bands, the bonus on 1.8 Mc/s and 3.5 Mc/s undoubtedly helped Port Talbot Group 'A' station (GW4CG/P) to win 1.8 Mc/s and the 'B' station (GW5VX/P) to gain fifth place on 3.5 Mc/s while Cardiff Group 'B' station (GW4FW/P) came top on 7 Mc/s and the 'A' station (GW5BI/P) second on Top Band. Cannock Chase Amateur Radio Society 'B' station (G4CP/P) was the runner-up on the higher of the two bands. Incidentally, Port Talbot Group would have won the NFD Shield even if there had been no bonus on these bands but only by a very much smaller margin.

Stourbridge and District Amateur Radio Society 'B'

station (G6OI/P) led Gravesend Amateur Radio Society 'A' station (G6VC/P) by 13 points on 7 Mc/s with Cannock Chase Amateur Radio Society 'B' station third.

On 14 Mc/s Port Talbot Group 'B' station, which always does well on this band, had a margin of 144 points over Stourbridge and District Amateur Radio Society 'A' station (G8GF/P) while third place was filled by the Medway Group's 'B' station (G2ZP/P).

Scores on 21 Mc/s continued to improve and Belfast Group 'A' station (G13OFT/P) led the way for the second year in succession. Exeter Group 'A' station (G3ID/P) was second 57 points behind the leader while Cardiff Group 'A' station was third with six fewer points.

Once again, scores were very low on 28 Mc/s, with Croydon Group 'B' station (G6LX/P), Stourbridge and District Amateur Radio Society 'A' station (G8GF/P) and Chiltern Amateur Radio Club 'B' station (G6IF/P) heading the list.

Equipment

There was very little change in equipment used this year. Transmitters were generally of the v.f.o.-b.a.-p.a. type with a



Members of the Port Talbot Group, winners of NFD 1963, taking time off for a well-earned snack.

NATIONAL FIELD DAY 1963—

Posn.	Group	Call-sign(s)		1-8 Mc/s	3-5 Mc/s	7 Mc/s	14 Mc/s	21 Mc/s	28 Mc/s	Total
		A Stn.*	B Stn.							
1	Port Talbot Group	GW4CG	GW5VX	432*	495	443*	715	191*	0	2276
2	Cardiff Group	GW5BI	GW4FW	335*	617	405	438*	261*	26	2082
3	Gravesend ARS	G6VC	G6BQ	273*	474	452*	553	156*	—	1908
4	Cannock Chase ARS	G3ABG	G4CP	266*	525	446*	505	154*	0	1896
5	Stourbridge & District ARS	G8GF	G6OI	264*	414	465	571*	108	37*	1859
6	Oxford & District ARS	G2DU	G8PX	320*	421	426*	467	172*	11	1817
7	Medway Group	G2BP	G2ZP	295*	449	251*	557	148*	17	1717
8	Stamford & District Group	G3ARS	G3FUR	301*	407*	284	434	165*	0	1591
9	Croydon Group	G5BZ	G6LX	251*	366	300*	395	181*	39	1532
10	Weston-super-Mare Group	G5UG	G8FC	226*	473	413*	319	48*	19	1498
11	Belfast Group	G1OFT	G16YM	15*	411	358*	396	324*	0	1494
12	Torbay ARS	G3GDW	G3NJA	231*	227	311*	458	110*	0	1337
13	Crawley ARS	G2DP	G3TR	146*	320*	136	449	211*	0	1262
14	Wirral Group	G3NWR	G8BM	252*	337	256*	395	0*	0	1240
15	Midland Radio Contest Club	G2RO	G3RSR	287*	373	333*	144	96	—	1233
16	Reigate ATS	G3NKS	G3REI	238*	389*	204	205	182*	0	1218
17	Pontypool Group	GW3RHH	GW2HIN	286*	438	310*	82	80*	12	1208
18	Blackwood ADARC	GW6GW	GW3OXU	318*	424*	235	117	56	0*	1200
19	Edware Group	G5FG	G2IM	214*	283	244*	262	154*	32	1189
20	Scarborough Group	G3KS	G4BP	214*	309	302*	179	152*	0	1156
21	Ariel Radio Group	G3GDT	G3AYC	194*	302*	141	348	160	1*	1146
22	Sheffield Group	G8NN	G6LF	259*	357	237*	228	58	—	1138
23	K.W. Electronics RC	G3LCW	G8KW	60*	358*	76	503	116*	14	1127
24	Scunthorpe Group	G3JWR	G3KNU	192*	402	267*	200	59*	0	1120
25	Chelmsford Group	G6ZC	G4VF	184*	510	341*	30	51	0*	1116
26	Southampton Group	G5LR	G5OB	218*	320	399*	165	5	0*	1107
27	Coulsdon Group	G2DN	G3DVQ	247*	217	333*	210	65	23*	1095
28	Radio Society of Harrow	G3EFX	G3HBR	282*	330	164	274*	29	6*	1085
29	Standard Radio Club & Harlow & District									
	Radio Society	G3ERN	G3NIS	160*	446	210*	171	90*	0	1077
30	South Shields & District Group	G3NCE	G3DDI	236*	353	100*	297	87*	0	1073
31	Ayrshire Group	G5KFF	G4MQK	141*	435	211*	218	50*	0	1055
32	Ballymena Radio Club	G13PDN	G13RNY	273*	337	241*	196	0*	0	1047
33	Macclesfield & District RS	G3LDT	G3ATK	255*	350	200	232*	—	—	1037
34	Ilford Group	G3HIW	G6AH	259*	447	238*	81	3	—	1023
35	Guildford & District RS	G3KMO	G3PJX	220*	336	307*	152	—	—	1015
36	Lymington & District Group	G3JAF	G2DC	244*	155	290*	185	136	—	1010
37	Liverpool & District ARS	G8DI	G3LNG	169*	323	260	187*	64*	—	1008
38	Grimsby ARS	G4XC	G4GX	212*	296	274*	119	99*	0	1000
39	East Measey Group	G5LC	G8SM	196*	340*	240	173	42	0*	991
40	Purley & District Radio Club	G3KTA	G3FTQ	261*	233	259*	126	96	0*	974
41	Clifton ARS	G3OGE	G3GHN	210*	171*	249	238	41*	0	959
42	Glasgow City Group	G3HBY	G3AXX	202*	318	134	302*	0*	0	956
43	Chester Group	G3EWZ	G3ATZ	32*	499	222*	137	63*	—	953
44	Chiltern Amateur Radio Club	G5VWV	G5IF	123*	225*	124*	268	172	37	950
45	Amateur Radio Club of Nottingham	G3MP	G6CW	63*	353	272*	94	163*	4	949
46	Derby & District ARS	G3ERD	G3EEO	259*	231	144*	148	112*	—	944
47	Exeter Group	G3ID	G3JW	59*	126	184	312*	261*	—	942
48	Lothians Radio Society	G3UM	G3XIG	170*	327	140*	153	117*	2	914
49	City & County of Bristol Group	G4UZ	G3RQ	202*	235	137*	126	137	0*	887
	Hartlepool Group	G3IDV	G3AWL	179*	278	218*	174	38*	0	887
51	Basildon & District ARS	G3OIT	—	222	384	260	—	—	—	856
52	Acton, Brentford & Chiswick Group	G5LQ	G3IU	205*	247	245	157*	1*	—	856
53	Wolverton District Radio Club	G4CK	—	255	318	230	—	—	—	854
†	Stockport Group	G3BY	G3NBN	23*	331	251*	221	26*	2	854
54	Dursley & District ARS	G3NXI	G3ONX	266*	255*	247	58	20	0*	846
55	Norwich & District Radio Club	G3IOR	—	—	473	—	360	—	0	833
56	Cheltenham Group & Cheltenham Amateur									
	Radio Society	G3CGD	G5BK	148*	302	237*	85	—	—	822
57	Stroud Group	G5ZK	—	211	237	311	—	—	—	809
58	Portsmouth & District RS	G3WC	G6SS	253*	178*	129	178	54	0*	792
59	Thanet Group	G2JF	G2IC	216*	323*	175	67	—	—	786
60	Stean Group	G8NF	—	300	293	192	—	—	—	785

COMPLETE RESULTS

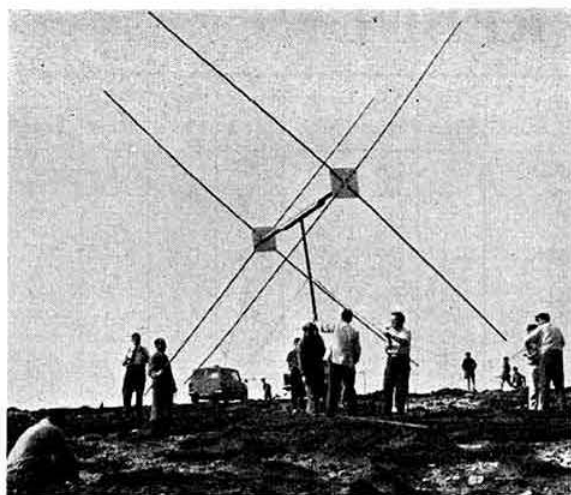
Posn.	Group	Call-sign(s)		1-8 Mc/s	3-5 Mc/s	7 Mc/s	14 Mc/s	21 Mc/s	28 Mc/s	Total
		A Stn. *	B Stn.							
61	Blackpool & Fylde Group ...	G8GG	G5ND	205 *	258	205 *	72	41 *	0	781
62	Catherham Group ...	G2AJ	—	—	302	305	146	—	—	753
63	Caithness Group ...	GM3COV	—	244	—	91	416	—	—	751
64	Crystal Palace & District Radio Club ...	G3OOU	—	251	286	—	207	—	—	744
†	Dorking Group ...	G3CZU	G3LHC	223 *	247	91 *	66	116 *	—	743
‡	Lincoln Short Wave Club ...	G4BU	—	205	310	—	217	—	—	732
66	Rotherham & District Radio Club ...	G3OAM	G2LG	154 *	354	121	65 *	3 *	0	697
67	Southport Radio Society ...	G2ART	G3HWS	102 *	272	224 *	95	—	—	693
68	Gloucester Group ...	G3MA	—	245	270	171	—	—	—	686
68	Southgate, Finchley & District Group ...	G5FA	—	223	263	200	—	—	—	686
70	Ainsdale Radio Club ...	G3OIR	G3LWK	92 *	248	131	179 *	24	0 *	674
71	Dundee Group ...	GM3EUV	GM4HR	69 *	223	66 *	138	145 *	10	651
72	Cheltenham Top Band Club ...	G3PEO	—	128	291	214	—	—	—	633
73	Newark Group ...	G3ELJ	—	240	274	110	—	—	—	624
74	Basingstoke Group ...	G3CBU	G3ORF	193 *	282	41 *	67	39 *	1	623
75	Verulam (St. Albans) Group ...	G8TK	—	—	261	202	155	—	—	618
76	Hull & District ARS ...	G3FCY	—	276	—	290	—	51	—	617
77	Chorley Group & Preston ARS ...	G3GGS	G3KUE	195 *	149	86	174 *	0	0 *	604
77	A.E.R.E. (Harwell) ARS ...	G3PIA	—	—	324	73	207	—	—	604
79	Retford Group ...	G3KPU	—	206	—	382	—	10	—	598
80	Radio Club of Loughborough & District ...	G4BI	—	153	277	—	162	—	—	592
81	Aquila Radio Club ...	G3BRK	—	208	179	189	—	—	—	576
§	Burnham-on-Sea ARC ...	G3GIW	—	97	263	—	211	—	—	571
82	Royal Signals, Catterick, Group ...	G3CIO	—	149	313	—	104	—	—	566
82	Dunfermline Radio Society ...	GM3IQL	—	—	321	160	85	—	—	566
84	Bury & Rossendale Group ...	G3BRS	—	144	262	—	151	—	—	557
85	Leicester Radio Society ...	G3LRS	—	246	219	90	—	—	—	555
†	North Wilts Group ...	G3JOT	G2BRR *	3 *	233 *	75	186	40 *	17	554
86	Pye Telecommunications ARS ...	G3PYE	—	238	215	—	90	—	—	543
87	Bath Group ...	G2ZR	—	180	332	24	—	—	—	536
88	East Kent Radio Society ...	G3LTY	G4WK	183 *	134 *	161	47	—	4	529
88	Reading Group ...	G3PGM	G5HZ	186 *	116 *	225	0 *	0	0	527
89	Shefford & District ARS ...	G2DPQ	—	252	126	149	—	—	—	527
91	Mid-Lanarkshire Group ...	GM3PXK	—	122	269	93	—	—	—	484
†	East Ham Group ...	G2ZZ	G3PGI	302 *	—	175	—	—	—	477
92	Barnsley & District ARC ...	G5IV	—	16	291	159	—	—	—	466
93	Ilminster Boys Grammar School Group ...	G3IGS	—	118	199	137	—	—	—	454
94	North Notts ARS ...	G3RCW	—	210	139	—	103	—	—	452
95	York ARS ...	G3HWW	—	115	223	106	—	—	—	444
96	Southend & District RS ...	G5QK	—	145	202	96	—	—	—	443
97	South Dorset Radio Society ...	G2TZ	—	110	192	—	137	—	—	439
†	Braintree Group ...	G3MUL	—	169	174	95	—	—	—	438
98	Manchester & District ARS ...	G3HOX	—	121	183	108	—	—	—	412
99	Stratford-upon-Avon & District ARC ...	G3PGU	—	153	257	—	—	—	—	410
100	Chingford Group ...	G4GA	—	—	131	124	144	—	—	399
101	Cornish Radio & TV Club ...	G3NVJ	—	—	200	155	34	—	—	389
102	Newmarket Group ...	G3IAG	—	105	254	—	20	—	—	379
103	Mitcham Group ...	G3LCH	—	—	52	273	51	—	—	376
104	Grantham & District ARS ...	G3PVR	—	124	192	40	—	—	—	356
105	Newbury & District ARS ...	G3LLK	—	178	153	16	—	—	—	347
106	Sole Bay Group ...	G3WN	—	89	218	—	—	—	—	307
107	Halifax Group ...	G3IGW	—	294	—	—	—	—	—	294
108	Great Yarmouth Group ...	G3HPR	—	0	254	0	—	—	—	254
109	Maidstone Group ...	G8LZ	—	90	130	—	—	—	—	220
110	Stevenage & District Group ...	G3SAD	—	136	—	49	20	—	—	205
111	Enfield Group ...	G3FD	—	147	—	49	—	—	—	196
112	Kingston & District ARS ...	G3KIN	G3RHF	79	—	41	75	—	—	195
113	Bradford Radio Society ...	G3KSS	—	117	67	—	—	—	—	184
114	Eccles & District Radio Club ...	G8VF	G3GXI	5 *	170	0	3	0 *	0 *	178
115	Plymouth Radio Club... ..	G3PRC	—	21	—	—	123	4	—	148

* The first-named call sign operated on bands marked thus.

† Invalid—Rule 20.

§ Invalid—Rule 12.

† Late entry.



For the third year running Caithness Group put in a single station entry and succeeded again in improving on their previous scores. The station was located at Brims Hill, near Thurso, on the North Coast of Scotland, 19 miles west of John O'Groats. For three years they have sustained the distinction of being the most northerly competing station. The nearest contact made was over a distance of 180 miles with GM3NXX in Bridge of Earn near Perth. In this picture preparations are being made to raise the 20m cubical quad.

doubler tucked in where needed. The usual receivers had their annual outing. On the three l.f. bands, half-wave aerials and long wires were most common while cubical quads (many 14/21 Mc/s dual types) were most frequently used with a few V-beams thrown in for good measure.

Power supplies followed the same pattern as before with p.e. and diesel generators the favourites with rotaries driven from accumulators a close second. There were a few transistor power packs but Loughborough Radio Club got away from the usual run of supplies and used a 500 watt steam-driven alternator! The Contests Committee wondered if the p.a. valve was used to help generate some of the steam.

Comments

On the rules: It is impossible to condense *Gravesend's* comments into a few words as they gave four pages of reasons for not liking the bonus system for GWs! *Cannock Chase*—Bonus on 1.8 and 3.5 Mc/s unfair. *Stourbridge*—Same words exactly. *Wolverton*—Extra points for GM, etc., should be washed out. *Norwich*—Object violently to bonus on 3.5 Mc/s. *Crawley*—Please reconsider bonus on 1.8 and 3.5 Mc/s. *Reigate*—No bonus for GWs and retain aerial cross-section rule. *Ariel*—Remove limit on aerial cross-section, 5 watts input on all bands and a special handicap prize on 1.8 and 3.5 Mc/s because of advantage to Midlands. *Sheffield*—Five watts and no aerial restrictions. *Chiltern*—Bonus points on 28 Mc/s. *Caithness*—No points for working stations in own country. *Newmarket*—All 'A' stations on same bands. *Port Talbot*—OKs worth more than two points on 1.8 Mc/s. *Cardiff*—Earlier start and finish (say 15.00 GMT) and bonus points for stations not using p.e. or diesel generators. *Halifax*—No faults in rules. *Basildon*—Rules acceptable but more points for fixed stations outside UK on 1.8 Mc/s and also for W/K. *Sheffield* ('B' station)—Inter-G contacts should be disallowed on h.f. bands as London has advantage working semi-locals. *Sheffield* ('A' station)—Comments of 'B' station are puerile.

On the equipment: *Lymington*—Lost five hours due to faulty generators and non-arrival of spare. *Barnsley*—Early close due to generator and p.a. faults. *AERE*—P.e. generator broke down at 11 a.m. Sunday, a sorry state of

affairs for an Atomic Energy Group. *Stamford*—It took four hours during the night to find that magneto points needed attention. *Ilminster*—Brown paper used to seal gasket on p.e. generator. *Lincoln*—Bob Sadler worked all Saturday morning on generator after fault had shown up on Friday night. *Reigate*—Generator trouble for six hours till owner arrived. *Mitcham*—Wasted time looking for amps in voltage-fed aerial. *Gravesend*—Had aerial loading troubles.

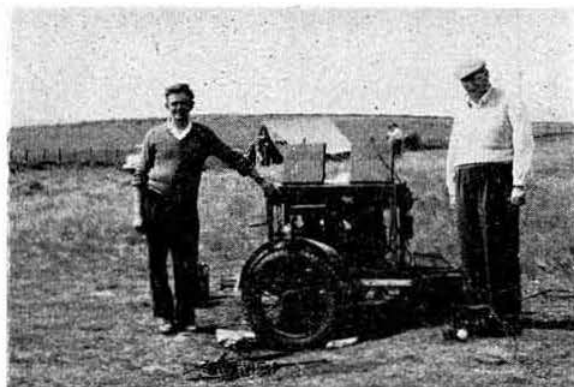
On the Conditions: *Blackpool*—Poor on 14 Mc/s. *Cannock Chase*—Long skip on 7 Mc/s made contacts with Gs tough. *Stockport*—7 Mc/s very good but 21 Mc/s disappointing. *Cheltenham*—7 Mc/s best for years. *Hull*—7 Mc/s packed during the day. *Stourbridge*—Hard work on 14 Mc/s. *Caterham*—First time on 3.5 Mc/s—easier than 7 Mc/s.

On the Weather: Nearly every station commented on the weather being perfect or best for years.

On things in general: *Cheltenham* had a real struggle to make contacts on 1.8 Mc/s. Later they found that somebody had stolen the halyard at the far end of their 350 ft. aerial resulting in that end being earthed. Now they know where the r.f. went! *Grimsby*—Had to co-operate with cricket match and pitch tent on boundary. Where did one of crew find petrol at 6 a.m. on Sunday morning? *Sole Bay*—Serious lack of operators. *Reading*—Transistor power supply packed up five minutes before "off" but made it OK. Very tiring with only two operators. *Mitcham*—Only one operator for all but seven hours. Help! *Blackpool*—Only two full-time and one part-time first-class operators with one new boy. *Maidstone*—Wish neighbouring groups would leave some operators for us. *Lymington*—Main water supply in centre of 11 acre field. Cattle trough used as 'fridge for milk (Contests Committee wonder if Rule 12 has been broken!). Learnt many lessons on our first NFD. *Ilminster*—Food supplied by YL cooks from girls school as before. *Nottingham*—Less paper work please (The right sort of attention to your generator might help). *Newark*—73 to Contests Committee. Somebody left tent pole at home. *Scarborough*—Lost one hour as smoke poured from power pack. Reason—dial light insulation had broken down! *Hull*—Too many phone stations on 1.8 Mc/s. *Reading*—Heavy thunderstorm cut operations by two hours. 20m dipole struck. *East Kent*—Heavy storm caused half an hour stoppage as operator got bitten when he touched equipment. *Southend*—Steel mast snapped and receiver caught fire but all OK by 17.17 hours



G3FVG tuning up the transmitter at Clifton Amateur Radio Society's G3OGE/P in Mountsfield Park, Catford, London. (Photo by G3OGE)



GW3KSQ and GW5VX with the generator which supplied power for Port Talbot Group's stations, GW4CG/P and GW5VX/P.

except for repeated attacks by mosquitoes. *Eccles*—Two horses demolished aerials during the night. *Stockport*—Wasted half an hour fishing for halyard with a branch while standing on car roof.

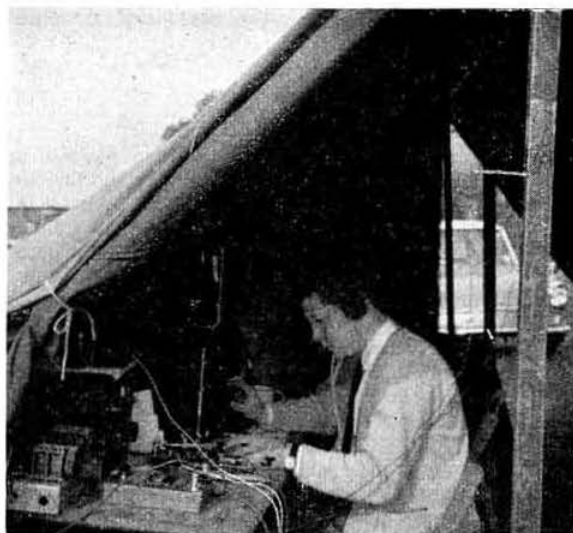
Comments from the Contests Committee

In the Results Table it will be noted that the entry from Burnham-on-Sea Amateur Radio Club has been marked "Invalid—Rule 12." The Contests Committee would like to explain that this club on its first attempt in NFD ran into serious power supply trouble which could not be cured. In order to continue operating and gain experience they connected up to the mains and asked for their entry to be included in the Results Table even though it was invalid. It is hoped they will enter again next year and have better luck with the power supply.

The Contests Committee was very pleased to see that the improvement, noted last year, in logs submitted was maintained and thank the many people concerned for the care taken in preparing the entries. However, there was one exception. This, a log in pencil and very badly written, wasted a considerable amount of very valuable time. As a matter of interest, competitors may like to know that Committee members spent over 150 man-hours at Headquarters just checking the logs, not to mention the time spent at home preparing the Results Table and write-up.



Power for the Derby and District Amateur Radio Society's A and B stations was provided by this diesel-driven generator supplying 250V 50c/s a.c. Left to right, G3PDD, i/c power station, G3RTG, G3FSH and junior operator. (Photo by A.1706)



G300U operating G300U/P for Crystal Palace and District Radio Club.

In the hand-written entries once again there was some confusion between the letters "U" and "V" and also between "H" and "M". It is realized that all the blame does not rest on the person preparing the entry and operators are asked to be more careful when making entries in the original logs which have to be copied.

Finally, a number of stations did not comply with Rule 19 in every way. Operators' signatures were on the cover sheet(s) as requested but on the log sheet(s) there was no indication as to which operator made which contact. Will somebody please suggest a way of checking if all operators' signatures are on the cover sheet without knowing the call-sign(s) of the operator(s) who made the contacts listed on the log(s)?

As the call-sign of an operator making a contact was not directly asked for in the rules published last December but by reference to RSGB General Rules to Contests published in January, it was decided not to penalize any entrant this year in respect of this rule. This point will be dealt with in the rules for the 1964 NFD.

Check Logs

The Contests Committee, once again, wishes to express its appreciation and thanks to all senders of check logs.

The Famagusta Group of Cyprus Amateur Radio Society (5B4OS/P) won a certificate for the check-log contributing most points to competitors. The Group made 111 contacts with G stations on four bands.

The certificate for the non-transmitting British Isles member submitting the most useful check-log went, as last year, to M. Harrison, B.R.S. 24733, of Manchester. It contained 505 entries (not quite so many as before) spread over the entire 24 hours of the contest, 10 minutes being the longest interval between entries.

A special word of thanks must be given to EI5AJ/P, EI7V/P, EI9S/P and EI6U/P for their check logs. The first three each contained over 150 contacts with Gs and the last had 100 contacts; all were of great use to the Contests Committee.

Check logs were also received from G2DHV/P, G3CWW, G3FAS, G3FBA, G3HJG, G3MWZ/P, G3NMO/P, G5LF, G6CJ, OE1WO, SM5BDS, UA3UH, VE1AE, VE3AU, VQ4JF, W4HOS and 5N2JKO.

THE summer months usually see a sharp decrease in several aspects of amateur radio activity and this has certainly been the case recently with RTTY. What with poor conditions, heavy QRN and QRM, and the counter attractions of outdoor activities, there has not been much doing RTTY-wise on 80m and even less on the DX bands. However, on 2m, activity is on the increase and there are reports of local nets opening up in several new areas. The 80m RTTY stalwarts around the Nottingham-Leicester-Sheffield area, have all taken themselves on to 2m and the 2m RTTY nets in the London and Southampton areas report consistent activity.

The first sign of the opening of the winter amateur radio season has been an increase in the writer's mail and quite a number of the letters are from those wishing to take up RTTY for the first time asking for information on how to go about getting started. So it might be a good idea this time to give some advice to those who may be thinking of trying their hand at this mode of communication.

The first point to be made is that RTTY is not limited to the transmitting radio amateur. It offers just as fascinating a sphere for the SWL enthusiast. In fact, if you want to be pretty well assured of an almost 100 per cent response to your SWL reports, concentrate on reporting on amateur RTTY signals. There can be few amateur RTTY operators who do not welcome SWL reports they may receive, especially if specimens of their printing are sent. Again, there are such transmissions as the News Bulletins and DX notes sent out from PA0AA, which make most interesting copy.

The next most often asked question is "What does it cost?" Well, it's like most other types of amateur radio equipment, you can spend just about how much or how little you like. You could presumably buy a teleprinter from commercial sources at between £150—£350, pay another £350 for a Hammarlund HX500 transmitter, which has built-in facilities for RTTY, get a top grade receiver for another £200 and no doubt a commercially available f.s.k. receiving unit around another £150 or so, making a grand total of . . . well, you add it up—not forgetting a bit more for benches, wiring, aerials and a sound proof shack so as not to keep the XYL awake with teleprinter noise! Or you can do as most folk do: build most of the gear yourself and get a first class RTTY station at very little more than the cost of a normal amateur radio station.

The only item you may not know how to cost is the teleprinter, but this too can be picked up—with a little luck—very cheaply. £5 maybe, plus a bit of stripping down, or you may get one all ready to go, in first class condition for not more than £20. Your normal station receiver can be used on the reception side, provided it is stable enough to resolve s.s.b. transmissions, and your transmitter can be easily modified for transmitting RTTY. The only other item required is a frequency shift keying receiving adaptor or terminal unit as it is more usually termed, which can very easily be built.

The next thing you want to do is to team up with others,



G2UK's RTTY station. The transmitter is a LG300 modified for f.s.k. and the receiver is a Hammarlund HQ110. The teleprinter is a Creed Type 3, which has been replaced by a Teletype Model 14 since the photograph was taken. The f.s.k. receiving adaptor, which is only partially visible and is located in a rack below the monitor speaker shown, is a surplus commercial unit, Type A.P. 66862.

who are similarly interested, which means joining the British Amateur Radio Teleprinter Group—BARTG—of which the writer is the Honorary Secretary. There are lots of advantages in doing this. First there is a news sheet circulated regularly to members, in which details of gear, including teleprinters, for sale appears; news of members' activities, new stations and skeds. There is a spare parts service for teleprinters, a supplies service to cover paper tape for printers, ink rollers and so on. There are library facilities and an excellent Manual has been produced giving all one needs to know about getting started on RTTY. In fact you cannot really get along without joining the Group. There are no formalities for joining, the subscription is 10/- a year and the writer will gladly send full details to interested readers.

RTTY activity is now to be found in Holland, Germany, Switzerland, Italy, Norway and England and Scotland. From PA0AA's RTTY News Bulletin recently we learn, too, that RTTY activity is now about to start in Denmark, with OZ8US, OZ5EL, OZ5JT and OZ7TH participating. So much for the European scene. From the world wide point of view, RTTY is on the increase in most countries and for those interested in working RTTY DX, new countries appear month by month. If you are looking for something new in amateur radio, why not try your hand at RTTY?

RTTY Contacts with Belgium on 144 Mc/s

On September 15, G2DZH, G3BPT, G3IIR and G3PDG worked ON4LI in Brussels for what is believed to be the first RTTY contact with Belgium on 144 Mc/s.

Insurance on Amateur Radio Equipment

From time to time enquiries are received at Headquarters regarding insurance cover for radio equipment and aerials. Members may like to know that some companies regard Amateur Radio equipment as covered by the terms of the normal Householder's Comprehensive Policy but members are advised to check this with their own particular company. Cover for aerials can generally be arranged for a small extra premium.

In those cases where a company does not consider Amateur Radio equipment covered by the Householder's Comprehensive Policy, it is generally willing to extend the cover at a nominal extra cost.

* "East Keal," Romany Road, Oulton Broad, Lowestoft, Suffolk.

THE MONTH ON THE AIR

A CHRONICLE OF EVENTS ON THE HF AMATEUR BANDS

By R. F. STEVENS, G2BVN *

DURING the current year there have been a large number of expeditions all made with the intention of providing contacts from a spot having little or no amateur activity. The success of these expeditions has varied considerably according to propagation conditions and the calibre of the operators involved, but undoubtedly the greatest achievement has been by Gus Browning, W4BPD, who, during the first week of September, made QSO No. 150,000 from the 48th country that he has visited.

How so many doors, previously thought to be locked and bolted, have been opened by this adventurer will make interesting reading and in due course Gus will publish a chronicle of his travels. This continuing expedition has not only been characterized by the large number of contacts effected but also by the manner in which they have been made. H.f. band operators should observe the quiet, efficient and courteous method of working adopted by W4BPD, noting particularly that MC's and the passing of reports by a third station have no place in the scheme of operations.

Control of the financial side and despatch of the QSL cards is in the hands of the World Radio Propagation Study Association headed by W4ECI, W4ZRZ and W3RIS, aided by a number of willing helpers. Despite the efforts made on behalf of W4BPD the door to operation from the VQ8 islands is still closed. Lest, however, silence be taken as an indication of inaction it is emphasized that this subject is being actively pursued and whatever the final result there can be no justifiable accusation of apathy.

Apropos the comments in *MOTA* last month EI8P writes to agree with the argument that publication of "scores" encourages contacts at any price and consequent poor operating. He further suggests that these tables should be dropped when things should improve at a very fast rate as the urge to keep one's place is no longer valid. EI8P opens up a new field of thought when asking "what about starting a campaign to regard contacts with expeditions as being invalid for the major certificates, such as EDXC. By all means let the expeditions continue but outlaw any that require more than 10/15 kc/s for listening purposes. If certain operators need 50 to 100 kc/s to pick out calls then either their equipment is below par or their operating ability has not progressed beyond the novice stage." Any comments?

News from Overseas

VS9MB at Gan in the **Maldives Islands** is now active on the 7 Mc/s band, usually operating c.w. on 7025 kc/s, although it is hoped to make an appearance on s.s.b. in the near future. So far 15 countries have been worked on this band and it is expected that autumn conditions will lead to

improved results. The consumption figures for QSLs at VS9MB have been running in the region of 1,000 a month, but in future cards will only be sent in reply to incoming QSLs.

4S7IW, Ian Wollen, remains the only 4S7 station active on s.s.b. and hopes to shortly have a 14 Mc/s beam at a height of 60 ft., giving superior results to the ground plane now being used. The KWM-2 is to be augmented by an external v.f.o., a gift from K8RTW, which will facilitate off-frequency operation when QRM is heavy.

VK4SS reports that operation from **VK4JQ** on Willis Island is erratic and it would seem that the high hopes at one time held for the removal of this spot from the rare list are not to be fulfilled. Pending the arrival of the Hammarlund equipment, operation from **VK9DR** on Christmas Island has been confined to c.w. **VK4SS** is on the lookout for UK stations on 7005 kc/s every day between 19.30 and 20.30, and earlier as the autumn progresses. The aerial used is a four element vertical broadside array aimed on Europe and the input 40 watts.

5N2JKO is now operating on Top Band and registered his first contact with Europe by working **DL1FF**. Subsequently QSOs were made with **GI6TK**, believed to be the first with a UK station, and **W1BB**, for yet another "first." **5N2JKO** expects conditions to improve later in the year; at the present time there is a noise level in Nigeria of up to S7. Operation usually takes place on Sunday mornings, and the most favourable time at the Nigerian end of the path is between 04.45 and 05.30 GMT. Stations in Kenya now available on this band include: **VQ4AQ** (1855 kc/s), **VQ4HE** (1802 kc/s), **VQ4IN** (1827 kc/s and v.f.o.) and **VQ4IQ** (v.f.o.).

VP8GQ will be leaving Signy Island next April and to those operators looking for a contact on Top Band suggests that they should search between 03.00 and 05.00 GMT during weekend periods. Openings have also been noted around 23.00/23.30, but these have been of extremely brief duration. **VP8GQ** uses **DHJ** as a marker—the longest continuous period during which this station has been audible was 30 minutes. The transmitting frequency of **VP8GQ** remains 1801 kc/s. At the time of writing no European QSOs have been made this season although stations have been heard, but a limited number of North American contacts have been made.

5N2JKO reports that activity on 3.5 Mc/s has been concentrated between 00.30 and 05.00 because of the high static level at other times. On Tuesdays, Thursdays and Saturdays **5N2JKO** may be found on or around 3785 (s.s.b.) or 3505 kc/s (c.w.) between 03.00 and 05.00. The 7 Mc/s band provides a reasonable amount of DX but the snag in using this band is that a call to a DX station produces hordes of Central European stations who completely cover the wanted DX. The pattern for 14 Mc/s is that the band opens at 05.00 with Europeans heard, between 07.00 and 07.30 there may occasionally be some VK stations heard, and the Europeans continue with good signals until about 10.00,

* Please send all news items to RSGB Headquarters to arrive not later than October 11 for the November issue and November 8 for the December issue.

after which time they are usually unworkable. JA, KR6 and other Far East areas peak between 12.00 and 15.00, whilst Europeans make another appearance between 16.00 and 19.00, with South American stations peaking about 20.00. North American signals are workable between 21.00 and 22.30, but little is heard on the band after the latter time. The 21 Mc/s band opens between 11.00 and 16.00, and there is activity on 28 Mc/s usually in the period 14.00 to 18.00, with 17.00 the most reliable time for Europe.

There are now some 26 licensees in Nigeria but a number of these are not active. 5N2ACB is on c.w. only, mainly on 7 and 14 Mc/s; 5N2BRG is going to New Zealand at the end of 1963 and 5N2CKH is travelling round West Africa on business, but is too busy to include any Amateur Radio on his agenda. 5N2HJA now has his beam at 40 ft. and has changed QTH to PMB 5067, Ibadan. 5N2's LJM and RAM are a husband and wife combination now active on a.m.

and c.w. 5N2RSB and 5N2SMW, both members of the Royal Corps of Signals seconded to the Royal Nigerian Army, will finish their present tours shortly and will be proceeding to Northern Ireland and Germany respectively. 5N2JKO concludes by quoting G3SDN who misread his licence and made his initial QSOs as G3SND!

Contrary to information appearing in some of the DX journals, Angus Murray-Stone requests that, for the present, all QSLs should be sent via the RSGB QSL Bureau and not to the Hammarlund box number. Angus recently came on the air for the first time during his present overseas tour using the call MP4TAX.

Expeditions

The tally of countries visited by W4BPD rises monthly and a stay in Nepal, 9N1, is planned after the conclusion of the operations from Bhutan and Sikkim. During his

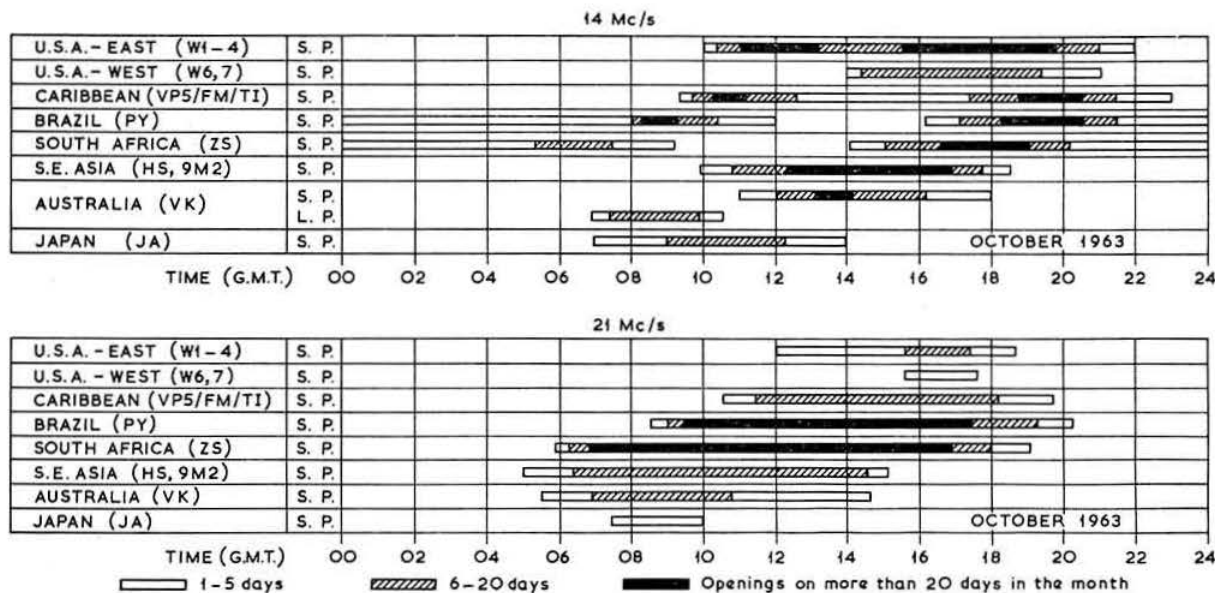
PROPAGATION PREDICTIONS

The highest values of daytime m.u.f.'s for the F2 layer will be attained during October and November in the Northern Hemisphere, and conditions on 14 and 21 Mc/s will be optimum, bearing in mind the current position of the sunspot cycle. Unfortunately 28 Mc/s will offer few openings, but on days with high m.u.f.'s contacts with South America may be possible between 11.00 and 17.00, and with Africa between 08.30 and 16.30. The 21 Mc/s band should show an improvement over preceding months and on favourable days contacts with all continents may be possible although the paths to the West Coast of North America and Japan will be workable only on isolated occasions. The 14 Mc/s band will again carry the main part of the DX traffic but with the shorter days it is to be expected that towards the end of September that there will not be any DX openings after 21.00. On favourable days contacts with Hawaii may be possible between 16.30 and 18.00. For optimum DX working on 7 Mc/s the path between the stations should lie in darkness, and it is likely that this band will produce good DX working immediately before and after midnight. Conditions on 3.5 Mc/s will

generally be inferior to those being experienced on 7 Mc/s. It will be found that conditions will favour stations located towards the South of Europe, and better DX working will be possible from Austria and Switzerland than from the northern part of Europe.

Contacts produced by reflection from the auroral zone may be occasionally possible on 28 and 21 Mc/s and for this type of working directional aerials should be pointed towards the North irrespective of the location of the station being heard or worked. Auroral reflection imparts a characteristic rough note to c.w. signals. A programme investigating the properties of auroral reflection QSOs is to be undertaken during the IQSY, and details of any contacts effected by this method may be sent to G2BVN.

The provisional sunspot number for August 1963 was 33, with periods of greatest activity lying between the 1st and 6th and between the 20th and 25th of the month. Predictions of the smoothed monthly sunspot number for November and December are 19 and 18 respectively. The Zurich Observatory reports that the first sunspot of the new cycle appeared on August 28.



stay in Tibet Gus reports that on three occasions the party of six jeeps had to move quite quickly, but no incidents resulted! After returning from AC4, W4BPD operated from Pouchling as AC7A, the new prefix resulting from the decision of the King of Bhutan to divide the country into three radio "districts," AC7, 8 and 9. On several days operation has been shifted to 7 Mc/s at 18.00 but no signals have been heard at this time. G3LPS worked AC5A/4 on 7 Mc/s but shortly after midnight.

Operation from Sikkim under the call AC3PT commenced on September 15 when signals were peaking over S9 around 16.00.

A multi-operator station is planned for Aves Island during the period of the CQ WW DX Contest (phone section) when activity will be concentrated on s.s.b. signing YV0AA.

Other trips said to be in the offing include a stay on Easter Island by WA2WBH for a period of 7 to 10 days during January 1964. Power is apparently available only between the hours of 00.00 to 05.00. There are rumours of a trip which will include Anguilla and St. Martin to commence at the end of the first week of October, the prime movers being K4UTE and VP7LG. ZS6BBB and ZS6YQ will be visiting ZS8 and ZS9 during January, probably spending five days in each country.

During his stay on Alderney, GC2HFD/A amassed a total of some 600 QSOs with 60 countries in the period of 18 days. Most of the activity was concentrated on 14 Mc/s, although some operation took place on 7 and 1.8 Mc/s. A high noise level on the latter band restricted activity and the best DX was GI6TK. The address for direct QSLs appeared in QTH Corner for September.

JA1BRK/JB8 and JA1HQG/JB8 have been operating from Toroshima Is. on c.w. and s.s.b., and QSLs should go via JA1CRR (see QTH Corner). At the time of writing the status of this island, relative to DXCC, is not known, and all rumours are being ignored.

Hammalund report that 3000 QSOs were made from Nauru (VK9BH) and 8000 QSOs from Corsica (F9RY/FC, etc.). It was hoped that QSLs for these operations would be distributed in early September and October respectively.

It has now been established that the recent operation by VP2GAC as VP2CC/C from Carriacou Is. will count for Grenada.

The visit by VS9ADV to Masirah Is., and the s.s.b. operation on the crystal controlled frequency of 14,130 kc/s made amends for the inactivity of club station VS9OC during recent months. VS9ADV/VS9O counts as Muscat and Oman, a separate country from Bahrein, Qatar and the Trucial States.

The RSGB Countries and Zones List has been revised to incorporate recent alterations and is available from Headquarters, price 9d. post paid.

Rumoured and projected expeditions include:
 October (early) AP5 (East Pakistan) by W4BPD
 October Anguilla, St. Martin, etc., by K4UTE/VP7LG
 October 26-27 YV0AA, Aves Island
 October (late) Kuria Muria by Aden group
 January Easter Island by WA2WBH
 January ZS8 and ZS9 by ZS6BBB and ZS6YQ
 UW0IH/0 located on Wrangel Island was worked on 14 Mc/s c.w. by G3YF and G3AAE on September 10, the first day on which this station was reported. Wrangel Island was deleted from the DXCC countries list w.e.f. September 1, 1960, due, it is believed, to inactivity from this spot.

Contests

No official details of the VK/ZL Contest have been received but it is understood that the dates of the two sections are:



Operators of GB3RAF, the RAF Amateur Radio Society's station, which was the leading multi-operator entrant in the CQ World Wide Contest earlier this year. From left to right, G3ROB, G3UG, G3GJQ, F/Lt. Griffiths (Honorary Secretary), G2BVN, Mr. Griffiths junior, GW3IEQ and G3HRY.

Phone October 5 10.00 to October 6 10.00
 c.w. October 12 10.00 to October 13 10.00

Logs should be sent to the Federal Contest Committee, WIA, Box 638J, GPO, Brisbane, Australia, to arrive not later than January 19, 1964.

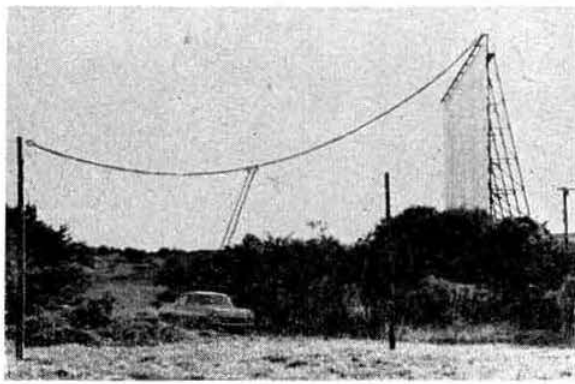
A summary of the rules for the CQ World Wide DX Contest, the phone section of which takes place on October 26/27, appears on page 262. Log sheets will be available from G2BVN by sending a s.a.s.e. (foolscap size).

The positions of the leading stations in the Seventh CQ World Wide Single Sideband Contest are shown below.

All Band, Single Operator		Multi-operator Single Band Leader	
DL3LL	334,110	UA1KBW	177,282
W2VCZ	223,080		
UA2AW	217,288		
UA3CR	186,048		
K3UDK	167,162		
Single Band, Single Operator		England	
14 Mc/s		G4CP All band	160,556
HL9KH	313,728	G3NFV All band	42,946
SM5BLA	193,280	G2ABB All band	22,960
TF2WHB	159,444	G3NMH 14 Mc/s	46,200
EA4GZ	128,188	G3KZQ 14 Mc/s	41,160
UA1MU	122,104	G3MEA 14 Mc/s	35,192
		G3OIZ 14 Mc/s	12,862
		G3NWV 14 Mc/s	3,774
		G3PEU 3.5 Mc/s	14,006
3.5 Mc/s Leader		Scotland	
4X4DK	19,008	GM3JDR 14 Mc/s	44,200
		GM3CIX 14 Mc/s	37,400
7 Mc/s Leader		Northern Ireland	
K2GXI	14,632	GI6TK All Band	22,278
21 Mc/s Leader		Eire	
KP4MA	27,168	EI8P 14 Mc/s	93,000
Multi-operator All Band		Isle of Man, Multi-operator	
GB3RAF	232,140	GD6UW All Band	12,322

These results have been made available by the courtesy of K2MGE/K2HEA, who have so quickly completed the laborious task of checking the many logs. Sidebanders everywhere will surely join in acclaiming the efforts of Dorothy and Irv. It will be noted that the leading all band multi-operator station, and running third in the tally of highest scores on a world wide basis, is the Headquarters station of the Royal Air Force ARS at Locking, GB3RAF. Amongst the English

station certificate winners are **G4CP**, **G3NMH** and **G3PEU**. **K2MGE** mentions that the printer's error in the rule sheets, the let-down in conditions and the emergence of many multi-operator stations, provided the organisers with many headaches, but that plans are going ahead for the next contest of this series.



ZS2FM of East London, South Africa, suspends one end of his Top Band aerial from the top of an outdoor movie screen out in the country well away from the city's noise. During a series of summer 160m tests he worked **W1BB** twice. In addition to low frequency activities, **ZS2FM** is interested in all bands up to 10,000 Mc/s and is editor of "Feedback" magazine.

(Photo via **W1BB**)

Awards

The White Stick Award is sponsored by the White Stick ARC for working at least 50 blind amateurs with no more than 10 in the applicant's own country. Contacts must have been made after January 1, 1963, using any band or mode, and QSLs must show that the operator is registered as being blind, or state that he is a member of the White Stick Club. GCR applications together with 10 IRC, or the equivalent, should be sent to the custodian F. A. Robb, **G16TK**, 125 Downshire Road, Holywood, Co. Down, Northern Ireland. **G16TK** would be pleased to have the names and addresses of blind operators known to readers for inclusion in the register that he is compiling.

The Award Hunters' Club International Inc. has undergone a change of organization w.e.f. September 1, 1963, and interested readers are invited to write to the General Secretary of the Club, **OH2YV**, for further information. The address is: Isokaari 4-B-30, Lauttasaari, Finland. The AHC list the following awards by Scandinavian Member Societies of the IARU:

Denmark: OZ-CCA. (Classes I and II) by EDR, PO Box 335, Aalborg, Denmark.
Finland: Finnmaid, OHA, OHA-100, OHA-300, and OHA-VHF by SRAL, PO Box 306, Helsinki, Finland.
Norway: WALA by NRRL, PO Box 898, Oslo, Norway.
Sweden: WASM, WASM-II and WASM-144 by SSA, Enskede 7, Sweden.

The latest volume of the *Directory of Certificates and Awards* will be available from October 1 and may be ordered through **G2BVN**. Each volume of the *Directory* costs 18s. 6d., with a three ring binder as an extra at 7s. 6d. The *Directory Extra News Letter*, incorporating the former *DX-QSL-NL*, is available at 15s. for four quarterly issues.

Around the Bands*

Very few reports again this month although conditions have been quite interesting and even the low frequency bands are looking up now.

*Compiled by J. G. Cottrell, **G3PSY**

B.R.S.19107 (Beckenham) listening on 1.8 Mc/s reports hearing **W1BB** at 579 (04.15) working **5N2JKO**, **W2IU** (04.30) and **ZB1BY** (02.00). Undoubtedly this band has some interesting spots for those who keep the night watches! No other reports available this month for this band.

B.R.S.20317 (Bromley) reports improving evening reception on 3.5 Mc/s with some DX to be heard. **6OIND** at **S6** (22.20) was noteworthy, as were **VS1LP** (22.47), **VQ4IV** (23.00), **EP2RC** (23.10), **VP8GQ** (23.57), **PY1BTK** (00.07), **KV4CI** (00.05). The WAE and AA tests were responsible for much of this DX. Also heard were **UA9DN**, **UA9GN**, **UD6BD**, **UD6AM** (20.00), **5A1TW**, **5B4CZ** and **VE1ZZ** (23.43), all in the evening. **B.R.S.19107** (Beckenham) heard **YV5BPJ** at 05.30 on s.s.b. working **Ws** whilst c.w. yielded **UD6AM** (22.00), **VQ4IV** (22.05) and **5N2JKO** (02.40) working Europeans including UK stations.

VP8GQ found Top Band open for UK contacts on September 13 and 15 and amongst the stations worked were **G3GRL**, **G3MYI**, **G3OHX**, **G3OQT**, **G3OUV**, **G3PQA**, **G3RAU** and **G3RBP**. On both occasions the openings lasted only 15 minutes, although UK stations had been readable at **VP8GQ** since 03.00. The reports exchanged with **G3GRL** were 589 both ways! Top Band contacts were also made with Canadian and North American stations.

On 7 Mc/s there is plenty of DX to be heard. **B.R.S.19107** heard **5N2JKO** (01.45), **OA4NKY** (05.30) most mornings and **VK/ZL**'s available most mornings all on s.s.b. On c.w. **KC6BO** (15.45) was heard working into Europe, with **AC7A** (17.40) at the low end of the band. **HL9KH** (19.50), **JA3ZF** (20.20), **JA5FRV** (17.00), **VU2PF** (20.49), **VQ2WR** (23.50), **ZS1A** (03.46), **ZS6DF** (04.45) and **5H3HD** (20.40). **B.R.S.20317** (Bromley) provides a continental roundup with **KC6BO** as the star performer.

Europe—**IS1ME** (16.00).

Asia—**EP2RC** (15.27 onwards), **EPIAD** (16.55), **VS1LU** (17.43), **VS1LP** (23.15), **VS9AAX** (19.45), **JA1AEA** (16.11),

QTH Corner

ACTA via **W4ECI**
FR9Y/FC via **H89TL**
F9UC/FC via **DL9PF**
FP8AS via **W2EQS** (home call)
FP8BC via **W1Y1S** (home call)
FP8CK via **W2JAE** (home call)
HL9KD via **WA2IGR** (home call)
HL9KR E. Quinn, DET8, 6146 AFAG, Box B23, APO 18, San Francisco, Calif., USA.
HS1X via **WA2WCB**
JA1BRK/JBB via **JA1CRR**, 3-16 Yoshino, Minami Yokohama, Japan.
KG4AN via **K0GVB**
KIKSH/KG6 via **W1ETF**
KP6AZ via **WA6FXO** (home call)
MP4DAE B. Croskie, c/o Schlumberger SA, Adma, Das Is. via Bahrain, Arabian Gulf.
MP4TAS Box 300, Abu Dhabi, Trucial States, Arabian Gulf.
OH2EW/OH0 via **W2CTN**
PY1BCR (1962 operation only) **PY1CK**, Box 1044, Rio De Janeiro, Brazil.
PY7AKW Box 1043, Recife, Brazil.
PX1BO via **F2BO** (home call)
VE3BGV/SU Sgt. W. McLaughlan, 56 Canadian Signal Sqn., CPO 5049, Montreal, Canada.
VP2MM via **K8ONV** (home call)
VR2DK via **W2CTN**
VS9ADV/VS9O D. V. Payne, Box 4297, Aden.
YA1AN via **DL3AR**
ZD8HB via **RSGB**
ZD8WF via **W3PN**
ZD9AM R. Johnson, P.O. Box 197, Benoni, Transvaal, South Africa.
ZK1BV G. W. Ashton, Aitutaki, Cook Is.
3A2CP via **G3HPH** (home call)
6O1KH via **OEI5I**
6W8WS Box 3028, Dakar, Senegal.
9G1EE via **G3LMH** (home call)
9Q5PS Box 1071, Stanleyville, Congo.

RSGB QSL Bureau: **G2MI**, Bromley Kent.

JA5FRV (17.00), JA3ZF (20.45) and JA6AKW, HL9KH (16.21), UA0AG (18.22).

Africa—Plenty of activity and those heard included ZS2MI (18.41), 60IND (21.23), CR7IZ (23.43), VQ4IV (21-22.30), VQ4AQ (20.40), ZS1A, ZS2HI and ZS5FY, all between 18.00 and 19.00 GMT. 5N2ACB received regularly (23.20) and finally 5A2TW and 5A3CJ also to be heard frequently.

USA/Canada—Best time for openings seems to be 22.00 to 24.00 GMT when East Coast areas are to be heard.

South America—VP2MV (23.25), VP8GQ (23.18), CEIEK (00.00), PY5A7L, KV4CI (22.15), VP6WR (22.40), VK5KO (18.10), VK5ZP (22.00).

VSILU (Singapore), using 40 watts to a ground plane, worked AC5A, AC5A/4, HL9KH, HM4BI, numerous JAs, HC1DC, KC6BO, KG6NAA, KH6DIA, KL7BJW, KR6s, KR8s, KX6AJ, KX6BK, VKs, VK9DR (Christmas Is.), VQ2WM, ZE2KL, ZL1HY, ZS2MI (Marion Is.) and numerous ZSs.

A.3543 (Pitea, Sweden) reports c.w. signals from EP2RC (15.15), HC1DC (23.58), HL9KH (16.01), PY7ACS (00.20), VP6WR (22.35), VP8GQ (23.30), YA2TC (23.00), 5N2ACB (22.18) and 6YAXG (00.13).

The 40m band certainly has plenty of possibilities provided one can get through the interference.

Conditions on 14 Mc/s have improved during the month and for all round performance this is undoubtedly the most consistent part of the frequency spectrum. Starting early in the morning (05.00 GMT onwards) contacts with the North West territories of Canada, Alaska and West Coast US stations are easy to achieve. Signals from the Pacific area, e.g. VK, JA, KR6, KS6, etc., start to show up by 07.00 GMT or soon after. During the morning Africa and the Middle East appear and gain steadily in strength up to early evening. Antarctica, Central and South America and West Indies start coming in by mid-afternoon and are often roaring through by 18.00/20.00 GMT. For a period during most evenings it is frequently possible to make QSO's with stations anywhere in the sector bearing 100° east from north through Africa, the Atlantic and Western Hemisphere to bearing 300°.

G3YF (Chingford) illustrates the possibilities by reporting s.s.b. contacts with KB6CP (07.50), KS6BA (08.00), WA6FXO/KP6 (08.30), KM6CE (08.00), KS6BH (08.00), KM6BI (08.45), KR6RN (09.45) whilst c.w. found 6W8AC (08.10), 6W8AB (08.20), ZK1BV (07.45), KH6DUV (08.30), VR2EM (09.20), AC7A (13.15), AC5A/4 (15.30), TN8AF (17.45), VU2ND (17.50), UJ8AR (17.55), ZD8HB (17.55), TA2BK (18.00) and 9LITL (18.15). **G3AAE** (Loughton) logged c.w. during the month with ZK1BV (07.25), VR2DK (10.20), ZS2MI (11.30), FB8XX (13.00), AC5A/4 (13.45), JTICA (14.00), VS4RS (15.35), AC5A (16.05), AC7A (16.15), VQ8AI (16.30), MP4MAH (17.20), ZD7BW (18.00) and KG4AN (20.50). **B.R.S.24821** (Barkingside) reports 9K2AG (17.55), SV0WL (14.44), YU1LA (20.07) and BY1BOY (20.20) on a.m. **G3POI** (London) had some good QSOs with BV1USA (15.53), 9M2UF (16.03), JTICA (16.49), 457EC (16.52), AC7A (15.46), FR7ZD (17.07), VQ8AI (17.17), TU2AU (17.15), ZE4JS (18.17), HZ1AB (19.29), ZD8HB (19.20), VP2MM (19.49), TG9AD (20.13), VP4LC (21.24) amongst others. Your compiler **G3PSY** (Thorpe Bay) found plenty of interest on the band (c.w.) such as KG4AN (00.18), VE8CD (03.05), KL7MF (08.59), KL7BR (09.48), OH5VF/OH0 (09.35), VK3NR (08.00), KR6NG (16.24), EP2RC (17.08), AC5A/4 (17.17), ZS6IQ (17.57), EP2AS (18.39), 9Q5PS (19.07), TN8AU (19.26), VP8GQ (19.25), PZ1BW (19.50), OA4FM (19.33), VP4LC (20.04), EA8BK (20.07), MP4QDA (20.06), VP8HD (20.30), LU6FA (20.58), YV5BAA (21.35), WA6EXR (21.21), and W6MSM (21.39), the last two both at 57, and many other W6s appearing recently at this time, VP2AV (21.53), 4W1AA (22.58) (is he a phoney?—beam

direction is correct). **A.1798** (Winchester) heard s.s.b. from KR6GF, GM (16.22), VS1LO (16.40), MP4TAV (16.45), YAIAN (17.12), VS9ADV/VS9O (16.36), KG6IJ (16.15), VK9DR (15.45), W6PXH and many others (15.00 to 16.00), XW8AL (15.45), BV1US (15.50), XE2FL (21.08), HC2JT (20.52), HK3LX (21.08), TIZLA (20.50), TG9MO (20.55), VP9FD (20.55) and VP6WR (21.08). A.m. signals were heard from LX1PO (20.35), AP2MI (20.37), YV1BI (21.15), HI4XAB (21.16) and VP9FD (21.25). Finally **A.2498** (Peterlee) reports hearing s.s.b. from ET3RT (12.30), ET3PP (17.00), FG7XS (22.40), HL9KR (12.20), HPIJF (22.20), K7IWH/MM, coastguard icebreaker, QTH west of New Siberian Islands, KB6CP (08.10), KS6BA (07.30), PJ3AO (22.20), VK4FJ (13.20), ZL1AIX (07.50), 4U1ITU (09.00) and many other stations.

5N2JKO (Zaria) is able to work 3-5 Mc/s during the early mornings only but contacted DL, EI, G3GGS, G3PEK, G3PIT, G3RFX, G3RHJ, LA, HB, OE, OH, OK, SM, SP, VE1ZZ, VE2NV, W1 to 4 and 9Q5TJ, all on c.w. S.s.b. accounted for DL1KB, EI4Q, G3HDA, G3CDF, G16FK, OK2OP, PAOPK, SM2BJI, SM5GZ and VE2WM.

5N2JKO used 14 Mc/s s.s.b. to work CE5EF (20.00), EP2BQ (14.50), EP2DJ (17.00), ET3AP (20.00), ET3MEN (10.20), FG7X1 (19.50), G2HFD/A, GD6IA, G13CWY/M (13.20), LX1CO (15.20), LX1DE (18.00), OK5SSB, OK3KM (19.20), OX3KW (19.00), PZ1BW (21.00), PZ1CE (15.00), SV0WF (Rhodes, 16.55), TU2AU (18.00), UL7FA (17.15), VS9ADV/VS9O (15.20), VS9MB (15.50), ZD7BW, ZS3D (15.20), 3A2CP and 9M2GD/P (14.45).

A.3543 (Sweden) heard c.w. from FY7YL (20.24), KG4AM (23.17), HL9KB (14.34), KR6GF (15.30), JT1AG (15.35), UA0LL (13.20), 5H3JI (21.25) and 6W8AC (18.41), whilst s.s.b. yielded F9RY/FC (15.44), JTICA (15.40), KG6IJ (15.10), VK6RU (15.45), TI2KZ (20.05), VS9ADV/VS9O (15.11) and ZD7BW (19.48).

As ever 21 Mc/s seems to be more limited by activity than conditions. **G3AAE** (Loughton) reports 601KH (11.30) and 9U5BB (11.45) on phone and FB8ZZ (10.15), TL8AC (11.00), VP8GQ (14.00), 5R8BX (15.15) all on c.w. **B.R.S.24821** (Barkingside) heard 5N2EBL (18.34), 9G1EE (18.15), VQ2SP (19.05) and 9G1CC (18.04) all on a.m. **A.1798** (Winchester) heard a.m. also from PY1NBA, 5BQS, 5KE (18.00-20.00 GMT), 9G1EZ, EX, FA (20.00 GMT), 601KH (16.08) and 5X5JK (20.20). **G3PSY** (Thorpe Bay) worked c.w. with CR6FW (14.05), PY2AQ (20.46), YV5BRA (20.38), YV6BS (14.15), VP8GQ (13.38), VQ2IE (17.35), ZS6MM (16.17), TL8AC (16.25), 4X4MR (16.30), 5H3JI (13.32), 9Q5TJ (08.08). Listener J. R. Daws **A.3738** (Leeds) reports s.s.b. from KP4WD (19.31), YV5BPJ (19.40), LU5HG (19.52) and HI8XJH (20.17) whilst a.m. from PX1MO (19.16), 6W8AA (19.18), 9Q5HFE (19.40).

These reports indicate that the paths to Africa and South America are open regularly and give good signal strengths. Other areas are not much in evidence at the moment.

The 28 Mc/s band suffers even more from lack of activity although the opportunities are often there. **A.1798** (Winchester) heard CR6BX (18.15) and EA8DR (20.00) on a.m. amid the Europeans. **B.R.S.24821** (Barkingside) heard CT1JV (17.42) and UP2NM (20.00) also on a.m.

DX Briefs

WA6MAZ, who did an excellent job when handling the cards for VR3O, has now turned over all the logs for the latter call to Martin who is back in the USA. **WA6MAZ** and **WA6MFZ** will be moving at the end of the year to the Fort Myers of Florida where they will be making a permanent home after 22 years of travelling.

9G1EE is now back in the UK and any outstanding QSL cards should be sent via his home call **G3LMH**.

Christmas Island is now on the air again with s.s.b. under the calls **VK9DR** and **VK9MD** (**G3AAE**).

GM3JEQ/P is the subject of commendation by G2QY for his handling of the pile-ups that developed on Top Band during his recent tour of Scotland. Generally operating manners were good but there were apparently the usual sprinkling of stations bent on causing confusion.

Operators awaiting JTICA cards are asked to have patience for, whilst a few cards have been received, the bulk have not yet arrived.

A period of intensive operation from KC6BO on the Western Carolines was recently undertaken by W4YDH, and QSLs should go to his home address.

It is reported by DX'press that all newly licensed stations in Swaziland will have the prefix SD1.

* * *

Correspondents are thanked for their co-operation and acknowledgement is made to the West Gulf DX Club Bulletin, the LIDXA Bulletin (W2MES), DX'press (PA0FX), the Florida DX Report (K4IIF), The DX'er (WA6TGY) and DX (W4KVX). Please send all items to RSGB Headquarters to arrive not later than October 11 for the November issue and November 8 for the December issue.

Jamboree-on-the-Air

This year's Jamboree-on-the-Air will start at 00.01 GMT on October 19 and end at 23.59 GMT on October 20, 1963. The event is in no way a contest.

GB3BPH will operate on all bands from 2 to 160m at Baden-Powell House, Queen's Gate, London, S.W.7. GB3BPH will also be active during the week immediately prior to the Jamboree.

VE3WSB, the Boy Scout World Bureau station in Ottawa, will be active on 15, 20, 40 and 80m using a.m., c.w. and s.s.b.

GB3GBS in Great Yarmouth will be operational on all bands from 10 to 160m using a.m.

Reports on the reception of stations taking part in the Jamboree, particularly those overseas, should be sent to the British Organizer, L. R. Mitchell, G3BHK, "Katoomba," Tyneham Close, Sandford, Wareham, Dorset. Participation certificates will again be sent to all those forwarding reports to G3BHK, enclosing a stamped addressed envelope.

Special Events Stations

During the Royal Dublin Society's Scientific and Technical Exhibition from October 22 to 25 inclusive, members of the Irish Radio Transmitters' Society will be operating EI0RDS in the 3.5, 7, 14, 21 and 28 Mc/s bands on c.w., a.m. and s.s.b. On 144 Mc/s the station will operate on c.w. and a.m. On October 22, 23 and 25 EI0RDS will be active from 14.00 to 22.00 GMT and on October 24 from 10.00 to 20.00 GMT. QSL cards should be sent to the IRTS QSL Bureau, 24 Wicklow Street, Dublin 2.

Top Band Operation from Angus and Kincardine

On page 181 of the September issue of the BULLETIN, the call-sign given in the caption to the photograph should have read GM3JNO/P.

Teenage Net

A net, for teenage operators, has been started by G3OAG and G3RVR. All teenage amateurs are welcome to call in on Sundays at 11.30 a.m. on 3700 kc/s.

Can You Help?

● I. G. Mant, A.3776, 28 Wellbourne Road, Childwall, Liverpool, 16, who requires information on a German receiver covering 27.2 Mc/s to 33.4 Mc/s (dial marking 272 to 334) which is believed to have been used in tanks? The receiver uses seven Telefunken type RV12P4000 valves.

New Name for Marconi's

The name of the world's first radio company has been changed from Marconi's Wireless Telegraph Company Limited to The Marconi Company Limited.

This new title, which has the obvious advantage of simplicity, has been chosen to avoid the restrictive description of "wireless telegraphy" as the main occupation of the company, whose interests now include radar, sound and television broadcasting, telecommunications, aeronautical and maritime navigation and communication equipment.

Marconi's Wireless Telegraph Company Limited has been the title of the company since the beginning of the century, although it was not, in fact, the original name of the company founded by Guglielmo Marconi. The original company was proposed in 1897 and the draft prospectus bore the name "Marconi's Patent Telegraphs Limited." This title is amended on the draft, however, apparently in Marconi's hand, to "The Wireless Telegraph and Signal Company Limited," and this became the first official title of the company, registered on July 20, 1897.

CONTESTS DIARY

- October 5-6 - VK-ZL Contest (phone).
- October 6 - RAEN Rally (see page 195, September, 1963)
- October 12-13 - VK-ZL Contest (c.w.)
- October 19-20 - 7 Mc/s DX Contest (phone). (See page 67, July, 1963.)
- October 26-27 - CQ WW DX Contest (phone). (See page 262.)
- October 27 - Second 420 Mc/s Contest. (See page 137, August, 1963.)
- November 2-3 - 7 Mc/s DX Contest (c.w.). (See page 67, July, 1963.)
- November 9-10 - Second 1.8 Mc/s Contest. (See page 195, September, 1963.)
- November 16-17 RSGB 21/28 Mc/s Telephony Contests. (See page 126, August, 1963.)
- November 23-24 CQ WW DX Contest (c.w.). (See page 262.)

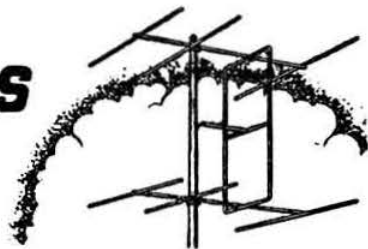
1964

- January 26 - 144 Mc/s C.W. Contest.
- February 1-2 - Affiliated Societies' Contest.
- February 15-16 - BERU. (For rules, see page 261)
- February 29 - First 1.8 Mc/s Contest.
- March 1 - 144 Mc/s Open and Listeners' V.H.F. Contests.
- *March 7-8 - Low Power Contest.
- April 5 - D/F Qualifying Event.
- April 12 - D/F Qualifying Event.
- April 19 - D/F Qualifying Event.
- April 26 - D/F Qualifying Event.
- *May 2-3 - First 144 Mc/s Portable Contest.
- May 10 - D/F Qualifying Event.
- *May 30-31 - First 420 Mc/s Contest.
- June 6-7 - National Field Day.
- June 14 - D/F Qualifying Event.
- June 20-21 - 70 Mc/s Contest.
- June 27-28 - D/F Qualifying Event.
- June 27-28 - RSGB 1250 Mc/s Tests.
- *July 4-5 - Second 144 Mc/s Portable Contest.
- July 12 - D/F Qualifying Event.
- July 19 - D/F Qualifying Event.
- July 26 - D/F Qualifying Event.
- *September 5-6 - V.H.F. National Field Day.
- September 13 - D/F National Final.
- September 19-20 - Low Power Field Day.
- October 3-4 - RAEN Rally.
- October 21-22 - Second 420 Mc/s Contest.
- October 31 - November 1 - RSGB 7 Mc/s DX Contest (Phone).
- November 21-22 - RSGB 7 Mc/s Contest DX (C.W.).
- November 28-29 - Second 1.8 Mc/s Contest.
- December 5-6 - RSGB 21/28 Mc/s Telephony/Receiving Contests

* To coincide with Region 1 IARU dates.



FOUR METRES AND DOWN



By F. G. LAMBETH, G2AIW *

V.H.F. National Field Day - Continental Activities

AT the beginning of the V.H.F. National Field Day on September 7, there was a high pressure system to the south west of the UK riding out over Northern France. Pressure was low to the north west with a warm front lying from Devon to N.E. England; the low pressure system became vigorous and its associated fronts sweeping across the country during the Sunday brought heavy rain and strong winds to most areas.

On 144 Mc/s conditions for inter-G working were good in the early stages; stations in the extreme West were heard working S.E. England as were those in Wales and North England. During the evening and night, and well into the Sunday, a considerable number of F, ON and PA0 stations were heard and worked by stations in the South of England.

There was some activity from Germany but to a much less extent. One G station was heard calling CQ in fluent German to be promptly called by another G also in fluent German. It is not known whether a QSO resulted and if so whether it was completed in German.

Scores, in number of contacts, were in many cases quite a bit better than last year. Several stations with QSO serials in excess of 150 on 2m were heard and one with 200 contest QSOs on the same band.

In addition to the usual tactics of using the best possible (and most inaccessible) sites, super efficient gear and aerials in order to get a high score, one station employed a most attractive and efficient YL operator during the closing stages of the Contest in order to get some extra QSOs—if they had used TV as well they might have made even more!!

On 4m activity seemed to be rather higher than was expected and was spread all over the country. From the South, the furthest heard was GI, but there may well have been others which were missed.

As far as contacts go on this band a number of stations were heard giving serials around the 50 and over mark, and one with 65 QSOs for this band, which indicates that activity was quite high.

On 70cm there was also quite a fair amount of activity and some reasonably long hauls were worked. It was rather difficult in listening around on this band to assess what sort of scores were being put up.

Overall operating seemed to be very good indeed and non /P stations who were not taking part in the Contest itself co-operated by making quick snappy QSOs so enabling competitors to get on with the job in hand.

A certain amount of c.w. operation was heard on 2m, and on a percentage basis even more on 4m.

The vast majority of stations were using distance in kilo-

metres from a large town for giving their QTH although there were some who used statute miles. QRA Locators were not used to any extent for inter-G working and when G-Continent QSOs were made QRA locators were given but the European stations were usually asked for a QTH as well, presumably because of a shortage of foreign QRA locator maps.

The usual crop of troubles in equipment occurred but by and large seemed to be overcome in spite of most stations suffering at some time with pretty awful weather.

There did not appear to be so many /M stations active as usual, possibly due to the rather poor weather.

G2JF (Wye, Ashford) considers that conditions on September 7/8 were very ordinary although he did make 184 contacts, including 56 G, 50 PA, 13 DJ/DL, 20 ON, 44 F and one LX, but considers that only his very good position made this possible. Other stations known by G2JF to have large scores were G3FRV/P (South Downs), G5ZT/P (Devon) and GW4LU/P; some of these, at certain times, had higher scores than G2JF. ON4ZN/P was a terrific signal and had 102 QSOs when G2JF had 85. Not many G stations appeared to be using QRA locators, so that at this stage one assumes that few of them will be entering the Region 1 IARU V.H.F. Contest.

G2BJY (Walsall) also considered conditions were not very good, although by Sunday midday there were at least 12



Derby and District Amateur Radio Society's 70 Mc/s station during V.H.F. National Field Day on September 7-8, 1963. Left to right, S. W. L. Bosworth, G3FSH, G3PDD, and H. Shaw.
(Photo by A.1706)

* 21 Bridge Way, Whitton, Twickenham, Middlesex. Please send all reports for the November issue to arrive by October 11, and for the December issue by November 8.

participants past the 100 mark. Some stations were heard working ON, PA and F around 04.00 GMT and F8VN/P was heard on A1 at 579 calling CQ on 2m without apparent result. Conditions seemed at their best between 1930 GMT until midnight on Saturday when they seemed to fall off—they were poor on the Sunday. No stations were heard further North than Lancashire and Yorkshire.

G2BJY operated from 20.15 to 22.20 GMT (Saturday), 03.00 to 04.20, 12.10 to 13.10 and from 16.01 to 17.31 (Sunday). No station was heard from the London area, or from Suffolk, Wiltshire, Norfolk or Cornwall, although G2JF was S9+ at times. G3FRV is thought to have been the loudest and most consistent of the DX portables.

G3FDW/P (Cumberland and Westmorland Group) was active on 70 Mc/s during V.H.F. NFD, in rain and wind on their eyrie on a Cumberland Mountain. After some difficulties necessitating a change to lower down the mountain, a start was made at 05.00 on the Sunday, and in the next eight hours 24 stations were worked. As far as is known these were the first 70 Mc/s QSOs with Cumberland, the first being with GM6XW/P (near Stirling). The best DX was G3FZL/P (251 miles) and G8RW/P (255 miles). GM, GI, GW and G were worked. G3FDW (Gosforth, Cumberland) is active on 70-279 Mc/s and tries to be operative most nights between 22/23.00 hours, also Sunday mornings.

G3LMG/P (near Okehampton, Devon) made 16 QSOs on 70-2 Mc/s but he had several reports that London stations were blotting him out owing to the very narrow bandwidth, so that some contacts were probably lost because operators did not realise that Devon was at last on the 4m map. G5ZT is on 70-2 Mc/s from the home QTH (skeds welcomed). He has had a QSO with G3EHY.

G3LHA/P was active in Rutland on September 8 during V.H.F. NFD and two hours operation brought 10 contacts. G5UM/P and G3FD/P were good signals. G3ENY/P in Shropshire was the best portable contact at 74 miles. Activity was lower than expected, and the lack of fixed stations was especially noted. G3LHA will be out again if the weather is suitable during the 420 Mc/s Contest later this month; but the site has not yet been decided on.

G5ZT/P (near Okehampton) worked 129 stations on 2m for an approximate claimed score of 29,737. He was delighted to work GM3IUB/P, the first time GM has been worked from the site. ONs, PAs and F were also heard. What annoyed many stations was the action of one very well-known station in calling "CQ-DX" and when called saying "I said DX only." During a major contest this does seem very "Snooty" indeed.

G3BJD/P was the Cumberland and Westmorland station during Field Day. In very bad weather they got away to a flying start, working some 55 stations, the best DX being G3FRV/P at 255 miles at S6/7 on phone. The Group has four stations active on 2m: G3BW (Whitehaven) on 145-86 Mc/s, G3BJD (Seascale) on 145-92 Mc/s, G3RHE (Seascale) on 145-84 Mc/s and G3OHK (near Washington).

GB2GC in the Channel Islands

On August 9 GB2GC visited Sark where the party consisted of G3PCR, G3ROP, G3SDP and SWL Bernard, assisted by G3OUF for the first evening. The arrival was delayed owing to a rough sea but with the help of a "potential" amateur, Patrick Perks (the island's electrical engineer), the 2m gear was set up by about 7 p.m. The skeds were quite successful with only three missed during the evening. Conditions were very good as the barometer was just beginning to fall. By 21.00 GMT numerous stations in the Midlands had been worked. The strongest signals from that area were from G3BA, G3DKF, G3RMB, G3KMT and G2ANS. A number of Welsh stations were

also worked including GW5BI, GW8UH, GW3ATM and GW3MFY, all over S9. Numerous stations in Southern England were worked for a total of just under 60 contacts. The last CQ call of the day was answered by G3OSS. The barometer continued to fall and by Saturday evening (August 10) conditions were very poor. Conditions did not improve on the Sunday. GC2FZC and a few French stations were the only contacts made during this period.

Operation on Alderney took place on August 13 from the Grand Hotel, about 180 ft. a.s.l. The operators were G3OUF, G3PSH and G3SHK. The first test transmission resulted in a contact with G3JXN (59) to put Alderney on the 2m map for the first time. Again almost all the skeds were kept, but conditions were not as good as they had been on August 9 from Sark. At 18.45 GMT G5YV (579) was worked for the best DX of the expedition, the distance being just under 300 miles. The strongest signals that evening were from G3OSS, G3HBW, G3HRH, G3FAN, G3NUE, G3BNC, G3FIH, G3DKF, G3LTF, and G3ICO who were all over S9.

At 12.30 GMT on August 14 G3AYC (London, W.1) was worked on sked at 59 with rapid flutter. In the evening conditions were rather variable. At 18.20 GMT G3AGN in Suffolk was worked at RST569, after this South Coast stations were worked until conditions improved later in the evening.

G3AYC was worked again at lunch time on August 15 at 59. Conditions in the evening were slightly better than on the previous day and G3RMB (56) and G8KL (569) were the best contacts. During the three evenings on Alderney about 80 contacts were made.

Despite an excellent location on Jersey near Les Platons (450 ft. a.s.l.) no contacts were made on August 18-19. Telephone calls to GC2FZC confirmed that conditions were a complete washout. Indeed it poured with rain almost continuously from August 17 until departure. Top Band was also used from the Islands with activity on 40 and 20m from Jersey.

All QSL cards should be sent to G3OUF, 80 Argyle Road, Ealing, London, W.13.

First Fully Transistorized F/EA QSO

F3SK (Biarritz) paid a visit to San Sebastian to arrange the first two way, all transistor test on 144 Mc/s. It was achieved without difficulty on phone on August 26 between F3SK and EA2BJ (who, F3SK says, is "but 77 years old and the oldest of the 'radio aficionados' of Spain." Between other performances on different bands, he achieved the first EA/W contacts some months after working F8AA, Reinartz, Schnell, and other old-timers.)

The equipment used at both stations was very similar, especially the transmitters. The power supplies were 12 volt batteries. Both transmitters can deliver about 400 mW on phone, and 800 mW on c.w. Modulation reaches 100 per cent easily, with less than 5 per cent distortion between 100 and 4000c/s. Both transmitters use six r.f. stages and 8 Mc/s (fundamental) third overtone crystal oscillators with, at F3SK, a 2N1143 transistor, and a 2N1742 at EA2BJ. An FT243 crystal in a special circuit gives high stability. The oscillator in each case is followed by a 2N1143 tripler to 72 Mc/s, a 2N1143 amplifier, 2N1143 doubler to 144 Mc/s, 2N1141 buffer at F3SK or a 2N1143 buffer at EA2BJ, a Pacific Semiconductor's 2N1506 neutralized grounded collector p.a. at F3SK, and a 2N1506 common base p.a. at EA2BJ. A d.c. converter utilizing a pair of 2N525s delivers 20 volts to all stages including the p.a. for phone, 20 volts to the first five stages and 30 volts to the p.a. for c.w. The modulator, designed for use with a dynamic microphone, includes a 2N525 first preamplifier, 2N525 second preamplifier, 2N525 buffer, and a pair of 2N525s in push-pull

class B. All the transformers and filter chokes were wound on C-cores.

The receiver at EA2BJ is a single conversion, all transistor superhet, which uses the following stages: AF139 (Siemens) first v.h.f. amplifier; AF102 second v.h.f. stage; AF102 mixer; AF115 s.e.o.; AF114 first oscillator; AF102 injection amplifier; AF117 first 10.7 Mc/s i.f. amplifier, followed by a Toyo 10 Mc/s crystal filter; four AF115 i.f. stages; AF115 a.g.c. separator; germanium diode a.g.c. rectifier; 2N338 silicon d.c. a.g.c. amplifier; detection diodes; several 2N525 transistors for a.f. amplification; and an AF115 b.f.o.

The superhet at F3SK is double conversion, and was displayed at the last London V.H.F. Convention. The line-up is as follows: T2028 (Philco) first v.h.f. amplifier; AF102 second and third v.h.f. stages; AF102 first mixer; AF115 60 Mc/s conversion oscillator; AF102 120 Mc/s frequency doubler; AF102 24-26 Mc/s first i.f. amplifier; AF102 24-26 Mc/s s.e.o.; four 2N247 455 kc/s i.f. amplifiers; 2N247 a.g.c. separator; germanium diode a.g.c. rectifier; 2N338 silicon d.c. a.g.c. amplifier; detector and noise silencer diodes; several 2N525 transistors for a.f. amplification; AF115 b.f.o. with zener diode stabilization; and an AF115 adjustable b.f.o. injection amplifier.

From the Biarritz location, F3SK's best phone DX, using a fully transistorized station, has been with F8XT, 250km north east, and F1BP 320 km east, although the most satisfactory was with G3FUR/P in Cornwall on September 9, 1962. The signal was comfortably resolved, but the good propagation made it a rare day.

Two Metre News and Views

G3KQF (Borrowash, Derbyshire) can now be found on s.s.b. again and is running a QV06-40A p.a. driven by a QV03-10 mixer; the s.s.b. drive being at 28 Mc/s from a G2DAF-type exciter. The linear has a 600V h.t. supply at the moment, but it can obviously be run at higher h.t. voltages. Other operators' opinions, and news of conditions under which their rigs are run, would be appreciated. The aerial at present is an eight element Yagi, beamed southward, but the 6-over-6 will be rebuilt when the present aerial is motorized.

G2JF (Wye, Ashford) has sent a photo of his new four square 6-over-6 J-Beam, with spacing between bays of two wavelengths, both vertically and horizontally. The feeding system is based on a design by G3HRH.† New stations worked by G2JF during August were G3FST, G3IXE, G3KSW, G3NKK, G3OVQ, G3OYZ, G3PKF, G3PSS, G3PYC, G3SDI and G6AW (we are glad to know that the latter is working again!).

Since May, G2JF has been maintaining a thrice weekly extended tropo scatter schedule with DL3YBA and DJ2BE over a range of 400 miles. Signals do not vary much and seem to be quite independent of propagational conditions and the weather. G2JF would welcome schedules with anyone over such extended ranges—the main requirements would appear to be a good location and a high gain aerial system. Many Americans are of the opinion that ranges up to 900 miles should be possible.

G3CCA (Oadby) was flooded out recently while on holiday and returned to find a ruined transmitter, h.t. transformer, and a chapter of accidents with QV03-20As! All appears to be in order again now, however, although it has caused delays to other projects.

G3CCH corrects a remark we recently made about OK stations on 2m and 70cm. It transpires that they are all crystal controlled on both 2m and 70cm, and the operators, some of whom he had the pleasure of meeting whilst on a visit to Czechoslovakia this year, are very enthusiastic indeed.

† "A Cubical Quad Array for the 144 Mc/s Band," by R. C. Hills, B.Sc.(Eng.), G3HRH, and P. M. Elton, G3GOZ, *RSGB BULLETIN*, April, 1959, p. 476.

All stations seen and heard whilst in Czechoslovakia appeared to be using very modern ideas, and c.w. is far more popular than in this country. The occasion of his visit was the V.h.f./U.h.f. Convention at Gottwaldov on July 26-29. The Czechs hope that more G stations will be represented on future occasions.

Some Polish stations to look for are the following:

S²SM QRA Locator KM66G Warsaw 144.729 Mc/s.
SP3GZ QRA Locator IM71A Wolstyn 144.152 Mc/s.
SP3GT QRA Locator IL76A Wroclow 144.38 Mc/s.
SP3PJ QRA Locator IM45 Poznan 144.135 Mc/s.
SP9ANH (MS) who has worked G5YV 145.106 Mc/s.
SP5ADZ (MS) 144.760 Mc/s.

During the Perseids meteor shower, DL3YBA nearly worked LZ1AB (144.172 Mc/s) on August 10, and OK2WCG worked UR2CQ (144.056 Mc/s). The date of the latter is believed to be August 13. OK2HK and SM4CDO were also active; OK2LG reported hearing OH2HK for four minutes out of five! DL3FM reports that DL3YBA recently worked UA1DZ by m.s.

We note from a W1AW bulletin of August 29 that EI4R/P was to conduct Transatlantic Tests on 144.22 Mc/s during the last two weeks in September. Up to the time of going to press, no results had been reported.

Operating time during August was at a premium for G3HRH (Digswell, Herts), as most of the month was spent working against a deadline to produce the 2m station for use at G8LM/P during V.H.F. N.F.D. However conditions on 2m were not very exciting during that month, in contrast to the final days of July, which produced excellent phone contacts with HB1ADT/P, F1BO, F1DT, F2XO and PA0PAL. Time out was taken in the middle of August to work GB2GC in both Sark and Alderney, the latter producing a report of S9 on phone. Nothing was heard of the expedition from Jersey—this seems to have been the same with everyone, and G3HRH presumes that they were in fact non-operative from that island. On the evening of August 14 F9NJ (Lille) was an excellent signal on phone.

As a relief from the time spent at the workbench during August, and in anticipation of going QRT for several weeks later in the year, when the station is to be transferred to a new outdoor shack, G3HRH has concentrated on operating since September 1. This sustained effort has produced a total of 40 counties and six countries on 2m, and eight counties and two countries on 70cm in a period of 15 days of operating. Conditions at the beginning of the month were pretty low, persisting right through the weekend of V.H.F. N.F.D. to September 13 when the band showed signs of improving. The early days were enlightened only with contacts with GM3IUB/P in Kirkcudbright and Wigtown, the latter being a new "all-time" county. However on September 13 excellent phone signals were heard from the North-West, and F8MX/A was worked on 70cm at 59+ both ways for a new country on that band. On September 14

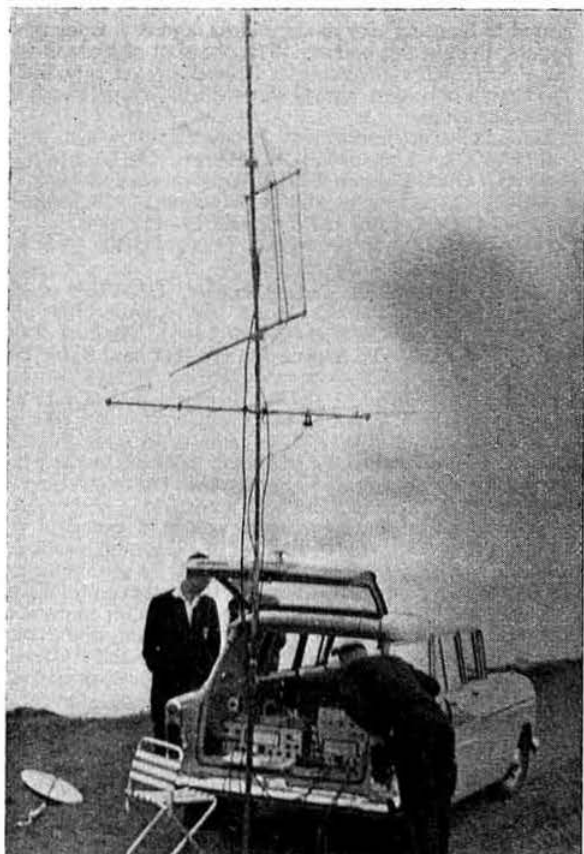
V.H.F./U.H.F. BEACON STATIONS

Call-sign	Location	Nominal Frequency	Emission	Aerial Direction
GB3CTC	Redruth, Cornwall	144.10 Mc/s	A1	North-East
GB3VHF	Wrotham, Kent	144.50 Mc/s	A1	North-West
GB3GEC	Hammersmith, London	431.5 Mc/s	A1	East

RSGB V.H.F. BEACON STATION GB3VHF

The frequency of the Society's v.h.f. beacon transmitter at Wrotham, Kent, when measured by the BBC Frequency Checking Station, was as follows (nominal frequency 144.50 Mc/s):

Date	Time	Error
August 20, 1963	14.04 GMT	298 c/s high
August 27, 1963	17.55 GMT	250 c/s high
September 3, 1963	12.40 GMT	300 c/s high
September 10, 1963	14.08 GMT	152 c/s high
September 17, 1963	10.50 GMT	190 c/s high



During the 23cm tests on June 23, 1963, G3HBW/P operated from the Worcestershire Beacon (1395 ft.). The equipment for 2m, 70cm and 23cm was carried in the rear of the car, and the aerials could be rotated from the operating position. The 23cm "dish" on the left was found to give inferior results when compared with the corner reflector aerial system. (Photo by G3MTI)

conditions had moved round to favour the South-West path, and GB3CTC was a good 57 signal all day with very little fading. Spasmodic operation during the day produced contacts with GW3PPQ (Llantwit Major, Glam.), G3IGV (St. Austell), G3ICO (Yeovil), GW3MDY and G3PD as the more distant stations, all of whom were very good signals in Digswell. The following day produced a large number of Midland and West Country stations at good strength in the morning, including a QSO with G2CIW on 70cm. In the evening the band had opened to the Continent, with stations heard in F, ON, PA, and DL, although others were obviously hearing the German stations at better strength than they were received at G3HRH. Most of that evening period was spent listening, although contacts were made with PA0LX, G3ILD (Darlington) and DJ7HY (near Munster) on 2m, and an unexpected phone QSO at 59+ both ways with F9NJ on 70cm.

G3HRH runs 150 watts input to a pair of QY3-125, modulated by a pair of 811 in class B z.b. The aerial system is two 8-over-8 slot fed beams stacked vertically at a mean height of 35 ft. and the receiver a home-designed 6CW4-6BQ7A converter feeding on Eddystone 680X at 10-12 Mc/s. The 70cm gear comprises a QV03-20A tripler/QV03-20A amplifier arrangement at 35 watts input, and a single 8-over-8 slot beam at 20 ft. The converter is an A.2521 r.f.-GEX66 mixer, into a BC348.

Amateur TV

G3NDT/T (Harrow) who is Hon. Secretary of the British Amateur Television Club, comments on G5UM's remarks on page 121 of the August issue. In spite of these, he says, there is activity on most nights of the week, although this activity lays emphasis on Amateur TV rather than ordinary sound radio, which was the main point of G5UM's comments. G3OUO/T, G3OPB/T, G3RAX/T, G3OUH/T, and G3NDT/T are frequently to be heard. G3OUO/T and G3NDT/T are exchanging excellent pictures and both stations are seen and heard at G3OPB/T, some 20 miles away. G3GDR and G3MCS have taken pictures, and G3GDR/T has been received. Although not a vision strength signal, G3NOX/T can often be heard. G3NDT/T has operated mobile TV on several occasions, and recently made the first two-way TV contact to mobile—G3NDT/T transmitted pictures to G3NOX/T and received excellent pictures in return whilst on the move—using 230 volts from Nife Cells! G3OUO/T-G3OUH/T helped with the Mobile TV experiments and each in turn has received pictures from the "roving eye." The best mobile TV DX so far is five miles using a QV03-20A tripler with an omni-directional cylindrical slot aerial. We are very happy to have this news of Amateur TV, which is growing apace, and shall be very glad to hear of other stations' work in this interesting and rewarding field of activity.

G3CCA (Oadby) now has a 70cm converter employing Nuvisors, and the new RCA 7587 tetrode as the i.f. amplifier.

SECOND 420 Mc/s CONTEST

October 27

For details see page 137, August, 1963

More 1296 Mc/s DX

G3LTF (Galleywood) worked F8MX/A on 23cm for a 133 miles QSO, on September 14 at 21.30 GMT. The reports were G3LTF to F8MX/A S8 and from F8MX to G3LTF 439. F8MX later peaked to S9 but QSB was present. G3LTF was running about 3-4 watts output from a 3CX100AS with 20 watts input. The aerial was a 4 ft. dia. dish about 20 ft. above ground. G3LQR (Colchester, distance about 150 miles) also worked F8MX at S9 with very little QSB. On September 15, G3LTF heard signals from PA0COB (The Hague) RS56, but was not heard by the PA. He also heard signals from PA0VLP (Eindhoven) at 190 miles. G3NBQ (Coventry) heard G3MAR/P at 22 miles S9+ during the V.H.F. National Field Day. The aerial is 8-over-8 slot fed 38 ft. high. G3NBQ has been listening for nearly 12 months for a signal.

NORTH WEST V.H.F. CONVENTION

QUEEN'S HOTEL, PICCADILLY,
MANCHESTER

SATURDAY, OCTOBER 5, 1963

Talk-in Station

G3OHF/A

The programme will commence at 2 p.m. with visits, discussions, a trade show and a display of equipment. Tickets may be obtained from Fred Nichols, G3MAX, 52 Great Ancoats Street, Manchester 4 (Telephone: Cen 6276).

Organized by the North West VHF Group

Mobile Column

By E. ARNOLD MATTHEWS, G3FZW*



Among those at the Reading ARC picnic were (left to right) G3MCG, G5TP, G5YM, G5DF, G5HN and G8SC.
(Photo by G3OMU)



G3NAJ and G3LWJ at the Derby Rally talking to G3PUJ and a short-wave listener from the Stainton Harold Cheshire Home.
(Photo by A.1706)



The reception area at the Derby Mobile Rally held at Rykneld School, Derby, on August 18.
(Photo by A.1706)

THE Britannia Rally, organized by G3NBR on behalf of the Royal Naval College Radio Club, and G3ABU on behalf of Torbay ARS was held at the RN College, Dartmouth on August 11. There was an estimated total attendance of 350 persons and 50 mobile-equipped cars. DJ2SR was awarded the prize for the furthest from home, and G3GRA came 212 miles from Crawley to win the award for the greatest distance travelled on the day of the rally. G3NUE and G3IWW won prizes for the longest distance contacts with the rally stations on 2 and 160m respectively. Awards for the best overall mobile rigs, judged by the R.R., G5UH, and G5ZT, were won by G2HJY and G3OCB, whilst a mobile treasure hunt was won by G5UG, with G3XC and G3OCB second and third. The talk-in stations were G5ZT/P, assisted by G3IEA on 2m, and G6VJ operated by G3LHJ and G3LKJ on 160m.

"A rally with a difference" is the style chosen by Reading ARS, judged by the report from G3EJA on the "Picnic" held on August 25 at Pangbourne. "There are no lucky draws, go-karts or sideshows," he writes, "just families getting together with their tea, and having a good time."

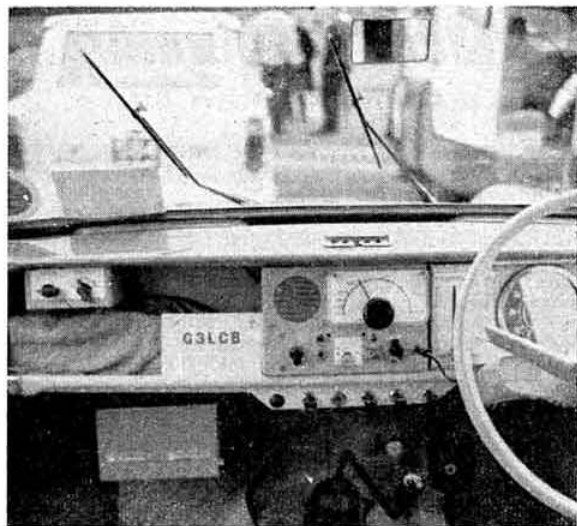
Highlight of the event was the TV gear demonstrated by

* 1 Shortbutts Lane, Lichfield, Staffs.



A small part of the crowd at the Junk Sale at the Derby Mobile Rally.

(Photo by A.1706)



Among the visitors to the Reading Amateur Radio Club's picnic at Pangbourne on August 25 was G3LCB/M whose equipment is fitted neatly on to the parcels tray of his car.
(Photo by G3OMU)

G3NDT/T and G3OUO/T. Another centre of interest was G5YM's whip aerial, which at 25-30 ft. can hardly be classed as mobile! Over 100 people attended and over 40 cars were /M equipped.

The Derby Radio Societies Rally held at Rykneld School, Derby, on August 18 attracted an attendance of 4,200 people in 604 cars, of which 163 were /M equipped. The attractions were hi-fi, judo, radio-controlled aircraft, and Fire Brigade displays, a Silver Band Concert and various trade stands. Despite being moved out of doors this year, the junk sale was somewhat hampered by lack of room! A children's treasure hunt was a great success and over 50 prizes were distributed.

The big raffle prize, an electric dishwasher, was won by



G3DSA/M receiving the Top Band prize from Mrs. Melville, wife of the President of the Derby and District Amateur Radio Society.
(Photo by A.1706)

G3HLC, and a transistor portable and an electric fan heater were won by G3BDS and G3CTD respectively. Three prizes are still not claimed: pink ticket No. 1709 and 3998, and green ticket 3685. Holders may claim from G3KQF up to October 18.

A rather novel "spot" mobile competition conducted by randomly stopping a tape recording of all mobile contacts with the talk-in stations were won by G3DSA and G3NAO.

Society personalities who attended included the Z.R. G3FUR and the R.R. G4JW.

This annual event has grown steadily until it has now reached the limit of its present venue. This has not deterred the organizers, under the chairmanship of G3KQF from fixing the date for the 1964 Derby Rally for August 16.

October Rally

The second mobile picnic organized by the Northern Amateur Radio Mobile Society, will be held on Sunday, October 6, 1963, from 2 p.m. The venue will be the car park at the top of Sutton Bank, on the A170 between Helmsley and Thirsk. There will be a talk-in station, and all mobiles will be welcome whether members of the society or not.

* * *

Reports for inclusion in the November issue should reach G3FZW by October 10.

RAEN Notes and News

By E. ARNOLD MATTHEWS, G3FZW *

Around the Groups

Hampshire Group held a meeting at Eastleigh Police station on August 6 to hear a lecture by Insp. D. Shiers, G3JUG, on "The Police Radio System." G3JUG was introduced to the meeting by Supt. Cansfield of Eastleigh and described the latest police radio equipment, including car and motorcycle mobile, portable and base stations and the system of operating the links required to give county coverage.

At a meeting with Hampshire St JAB on August 29 plans were discussed for an exercise held at Hurn Airport late in September. The exercise will be reported in the next *RAEN Notes and News*.

Manchester AC, G6DN, reports that at the special request of the police, a selected number of his group members participated in an exercise held by the Northern Hospitals Board and Manchester City Police on August 18. The station at Police HQ and five mobiles at hospitals and other points were manned. Thanking Raynet members for their services Chief Supt. Ashton expressed himself as quite satisfied with the way the messages had been handled.

Developments in Swindon

An enquiry about Raynet has been received from J. Glenn, G3CER, of "Shiralee," Post Office Lane, Broad Hinton, Swindon. Those interested in the formation of a group in the district are asked to contact him.

Personnel

Change of Address

The address of the Manchester AC, C. M. Denny, G6DN, is temporarily c/o Mrs. Ross, 3 Tebay Avenue, Cleveleys, Blackpool, Lancs.

R. Parsons, G1HXXV, has resigned as AC for Belfast.

* 1 Shortbatts Lane, Lichfield, Staffs.

Society News

Society Trophies and Premiums

The Council has made the following awards for 1963:

ROTAB Trophy to Mr. Frank Hooson, G3YF, in recognition of his consistent DX work over a period of many years. Mr. Hooson has 320 DXCC countries confirmed and is active on all bands from 1.8 Mc/s to 28 Mc/s.

Founder's Trophy to Mr. F. W. Fletcher, G2FUX, in recognition of his outstanding services to the Society in connection with the Golden Jubilee Celebrations as Honorary Business Manager.

Calcutta Key to Mr. Norman Caws, G3BVG, for outstanding service to the cause of international friendship through the medium of Amateur Radio with special reference to work at the Malmö IARU Region I Conference.

Courtney Price Trophy to Mr. G. R. B. Thornley, G2DAF, for outstanding technical development in the field of Amateur Radio with special reference to his description of the G2DAF Linear Amplifier published in the April 1963 issue of the RSGB BULLETIN.

Ostermeyer Trophy to Mr. A. L. Mynett, G3HBW, whose Transistorized Receiver for the 432 and 1296 Mc/s Bands was considered to be the most meritorious piece of home-constructed equipment described in Volume 38 of the RSGB BULLETIN.

Norman Keith Adams Prize to Mr. J. C. Ayling, G3PNA, for his article "A Hydraulically Operated Telescopic Mast" published in the March 1963 issue of the RSGB BULLETIN.

Bevan Swift Memorial Prize to Mr. R. G. Flavell, G3LTP, for his articles "V.H.F. Weather (Part One)" and "200 Plus on Two" published in the March and May 1963 issues of the RSGB BULLETIN.

It has been decided not to award the **Wortley Talbot** and **Varney Trophies** for 1963 as no contribution published in Volume 38 of the RSGB BULLETIN appears to fall within the scope of the rules governing the award of these trophies.

Maitland Trophy

The Council has awarded the Maitland Trophy to Mr. W. Robertson, GM6RI, who was the Scottish contestant with the highest aggregate score in the Second 1.8 Mc/s Contest 1962 and the First 1.8 Mc/s Contest 1963.

Dr. R. L. Smith-Rose addresses Japanese Radio Amateurs

Whilst in Tokyo for the Golden Jubilee Celebrations of the International Scientific Radio Union (URSI), of which organization he is President, Dr. R. L. Smith-Rose, C.B.E., addressed a meeting of members of the Japan Amateur Radio League.

In the course of his address Dr. Smith-Rose referred to the Golden Jubilee celebrations of the RSGB, and to his own early experimental wireless activities 50 years ago. He ended his address by saying that "I am very happy that research in radio science has led me into the field of international collaboration where we meet our colleagues from different countries and have interesting discussions with our many friends all over the world. This is also one of the great advantages of Amateur Radio, in the pursuit of which you derive great pleasure and interest in direct communication with your fellow amateurs in all countries."

The meeting in Tokyo was the XIVth General Assembly of the International Scientific Radio Union.

Dr. Smith-Rose was President of the RSGB in 1959.

Articles Required

The Editor will be pleased to consider articles from members on the following subjects:

A comparatively simple s.s.b. transmitter for 20 or 80m.

A single-band s.s.b. transceiver.

The design of crank-up and tilt-over towers.

The rewinding of coils and transformers.

Articles of a practical nature describing the construction of all types of equipment for the amateur station and short-wave listener are also required.

A 144 Mc/s Grounded Grid Converter

There was an error in Fig. 1 of the article by G. R. Jessop, G6JP, which appeared in the September, 1963 RSGB BULLETIN, page 158. Pin 9 of the ECC85, V4, only connects to an internal shield, and is not a heater centre tap. Pin 5 should therefore be wired to earth, and not to pin 4, as shown.

More Pirates Fined

On July 10, 1963, at Sutton Magistrate's Court, R. I. Martin of 5 High Street, Sutton, Surrey, pleaded guilty to a charge of using wireless telegraphy apparatus without the necessary licence. He was fined £6 and ordered to pay £4 4s. costs.

On August 16, 1963, at Tottenham Magistrate's Court, J. Renaut of 2 Cedars Road, Edmonton, London, N.9., pleaded guilty to a charge of using wireless telegraphy apparatus without the necessary licence. He was fined £10 and ordered to pay £3 3s. costs.

Claims for RSGB Certificates

Members are reminded that claims for RSGB Certificates should be sent direct to Headquarters. Claims are acknowledged on arrival and passed to the Honorary Certificates Manager for attention.

Death of Percy Falkner

It is with deep regret that we record the death on September 10, 1963, of Percy H. Falkner, a director and advertising manager of Short Wave Magazine Ltd. for the last 17 years.

Silent Keys

P. N. TRUSS, G3MST

The death occurred suddenly on August 8 of Peter Norman Truss, G3MST, of Sutton Coldfield. Peter, a very keen v.h.f. enthusiast, died as a result of a cerebral haemorrhage, at the early age of 31.

He continually endeavoured to promote v.h.f. and mobile activity and helped to accomplish this by establishing the Midlands Radio Contest Club, G3RUF.

He leaves a widow and three young children, to whom we extend our very deepest sympathy.

M.A.B., R.A.S.

KENYON SECRETAN, ex-SLF

Old-timers will be sorry to learn of the death at Cromer on August 29, 1963, of Kenyon Secretan, one-time SLF of Castlenau, Barnes, London.

Readers of early issues of the *T & R Bulletin* will remember, in particular, his advertising slogan "Sec. Seldom Sleeps." "Sec." was a partner in the firm of Secretan & Mallett Ltd., radio component manufacturers.

A contemporary with him describes Kenyon Secretan as "one of the most sincere, kindly and devoted 'old timers' in Amateur Radio." Forty years ago his call was well known on the DX bands, in fact one who remembers him well recalls that he "engineered" first contacts between England and the Antipodes for several of his friends.

J. C.

REGION 8 MEETING

Sun Lounge, Leas Cliff Hall,
Folkestone

Sunday, October 20, 1963

Programme

- 2.00 p.m. (for 2.15 p.m.) Business Meeting.
- 3.45 p.m. Short Technical Talk.
- 4.45 p.m. Tea.
- 5.30 p.m. Social Evening.

Tickets, price 4/6 each for members and 3/- for wives and friends, may be obtained from Area and Affiliated Society Representatives or direct from the Regional Representative, Norman D. Mattock, G2DFG, 70 Bouverie Road West, Folkestone. The Council will be represented by Messrs J. C. Graham, G3TR, L. E. Newnham, G6NZ, E. W. Yeomanson, G3IR, and John Clarricoats, O.B.E., G6CL (General Secretary).

For further details, see page 190, September 1963.

"Television Sound Production"

London Lecture Meeting on November 8, 1963

The general public, and indeed a large number of television producers, seem to take sound for granted. The suggestion that "sound is simple" is a common illusion and the purpose of Mr. W. E. Sutton's talk is to outline some of the problems encountered and to describe, using recorded illustrations, the techniques involved in the production of television sound.

The talk will cover microphone technique for both live productions and pre-recorded music or other sessions, and a description of the various types of microphone and associated equipment used. Studio acoustics and the use of echo or artificial reverberation will be briefly discussed and finally the production of special sound effects and the use of sound effects generally will be described.

The meeting will be held in the Faraday Room at the Institution of Electrical Engineers, Savoy Place, Victoria Embankment, London, on November 8, commencing at 6.30 p.m.

RAE Courses

In addition to those listed in the August and September issues of the BULLETIN, courses in preparation for the RAE are taking place at the East Ham Technical College; the Fleetwood Navigation School; the Leicester College of Technology; the Foley College of Further Education, Hagley Road, Stourbridge, Worcestershire, and Hilderstone House, St. Peter's Road, Broadstairs, Kent (details from the Warden).

LONDON U.H.F. GROUP

will meet at the

BULL AND MOUTH TAVERN

corner of Bloomsbury Way and
Bury Place, London, W.C.1,

at 7.30 p.m. on Thursday, October 3 and
November 5, 1963

All v.h.f. and u.h.f. enthusiasts welcome

NOTE THE NEW VENUE!

Radio Amateurs' Examination

THE next Radio Amateurs' Examination arranged by the City and Guilds of London Institute will take place on Friday, December 13, 1963, from 6.30 to 9.30 p.m. only at the Technical Colleges listed below. Candidates for this examination must apply to one of the Colleges named **not later than November 1**. (No entries can be accepted after that date). The examination fee of £1 10s. must be paid to the College authorities at the time of entry.

BEDFORDSHIRE Luton:	College of Technology
BUCKINGHAMSHIRE High Wycombe:	College of Further Education
CHESHIRE Birkenhead:	Technical College
DURHAM South Shields: Durham City:	Marine and Technical College Durham Technical College
DEVONSHIRE Plymouth: Exeter:	College of Technology Technical College
ESSEX Chelmsford:	Mid-Essex Technical College and School of Art
GLOUCESTERSHIRE Cheltenham:	North Gloucestershire Technical College
Bristol:	Technical College, Ashley Down
HAMPSHIRE Southampton:	Technical College
KENT Chatham:	Medway College of Technology
LANCASHIRE Blackburn:	Municipal Technical College and School of Art
Openshaw:	Technical College
Blackpool:	Technical College and School of Art
Oldham:	Municipal Technical College
Preston:	The Harris College
Liverpool:	Riversdale Technical College
Bolton:	Technical College
LEICESTERSHIRE Leicester:	College of Technology
LINCOLNSHIRE Cleethorpes:	District Education Office
LONDON East Ham, E.6: Southgate, N.13:	Technical College Technical College
NORTHAMPTONSHIRE Northampton: Kettering:	College of Technology Technical College
SUFFOLK Bury St. Edmunds:	West Suffolk College of Further Education
SUSSEX Crawley: Brighton:	College of Further Education Technical College (6 p.m.-9 p.m.)
WILTSHIRE Trowbridge:	West Wiltshire and Trowbridge College of Further Education
YORKSHIRE Halifax:	Percival Whitley College of Further Education
Huddersfield:	College of Technology
Hull:	Kingston upon Hull College of Technology
Middlesbrough: Doncaster:	Constantine College of Technology Technical College
SCOTLAND Kirkcaldy: Lerwick:	Technical College Director of Education, Education Offices
Greenock:	Watt Memorial College
NORTHERN IRELAND Belfast:	College of Technology

London Lecture Meeting

Friday, November 8, 1963

Television Sound Production

By W. E. Sutton, G3FWI

in the

Faraday Room,

Institution of Electrical Engineers,

Savoy Place, Victoria Embankment,

London, W1

Buffet Tea 6 p.m.

Lecture 6.30 p.m.

Conference on the Design and Use of Microwave Valves

The national Conference on the Design and Use of Microwave Valves, to be held at the Institution of Electrical Engineers in London, October 16-18, under arrangements made by the I.E.E.'s Electronics Division, is intended to

supplement the biennial international meetings which are held in this field.

The Opening Address at the Conference will be given by Sir Albert Mumford, Engineer-in-Chief of the Post Office who became President of the I.E.E. on October 1, 1963.

Aspects to be covered include signal amplification and physical measurements, communications and industrial applications, and radar. Low noise devices form an important aspect of the Conference. One of the papers in this field is "Satellite System Earth Stations—Masers or Parametric Amplifiers for the First Receiving Stage" by Mr. F. J. D. Taylor, well known for his work in connection with the Goonhilly Downs communications satellite ground station.

Further information is available from the Secretary, The Institution of Electrical Engineers, Savoy Place, London, S.W.1. (COVent Garden 1871).

Exhibition of Scientific Instruments and Apparatus

The Institute of Physics and the Physical Society has announced that its 1964 Exhibition of Scientific Instruments and Apparatus will be held in the Halls of The Royal Horticultural Society, Vincent Square, London, S.W.1. from January 6-9, 1964.

RSGB INTERNATIONAL RADIO COMMUNICATIONS EXHIBITION

SEYMOUR HALL, LONDON, W.1

October 30 to November 2, 1963

Offers of Equipment for Display

Members are reminded that offers of home constructed equipment for display on the Society's stand are still required and should be sent to the Honorary Secretary of the Exhibition Committee at the address given below.

Competitions for Amateur Constructed Equipment

On the opening day of the Exhibition, several competitions for amateur constructed equipment will be judged. Members intending to enter any of these competitions must notify the Honorary Secretary of the Exhibitions Committee, with details. Equipment already offered for display will be automatically entered in the appropriate contests, with the exception of (d) below, where a specific entry must be received by the Exhibition Committee Secretary, together with the required declaration. All equipment for display, or judging, must be in the Exhibition hall by 9.30 a.m. on Wednesday, October 30, or delivered to Headquarters by Friday, October 25. Details of the various contests are given below:

(a) Horace Freeman Trophy

The Horace Freeman Trophy will be awarded for the most original piece of equipment on show. Judging will be carried out by members of the Society's Technical Committee.

(b) Exhibition Organizer's Plaque

A Silver Plaque awarded by the Exhibition Organizer, Mr. P. A. Thorogood (G4KD), will be presented for the best piece of equipment on show.

(c) "Other Regions" Award

For the best exhibits by members residing outside Region 7, two prizes of vouchers to the value of ten and five guineas.

(d) Special Award for "Amateur" Amateurs

A special award of a voucher for five guineas will be made for the best piece of home constructed equipment entered by a member who is not, nor has been, employed in the radio or electronics industry. Entrants will be required to submit a signed declaration to the effect that they are not and never have been employed in the radio or electronics industry, that the item was constructed at their home, and that the construction and design is entirely their own work. It is emphasized that the smartest (in appearance) exhibit may not necessarily win the award.

Judging

Judging for items (b) (c) and (d) will be carried out by an "ad hoc" panel of members of the Exhibition Committee, who are not eligible to enter for any of the competitions.

Offers of Assistance

The Exhibition Committee requires additional assistance to man the RSGB stands during the period of the Exhibition. Offers should be sent to the Honorary Secretary of the Exhibition Committee.

Vintage Equipment

The Committee is anxious to borrow items of vintage amateur equipment, particularly transmitters constructed in the 1920-1935 period. The equipment is required to complete a special exhibit commemorating the Society's Golden Jubilee.

Please send all offers of equipment and assistance to:
R. G. B. Vaughan, G3FRV, Honorary Secretary, RSGB Exhibition Committee, 9 Hawkins Road, Tilgate, Crawley, Sussex.

Society Affairs

A digest of the business discussed at the July, 1963, meeting of the Council

THE July meeting of the Society's Council was held at Headquarters on July 29, 1963, and was attended by Messrs. Norman Caws (President), H. A. Bartlett, J. C. Graham, R. C. Hills, E. G. Ingram, J. Douglas Kay, A. O. Milne, L. E. Newnham, F. K. Parker, R. F. Stevens, G. M. C. Stone and E. W. Yeomanson (Members of the Council), John Clarricoats (General Secretary) and John A. Rouse (Editor).

Apologies were presented for the absence of Major-General E. S. Cole, Mr. L. Goldsbrough, Mr. A. D. Patterson, Mr. J. W. Swinnerton and Mr. A. C. Williams.

Articles of Association

Mr. Caws handed to members of the Council copies of the draft of the revised Articles of Association which has been approved by the Society's solicitors and by the Board of Trade.

It was agreed to send copies of the revised draft to the Regional Representatives for consideration.

Membership

The Council approved 115 applications (94 Corporate and 21 Associate) for membership. In addition, seven applications for transfer from Associate to Corporate grade were accepted. It was agreed to waive for one year the subscriptions of three members who suffer from blindness.

The Council granted affiliation to the Cyprus Amateur Radio Society, the EMI (Wells) Radio Club and the 259 Signal Squadron (COMCAN) Amateur Radio Club.

Nominations for the 1964 Council

Nominations were made to fill the vacancies which will occur in the Council on December 31, 1963. (Details of the Council's nominations were given in the September issue of the BULLETIN).

In connection with the forthcoming Council election, it was agreed to use a new style of business reply ballot paper.

BERU Contests

It was decided that in future the BERU Contests should be open to anyone licensed to operate in a Commonwealth country. In the past, the contest has been restricted to British subjects.

Mr. W. H. Martin

In accordance with notice previously given, Mr. W. H. Martin, G15HV, was elected a Vice-President of the Society in recognition of his outstanding services to the Society and in particular for his services as Northern Ireland QSL Sub-Manager.

Regional Meetings and Lectures

Approval was given to the holding of a Regional Meeting in Folkestone on October 20, 1963, at which Messrs. Graham, Newnham, Yeomanson and the General Secretary will represent the Council.

It was decided, subject to the agreement of the Chelmsford Radio Club, to advertise a special lecture arranged for October 1, 1963, as a Regional Lecture.

Regional Representatives Conference

The General Secretary was instructed to investigate the possibilities of holding a Regional Representatives Conference in Birmingham during November.

Publications

The Council approved a further printing of the *Communications Receivers* booklet and the production of a new edition of the *Radio Amateurs' Examination Manual*. Approval was also given to the use of a plastic binding for the *Experimenters' Gen Book*.

Reports of Committees

The Membership and Representation Committee met on May 20 to discuss the News Bulletin Service, the Affiliated Societies Representatives scheme, a proposal for a new Zone and the

methods by which the revised Articles of Association can be most effectively brought to the attention of members.

At its meetings on June 14 and July 12, the Exhibition Committee dealt with arrangements for the RSGB International Radio Communications Exhibition including the "live" station and a special Golden Jubilee exhibit of historical radio equipment.

On June 24, the Scientific Studies Committee gave further consideration to articles for the BULLETIN, tropospheric propagation investigations, the proposal to install an experimental station at Lerwick, arrangements for the IQSY, *Oscar III* and *Echo A12*.

The Mobile Committee also met on June 24 to discuss the results of the Golden Jubilee Rally at Wethersfield, representation at the RAF Stradishall Rally, and arrangements for the National Mobile Rally at Woburn Abbey.

The Contests Committee met on June 27 to give consideration to the results of the V.H.F. Listeners' Contest, 1963, the First 420 Mc/s Open Contest 1963 and the First 144 Mc/s Portable Contest 1963. The Committee also approved the programme of contests for 1964.

When the Finance and Staff Committee met on June 29, 1963, it dealt with staff matters, the purchase of a new addressing machine, dictating and other office equipment and the production of the RSGB *Amateur Radio Call Book*.

At its meeting on July 8, the V.H.F. Committee discussed band planning, *Oscar III*, the Ninth International V.H.F./U.H.F. Convention (which had been entirely self-supporting) and beacon stations. A number of applications for v.h.f. operating awards were approved. The V.H.F. Manager reported on the discussions at the Region I IARU meeting in Malmö.

The Council was in session from 6 p.m. to 11.15 p.m.

Bulletin Stencil Plates

Stencil plates used for the preparation of a BULLETIN wrapper occasionally become worn or lose ink, with the result that the Post Office experience difficulty in tracing the address.

Members who notice that the address on the wrapper used for their copy of the BULLETIN is indistinct, or in any way faulty, are asked to advise Headquarters.

GB2RS SCHEDULE

RSGB News Bulletins are transmitted on Sundays in accordance with the following schedule:

Frequency	Time	Location of Station
3600 kc/s	9.30 a.m.	South East England
	10 a.m.	Severn Area
	10.15 a.m.	Belfast
	10.30 a.m.	North Midlands
	11 a.m.	North East England
	11.30 a.m.	South West Scotland
145.30 Mc/s	12 noon	North East Scotland
	10.30 a.m.	Beaming north west from Sutton Coldfield
145.50 Mc/s	10.45 a.m.	Beaming south west from Sutton Coldfield
	11.00 a.m.	Beaming north from Leeds
145.8 Mc/s	11.15 a.m.	Beaming east from Leeds
	11.30 a.m.	Beaming west from Belfast
145.10 Mc/s	11.45 a.m.	Beaming north east from Belfast
	12 noon	Beaming north from London area
145.10 Mc/s	12.15 p.m.	Beaming west from London area

News items for inclusion in the bulletins should reach Headquarters not later than first post on the Thursday preceding transmission. Reports from Affiliated Societies and from non-affiliated societies in process of formation will be welcome.

Regional and Area Representation 1964-65

Regional Representatives

THE undermentioned Corporate Members have accepted an invitation from the Council to serve, if elected, in the office of Regional Representative for the period from January 1, 1964 to December 31, 1965:

Region	Name	Call-sign
1	B. O'Brien	G2AMV
2	J. R. Petty	G4JW
3	W. A. Higgins	G8GF
4	F. C. Ward	G2CVV
5	S. J. Granfield	G5BQ
6	L. W. Lewis	G8ML
7	P. A. Thorogood	G4KD
8	N. D. Mattock	G2DFG
9	R. E. Griffin	G5UH
10	C. H. Parsons	GW8NP
13	G. P. Millar	GM3UM
15	J. Wm. Douglas	GI3WD
16	P. J. Naish	G3EIX
17	M. P. Nicholson	G2MN

Not later than October 31 next, any five Corporate Members resident in a particular Region may nominate any other qualified Corporate Member resident in that Region for the office of Regional Representative, by delivering their nomination in writing to the General Secretary, together with the written consent of such person to accept office if elected. Each such nominator shall be debarred from nominating any other person for the current election of Regional Representatives.

Area Representatives

Not later than October 31 next, any five Corporate Members resident in an Area may nominate any qualified Corporate Member resident in that Area for the office of Area Representative, by delivering their nomination in writing to the General Secretary, together with the written consent of such person to accept office if elected.

In the case of London, Area Representatives may be nominated for groups of Postal Districts. In the case of certain other large towns, Area Representatives may be nominated on a geographical basis, viz. North Birmingham, South-East Manchester.

Area Representatives will only be confirmed in their appointment if the total membership in the area they propose to represent is at least 10.

Vacancies

In the event of no nomination being received prior to November 1, 1963, from the Corporate Members resident in any Region or Area, the Council reserves the right to make an appointment.

Ballots

In the event of more than one person being nominated for a particular office a Ballot will be conducted, details of which will be published in the December, 1963, issue of the RSGB BULLETIN.

Resignations

If, for any reason, an elected representative wishes to resign his office, he should notify Headquarters who will advertise the vacancy. Local members cannot automatically appoint another member to undertake the duties of a representative who has resigned.

The Council reserves the right to call upon any representative to resign his office if, in their opinion, he is considered to be unsuitable or unsatisfactory.

Period of Office

Regional and Area Representatives will hold office for a period of two years as from January 1, 1964.

Regions and Counties

The following are the Regions and Counties forming them:

Region 1 (North Western).—Cheshire; Cumberland; Lancashire; Westmorland; the Isle of Man.

Region 2 (North Eastern).—Durham; Northumberland; Yorkshire.

Region 3 (West Midlands).—Birmingham (Postal Area); Hereford; Shropshire; Staffordshire; Warwickshire; Worcestershire.

Region 4 (East Midlands).—Derbyshire; Leicestershire; Lincolnshire; Northamptonshire; Nottinghamshire; Rutland.

Region 5 (Eastern).—Bedfordshire; Cambridgeshire; Hertfordshire (outside London Region); Huntingdonshire.

Region 6 (South Central).—Buckinghamshire (outside London Region); Gloucestershire (excluding Bristol); Oxfordshire.

Region 7 (London).—The London Region covers the London Postal District, the whole of Middlesex and Surrey and all other territory within 25 miles radius of Charing Cross.

Region 8 (South Eastern).—Kent (outside London Region); Sussex.

Region 9 (South Western).—Bristol; Cornwall; Devonshire; Dorset; Somerset.

Region 10 (South Wales).—Brecknockshire; Cardiganshire; Carmarthenshire; Glamorgan; Monmouthshire; Pembrokeshire; Radnorshire.

Region 11 (North Wales).—Anglesey; Caernarvonshire; Denbighshire; Flintshire; Merionethshire; Montgomeryshire.

Region 12 (North Scotland).—Aberdeen; Angus; Banff; Caithness; Inverness; Kincardine; Moray; Nairn; Orkney; Perth; Ross and Cromarty; Shetland; Sutherland.

Region 13 (East Scotland).—Berwick; East Lothian; Fife; Kinross; Mid-Lothian; Peebles; Roxburgh; Selkirk; West Lothian.

Region 14 (West Scotland).—Argyll; Ayr; Bute; Clackmannan; Dumfries; Dumfries; Glasgow (Postal Area); Kirkcudbright; Lanark; Renfrew; Stirling; Wigtown.

Region 15 (Northern Ireland).—Antrim; Armagh; Down; Fermanagh; Londonderry; Tyrone.

Region 16 (East Anglia).—Essex (outside London Region); Norfolk; Suffolk.

Region 17 (Southern).—Berkshire (outside London Region); Hampshire; Wiltshire; the Channel Islands; Isle of Wight.

NOW AVAILABLE

NEW MINIATURE SOCIETY BADGE

in 9ct. Gold

Measures only $\frac{7}{16}$ in. high

PRICE 17/6 EACH

RSGB HEADQUARTERS
28 LITTLE RUSSELL STREET, LONDON,
W.C.1

RSGB

International Radio Communications Exhibition

**Seymour Hall, Seymour Place, Marble Arch,
London, W.1**

**Wednesday, October 30, 1963, to Saturday,
November 2, 1963.**

List of Exhibitors

THE ADMIRALTY
AMATEUR RADIO MOBILE SOCIETY
ASSOCIATED ILIFFE PRESS LTD.
AVEL PRODUCTS LTD.
BRITISH AMATEUR TELEVISION CLUB
BRITISH BROADCASTING CORPORATION
DAYSTROM LTD. (HEATHKIT)
ELECTRONIQUES (FELIXSTOWE) LTD.
ENTHOVEN SOLDERS LTD.
GREEN & DAVIS
J-BEAM AERIALS LTD.
K.W. ELECTRONICS LTD.
MINIMITTER CO. LTD.
E. J. PHILPOTT'S METALWORKS LTD.
POST OFFICE ENGINEERING DEPT.
RADIO SOCIETY OF GREAT BRITAIN
ROYAL AIR FORCE
SALFORD ELECTRICAL INSTRUMENTS LTD.
SELRAY BOOK COMPANY
SHORT WAVE MAGAZINE LTD.
STERN CLYNE LTD.
WEBBS RADIO
WITHERS ELECTRONICS
NO. 1 SPECIAL COMMUNICATIONS REGIMENT (CITY
OF LONDON) ROYAL SIGNALS, T.A.

Exhibition Stations

During the period of the exhibition two stations will be operating from the Seymour Hall, and contacts with members, wherever they may be, will be most welcome.

GB3RS will be operating on 160, 80, 40, 20 and 15m.

GB2VHF will be operating on 4 and 2m.

Operating Schedule

Operation will generally be in accordance with the times and frequencies given in the schedule below, but it may be necessary to amend the schedule in the light of conditions. Members are asked to co-operate by making *short* calls, and by moving off the channel after making contact.

Neither exhibition station will engage in multi-way QSOs, and stations are asked not to use "break-in."

OPERATING SCHEDULE

GB3RS

Date	Times (GMT)	Frequency kc/s	Mode
Wednesday, October 30	09.00-10.45	14,150	A3
	11.30-13.00	3650	A3
	13.00-17.30	14,150/21,150	A3
	17.30-19.00	1910	A3
	19.00-20.00	1820	A1
Thursday, October 31	09.00-11.00	14,150	A3
	11.00-13.00	3650	A3
	13.00-17.30	14,150/21,150	A3
	17.30-19.00	1910	A3
	19.00-20.00	1820	A1
Friday, November 1	09.00-11.00	14,150	A3
	11.00-13.00	3650	A3
	13.00-17.30	14,150/21,150	A3
	17.30-19.00	1910	A3
	19.00-20.00	1820	A1
Saturday, November 2	09.00-13.00	3650/7075	A3
	13.00-14.00	1910	A3
	14.00-17.30	3650	A3
	17.30-19.00	1910	A3
	19.00-20.00	1820	A1

GB2VHF

GB2VHF will operate on 70-339 Mc/s and 144-792 Mc/s for the period of the exhibition, depending on conditions and activity.

RTTY

RTTY transmission and reception demonstrations will be given by G3IIR/A working on a fixed schedule with G3BPT at Culverstone, near Gravesend, Kent.

GB2VHF

The Post Office has issued to the Society a new "special character" licence, call-sign GB2VHF, which will be used at Mobile Rallies and Exhibitions organized by the Society.

In addition to normal facilities the new licence authorizes the use of radio teleprinter transmissions in any band stated in the Schedule to the Amateur (Sound) Licences in respect of those stations for which F1 emissions are authorized, excepting in the band 1.8-2 Mc/s.

The radio teleprinting provision also applies to the Society's other "special character" licence GB3RS.



INTERNATIONAL RSGB RADIO COMMUNICATIONS EXHIBITION

To be opened at 12 noon on Wednesday, October 30, 1963,
by F. C. McLean Esq., C.B.E., B.Sc. (Hons), M.I.E.E.,
Director of Engineering, BBC

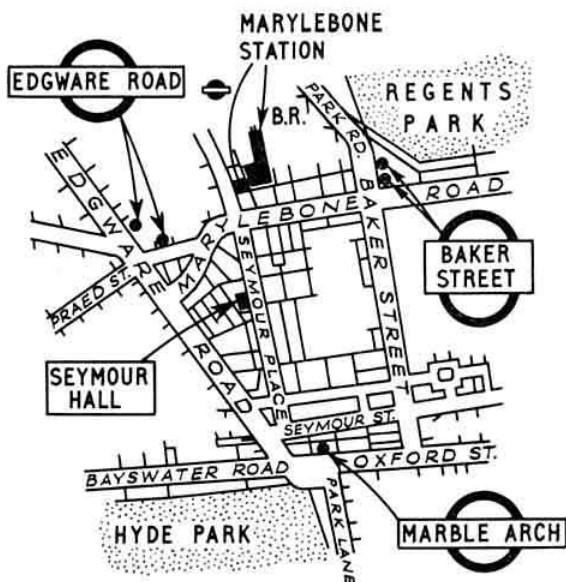
OCTOBER 30 to
NOVEMBER 2
10 am to 9 pm

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Royal Navy
Army
Royal Air Force

Demonstrations of
Amateur Television
Amateur RTTY

Displays by manufacturers of acrials, components,
hi-fi gear, receivers, transmitters, and v.h.f. equipment



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CLUBROOM

A Monthly Survey of Group and Club Activities

FROM a northern club comes the idea of a building project with a new slant. Under the direction of an "old hand" a group of members is embarking on the "mass production" of a standard transmitter design which each member will make the nucleus of his own station. This system has many advantages, since the relatively inexperienced constructor has the benefit of expert advice and can check results and avoid snags at each stage of the project. He can embark on a more sophisticated design, and can call on the services of his colleagues as well as share the power tools and test equipment needed for alignment.

We look forward to hearing the outcome of this interesting idea, which many clubs may wish to copy. It makes possible the bulk purchase of components, machine cutting and drilling of panels, and a saving in time and money for the "one off" constructor, as well as a direct incentive to newcomers to the hobby to get on the air. At the same time more experienced members might build test gear, aerial change-over units or electronic keyers—items which somehow fail to mature as a single venture.

News from the Newsletters

The *Cornish Link*, magazine of the Cornish RTC, appears this month in an attractive multi-coloured cover: the 8-page issue contains members' advertisements, a meeting report and details of members' activities from l.f. to v.h.f. bands. South Hampshire QUA reports that despite the offer of free space there is no rush of members to advertise their gear! A cover competition to find a design for the forthcoming ninth volume is announced, while Southampton Area Group is hoping to obtain G3SOU as a Group call-sign. Newsletter No. 71 of North Kent RS—the first from the pen of G3ONR—advises a "Junior Forum" on October 10 at the Bexleyheath Congregational Church Hall. Surrey RCC's *Monthly News*, in announcing a Surplus Gear Sale on October 8, promises to give free advance publicity on all

items worth more than £3 each—a good opportunity for members to save their Saturday pennies or to decide to raise some by offering their own unwanted gear. Enfield and District Group's *Lea Valley Reflector* contains a hard-hitting article by AR B.R.S.20533, "We had our changes" he states, "but did we change the right people?" This after four years in office suggests that B.R.S.20533 at least has a right to stand up and ask for support in Group activities. The FOC Circular Letter No. 186 suggests an "Inactive Panel" for those members forced to give up radio for the time being—a reasonable and sensible idea since activity is the keynote of this over-the-air group, and few members wish to give up the aims to which the club aspires when forced to accept involuntary activity.

A newcomer this month is the Irish Radio Transmitters' Society's *EI News*, from which it is learned that the society will be exhibiting at the Royal Dublin Society's Scientific and Technical Exhibition on October 22-25. On display will be an Amateur Station operational on h.f. and v.h.f. bands, a "typical shack work bench" and other equipment. "All systems go" is the hope of the v.h.f. "pond-spanning group" which plans to work across the Atlantic on 2m when conditions permit. An article on RTTY by EI6W completes the issue. The Stratford-upon-Avon *Summer News Sheet* reports meetings at Flat 1, Birds Commercial Motors: at the recent fourth AGM G8TO was re-elected President. Junior members are being helped to construct receivers so that they can join in the Sunday morning nets to "listen and learn." The September Newsletter of the Southgate, Finchley and District RSGB Group announces the acquisition of call-sign G3SFG and the construction of the equipment to put it on the air. To house this gear the club-room has been redecorated, with all lending a hand to complete this important chore. Honorary Secretary G3RPB will be pleased to enrol new members to get them into training for the next big effort!

North of the Border

Two reports this month—the first from the Ayrshire RSGB Group, which will meet on the third Sunday of every month in the ATC Hall, Mews Lane, Kilmarnock from 7.30 p.m. The Lothians RS plans to provide every member with a printed membership card giving the full programme arranged for the new session and to sell a bi-monthly magazine. Raffles held at every meeting keep the bank balance "out of the red" in spite of NFD expenditure.

Points North

Northern Heights ARS of Halifax plan a coach party for the Radio Communications Exhibition as a change from manning their own station at local shows. They look forward to taking part in the Scout Jamboree-on-the-Air and to welcoming the Spen Valley RS on October 23 to a display of members' gear. Hull and District RS reports a change of Honorary Secretary, G3RMX (38 Balmoral Avenue) now taking over this important post. Wirral ARS hopes to be well represented at the Stockport ORM and to have good attendances at the Film Show on October 16 and the Annual Dinner—details from G3FOO. Manchester and District ARS has the happy idea of inviting YLs and XYLs to an Open Night on October 16—at least it can be shown where the OM spends his nights out! This club claims a marathon effort—a group of members pushed a



G3PED operating the single sideband h.f. station GB3DTS at the Dagenham Town Show. The transmitter was constructed by G3MYV.

30ft., 6in. diameter pole nine miles from G3LGC's home to the clubroom. Who can better that for enthusiasm? To prove that it is true, visit the Club HQ at the Community Centre, 203 Droylsden Road and see for yourself—maybe you will be pressed into service to help to erect it! Coming a little further south, the University of Keele RS will be taking part in a "Mart" to attract "freshers" to the various student societies, and will operate G3COY/A on 40, 80 and 160m on October 12. Thereafter the society will meet every Monday evening during the term, with G3COY working hard to encourage the hoped-for influx of new members. Scarborough ARS welcomed VU2GG and DJ2JJ to recent meetings. The first meeting each month is always a Sale of surplus gear: further October meetings are a film show, a "constructors' night" and a talk by G3PEJ on mobile operation. Mansfield ARS likewise enjoys weekly meetings—at the Hope and Anchor Inn, Union Street, when Morse and technical instruction are given. Special operation from a local Hobbies Exhibition is planned.

South and West

Southampton RSGB Group meets on the second Saturday of each month in the Engineering Lecture Theatre of the University at 7 p.m., and will be holding its AGM on October 12. G3MDH is Honorary Secretary. South Dorset RS, who have been hearing a talk by G3FNT, will be holding a Bring and Buy Sale at the October meeting. Reading ARC enjoyed the always welcome "Aerials" lecture by "Dud" Charman and a Mobile Picnic on August 25 which was visited by over a hundred people. At the October 26 meeting there will be a surplus gear sale. The club net continues to function on 1981 kc/s on Mondays at 8.30 p.m. The East Worcester Group is now established at the Old People's Centre, Park Road, Redditch and meeting at 8 p.m. on the second Thursday in each month. A RAE course is planned with the help of the local Education Authority, which also runs a practical course for the home constructor. At the October 10 meeting G3GYP will make clear the principles of transistor operation, while a "GB" call-sign is being sought for the Jamboree mentioned elsewhere. A quarterly meeting specially to cater for the problems of young members and newcomers is a feature of the Group's programme. Worthing and District ARC meets on the second Monday each month at the Adult Education Centre, Union Place, and G3KFH hopes to recruit many new members, especially from licensed amateurs. Likewise Mitcham and District RS canvas more support, otherwise a "fold-up" is seriously considered; that some members are prepared to pull their weight is shown by the efforts of G3LCH, G3NFA and B.R.S.24764, and a special meeting is called for October 11 to consider the position.

Plymouth RC have visited the local BBC station and also the Dartmouth Mobile Rally, while club President G5ZT has been demonstrating his h.f. and v.h.f. home stations. Meetings are held on the first Tuesday of each month at New Marlborough House, Buckwell Street, and on other Tuesdays at the Clubroom, Virginia House Settlement, Palace Street. Morse instruction is popular, and the club favours active members, working on a small scale rather than on a large roll of "non-attenders." The future programme includes a Film Show on October 15 and a Quiz Contest with Torbay later in the year. The Annual Dinner is planned for February 8 next year at the Magnet Restaurant.

"Town" and Around

Reigate ATS is another society which participates in local shows, and has operated three exhibition stations this year. BULLETIN Editor G2AHL will be speaking to members on October 19 (7.30 p.m. at the Tower, High Street, Redhill),

while the rare pleasure of a YL lecturer will be enjoyed on November 23, when G2YL will give an illustrated talk. The Annual Dinner will be held on February 15 at the Mill House, Salfords. G3BBR and G3RAE are investigating conflicting claims for different types of mobile whips—perhaps for a BULLETIN article? Barnet RC is already planning for the Christmas Party at Oakmere House, Potters Bar on December 7. To quote G3MWG there will be "a larger band, licensed bar, and free refreshments." What greater value for five bob anywhere? Crawley ARC had a successful three-club rally on the Hogs Back near Guildford in August, and will be hearing G3JKF giving "Hints and Tips" at the October meeting—details from G3FRV. Grafton RS has ceased its Tuesday meetings, but still meets on Mondays, Wednesdays and Fridays at the Montem School, N.2. During October, after a visit from "Dud" Charman, members will hear G3DZW talk on s.s.b. (October 18) and will hold a SWL Corner on October 25. The first two evenings of the club's week are reserved for RAE and Morse classes, which proved last year to be highly successful. Enrolments (still a few vacancies) can be made "on the night" or by reference to Honorary Secretary G2CJN. The Civil Service RS claims members from all branches of the Service and from kindred occupations. It has now embarked on its new session, and welcomes membership enquiries—details from Honorary Secretary G. Lloyd Dalton, 2 Minster Heights, Purley, Surrey. G3MCA has been lecturing to Cray Valley RS on the GPO Radio Tower, while G2AQB is first to qualify for the WCV Award: for details see MOTA for September.

Medway ARTS held a paddle steamer excursion to Southend on August 11 to visit their friends in Essex: 120 members and visitors took part. At the new clubroom at the Brase-nose Club, Nelson Road, Gillingham the society meets on alternate Mondays, and has a 100 ft. garden at its disposal for aerial erection. There will be a construction contest on October 7 and a discussion on power supplies on October 21. On November 4 the fireworks will be provided by G3ORH conducting c.w. proficiency tests, with a Junk Sale to follow.

Last Round-up

A plea from the Amateur Radio Club of India asks for books and magazines—especially back issues of the BULL—so that a library can be built up. Amateur literature of any kind will be welcomed, and should be addressed to the Club at Post Box 53, Bangalore 1, India.

* * *

Material for the November issue by October 11, please, and for December by November 8. Contributors are asked to limit information to that which takes place during the currency of the BULLETIN issue—later events tend to be overlooked by readers when notified far ahead. Material, photographs, suggestions and criticisms are always welcomed.

Club of the Month

THE CITY OF BELFAST YMCA RADIO CLUB

As its name implies, this club is run as one of the YMCA clubs in the City of Belfast and is thus fortunate in having full use of two clubrooms each night from Monday to Saturday. It was founded in 1922 and is one of the oldest radio clubs extant in the British Isles; since its earliest days it has been affiliated to RSGB.

A transmitting licence was issued in 1926, the call-sign, G16YM, having remained unchanged ever since. The President, Jack Forsythe is a founder member, and the present licence holder, Bob Barr, G15UR, has been a member



The club station, GI6YM, at the YMCA Radio Club, Belfast.

since 1927. The club has been on the air continuously since 1926, with the exception of the war years, when the premises were "open-house" to visiting amateurs from the Services of many nations, so that the Visitors' Book reads like pages from the International Call Book. Even yet, in QSOs with the club many of these former visitors recall with pleasure the happy times there. Many of the club's own members have fine War Service records.

Membership includes people from all trades and professions, the youngest member being 13 years old and the oldest in the 60-plus range, but no distinction is made between the schoolboy at the crystal set stage and the owner of the latest s.s.b. rig and super communication receiver.

Many members are licensed amateurs, and the listeners and constructors are by no means idle.

Activities include transmitting and receiving, lectures, film shows, visits, social events, and constructional work to say nothing of good honest discussions (not always restricted to Amateur Radio!). Practically all equipment is "home-brew," except that, since the war commercial receivers have been used, the latest being a KW77. At the moment, operators are using a QRP transmitter on c.w., with results from all continents including Antarctica, VP8, but a full power s.s.b./c.w. transmitter is almost ready and should be on the air in a month or so. A trap dipole is used for general work. Operating at GI6YM is something of an experience as the "shack" is in a city centre location, on the fourth floor of the YMCA building, and beside the elevator! Rare DX or a local rag-chew are equally welcome; some operators come in at their lunch break to go on the air.

The club has taken part in radio exhibitions, both its own and those sponsored by outside organizations, and has given demonstrations to Church groups, Scout groups and men's clubs, bringing Amateur Radio to the notice of the citizens. It co-operates with the local RSGB Group in NFD, RAEN and similar events.

The club is active on four nights a week, from 8 p.m. to 10 p.m., Wednesday being the main night, Saturday an informal get-together and Friday construction of the noisier type. On Tuesday a newly started audio and tape-recording section (including stereo) will make the rafters ring, hence the advantage of having the transmitting room separate from the main one!

Many members are active RSGB men: Zonal Representative Barney Patterson, GI3KYP, is a professional electronics man; Bill Douglas, GI1WD, is Regional Representative for Northern Ireland. Ron Parsons, GI3HXV, the new QSL sub-manager for GI, is also a

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leading exponent of 70 Mc/s activity with a number of "firsts" to his credit. Several former members have gravitated to academic posts and to positions in the electronics world; while GI3KYP and GI3NUM lecture to the RAE classes organized by the Belfast College of Technology. (The club, incidentally was mainly responsible for having these started).

A well-known member is Bob Barr, GI5UR, holder of the ROTAB Cup for 1962-63 and of many DX awards. Frank Robb, GI6TK, very active on c.w. and s.s.b., is blind, and at the moment is organizing the "White Stick Award" (see MOTA). The club Chairman is Bob Boal, GI3AXI, an exponent of the indoor aerial for DX chasing, and another call well known to DX enthusiasts is that of Cedric Rourke, GI3IVJ. Syd Foster, GI3GAL, conducts the Northern Ireland RSGB News Bulletin Service GB2RS. The collective total of awards held by transmitting members is formidable and some of the club's certificates date back to 1932. A news-sheet is published in alternate months and a library, with books and magazines, such as QST, CQ and naturally the BULLETIN, is available for the use of members. The annual subscription to the club is 1 gn. (or 10s. if under 18 years) plus 5s. and 2s. 6d. respectively YMCA membership.

The YMCA General Office will always assist visitors and will put them in contact with club officials: true Irish hospitality is assured.

Retirement of the General Secretary

On December 31 this year our General Secretary, Mr. John Clarricoats, O.B.E., G6CL, retires after over 30 years' service with the Society. It is a great tribute to him that we are a thriving and vigorous Society today, for if it had not been for his foresight and enthusiasm, we should in all probability have ceased to exist during the war years.

I believe that many members would like to contribute towards a presentation to be made to him on his retirement. This is of course over and above the pension arrangements already made by the Council. If you wish to make a donation please send it to Mr. A. O. Milne, G2MI, who has agreed to act as a treasurer for this presentation, at 29 Kechill Gardens, Hayes, Bromley, Kent, marking the outside of the envelope "G.S. Presentation." Cheques should be made payable to A. O. Milne, No. 2 A/c.

Norman Caws, G3BVG,
President

BERU Contest

Rules for the Twenty-seventh Event, February 15-16, 1964

RADIO amateurs throughout the British Commonwealth are invited to take part in the Twenty-seventh BERU Contest to be held on February 15-16, 1964. The Contests Committee is again arranging to secure the maximum amount of overseas publicity but invites the assistance of members in bringing the dates and rules to the notice of operators throughout the Commonwealth.

- Sections.**—The contest is divided into two sections: (a) High Power—maximum licensed power; (b) Low Power—maximum input 25 watts.
- Duration.** The contest (both sections) will start at 00.01 GMT on Saturday, February 15, and end at 23.59 GMT on Sunday, February 16, 1964.
- Eligible Entrants.** The contest is open to all fully paid-up corporate members of the RSGB resident within the United Kingdom and to all amateurs licensed to operate within the British Commonwealth and British Mandated Territories. All entrants agree to be bound by the rules of the contest.
- Operator.** Only the entrant will be permitted to operate his station for the duration of the contest.
- Entries.** Entries should be set out, as shown in the example, on **ONE SIDE ONLY** of foolscap or International A4 paper. Entries must be postmarked not later than March 9, 1964, and must be addressed to the Contests Committee, Radio Society of Great Britain, 28 Little Russell Street, London, W.C.1, England. Log sheets are available from RSGB Headquarters on request.

BERU CONTEST, FEBRUARY 15-16, 1964

Section: (High or Low Power)..... Claimed Score.....

Name..... Call-sign.....

Address

Transmitter.....(D.C. input to any stage of the transmitter shall not exceed 25 watts in the Low Power Section)

Receiver..... Aerial(s).....

DECLARATION: I declare that this station was operated strictly in accordance with the rules and spirit of the contest, and I agree that the decision of the Council of the RSGB shall be final in all cases of dispute. I certify that the maximum input to the final stage of the transmitter was.....watts.

Date..... Signed.....

Failure to sign the declaration may involve disqualification of the entry.

SAMPLE LOG SHEET

Date	Time GMT	Call-sign of station worked	I sent him	He sent me	Band Mc/s	Bonus Points	Points Claimed
16	0005	G3XXX	569001	559002	14	20	5
16	0009	VK2ZZZ	579002	569004	14	20	5
17	0012	GM3YYY	569113	579102	14	—	5
17	0730	GW8XXX	589164	589154	21	20	5
Total (Points Claimed + Bonus Points) 20 + 60 = 80							

- Bands.** Operation is restricted to the following bands: 3.5, 7, 14, 21 and 28 Mc/s. Transmission must be of type A1 (pure c.w.) only, and frequent tone reports of T8 or less may result in disqualification.
- Licence Conditions and Power Input.** Entrants must operate within the terms of their licences.
- Contacts.** Contacts may be made with any station using a British Commonwealth call-sign except within the entrant's own call area. British Isles stations may not work each other for points. Contacts with unlicensed stations will not count for points. The decision as to whether or not a contact is valid will rest with the RSGB Contests Committee. Only one contact on each band with a specific station will count for points. Duplicate contacts should be logged, but no points claimed.
- Scoring.** Each completed contact will score 5 points. In addition a bonus of 20 may be claimed for the first contact with each new Commonwealth call area (as defined in the Appendix) on each band. All British Isles stations (G, GB, GC, GD, GI, GM and GW) count as only one call area.
- Contest Exchanges.** Contest numbers must be exchanged and acknowledged before a contact can count for points. The contest number of six figures shall be made up of the RST report and three figures starting with 001 for the first contact and increasing by one for each successive contact, e.g., 559001 for the first and 439002 for the second contact, and so on.
- Awards.** At the discretion of the Council, a trophy or miniature will

be awarded to the winner of each section, and certificates will be awarded to the first three entrants in each section. In addition a certificate will be awarded to the leading entrant in each call area regardless of the number of entrants in his call area provided that his score exceeds 1,500 points in the High Power section or 750 points in the Low Power section. A certificate will be awarded to the runner-up in each call area in which there are ten or more entrants, provided his score exceeds 1,500 points in the High Power section or 750 points in the Low Power section.

Appendix

The following call areas are recognized for the purposes of scoring in the BERU contest:—

AC3 Sikkim	VQ7 (Aldabra Island)
AP (West Pakistan)	VQ8 (Chagos)
AP (East Pakistan)	VQ8 (Agalega)
G, GB, GC, GD, GI, GM, GW—as one call area.	VQ8 (Rodrigues)
MP4 (Bahrain)	VQ8 (St. Brandon)
MP4 (Muscat and Oman)	VQ8 (Mauritius)
MP4 (Qatar)	VQ9
MP4 (Trucial Oman)	VR1 (Gilbert & Ellice Islands)
VE1	VR1 (British Phoenix Islands)
VE2	VR2
VE3	VR3 (Christmas Island)
VE4	VR3 (Fanning Island)
VE5	VR4
VE6	VR5
VE7	VR6
VE8	VS1
VK0 (Australian Antarctica)	VS4
VK0 (Heard Island)	VS5
VK0 (Macquarie Island)	VS6
VK1	V59 (Aden)
VK2	V59 (Maldives Islands)
VK2 (Lord Howe Island)	V59 (Kamran Island)
VK3	VU2
VK4	VU4 (Laccadive Islands)
VK4 (Willis Island)	VU5 (Andaman and Nicobar Islands)
VK5	ZB1
VK6	ZB2
VK7	ZC5
VK8	ZD3
VK9 (Admiralty Island)	ZD6
VK9 (Christmas Island)	ZD7
VK9 (Cocos Island)	ZD8
VK9 (Norfolk Island)	ZD9 (Gough Island)
VK9 (Nauru)	ZD9 (Tristan da Cunha)
VK9 (New Guinea and Bismarck Island)	ZE
VK9 (Papua)	ZK1 (Cook Islands)
VO	ZK1 (Manihiki Island)
VP1	ZK2
VP2 (Anguilla)	ZL1
VP2 (Antigua and Barbuda)	ZL1 (Kermadec Island)
VP2 (British Virgin Islands)	ZL2
VP2 (Dominica)	ZL3
VP2 (Grenada and Dependencies)	ZL3 (Chatham Island)
VP2 (Montserrat)	ZL4
VP2 (St. Kitts and Nevis)	ZL4 (Auckland & Campbell Islands)
VP2 (St. Lucia)	ZL5 (NZ Antarctica)
VP2 (St. Vincent & Dependencies)	ZM6
VP3	ZM7 (Tokelau)
VP4	ZS3
VP5 (Cayman Islands)	ZS7
VP5 (Turks & Caicos Islands)	ZS8
VP6	ZS9
VP7	457
VP8 (Falkland Islands)	5B4
VP8 (Grahamland)	5H3
VP8 (Sandwich Islands)	5N2
VP8 (South Georgia)	5X5
VP8 (South Orkney Islands)	6YA
VP8 (South Shetland Islands)	9G1
VP9	9K2
VQ1	9L1
VQ2	9M2
VQ4	

CONTEST NEWS



— RESULTS — REPORTS — RULES —

Newbury D/F Qualifying Event

The D/F Qualifying event held at Newbury on August 11, 1963, attracted ten teams of competitors. The organiser was J. A. Gale, G3LLK, who operated the hidden transmitter and was helped in the organisation of the event by members of the Newbury and District Amateur Radio Society. F. Lloyd, G3IPR, and B. Folds, G3LIL, officiated at the start and also provided radio contact with the hidden transmitter which was hidden in thick bracken at Bucklebury Common, about six miles from the start. The Contests Committee was represented by D. A. Findlay, D.F.C., G3BZG. No special hazards had to be overcome in order to find the transmitter and eight of the ten competitors succeeded in locating it, the first, M. P. Hawkins, arriving after only 61 minutes followed closely by E. W. Bristow two minutes later. The third arrival, W. North, was unlucky not to win, having been visible to the transmitter crew shortly after 2 p.m.

The event was followed by tea in very pleasant surroundings at The Old Mill, Aldermaston, attended by about 29 people.

Subject to the Contests Committee's confirmation the results were as shown below. The first three to find the transmitter who had not already qualified, Messrs. North, Peck and Newman, became eligible to take part in the National Final.

Name	Time of Arrival
1. M. P. Hawkins Oxford & District ARS	14.31
2. E. W. Bristow Oxford & District ARS	14.33
3. W. North High Wycombe	14.34
4. G. T. Peck High Wycombe	14.35
5. A. C. Newman Salisbury	14.36
6. A. D. Bristow Oxford & District ARS	15.21
7. I. Butson Oxford & District ARS	15.30

Rules for the BERU Contest Receiving Section, 1964

The rules for the Receiving Section of the BERU Contest 1964 are as follows:

1. **Eligible Entrants.** The contest is open to all fully paid-up members of the RSGB resident within the United Kingdom and to all short wave listeners resident within the British Commonwealth and British Mandated Territories. All entrants agree to be bound by these rules. Only the entrant may operate his receiving station for the duration of the contest. Holders of amateur transmitting licences are not eligible to take part.

2. **Duration.** The contest will commence at 00.01 GMT on Saturday, February 15, 1964, and end at 23.59 on Sunday, February 16, 1964. The BERU Contest for transmitting amateurs will take place during the same period.

3. **Entries.** (a) To count for points, a station outside the entrant's own call area must be heard in a contest contact and the following details logged in columns headed as follows: (i) Date/Time (GMT); (ii) Call-sign of Station Heard; (iii) Report and Serial Number sent by Station Heard; (iv) Call-sign of the Station being worked; (v) Band in Mc/s; (vi) Bonus Points Claimed; (vii) Points Claimed. CQ or Test calls will not count for points.

(b) Entries must be set out on ONE SIDE ONLY of foolscap or International A4 paper. Entries must be postmarked not later than March 9, 1964, and must be addressed to the Contests Committee, Radio Society of Great Britain, 28 Little Russell Street, London, W.C.1. Log sheets are available from RSGB Headquarters on request.

(c) All entries must contain the following declaration:
I declare that this receiving station was operated strictly in accordance with the rules and spirit of the contest and I agree that the decision of the Council of the RSGB shall be final in all cases of dispute. I do not hold an amateur transmitting licence.

Date..... Signed.....

4. **Scoring.** Each complete log entry will score 5 points. In addition, a bonus of 20 points may be claimed for the first station heard in each new

SECOND 1-8 Mc/s CONTEST, 1963

Amendment to Rule 6

The rules published on page 195 of the September issue of the *Bulletin* have been amended as follows:

6. **Contest Exchanges:** RST reports followed by the contact number starting with 001 and the county code letters given on page 376 of the January, 1963 issue of the *Bulletin*, e.g. for a contact from Surrey 579005SY. All reports must be acknowledged with "R."

Commonwealth call area (as defined in the Appendix on page 261 of this issue of the *BULLETIN*) on each band. The British Isles (G, GB, GC, GD, GI, GM and GW) count as one call area only as indicated in the Appendix to the rules of the Transmitting Section. A station may be logged only once on each band for the purpose of scoring. Where both stations in a contact are heard, they should be logged separately; points may be claimed for both entries.

5. **Awards.** At the discretion of the Council a trophy or miniature will be awarded to the winner and a certificate of merit to the runner-up in each of the IARU continents.

CQ World Wide DX Contest 1963

The following is a résumé of the rules for this year's World Wide DX contest arranged by *CQ Magazine*.

Period: phone section; 00.00 GMT October 26 to 24.00 GMT October 27. C.w. section; 00.00 GMT November 23 to 24.00 GMT November 24.

Bands to be used: 1-8 to 28 Mc/s.

Type of competition: 1. **Phone Section.** (a) Single operator; (b) Multi-operator single transmitter; (c) Multi-operator multi transmitter. 2. **C.w. Section.** (a), (b) and (c) as for Phone Section. 3. **Inter-Club.** (DX Clubs affiliated to a national body.)

Serial numbers: Phone stations will exchange serial numbers consisting of 4 numerals, the first 2 being the RS report and the last 2 their own Zone number. C.w. stations will exchange serial numbers consisting of 5 numerals, the first 3 being the RST report and the last 2 their own Zone number. Stations in Zones 1 to 9 will prefix their Zone number with 0.

Points: Contacts between stations on different continents will count 3 points. Contacts between stations on the same continent but not in the same country will count 1 point. Contacts between stations in the same country will be permitted for the purpose of obtaining a Zone and/or Country multiplier but no QSO points can be claimed. Only one contact with the same station is permitted per band. A multiplier of 1 for each Zone contacted on each band and a multiplier of 1 for each country worked on each band.

Scoring: The score of each single band is the sum of the Zone and country multipliers for that band, multiplied by the total contact points on that band. The total all band score is the sum of the Zone and country multipliers of all bands multiplied by the sum of the contact points on all bands.

Those sending in logs for a single band are eligible for a single band award only. If a log is sent in for more than one band, indicate which band is to be judged otherwise it will be judged as an all band entry. Single operator contestants must show a minimum of 12 hours operating time to be eligible for an award. If a contestant operates more than one band and wishes to be judged for a specific single band he must show a minimum of 12 hours on that band. Contestants using the 21 or 28 Mc/s bands will be required to show a minimum of only 8 hours. Multi-operator stations must show a minimum of 24 hours of operating time to be eligible for an award, and will be judged only on the basis of an all band score.

The log forms and report forms follow the pattern of previous years. Zone numbers and countries should be filled in on only the first occasion of a contact. All times to be in GMT. All logs must be postmarked not later than December 1, 1963, for the phone section and January 15, 1964, for the c.w. section, and should be sent to CQ, 300 West 43rd Street, New York, 36 N.Y., U.S.A. (Act: Contest Committee). Log forms are available from G2BYN on receipt of a large stamped addressed envelope.

Can You Help?

● H. E. Willis, B.R.S.25268, 111 Laburnum Road, Strood, Kent, who requires details of a 6 volt power unit to operate an R109 receiver from a.c. mains and/or details of conversion of this receiver for mains operation?

● T. R. Whittaker, G3JNM, 33 Cherington Crescent, Macclesfield, Cheshire, who requires information on the Cathode Ray Oscilloscope Indicator CTR type 103 and associated Power Unit, both of which are part of Monitor Equipment type 101?

● W. R. Longmire, B.R.S.24536, Overlea, Stanah Road, Thornton Cleveleys, Lancs, who requires assistance in the design of a tiltover steel tower about 30 to 35 ft. high?

Letters to the Editor

Neither the Editor nor the Council of the Radio Society of Great Britain can accept responsibility for views expressed by correspondents. Letters for inclusion in this feature should be concise and preferably not more than 200 words in length.

A Great Fighter

DEAR SIR,—Many members will have read with pleasure the note by the President in the August BULLETIN inviting all to subscribe to a retiring gift to John Clarricoats, our General Secretary, and many will already have responded.

Such an appeal should need no boost, and there will indeed be few who will not acclaim the President's action in launching the appeal. But the amateur is notoriously slow in response—not usually because he intends to do nothing, but just because (as we are for ever hearing on the air) he "hasn't yet got round to it"; and in very many instances this is bound to be the reaction (or inaction) to the appeal.

I would commend one thought to every active transmitting member. As you switch on to your favourite band and maybe achieve a highly satisfactory contact, just remember that the privilege of using that band, whatever band it may be, has been fought for, not once but endlessly, month after month and year after year, both nationally and internationally, ever since licences were first issued. As far as the British amateur is concerned, one man has been constantly in the vanguard of that fight, waging war year after year, that we might have the very best facilities that could be secured. John Clarricoats has never faltered or grown weary in action, as those of us who have accompanied him on innumerable sorties thankfully recall. With his amazing mastery of the facts, his statesmanlike utterances and his great capacity for working behind the scenes to secure the greatest "fire power" in conference, he has always commanded our respect. Some of the greatest "battles of the bands" would never have been won but for the gallant fights put up by John Clarricoats.

The pension arrangements which the Society has been able to make for our General Secretary are meagre by any standard. This is due to the fact that they should have been started much earlier. But the President is not appealing for large sums of money—if every active member of the Society gave 20/-, the General Secretary's retirement would, I am sure, be made much more comfortable. Many will not be content to give as little—but the really important thing is that *everyone* should give something now.

In conclusion, may I add that nobody has suggested to me that I should write this letter.

Yours sincerely,

W. A. SCARR, G2WS
Past President

The Riddings, Coventry.

Bulletin Advertising

DEAR SIR,—It was with considerable interest that I read Mr. R. F. G. Thurlow's letter in the September issue of the BULLETIN, for you recall that an advertisement for the 92nd Signal Regiment, Army Emergency Reserve, appeared in the July issue. The results of the latter were equally good!

Both GM6RI and I received dozens of replies from members of the Society. The range of these replies was interesting: they included many recently licensed amateurs as well as those who had held calls for several years, and from B.R.S. members; they included answers from Scotland, Wales, and Northern Ireland, in addition to many from most areas of England. Whilst the majority of the letters were received during the week following the publication of the BULLETIN, we are still getting enquiries.

The effect, then, of this advertisement will have been to make a most useful addition to the strength of our Regiment. Encouraged by this, we have now obtained a call-sign for the 92nd Signal Regiment Radio Club; appropriately, it is G3SIG. Using this call, we hope to be active in contests during the coming months. We also look forward to having personal QSOs during the Radio Communications Exhibition.

Yours faithfully,
R. J. HUGHES, G3GVV

Haywards Heath, Sussex.

The G3RKK Receiver

DEAR SIR,—As an amateur who can claim some experience over the years in building his own receivers, I write to congratulate G3RKK on his very fine effort described in the July, 1963, BULLETIN. Quite apart from the design and construction, I was interested particularly in the cost (£30) as the components used were almost all new.

I have been depressed in recent years to find the cost of factory-built receivers steadily rising to a level that by now must be beyond the means of the average amateur. Personally I am not concerned, having never used, let alone bought, a factory-built communications receiver, but I think some explanation is owed by the manufacturers to the amateur who does use such receivers, in view of the fact that they retail at such high prices.

I think it can be fairly said that a commercially produced equivalent of G3RKK's receiver (possibly installed in a luxurious cabinet contributing nothing to the performance) would retail at some 2-2½ times what it has cost him. Admittedly he has, presumably, not included his labour in the £30 but on the other hand he has bought all new parts at retail cost, including a commercial coil pack and a dial and drive assembly which can hardly be termed inexpensive, and he has neither had the advantages of production in quantity nor the use of components bought at wholesale prices or made on the spot that must show considerable savings to a manufacturer. Additionally, a manufacturer's design costs must surely be minute per receiver coming off the production line.

Perhaps a manufacturer would care to comment on the above with particular reference to the fact that a commercially produced receiver costs far more than a home brewed version of the same capabilities whereas in the motor industry the direct opposite applies, i.e. to build a car at home using parts bought at retail prices would cost the constructor far, far more than the price (including a heavy purchase tax) of the finished vehicle obtainable from the local garage!

Yours faithfully,

N. W. AUSTIN, G2FQR

Reading, Berkshire

Go Vertical on "Four"

DEAR SIR,—Before mobile development on the 4m band gets to the point of no return, some thought should be given to the best aerial polarization mode to use. In the view of many, vertical polarization has so many advantages—particularly mechanical ones—that we should delay no longer in adopting it as the standard for vehicle use.

It is not without significance that business radio users, who operate close to our 70 Mc/s band, adopted "vertical" long ago: amateur mobile users should do the same.

I offer these views in the hope that they will stir operators into some action pretty quickly, before so many horizontal aereals are in use that a change to vertical may not be acceptable. It is not too late to standardize vertical polarization now: in a few months' time it may well be.

Yours faithfully,

PETER J. SIMPSON, G3GGK

Barkway, Herts.

Obtaining a Licence

DEAR SIR,—In recent issues of the BULLETIN, I have noticed letters concerning the lack of coaching and training facilities for the Radio Amateurs' Examination and Morse test from certain disgruntled listeners.

This letter is not meant to be self-congratulation, or smugness on my part, but perhaps may give encouragement to some. About two years ago, I found out about Amateur Radio, from an American magazine, and later, bought an old receiver. I learnt Morse by pounding away on a Morse key, and listening to the clicks it made. Swotting from various books (your *Examination Manual* proved invaluable), I prepared myself for the November RAE and passed. The Morse test followed, and in February, the precious "ticket" arrived. Only then, for the first time, did I meet a radio amateur! I am certain that had there been an amateur in the town, he would have helped in every way possible; unfortunately, there was not.

So to short wave listeners who are in the same position as I was I say, use a bit of common sense and get on with it—alone.

Yours faithfully,

E. RONALD EDWARDS, GW3RUE
(age 17yrs.)

Denbigh.

Forthcoming Events

Details for inclusion in this feature should be sent to the appropriate Regional Representatives by the first of the month preceding publication. A.R.s and club secretaries are reminded that the information submitted must include the date, time and venue of the meeting and, whenever possible, details of the lecture or other event being arranged. Regional Representatives are requested to set out the copy, preferably typed double spaced, in the style used below. Standing instructions for more than three months ahead cannot be accepted.

REGION 1

- Ainsdale (ARS).**—October 9, 23, Russell Road, Methodist Church Hall, Southport.
Blackburn.—Fridays, 8 p.m., West View Hotel, Revd. Road.
Blackpool (B & FARS).—Mondays, 8 p.m., Pontins Holiday Camp, Squires Gate.
Bury (BRS).—October 8 (provisional date for Annual Dinner), November 12 (talk by Jack Bennett, G3PVG), 8 p.m., Knowsley Hotel, Kay Gardens.
Chester.—Tuesdays, 8 p.m., YMCA.
Eccles (E & DAC).—Tuesdays, 8 p.m., The Congregational Mission Church, King Street.
Liverpool (L & DARS).—Tuesdays, 8 p.m., Gladstone Mission Hall, Queens Drive, Stoneycroft.
Macclesfield.—October 15, 29, 42 Jordongate.
Manchester (M & DARS).—Wednesdays, 7.30 p.m., 203 Droylsden Road, Newton Heath, Manchester 10. (SMRC).—Fridays, 7.45 p.m., Rackhouse Community Centre, Rackhouse, Daine Avenue, Northenden.
Morecambe.—October 2, November 6, 125 Regent Road.
Preston.—October 8, October 22 (visit to Ministry of Aviation, Barton Hall). Meetings start with a Morse practice at 7.30 p.m., St. Paul's School, Pole Street.
Southport (SRS).—Wednesdays, 8.30 p.m., Sea Cadets Camp, The Esplanade.
Stockport.—October 9, 23, November 6, 8 p.m., The Blossoms Hotel, Buxton Road.
Wirral.—October 2, 16, November 6, 7.45 p.m., Harding House, Park Road West, Claughton.

REGION 2

- Barnsley.**—October 25 (debate), November 8 ("Our Club History," by T. Malkin, GSIV), 7.30 p.m., King George Hotel, Peel St.
Catterick.—Tuesdays and Thursdays, 7.30 p.m., Club Room, Vimes Rd., Catterick Camp.
Halifax.—November 12 ("QSLing," by Mr. Lawless, G3NIZ), 8 p.m., Beehive and Crosskeys Inn.
Halifax (Northern Heights ARC).—October 9 (discussion on Jamboree), October 23 (display of members gear), 7.30 p.m., Sportsman Inn, Ogden, October 19, 20 (Scout Jamboree-on-the-Air).
Scarborough.—Thursdays, 7.30 p.m., Chapman's Yard, North Street.
Sheffield.—Fourth Friday in each month, 8 p.m., 8 Sandbeck Place.
York.—Tuesdays (Learners and Morse Training), 7.30 p.m., Thursdays (Club Night), 8 p.m., 61 Micklegate.

REGION 3

- Birmingham (MARS).**—October 15, 7.30 p.m., Birmingham and Midland Institute, Paradise Street. (MRCC).—October 4, 7.30 p.m., Weatheroak, Wythall. (Slade).—October 11, 25, 7.45 p.m., The Church House, High Street, Edington.
Cannock (CCARS).—October 3, 7.30 p.m., "The Tavern," Bridgetown.
Coventry (CARS).—Mondays, 8 p.m., Willenhall Scout HQ, Little Farm Buildings, Littlethorpe, St. James's Lane, Coventry.
East Worcestershire.—October 10 ("Principles of Transistors," by ex-G3GYP), 8 p.m., Old People's Centre, Park Road, Redditch, October 19-20 (Scout Jamboree-on-the-Air).
Lichfield (ARS).—October 7, 7.30 p.m., Swann Inn, Lichfield.
Stourbridge (STARS).—October 18 (Annual Dinner), 8 p.m., Bell Hotel.
Sutton Coldfield (ARS).—October 11, 25, 7.30 p.m., 92 The Parade, Sutton Coldfield.
Wolverhampton (WARS).—October 7 (AGM), 8 p.m., Neachells Cottage, Stockwell End, Tettenhall.

REGION 4

- Burton-on-Trent (ARS).**—Wednesdays, 7.30 p.m., Club Room, Stapenhill Institute, Burton-on-Trent.

- Chesterfield (C & DARS).**—October 9, November 13, 7.30 p.m., Newbold Observatory, Newbold Road, Chesterfield.

- Derby (D & DARS).**—October 2 (Surplus Sale), October 6 (D/F Contest, President's Trophy), October 9 (Open Evening), October 16 (D/F Practice Run No. 6), October 23 ("Theory of Adding Machines," G. P. Miles), October 30 ("Application of Adding Machines," G. P. Miles), November 2 (trip to RSGB Exhibition), November 6 (Surplus Sale), 7.30 p.m., Room No. 4, 119 Green Lane, Derby. (DSW Exp. Soc.).—Fridays, 7.30 p.m., Sundays, 10.30 a.m., Club Room, Nunsfield House, Boulton Lane, Alvaston, Derby.

- Grantham (G & DARS).**—Mondays, 7.30 p.m., Club Room, rear of Manners Arms Hotel, London Road, Grantham.

- Grimsby (G & DARS).**—October 10 (AGM), October 24 (Open), 8 p.m., Grimsby Model Engineers Club Room, Fletchers Yard, Wellgate, Grimsby.

- Leicester (LRS).**—Mondays, 7.30 p.m., Club Rooms, Old Hall Farm, Braunstone Lane, Leicester.

- Loughborough (RCL).**—Fridays, 7.30 p.m., Corporation Hotel, Wharnclyffe Road, Loughborough.

- Lincoln (LSWC).**—First Wednesday in each month, 7.30 p.m., Lincoln Technical College, Cathedral Street, Lincoln.

- Mansfield (MRC).**—Fridays, 7.30 p.m., Hope & Anchor Hotel, Union Street, Mansfield.

- Melton Mowbray (ARS).**—October 17 ("Amateur Radio in the Arctic," recorded lecture), 7.30 p.m., St. John Ambulance Hall, Asfordby Hill, Melton Mowbray.

- Nottingham (ARC).**—Tuesdays and Thursdays, Room No. 3, Sherwood Community Centre, Woodthorpe House, Mansfield Road, Sherwood.

- Northampton (NSWC).**—Thursdays, 7 p.m., Allen's Pram Works, 8 Duke Street, Northampton.

- Peterborough (P & DARS).**—October 4, 7.30 p.m., Room No. 14, Peterborough Technical College.

- Workshop (NNARS).**—Tuesdays (beginners), Thursdays (informal), 7.30 p.m., Club Room, Victoria Institute, Eastgate, Worksop, Notts.

REGION 5

- Cambridge (C & DARC).**—Fridays, 7.30 p.m., Club Headquarters, Corporation Yard, Victoria Road, Cambridge. October 4 (talk and demonstration by J-Beam Aerials), October 18-19 (Scout Jamboree-on-the-Air).

- Luton.**—Mondays, 7.30 p.m., Surrey Street Schools, Luton.

- March (M & DRAS).**—Tuesdays, 7.30 p.m., rear of Police Headquarters, High Street.

- Sheffield (S & DARS).**—Thursdays, 7.45 p.m., Digswell House, Hitchin Road.

REGION 6

- Cheltenham.**—First Thursday in each month, 8 p.m., Great Western Hotel, Clarence Street.

REGION 7

- Acton, Brentford & Chiswick (ABCRC).**—October 15, 7.30 p.m., AEU Club, 66 High Road, Chiswick. (Tape Recording "Basic Transistor Principles.")

- Bexleyheath (NKRS).**—October 10 ("Junior Forum"), 7.30 p.m., Congregational Hall, Chapel Road, Bexleyheath.

- Barnet (BRC).**—October 29 (Lecture), 8 p.m., Red Lion Hotel, Barnet.

- Chingford (SC).**—Fridays (except first in month), 8 p.m., Chingford Community Centre, Enday Hill.

- Croydon (SRCC).**—October 11, 7.30 p.m., Blacksmith's Arms, South End, Croydon.

- Dorking (D & DRS).**—October 8, 8 p.m., Wheatsheaf, Dorking.

- East Ham.**—Tuesdays fortnightly, 8 p.m., 12 Leigh Road, East Ham.

- East London District.**—October 20 (G3AAE on "H.F. Propagation"), 2.30 p.m., Ilford Town Hall, High Road, Ilford.

- East Molesey (TVARTS).**—October 2 (Talk and demonstration on "Amateur Television" by D. Jones, G3LYF), 8 p.m., Carnarvon Castle Hotel, Hampton Court.

- Edgware & Hendon (EARDS).**—October 14 (F. W. Fletcher, G2FUX, on his tour of North America), October 28 (K. R. Clarke, G3KRC, "Hints & Kinks" and NFD Film), 8 p.m., John Keble Hall, Church Close, Deans Lane, Edgware.

- Enfield.**—October 17 (Talk by G3HRH on "Aerials"), 7.30 p.m., George Spencer School, Southbury Road, Enfield.

- Gravesend (GRS).**—October 16, 7.30 p.m., R.A.F.A. Club, 17 Overcliffe, Gravesend.

- Guildford (G & DRS).**—Second and fourth Friday in each month, 8 p.m., City Cafe, Onslow Street, Guildford.

- Harlow.**—Tuesdays, 7.30 p.m., rear of G3ERN (G. E. Read), High Street, Harlow.

- Harlow (SRC).**—Wednesdays, 7 p.m., Edinburgh Way, Harlow.

- Harrow (RSH).**—Fridays, 8 p.m., Roxeth Manor County School, Eastcote Lane, Harrow.

- Holloway (GRS).**—Mondays & Wednesdays (RAE and Morse), 7 p.m., Fridays (club), 7.30 p.m., October 4 (G6CJ) and October 18 (G3DZV), Montem School, Hornsey, N.7.

- Hounslow (HARDS).**—Mondays, 7.30 p.m., Canteen, Mogden Main Drainage Dept., Mogden Works, Isleworth.

- Ilford.**—Thursdays, 8 p.m., 579 High Road, Ilford (nr. Seven Kings Station).

- Kingston.**—October 3 (Talk on Pye TV), October 17 (AGM), October 31 ("Tape Records" by Brenell Engineering), 8 p.m., YMCA, Eden Street, Kingston. (Morse Classes weekly on Fridays at 2 Sunray Avenue, Tolworth.)

- Leyton & Walthamstow.**—October 22, 7.30 p.m., Leyton Senior Institute, Essex Road, E.10. (Interested new members contact A. Rix, 17 Forest Drive East, E.11.)

LONDON MEMBERS' LUNCHEON CLUB

will meet at the Bedford Corner Hotel, Bayley Street, Tottenham Court Road at 12.30 p.m. on Fridays, October 18, November 15 and December 13, 1963. Telephone table reservations to HOL 7373 prior to day of luncheon. Visiting amateurs especially welcome.

- London U.H.F. Group.**—October 3 ("Transistors or Valves?"), November 7 ("Aerials for V.H.F. and U.H.F."), by F. J. H. Charman, G6CJ), 7.30 p.m., The Bull and Mouth,bury Place (off Bloomsbury Way), London, W.C.1.

- Loughton.**—October 11, 7.30 p.m., Loughton Hall, nr. Debden Station.

- Mitcham (M & DRS).**—October 19, 20, International Boy Scouts Jamboree-on-the-Air, "The Canons," Madeira Road, Mitcham.

- New Cross (CARS).**—Fridays, 8 p.m., 225 New Cross Road, S.E.14.

- Norwood & South London (CP & DRC).**—October 19, CD Training Centre, Bromley Road, Catford.

- Paddington (P & DARS).**—Wednesdays, 7.30 p.m., Beauchamp Lodge, 2 Warwick Crescent, W.2.

- Purley (P & DRC).**—October 4 (Junk Sale), October 18 ("Syds Evening of Logic," Part II), 8 p.m., Railwaysmen's Hall (Side Entrance), Whytecliffe Road, Purley.

- Reigate (RATS).**—October 19, 7.30 p.m. (John Rouse, G2AHL, Editor of RSGB Bulletin), High Street, Reigate.

- Romford (R & DRS).**—Tuesdays, 8.15 p.m., RAFA House, 18 Carlton Road, Romford.

Science Museum (CSRS).—Monday, October 7, ("Electricity Generating Stations" by J. C. Pellott of CEGB), 6.30 p.m., South Kensington.

Sidcup (CVRS).—October 3 ("The Art of Short Wave Listening"), 7.30 p.m., Congregational Church Hall, Court Road, Eltham.

Slough (SARS).—First Wednesday in each month, 8 p.m., United Services Club, Wellington Street, Slough.

Southgate & District.—October 10 (informal), 8 p.m., Atlanta School, Tottenham Road, N.13.

St. Albans (Verulam ARC).—October 16, 7.30 p.m., Headley Road, St. Albans.

Sutton & Cheam (SCRS).—October 15 (Film Show on Mullard Transistors), 8 p.m., The Harrow, High Street, Cheam.

Uxbridge (UDRS).—October 14, 28 ("Top Band and 80m Transmitter Construction"), 7.30 p.m., St. Andrews Church Scout Hut, Uxbridge Road.

Welwyn Garden City.—October 17 ("Brains Trust" and BICC films), 8 p.m., Vineyard Community Centre, Digswell Road.

Wimbledon (W & DRS).—October 11, 8 p.m., Community Centre, St. Georges Road, Wimbledon, S.W.19.

REGION 8

Crawley (CARC).—October 9 (informal meeting). For details contact G3FRV. October 23 ("Hints and Tips"), by K. Franklin, G3JKF, 8 p.m., West Green Centre, Crawley.

REGION 9

Bath.—October 9, 7.30 p.m., Committee Room, Bath Technical College.

Bristol.—October 25, 7.15 p.m., Royal Fort, Bristol University, Woodland Road, Bristol 8.

Burnham-on-Sea.—Second Tuesday in each month, 8 p.m., Crown Hotel, Oxford Street, Burnham-on-Sea.

Camborne (CR & TC).—First Thursday in each month, Staff Recreation Hall, SWEB Headquarters, Poole, near Camborne.

Exeter.—First Tuesday in each month, 7.30 p.m., YMCA, St. David's Hill, Exeter.

Plymouth (PRC).—First Tuesday in each month, 7.30 p.m., Guild of Social Service Building, Plymouth. Other Tuesdays, Virginia House Settlement, St. Andrews Cross, Plymouth.

South Dorset (SDRS).—First Friday in each month, 7.30 p.m., alternately at Waverley Hotel, Westham, Weymouth, and Labour Rooms, West Walks, Dorchester. October meeting at Weymouth.

Torquay (TARS).—October 12 ("Loudspeakers—Then and Now," by R. Ashby, G3NBR), Club HQ, Belgrave Road, Torquay.

Weston-super-Mare.—First Tuesday in each month, 7.15 p.m., Technical College, Lower Church Road.

Yeovil (YARC).—Wednesdays, 7.30 p.m., Park Lodge, The Park, Yeovil.

REGION 10

Cardiff.—October 14 (AGM), 7.30 p.m., TA Centre, Park Street, Cardiff.

REGION 11

Prestatyn (FRS).—October 28 (Slow Morse, 7.30 p.m.; junk sale and auction, 8 p.m.), The Clubroom, Railway Hotel, Prestatyn.

REGION 13

Edinburgh (LRS).—October 10 ("Early Experiences on V.H.F.," by GM3DDE and GM3DQ), October 24 (surplus sale), 7.30 p.m., YMCA, 14 South Saint Andrew Street, Edinburgh.

LOOKING AHEAD

October 30–November 2.—RSGB Radio Communications Exhibition.

December 7.—Barnet Radio Club Annual Christmas Party.

December 20.—RSGB Annual General Meeting.

June 21, 1964.—Longleat Mobile Rally.

August 16, 1964.—Derby Mobile Rally.

REGION 16

Basildon (BDARS).—Details of meetings may be obtained from the Hon. Secretary, G3RQT, 59 Waldegrave, Basildon.

Chelmsford (CARC).—First Tuesday in each month, 7.30 p.m., Marconi College, Arbour Lane, Chelmsford.

Southend (SDARS).—Alternate Fridays, 7.30 p.m., in the canteen of E. K. Cole Ltd., Priory Road, Prittlewell, Southend. Further details from G3NPF, 2 Edith Road, Prittlewell.

Great Yarmouth (GYRC).—Fridays, 7.30 p.m., Electric Social Club (opposite Steward and Patersons), North Quay, Great Yarmouth.

REGION 17

Wessex (WARG).—October 6, 1 p.m., visit to IFA Repeater Station, Stockland Hill, Honiton.

October 14, 7.30 p.m., visit to Telephone Exchange, Lansdowne Road, Bournemouth. October 21 (Morse Class and Ragchew), 8 p.m., 47 New Road, Northbourne, Bournemouth.

November 4 (Open Night, Junk Sale and Raffle), 8 p.m., Cricketers Arms, Windham Road, Bournemouth.



Glass encapsulated quartz crystal units, both miniature and subminiature, are new products of Mullard Ltd., Mullard House, Torrington Place, London, W.C.1. As the holders can be evacuated, higher long-term stability over metal encapsulated types is claimed, together with a 100 per cent increase in Q . The drift figures for a period of one year are 0.0003 and 0.00035 per cent. Two holders are in current production, the metal equivalents of which are: HC-6/U (US) or D (UK), available in frequencies from 3.5 to 87 Mc/s; and the HC-18/U (US) or J (UK), in the range 20 to 61 Mc/s (third overtone).

A new rectangular meter, designated the model 55, is being manufactured by Taylor Electrical Instruments Ltd., Montrose Avenue, Slough. It has been designed to conserve visible panel space, which it achieves with a rear of panel mounting, the movement being totally hidden, leaving only the scale area and a slim bezel in sight. The scale length is approximately 4 in., and the lowest f.s.d. available is 10 μ A d.c.

Circuitape, obtainable from the Circuitape Division, B. & T. Designs (Richmond) Ltd., High Street, Tring, Herts., is a convenient system for rapidly drawing neat theoretical circuits. The component symbols, of which there are 30 types, are printed on transparent adhesive labels, having a matt upper surface which accepts ink. The symbols can be pressed on to a sheet of paper, and the interconnecting lines drawn in. Each type is available in dispensers of 500 symbols, and the cost is approximately 1d. per component.

The OMRON series of relays has been introduced by Key-switch Relays Ltd., 120-132 Cricklewood Lane, London, N.W.2. Twelve types are currently available, and range from a sub-miniature d.p.d.t., 30 watt model (type MH2) priced at 10s. 5d.,

to an eight pole, 15 amp model (type MA415) at 48s. 6d. All the relays can be wound for either d.c. or a.c./d.c. operation.

Rectifiers in kit form are being produced by Electro Automat Ltd. (Sales Engineering Dept.), Swinton, Manchester. Each kit contains a considerable quantity of rectifier plates in three sizes (18 \times 18mm, 23 \times 23mm, and 30 \times 30mm), spindles, contacts, insulating tubes, wire, and all necessary washers. Single rectifier plates, rated at 30 volts r.m.s., and 60, 125 and 300 mA respectively for each size, can be assembled into stacks of all standard configurations, for both single and three phase. The cost of a kit, complete with instructions, is £7 7s.

The "Zeniac" Zener diode selector incorporates 11 switched Zener diodes, together with a voltage and current meter, in a case styled similar to the latest "Avomitor." The instrument is manufactured by AVO Ltd., Avocet House, 92-96 Vauxhall Bridge Road, London, S.W.1, and incorporates International Rectifier Company diodes. Both 5 and 10 per cent tolerance diodes are available, in nominal voltages of 3.9, 4.7, 5.6, 6.8, 8.2, 10, 12, 15, 18, 22 and 27. The meter, which has four ranges of 10/30 volts and 100/300 mA, can be used either in conjunction with the diodes, or as an independent movement. The "Zeniac" is housed, with leads and instructions, in a case measuring 7 $\frac{1}{2}$ \times 4 \times 1 $\frac{1}{2}$ in.

A new multi-range test meter, the Avo Multimeter Mk. 4, has recently been introduced by Avo Ltd., 92/96 Vauxhall Bridge Road, London, S.W.1, to supersede all previous models in the series. The accuracy conforms to B.S. 89/54 (i.e., d.c. \pm 2.25 per cent. and a.c. \pm 2.75 per cent of f.s.d.). The meter incorporates a new style scale plate, together with improved internal assemblies and construction.

The Radio Communications Co., Telcomm Works, Market Square, Crewkerne, Somerset, are marketing a new, self-contained v.h.f. receiver, three separate models being available: the VCR/A tunes 65 to 125 Mc/s; the VCR/B 78 to 175 Mc/s; and the VCR/C 96 to 225 Mc/s. Each model is a 10 valve single superhet, with an internal 5 in. loudspeaker and a built-in power supply for 200/240 volt or 100/120 volt a.c. at 90 watts, or to special order, 12 volts d.c.

Can You Help?

W. A. Harrison, B.R.S.25069, 25 Wilmount Street, Woolwich, London, S.E.18, who requires the manual or circuit details for the Marconi Wavemeter type GL3T No. 3 ZC2129?

RSGB Slow Morse Practice Transmissions

Owing to pressure on space, the list of Slow Morse Practice Transmissions has been held over.

Closing date for November issue
October 11

Closing date for the December issue
November 8

Publications for the Radio Amateur and Shortwave Listener

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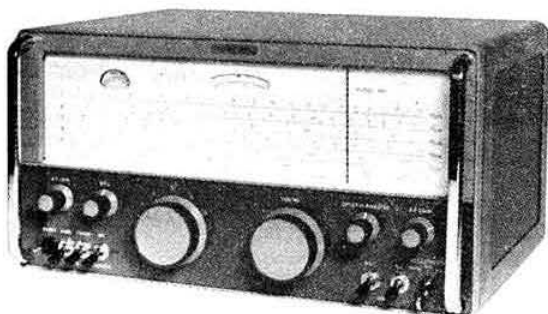
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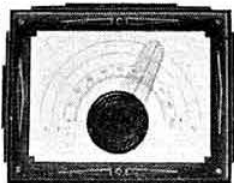
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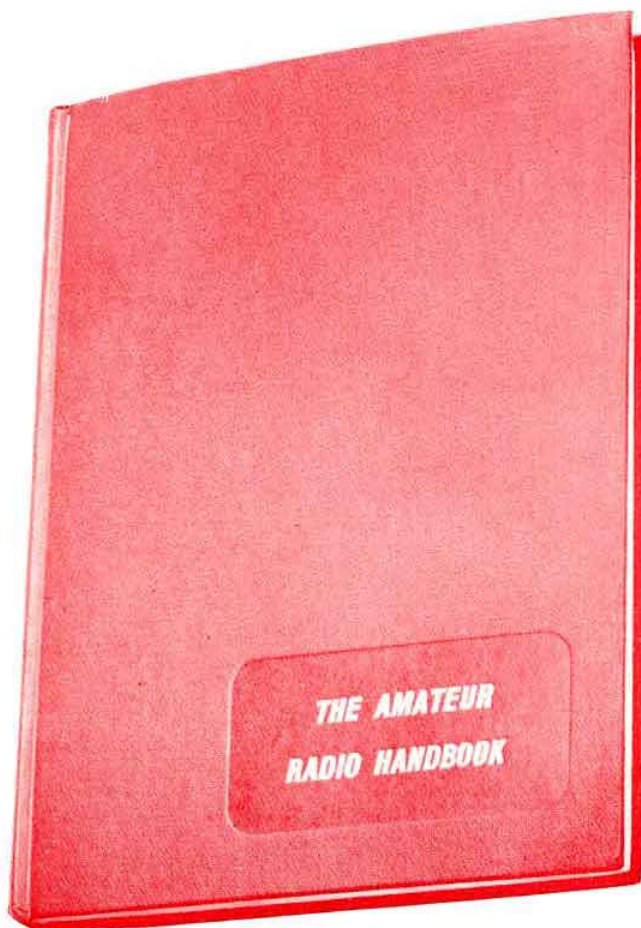
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