RSGB BULLETIN

JULY 1967
VOL. 43, No. 7

SEE PAGE 435

JOURNAL OF THE RADIO SOCIETY OF GREAT BRITAIN

KW2000A SSB TRANSCEIVER

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DESIGNED
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with no extras to buy

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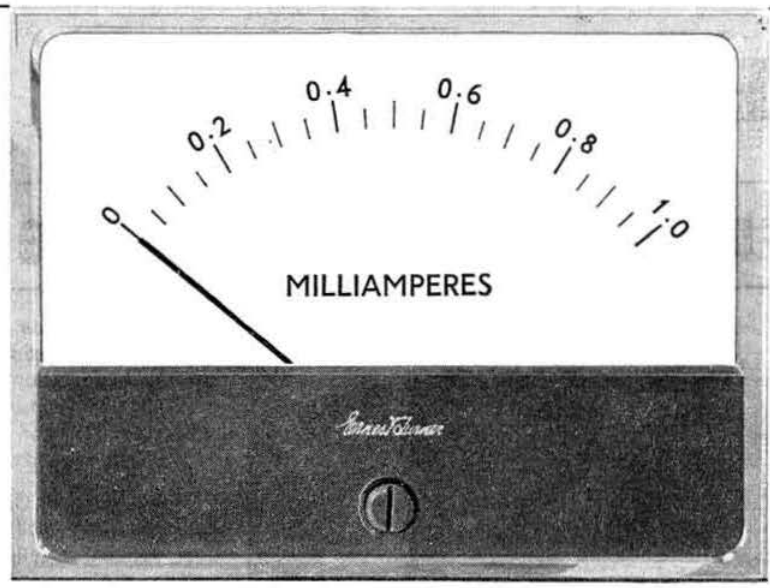

Model 643 Illustrated actual size

Clearly... Ernest Turner

Model 643 is one of the rectangular models in the Ernest Turner range of clear-front instruments.

This series has been designed to meet the requirement for a transparent-cased meter of clean, square-cut lines based on our popular moulded rectangular series. In addition, this type of instrument has the advantage of shadowless presentation and a clear, open dial which lends itself admirably to multiple and other special scaling.

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A

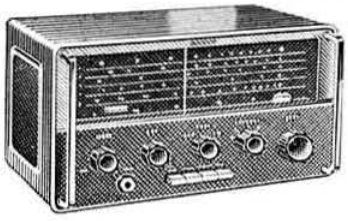
Eddystone EA 12

Amateur communication receiver

An amateur bands double-conversion superheterodyne receiver, for a.m, c.w, and s.s.b reception. For all amateur channels between 1.8 MHz and 30 MHz in nine 600 kHz bands with 28 MHz to 30 MHz in four bands.

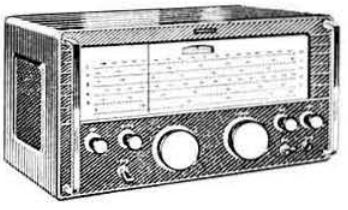
Primary features. Crystal controlled 1st oscillator, 2nd oscillator with continuously variable selectivity to 50 Hz, muting switched or by external relay, twin noise limiters, for a.m/c.w, and s.s.b, short-term drift better than 20 Hz and less than 100 Hz in any one hour, 'S' meter calibrated in nine levels of 6 dB and dB levels beyond 'S9,' two a.g.c time constants, deep slot filter, independent r.f, i.f, and audio gain controls with outputs for f.s.k and panoramic adaptor. **£185.**

OTHER RECEIVERS IN THE FAMOUS EDDYSTONE RANGE



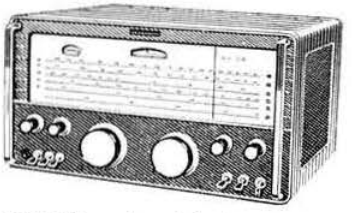
EC10 communications receiver

The fully transistorized EC10 communications receiver, supreme in its class, covers both medium wave broadcasting and all shortwave service to 30 MHz. Incorporating the famous Eddystone tuning drive, with logging scale and auxiliary vernier, shortwave reception is particularly simple. Battery operated or from optional a.c mains unit. **£48.**



840C A.C or D.C communications receiver

An 8-valve receiver with gap free coverage from 600 to 10 metres providing excellent reception of broadcast programmes and all major s.w channels including marine and international distress frequencies. The famous Eddystone extended band spread and logging scale is an essential feature. Suitable for a wide range of a.c and d.c voltages. Fully tropicalized. **£66.**



940 13-valve high sensitivity receiver

A superb high performance receiver incorporating two r.f and two i.f stages, push-pull output and silicon diode noise limiter circuit. Gap free coverage from 480 kHz and suitable for reception of c.w, a.m, and s.s.b modes. Exceptional sensitivity and stability. Built to professional standards for the serious listener. **£133.**

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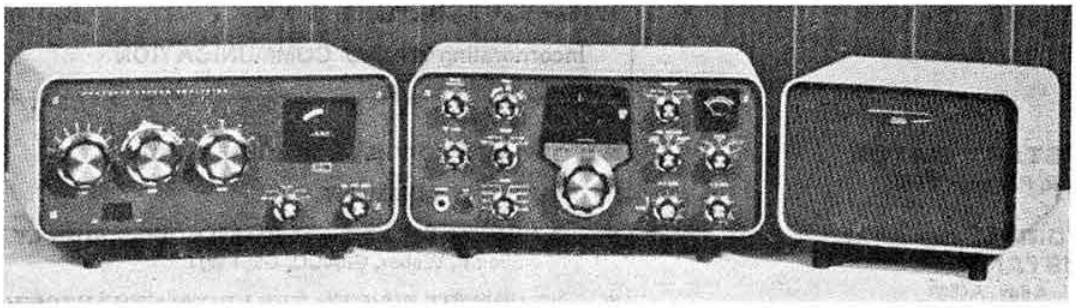

The HEATHKIT® SB-101 Transceiver and SB-200 KW Linear Plus Accessories

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SB-101 80-10 Metre SSB Transceiver

● 180 watts PEP, 170 watts CW ● Switch select Upper or Lower sideband or CW ● CW sidetone ● PTT or VOX ● Linear Master Oscillator with 1 kc dial calibration (resettable to 200 cps ● Provision or switch selection of optional SBA-300-2 CW filter ● Provision for external LMO ● Separate CW offset carrier crystal ● 100 kc/s calibrator

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Kit SB-200, 41 lbs..... **£107 10 0**

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Assembled SBW-600, 5 lbs..... **£10.10.0**
Kit SB-600, 5 lbs **£9.0.0**

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● Supplies voltages for SB-101 ● Provisions for remote operation (can be located in engine compartment) ● Circuit breaker protection ● 12 to 14.5V DC input (pos. or neg. earth as requested).

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Kit HP-13, 7 lbs. **£33 0 0**

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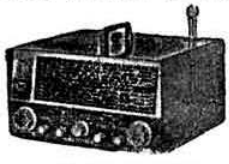

GC-1U Receiver

DX-100U Transmitter

RA-1 Receiver

HIGH SENSITIVITY GENERAL COVERAGE RECEIVER, Model RG-1 • Frequency coverage from 600 kc/s to 1·5 Mc/s and 1·7 Mc/s to 32 Mc/s • Send for details.
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3" OSCILLOSCOPE OS-2 • A small general purpose scope • **Kit £23.18.0 Assembled £31.18.0**

REFLECTED POWER METER, Model HM-11U • Indicates Antenna/Tx match • **Kit £8.10.0 Assembled £10.15.0**

"AMATEUR" BANDS RECEIVER, Model RA-1 • Covers all "amateur" bands • 10-160 metres • Half-lattice crystal filter at 1·6 Mc/s I.F. • Provision for fixed, portabel or mobile uses • Switched USB and LSB for SSB •
Kit £39.6.6 Assembled £52.10.0

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Either model Kit £8.10.0 Assembled £12.14.0

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VARIABLE FREQ. OSCILLATOR, Model VF-1U • Calibrated 160-10m • Fixed output on 160 and 40m • Ideal for our DX-40U and similar TX •
Kit £10.17.6 Assembled £15.19.6

GRID DIP METER, Model GD-1U • Continuous coverage 1·8 to 230 Mc/s • Self contained •
Kit £11.9.6 Assembled £14.9.6

(All British models are available in kit form or assembled. Deferred terms available U.K. over £10.)

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SB-401E Transmitter

SB-301E Receiver

80-10M deluxe AMATEUR BANDS RECEIVER, Model SB-301E • Of advanced concept, this model offers unsurpassed value • Up-to-date design • Latest construction techniques • Outstanding performance • Wt. 22lb. Power reg: 115-230V A.C. 50-60c/s 50W. Size: 14⅞" × 6⅝" × 13⅜". **£125.0.0 (less speaker)**
Assembled £155.0.0

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John A. Rouse, G2AHL

AMONG the many who attended the London Single Sideband dinner at The Royal Garden Hotel on 20 May, 1967, no one seemed to enjoy the occasion more than John Rouse. After a period of illness, which began in January of this year, he had been making excellent progress and the Sideband dinner provided the opportunity for him and his wife, Hazel, to relax among their many friends. Three days later John attended a meeting of the Council when the momentous decision was taken to proceed with plans to purchase a new Headquarters. He spent the following day at RSGB Headquarters dictating letters and minutes and on Thursday he continued work at home on a new edition of *The Amateur Radio Handbook*, a task that had occupied much of his time during recent months. He was not well on Friday morning but his doctor did not diagnose anything seriously wrong. During the afternoon he suffered a heart attack and died immediately at the early age of 44 years.

John Rouse will be especially remembered for the warmth of the welcome he extended to members when they visited Headquarters and for the heartiness of his laughter—an infectious laugh that brought happiness to all who were with him at the time.

John held an artificial aerial licence (2AHL) prior to the Second World War and during the war he served with Royal Signals. While in India, after hostilities had ceased, he operated for a time as VU2AD. On his return to England he obtained a full licence (G2AHL) and operated regularly from that time until his death.

After spending a few years in the insurance world John Rouse joined the staff of the Society in 1952 as Assistant Editor, and although he had had no previous experience of journalism he quickly applied himself to the special problems of the Society's Journal.

A keen motorist, John Rouse did much to popularise Amateur Radio mobile work and, in particular, mobile rallies. For several years he contributed a regular mobile feature to the

Society's Journal and he was an early member of the Amateur Radio Mobile Society. He was also closely associated with the establishment of the Technical Development Sub-Committee and for the preparation of a technical programme of work leading-up to the production of equipment for display at the annual RSGB Amateur Radio Exhibition and subsequently publication of descriptions in the RSGB BULLETIN and *Handbook*. He was an enthusiastic v.h.f. worker and a keen supporter of the conventions held each year.

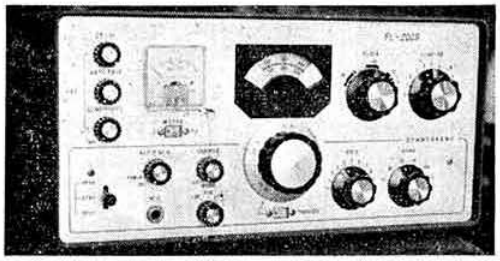
In 1958 John Rouse attended the IARU Region I Division Conference in Bad Godesberg, Germany, as an observer, but his main effort lay in the publications' side of the Society's work and in recent years he had devoted more and more of his time to new and revised RSGB publications. Although he did not have the time to travel very extensively on behalf of the Society he was a welcome speaker at regional meetings and other functions.

John Rouse will be sadly missed at RSGB Headquarters and by his many Amateur Radio friends throughout the world. Since the news of his death was announced last month the Society has received many letters of sympathy and tributes to John's ability.

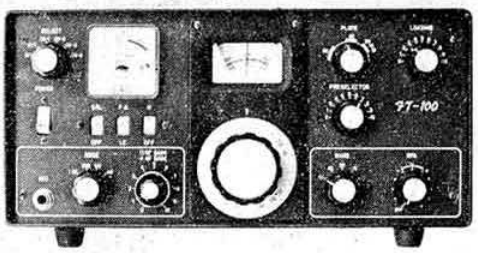
Cremation was at Guildford on 31 May when the Council was represented by John Graham, G3TR (Executive Vice-President), Roy F. Stevens, G2BVN (Immediate Past President), Norman Caws, G3BVG (Hon. Treasurer) and Leon Newnham, G6NZ (Past President). Others present included Douglas Findlay, D.F.C., G3BZG (Past President), John Clarricoats, O.B.E., G6CL (Hon. Member), Fred Lambeth, G2AIW (Vice-President), Austin Forsyth, O.B.E., G6FO (Editor, *Short Wave Magazine*), George Jessop, G6JP, Ronald Vaughan, G3FRV, Clem Jardine, G5DJ, Mrs Ceri Stone, G3SGN, and Mrs Sylvia Margolis (representing ARMS). Members of Headquarters staff, headed by D. W. Robinson, G3FMT, Trevor Preece, G3TRP, John Adey and Mrs Jardine were present.

J. C.

SOMMERKAMP "F" LINE



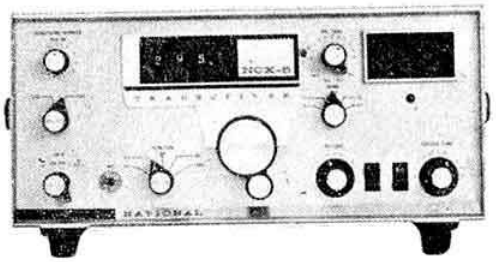
FL-200-B Tx. AM/CW/SSB. 240W p.e.p., 100W AM VOX, PTT, Break-in CW. Sidetone monitoring. Connectors for transceive with the FR-100-B supplied. Note:—The 6JS6A finals are the same electrically as the 6HF5 so the power ratings are *conservative*. **£130.**



FT-100 Transceiver. 150W p.e.p. all transistor except driver and P.A. 13" × 6" × 10" deep. **£180.**

NATIONAL

National 200. Low price transceiver 80-10; 200W p.e.p. SSB, AM, CW. **£160** less p.s.u. (p.s.u. kit £25).



NCX5 Mk.II top quality transceiver, 80-10; 200W p.e.p. SSB, AM, CW. **£225** less p.s.u. (p.s.u. kit £25).

Full details on request.

SOMMERKAMP — NATIONAL — LAFAYETTE

This urge on my part for creative writing is all very well, but it doesn't give me much chance to set out my stall, so I'll cut out the homespun philosophy bit this month and try flogging stuff instead.

RECEIVERS:

NEW.—Sommerkamp (tops in my view) £112.0.0. Lafayette in stock. The new HA500 at 42 gns and HA700 at 36 gns I feel are extremely good value for money. Particularly the HA500—how the heck they produce a double conversion hambander at this price I'll never know. Also the HA55A aircraft receiver, £19.7.6 impresses me.

SECONDHAND:

HA350, new demonstrator	£70.0.0
Drake 2B, C/W "Q" multiplier	£90.0.0
RG1	£35.0.0
R.107	£12.10.0
SP600JX	£95.0.0
Eddystone EA12	£110.0.0
Eddystone 888A	£55.0.0
Eddystone 940	£90.0.0
SR600	£65.0.0
SX28	£30.0.0
Marconi HR22	£85.0.0

TRANSMITTERS—NEW

Sommerkamp FL-200-B, terrific value ... £130.0.0

SECONDHAND: The best home brew copy of the LG300 I have ever seen. AM/CW. A beauty, with a separate monumental power supply ... £40.0.0

KW500 Linear	£45.0.0
Vanguard	£30.0.0
LG50	£25.0.0
Panda Cub	£25.0.0
DX100U	£55.0.0

Carriage on secondhand receivers and transmitters usually £1.0.0 extra.

TRANSCEIVERS:

NEW: The incomparable NCX5 Mk. 2 at £250.0.0 complete with p.s.u. kit and the new National 200 at £185.0.0 with p.s.u. kit take an awful lot of beating. These are in stock.

Deliveries of the FT.100 are slowly improving but still rough.

ODDS AND ENDS:

70 mc/s baluns, Marconi, post free	30/-
Bug keys	£4.10.0
Electroniques QP166	£12.12.0
HB166T transistor type	£15.15.0
Electroniques 1.6 mc/s transistor I.F. strip with xtal filter	£8.17.6
Bird R.F. Wattmeter calibrated to 1400 mc/s	£35.0.0
LED SWR Bridges	£6.18.0
Modulation scope A-100 imported from the States	£15.0.0
Johnson T-R switch	£3.0.0

Marconi filter unit. Dirty great steep sided xtal filters centred on 100 kc/s, 1 kc/s and 2 kc/s band widths with associated I.F. amps. If it's selectivity you want, you'll certainly get it... £10.0.0

HEADSETS: A nice German job, high or low impedance, or the Acos stethoset, high impedance. All at ... £1.1.0

1kc/s selective amplifier. Shove it in your audio output and attach high imp. phones. Fantastic CW selectivity ... £3.10.0

Scopes: R.C.A.	£15.0.0
Cossor 339	£15.0.0

Cossor 1049. *Mint* civilian, complete with motor driven camera (the camera alone costs well over £100.0.0!) ... £45.0.0

Marconi FM deviation meter. Unused and mint with all cables £5.0.0

Marconi TF144G/4 sig. gen. A1 ... £17.10.0

Sig. gen. type 20 calibrated 100 kc/s to 30 mc/s. Calibrated output down to 1 microvolt. A1 ... £12.10.0

Wide spaced variables, resistors, capacitors, chokes, relays, knobs, vibrators (6d. brand new!), meters, tag boards, (an assortment of 12 for 5/-) etc., etc. ...

ANTENNAS: Just got a bunch of Gotham Quads in. Full size, all aluminium, 3 banders (10, 15, and 20) single feed line. Quick, before they all go ... £23.10.0

SERVICE: What I like about John is that he is very, very quick and when you are paying labour costs, this is what counts, so if you have a real tough servicing problem, let John get his hammer and Stilsons at it, it'll save you a lot of money. He is the brilliant one and does the repairs; I am the stupid but meticulous one who does alignment, so if your Rx isn't up to snuff, let's have a go at it. If we can't improve it we make no charge. (Big-headed nit!)

POSTAGE: Please, please allow plenty for postage, we'll refund any excess. The number of clowns who order a dirty great transformer and enclose 6d. for postage amaze me!

A large s.a.e. will get you my lists.

73 de Bandit Bill,
VE8DP/G3UBO

J. B. LOWE

51 WELLINGTON STREET, MATLOCK, DERBYS.

Telephone No. MATLOCK 2817 (or 2430 after 6 p.m.)

CURRENT COMMENT *DISCUSSING TOPICS OF THE DAY*

Wireless Telegraphy Bill, 1967

THE third reading of this Bill took place in the House of Commons on Tuesday 13 June and the following extracts from Hansard are of direct concern to all radio amateurs.

Mr Edward Short (Postmaster-General) said, inter alia,

" In relation to Clause 7, I should like to repeat the assurance I gave my hon Friend the Member for Norwich, North, (Mr Wallace) in Committee—and I know that he will be much interested in this—that the Post Office will continue its close contact with the Radio Society of Great Britain, the amateurs' representative body. Before I make any Orders specifying apparatus on which the manufacture is to be banned, I will discuss it with this body. This will give full protection to legitimate interests of the amateurs. It would not make sense for me to exempt amateurs from any ban on making apparatus which I cannot license anyhow. Clause 7 is a worthwhile measure of consumer protection to keep off the market apparatus which I will not license because it will interfere with the use of radio which is licensed. Amateurs stand to gain from the Clause as do other licensed users of radio apparatus."

Mr Paul Bryan (the Shadow PMG) said, inter alia, " As to Part II we have expressed doubts on Clause 7 but I shall not express them again.

" We can only hope that the assurances which have been given by the Postmaster-General will be taken to heart by his successors, because everybody knows that they are necessary to benefit the amateur radio enthusiast whose rights we all wish to safeguard."

These extracts from speeches made in the House are self explanatory and it is gratifying to know that the views of the RSGB have received consideration from both sides of the House of Commons.

The Society is indebted to Mr. G. D. Wallace, M.P., for the support and interest that he has given, and to the many Members of Parliament who have raised the matter with the PMG after receiving letters from constituents who are members of the Society. The position has been completely clarified by several statements which appear in Parliamentary records and a potentially dangerous situation has been dissipated in a manner which must surely bring satisfaction to all concerned.

R. F. S.

FRONT COVER:

VE3AU's aerial system at Ottawa, Ontario used during this year's BERU contest. The rotator is home constructed, powered by a ½ h.p. 115 volt a.c. motor located five feet from the base of the tower. A three inch diameter aluminium pole rotates the three element tri-bander beam and with the mast shunt fed on 80 and 40m, an 80m through 10m aerial system is provided.

A Tunnel Diode Protected Power Supply

By SVEN F. WEBER, B.Mus., A.R.A.M., G8ACC*

SEMICONDUCTOR power supplies have become very popular in the last few years, and with good reason too. Apart from anything else, they are a lot more efficient in power in/power out ratios and can be made much smaller than their valve counterparts. Unfortunately, they have snags. If a power unit is made with a reasonably low output resistance (or impedance) and the output is accidentally shorted, considerably more current flows than is good for the semiconductors making up the power unit: they can depart in as little as a few microseconds for nether regions.... Switching the mains transformer on or off (or mains borne h.v. interference) can do it just as efficiently—due to voltage transients. When semiconductors behave and are docile, they are all we want, so the thing is to protect them from input voltage transients and output current surges.

Input

The input transients can be dealt with very simply: a capacitor and resistor across the transformer secondary (Fig. 1).

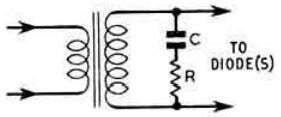


Fig. 1

The capacitance necessary to suppress the switch-off transient is given very nearly by [1]:

$$C = 400 \frac{\text{transformer total power rating}}{(\text{diode p.i.v.})^2} \mu\text{F}$$ for stalloy cores. When the transformer is switched on, voltage surges may occur due to oscillation of the transformer leakage inductance with the surge suppression capacitor. This can be damped to a safe value with a resistance in series with the capacitance: $R = 100\sqrt{R_1/7C}$ ohms where R_1 is the load resistance and the frequency is 50 c/s.

The reservoir capacitance is an effective short-circuit when the unit is switched on, so some series resistance before the reservoir is essential (Fig. 2):

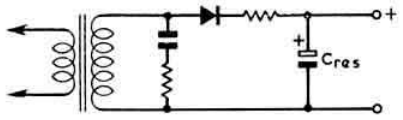


Fig. 2

The resistance can either be external or internal to the transformer to limit the surge to a safe value (say, 10 amps for a 1 amp rectifier).

Output

In Fig. 2 the output impedance will be high so the output voltage varies considerably with the current drawn. There are plenty of stabilizing circuits to reduce the output impedance and one which is not too complex is given in Fig. 3.

If a heavy output current surge arrives, TR3 could very well be blown up, and possibly TR2 as well. In other words, a current operated trip should switch the supply off *before* that kind of thing happens. A mechanical switch would be far too slow, so we are left with electronic switches.

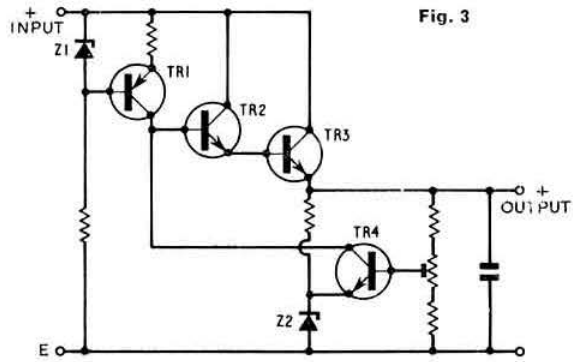


Fig. 3

The normal kind of switch either relies on a fairly heavy voltage drop (s.c.r.'s.) or a negative supplementary rail (Schmitt, Eccles-Jordan) for reliable working. It was to get round these disadvantages that a tunnel diode was used. A tunnel diode can switch in 1 mμS, but the switching range is small. Amplified, it could do the trick with ease.

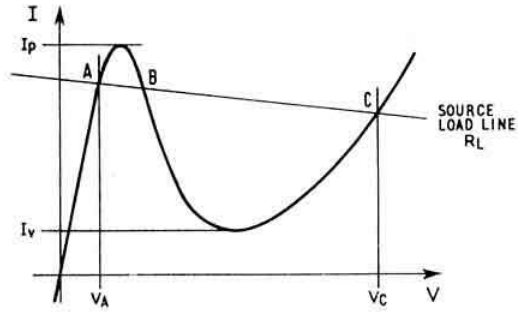


Fig. 4

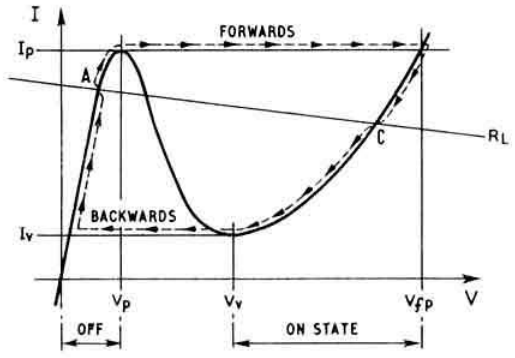
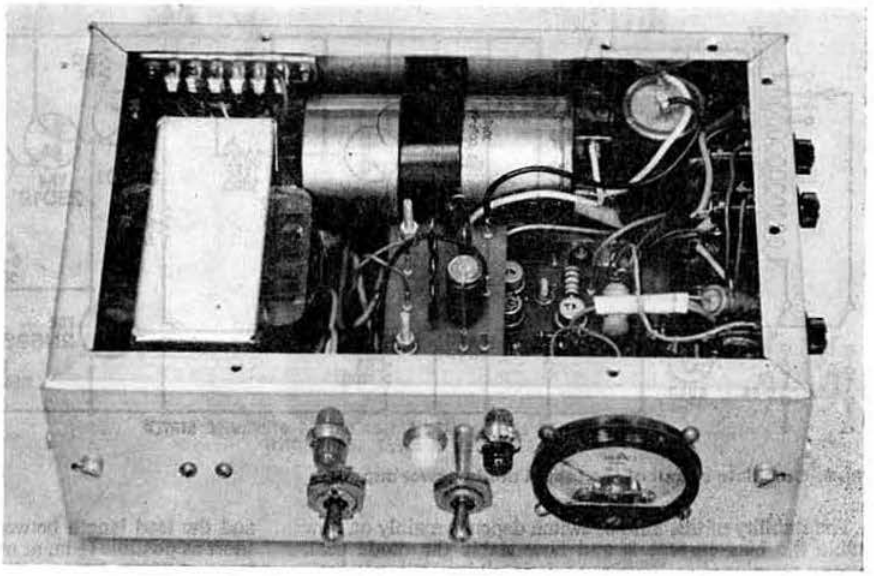


Fig. 5

* 65 Combemartin Road, Southfields, London, SW18.



The complete tunnel diode power supply designed and constructed by G8ACC. The circuit and details of the printed circuit board appear on the next page.

Switching using Tunnel Diodes

In a previous article on tunnel diodes [3], mention was made of driving a diode with a source impedance greater than that of the diode's own negative resistance (RSGB BULLETIN, Feb. 1965, p. 121). In fact, if a tunnel diode is driven from a current source (as it sees it), there can only be two places on the V/I curve where the device is stable; e.g., in Fig. 4, A and C. B is unstable, as it is on the negative resistance part of the characteristic. If the diode were biased to point A and it received a positive going pulse, provided that the pulse lifted it above the top of the curve, I_p, it would switch to C; and the only way it could be brought back again would be to have a negative going pulse going below the valley current, I_r. Or, alternatively, just switch the supply off. The sequence of events is shown in Fig. 5.

For a 1 mA tunnel diode (1N2939, 1N2940, JK19A, etc.), V_p is about 50 to 60 mV and V_{fp} is about 0·5V. The time taken to switch, *once V_p has been reached*, is easy to find approximately. With a CR combination, the time constant in seconds for the capacitor to charge up to 63 per cent of the supply voltage is equal to the capacitance multiplied by the resistance, in other words $t = CR$. R can be replaced by $\frac{V_{fp} - V_p}{I_p - I_v}$ and C can be taken as the junction capacitance.

With the 1N2940,

$I_p = 1$ mA
$I_v = 0{\cdot}15$ mA
$V_{fp} = 500$mV
$V_p = 60$ mV
$C = 5$ pF

making $t = \frac{(V_{fp} - V_p)C}{I_p - I_v}$

$= \frac{440.5.10^{-12}}{0{\cdot}85}$

$= 2{\cdot}5$ mμS.

2·5 mμS is a *little* bit too short! In fact having a plain unadorned tunnel diode switch (Fig. 6),

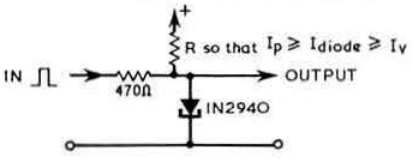
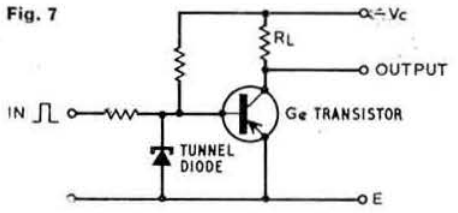


Fig. 6

a 10 pF capacitor charged up to 1 volt would be enough to switch it. The way to slow it down is to increase capacity across the diode. With 0·05 μF the switching speed drops to 25 μS, which is just about what is needed.

Fig. 7



The switching range, A to C or else V_p to V_{fp}, with a germanium tunnel diode, cannot be less than 300 mV. This can be amplified by hanging on a transistor directly-coupled stage on to the diode. Now the minimum voltage that "C" could be (in Fig. 1) is 350 mV (V_v) and the maximum 500 mV which is not enough to drive a silicon transistor. With a germanium transistor, however, things are different. When it is switched on, the major part of the tunnel diode bias current will be diverted to the base of the transistor—and then *this* switches on.

(Continued on next page)

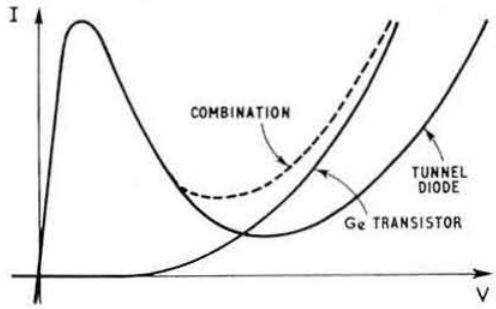


Fig. 8

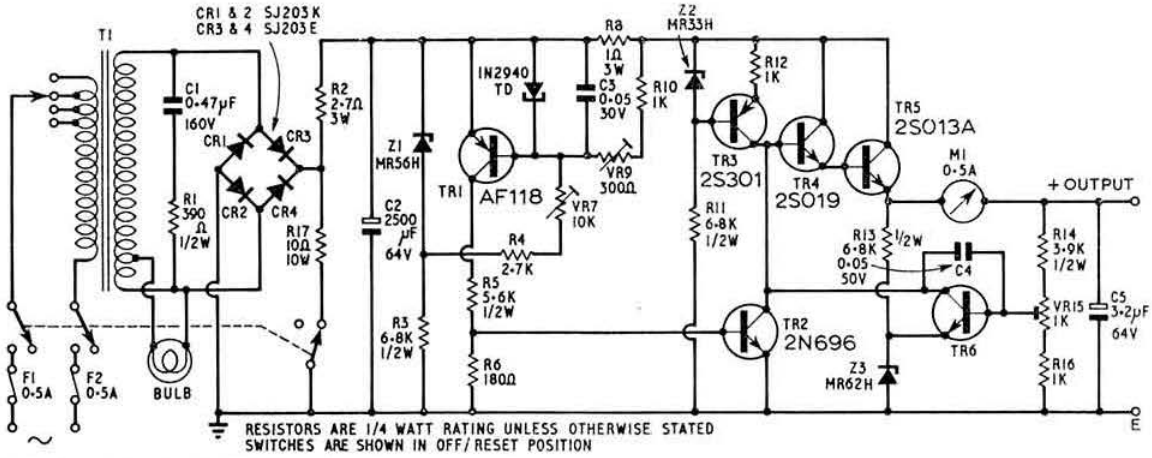


Fig. 9. Complete circuit of the tunnel diode power supply.

The stability of this kind of switch depends mainly on how stable the bias current is and how stable the diode peak current remains (I_p). With good design it is possible to have reliable tripping in a range as small as 1 per cent.

Complete Circuit

Fig. 9 is a ½ amp. 28-volt power supply with fairly low output impedance. It switches off in 25 μs at any current which may be desired, from 0 to a surge current of 0·8 amp—without even a flicker on the meter. The output voltage can be adjusted with VR15 to between 18 and 35 volts, and the voltage drops by 0·1 volt on full load.

The switch operates off a 1 ohm resistance in the main h.t. rail. VR7 controls the normal standing bias in the diode (about 0·75 mA) from a 5·6 volt zener diode (diodes of this range have the lowest temperature coefficient), and VR9 is a fine control for tripping. One practical point: the 0·05 μF capacitor (C3) across the diode junction should be ceramic and the lead length between it and the diode should be as short as possible (¼ in. at most). The d.c. amplifier used here is an AF118—because it's cheap and can stand the h.t. voltage. When the switch is off, the collector-emitter voltage of the AF118 is as near full h.t. as makes no difference. When the switch is operated, the transistor turns hard on ($V_{ce} = 0·5$ V) thus turning TR2 on (0·7-volt across the emitter-base junction). This brings the bases of TR4 and TR5 (a Darlington pair) down to ground level. The output voltage sinks to 5mV across 62 ohms, and 1·1 volts open circuited. Resetting is by switching the unit off and waiting for the reservoir capacitor to discharge through R17. The switch controlling R17 is ganged to the main power switch and should be a " break-before-make " type.

Resetting could be done by having a shorting button across the tunnel diode (and a protective fuse in the emitter circuit of TR5). While this method of resetting would work, no mechanical fuse can act fast enough to protect TR5 (and

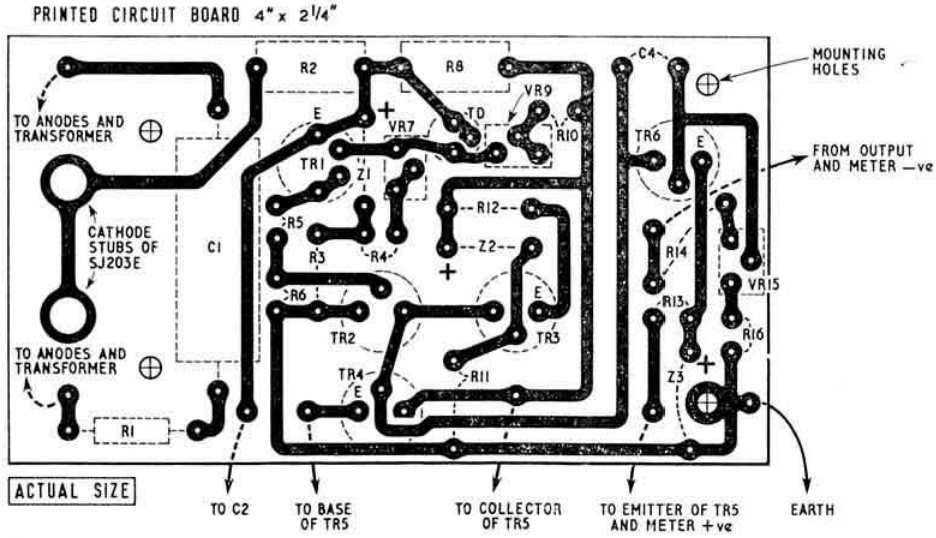


Fig. 10. Printed circuit layout.

quite likely the load as well) from burning out, if the unit still has got a short-circuited load connected across it.

If different cut-out times are needed, C3 can be changed or switched (Table 1):

Time μS	C3 μF	Time μS	C3 μF
10	0·02	100	0·2
25	0·05	250	0·5
50	0·1	500	1

500 μS (or $\frac{1}{2}$ millisecond) is the longest cut-out time-constant which can safely be used; and 10 or 25 μS should be sufficient protection, say, for overlay transistors or other high current, low impedance devices.

It would have been possible to have saved a transistor in this circuit (TR2) by having the switch in the negative line, but transistors of this kind are cheap, and it was thought worth while doing it this way, so as not to break the earth-line.

For higher currents, say 1·5 amps, the sensing resistor should be reduced to 0·3 to 0·5 ohms, the emitter resistance (R12) belonging to TR3 should be reduced to 560–620 ohms and, more important, TR4 (2S019) should have a heat sink. 1·5 A is the maximum that the final power transistor (2S013A) must pass. Any *n-p-n* transistors can be used in the stabilizer section provided they can stand the voltage and current. For negative h.t. lines, *n-p-n* transistors should be swapped for *p-n-p*'s—and vice versa—and the zener and tunnel diodes should have their connections reversed.

This power supply has been in operation for quite some time and has proved its worth several times when experimental transistor stages decided to go berserk!

COMPONENTS LIST FOR FIG. 9

C1 0.47 μF 160V (Mullard)
C2 2500 μF 64V (Mullard)
C3 0.05μ ceram 30V
C4 0.05μ ceram 50V
C5 3.2 μF 64V (Mullard)
CR1 SJ203K (AEI)
CR2 SJ203K (AEI)
CR3 SJ203E (AEI)
CR4 SJ203E (AEI)
F $\frac{1}{2}$ amp
M $\frac{1}{2}$ amp (low resistance)
R1 390 ohms $\frac{1}{2}$W
R2 2.7 ohms 3W
R3 6.8 K ohms $\frac{1}{2}$W
R4 2.7 K ohms $\frac{1}{2}$W
R5 5.6 K ohms $\frac{1}{2}$W
R6 180 ohms $\frac{1}{2}$W
VR7 10 K ohms min preset var.
R8 1 ohm 3W
VR9 300 ohms min preset var.
R10 1 ohm $\frac{1}{2}$W
R11 6.8 K ohms $\frac{1}{2}$W
R12 1 K ohm $\frac{1}{2}$W
R13 6.8 K ohms $\frac{1}{2}$W
R14 3.9 K ohms $\frac{1}{2}$W
VR15 1 K ohm min p/s var.
R16 1 K ohm $\frac{1}{2}$W
R17 10 ohms 10W
T1 40V $\frac{1}{2}$ amp tapped 6V (sec., d.c. res. min. 3 ohms)
TD 1N2940 (G.E.)
TR1, TR6 AF118 (Mullard)
TR2 2N696 (G.E)
TR3 2S301 (Texas)
TR4 2S019 (Texas)
TR5 2S013A (Texas)
Z1 MR56H (AEI)
Z2 MR33H (AEI)
Z3 MR62H (AEI)

References

The transistors are available from Henry's Radio Ltd., 303 Edgware Road, London W2.

[1] *Protection against Voltage Surges*, AEI Publication 4450-201.

[2] *Transistor Pocket Book*, R. G. Hibberd (Newnes), p. 256.

[3] RSGB BULLETIN, February 1965, p. 97.

Other references:

G.E. Tunnel Diode Manual.

Wireless World, April 1966, "Simple Thyristor Protected P.S.U."

RSGB BULLETIN, February 1966, "A Power Supply for Experimental Transistor Equipment."

G3HSC Morse Records

The price of the 7 in. EP simulated GPO test record has been increased to 15s., including postage. The two 12 in. LPs and courses remain at their original prices, however, and details may be found in the advertisement on the inside of the rear cover.

Can You Help?

● C. Corderoy, A5398, Ely Lodge, Enniskillen, Co. Fermanagh, N. Ireland, who wishes to borrow or purchase information on National H.F. Receiver type HRO MX?

"WORLD AT THEIR FINGERTIPS"

By John Clarricoats, O.B.E. G6CL

A history of the RSGB and Amateur Radio in the UK

This new RSGB publication will be available on 27 September, the opening day of the RSGB Exhibition. A de luxe edition and a paper back edition will be on sale.

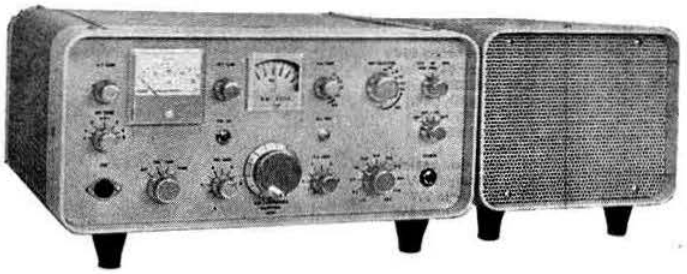
Details of a prepublication offer for RSGB members will be announced in the *Bulletin* next month.

OF INTEREST TO MEMBERS . . .

Bound copy RSGB Bulletin (Vol. 42–1966)	25/–
Car Badge (De Luxe with call-sign)* (*Postage on overseas orders 5/6 extra*)	25/–
Car Badge (RSGB Emblem with call-sign)*	18/–
Car Badge (RSGB or RAEN Emblem)	9/–
Leather Key Fobs, with RSGB Diamond attached—Black, Natural, Red, Green, Blue	7/–
RSGB Terylene Tie (Maroon or Dark Blue	16/–
RSGB Blazer Badge (Black or Dark Navy Blue)	8/–
Stereo Block (RSGB or RAEN Emblem)	10/–
Area Representatives Badge (ARs only)	10/–
Members Headed Qto, Paper (100 sheets)	10/–
Call-sign Lapel Badge (with RSGB or RAEN Emblem, pin or stud fitting)*	8/6
Call-sign Lapel Bar*	7/–
RSGB Lapel Badge ($\frac{1}{2}$in. size) stud or pin fitting	2/–
Plastic Window Sticker (RSGB or RAEN Emblem)	1/3

**Delivery 6-8 weeks*

P. Simpson, G3GGK and B. Armstrong, G3EDD*



The KW Electronics KW2000A

AFTER reviewing a series of imported equipment it was a pleasant change to receive an equipment from a British manufacturer, KW Electronics Ltd. of Heath Street, Dartford, Kent. The KW2000A s.s.b./c.w. transceiver has been in production for several years, and enjoys an international reputation; in fact, it is almost a rare event to listen to the h.f. bands for very long without hearing a station using one. The price complete with separate a.c. power supply is £220, and for £40 a 12 volt d.c. power unit is also available, but this was not submitted for review. The input voltage polarity must, incidentally, be stated when ordering.

General Description

The KW2000A is probably the only popular h.f. transceiver which incorporates the 160m band. The other bands which are covered are 80m through 10m, but on the higher frequency bands, full coverage is not provided, portions missing being 21·2–21·3 Mc/s, 28·2–28·4 Mc/s and 28·8–29·7 Mc/s. The reason for this is the use of a 200 kc/s tuning range which necessitates a large number of first oscillator crystals, and so low cost switches limit this number to eleven.

The receiver is a double superhet with crystal controlled first mixer, and the arrangement is almost identical to the Collins KWM2. The first i.f. is broadband to cover 2·955–3·155 Mc/s and the v.f.o. covers 2·500–2·700 Mc/s to give the 455 kc/s second i.f. The main selectivity is provided by a Kokusai mechanical filter.

*Member of RSGB Technical Committee.

The transmitter is conventional and the final amplifier is a pair of 6146 valves in parallel. A.l.c. is provided and is taken from the rectified final grid r.f. voltage and fed to the 455 kc/s i.f. amplifier. Both upper and lower sideband operation is provided, but no provision is made for carrier insertion.

The v.f.o. dial is calibrated at 1 kc/s intervals and the tuning knob skirt has 14 marks. The tuning rate is approximately 13 kc/s per turn. Calibration is accomplished by moving the tuning dial cursor to the required position.

VOX with anti-trip is fitted and is also used to key the transmitter on c.w. when fed from a keyed internal audio oscillator.

A 100 kc/s crystal calibrator is supplied as standard.

The valve heater circuit is a series parallel arrangement with the exception of the v.f.o. and h.f. crystal oscillator heaters which are fed from a separate line via a series resistor in the power supply.

The rear apron of the transceiver has two coaxial TV type aerial sockets, one for a separate receiver aerial if required and the other for a common aerial. Also on the rear apron is an octal socket which contains connections for external MOX, a key, external loudspeaker (in addition to that on the 15 way p.s.u. interconnection socket) and a pair of contacts on the VOX relay which are made on transmit. It is surprising that there is no conventional jack socket for a Morse key—a sign of the times?

Perforated aluminium is used for the main case. The chassis is also aluminium.

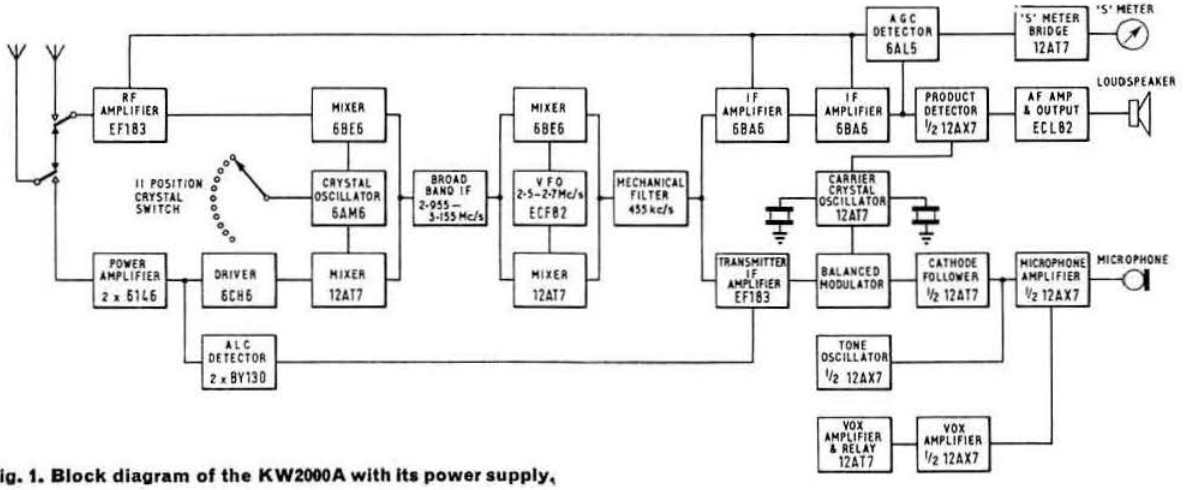
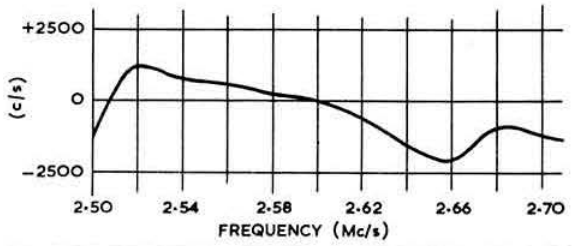


Fig. 1. Block diagram of the KW2000A with its power supply.

THE TESTS

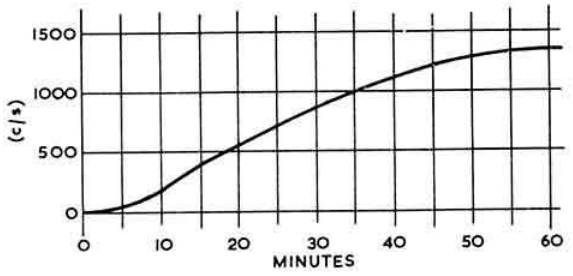
V.F.O.



Nominal Frequency Mc/s	Error (c/s)	Linearity reference Mid-scale (c/s)
2·500	−1105	−1269
2·520	+1356	+1192
2·540	+848	+684
2·550	+768	+604
2·580	−117	+281
2·600	+164	0
2·620	−364	−528
2·640	−1345	−1509
2·660	−1881	−2045
2·680	−756	−920
2·700	−1125	−1289

Before this test was run the scale cursor was aligned by using the crystal calibrator at 2·600 Mc/s. The error of +164 c/s at mid-scale can be accounted for by the combination of resettability performance and first crystal frequency error since the 100 kc/s calibrator harmonic is injected at the aerial terminal. The linearity was adequate but not as good as might be expected over such a small tuning range. Backlash and resettability were measured as in previous reviews and were both about 300 c/s. On switching from upper sideband to lower sideband the v.f.o. frequency has to be offset by the difference in frequency between the carrier crystals (2·71 kc/s), and this is done by shorting a coupling winding on the v.f.o. inductance with a small relay. The offset was measured at both ends of the v.f.o. range: at 2·5 Mc/s it was 2583 c/s and at 2·7 Mc/s, 2787 c/s. The effect of the INDEPENDENT RECEIVER TUNE CONTROL was to pull the frequency by +5066 c/s and −7675 c/s. This control can be switched to pull the transmit frequency (ITT), or both together (IRTT)—an unusual feature. The final v.f.o. test was drift from switch on.

The results are as follows:



Elapsed time from cold start	Frequency drift
1 minute	+26 c/s
2 ,,	+33 c/s
5 ,,	+44 c/s
10 ,,	+176 c/s
15 ,,	+405 c/s
30 ,,	+848 c/s
45 ,,	+1234 c/s
60 ,,	+1369 c/s

Stability was reached in just over 45 minutes.

TECHNICAL SPECIFICATION—KW2000A

GENERAL

Mode	Single sideband suppressed carrier (A3J) and c.w. (A1)
Bands Covered	1·8–2·0, 3·5–3·7, 3·7–3·9, 7·0–7·2, 14·0–14·2, 14·2–14·4, 21·0–21·2, 21·3–21·5, 28·0–28·2, 28·4–28·6, 28·6–28·8 Mc/s
Ambient Temperature Range	−10°C to +40°C
V.F.O. Stability	With constant input voltage to p.s.u., better than 200 c/s after warm-up period of 30 minutes
Independent Receiver/Transmitter Tuning	±6 kc/s from v.f.o. setting
Power requirements	Fixed station 200–250 volts, 45–65 c/s Mobile station 12·6 volts d.c. nominal
Power Consumption	**(Fixed Station)** approximately 320 watts on transmit
Current Drain (Mobile)	10 amps receive; 10–28 amps transmit

DIMENSIONS IN CABINET

Transceiver	6¼ in. high; 13⅜ in. wide; 13¼ in. deep
A.C. Power Unit	6¼ in. high; 7¾ in. wide; 13 in. deep
12V D.C. Power Unit	5¼ in. high; 4⅛ in. wide; 8 in. deep

WEIGHTS

Transceiver	18 lb approximately
A.C. Power Unit	24 lb approximately
12V D.C. Power Unit	6½ lb approximately

RECEIVER

Reception modes	(i) S.s.b. (either sideband selectable) (ii) A.m. (exalted carrier either sideband) (iii) C.w.
Input Impedance	50/75 ohms
Sensitivity	Better than 1μV for 500 mW output
Signal-to-Noise Ratio	Better than 15db signal plus noise-to-noise ratio at 1μV input
Output Impedance	3 ohms
Selectivity	Nominal 2·4 kc/s at 6dB better than 5 kc/s at 60dB
A.F. Output	1·5 watts
Spurious	Less than 1μV equivalent aerial signal.

TRANSMITTER

Emission	S.s.b. (either sideband selectable); c.w. (break-in keying)
Type of Service	S.s.b.—continuous; c.w.—50 per cent duty cycle
Carrier Suppression	50dB down relative to maximum output
Unwanted Sideband	45dB down relative to maximum output
Mic. Input	High impedance
Audio response	300–2600 c/s ±6dB
Output Impedance	20–300 ohms approximately on all bands
Anode Power Input	180 watts p.e.p. on s.s.b. 150 watts on c.w.
Keying	Break-in
Second Harmonic	40dB down from output signal
Third Order Distortion	30 dB down from output signal

RECEIVER

Signal-to-Noise Ratio

The signal-to-noise ratio was measured at 1μV p.d. input. The results were good and consistent varying from 22dB on 40m to 27dB on 15m.

Sensitivity and Audio Output

The claimed sensitivity of better than 500 mW with 1μV input was very conservative on the equipment tested. On

all bands more than 2 watts was measured. At the claimed a.f. output of 1·5 watts distortion was negligible and overload started to commence at 2·5 watts.

Strong Unwanted Signal Handling

Blocking was checked by using two signal generators. One was set to the receiver tune frequency at such a level to give 14dB signal-to-noise ratio. The second signal generator was set 20 kc/s from the receiver tune frequency and its level increased until the signal-to-noise ratio was degraded by 3dB. The unwanted signal was between +74 and +92dB, according to band, for blocking to take place. These results are excellent particularly in view of the high overall available gain.

Intermodulation was measured by feeding in two strong signals 10 kc/s apart on the 10m band and looking for an intermodulation product 10 kc/s above the upper frequency signal and 10dB below the lower frequency signal. The unwanted signals were in excess of S9 + 40 (+50dB) before the S meter would move off the stop. This is good.

A.G.C.

The a.g.c. was checked on 14·3 Mc/s with the following results:

Signal Input Relative to 1μV P.D.	Audio Output Rel. to Test Level at 1μV P.D.
+20dB	+4dB
+40dB	+7dB
+60dB	+12dB
+80dB	+15dB

This performance, although not as good as the best of the equipments previously reviewed, is adequate.

The S Meter

The handbook gives 50μV input for S9 and states that a figure of 6dB per S point can be taken as correct for all practical purposes.

An S meter setting control is provided so that the S meter is set to zero with the aerial terminal shorted to ground. This control was not touched for the test.

Measurements on 14 Mc/s showed the following:

Meter Reading	dB rel. to 1μV P.D.
Standing reading S2·5	
S3	+2
S4	+6
S5	+10
S6	+15
S7	+19
S8	+24
S9	+29
S9 + 20	+50
S9 + 40	+60

The variation with band showed:

Frequency	dB relative to 1μV P.D. to show S9
1·8 Mc/s	+27
3·5 Mc/s	+28
7·0 Mc/s	+28
14·0 Mc/s	+29
21·0 Mc/s	+34
28·0 Mc/s	+31

The Crystal Oscillators

No trimmers are provided on any of the crystal oscillators except the 100 kc/s calibrator.

The following results were obtained:

Nominal Frequency (kc/s)	Error (c/s)
4955·0	+109
6655·0	+414
6855·0	+534
8677·5	+161
8577·5	+119
10155·0	+484
12077·5	+248
12227·5	−170
15577·5	+127
15777·5	+158
15877·5	−77
453·68	+10
456·39	−1
100·00	−3·6 c/s

The 100 kc/s crystal was checked to see if it would pull on to frequency. It would. Although 3·6 c/s may appear to be a very small error, it amounts to over 1 kc/s on 10m. At the commencement of testing the calibrator was usually very slow to start and sometimes failed to. However, the sluggishness gradually cleared and by the time all of the tests were complete there was no trouble, but there was a pronounced chirp on switch on.

The crystal frequency errors were lower than those recorded in many of the other reviews.

Birdies

The top two 10m sections and the top 80m section were free. All the other segments had either one or two very low level responses. The only birdy which approached the specification level of 1μV was on about 7·05 Mc/s but this response would not be detectable with an aerial connected.

Spurious Responses

With a first i.f. in the 3 Mc/s region a somewhat limited first i.f. rejection might be expected when tuned to the 80m band—the rejection was in fact 52dB. On the 160 and 40m bands the rejection was better than 80dB and on 20, 15 and 10m better than 100dB which is very satisfactory. The first image rejection was also checked, and this varied from 48dB on 15m to 84dB on 160m.

TRANSMITTER

Power Output

The transmitter was tuned for maximum power output into a calibrated 50-ohm load using its internal audio oscillator, i.e., the c.w. condition. On 160m the power switch on the p.s.u. was placed in the low power position.

Band (metres)	Power output (watts)
10	55
15	70
20	72
40	77
80	72
160	37

The transmitter was next checked using two tone input on 1 and 1·8 kc/s. The audio input was increased until the spectrum analyser indicated 25dB intermodulation products.

Band (metres)	Peak Envelope Power Output (watts)
10	60
15	94
20	84
40	92
80	108
160	50

Carrier and Unwanted Sideband Suppression

During the two tone tests, the carrier and unwanted sideband was checked on 28 Mc/s. The carrier suppression, like the KW Vespa varied a small amount with audio input. On c.w. the carrier was 47dB down on full power when the audio oscillator drive was removed. This figure reduced to 30dB down when audio drive was present. On two tone input the suppression was 42dB with 25dB i.p.s referred to the peak envelope power. In this latter condition the unwanted sideband suppression was 50dB. The results are very satisfactory.

Transmitter Audio Response

A variable frequency audio oscillator was fed into the microphone input and the frequency varied from 0–3 kc/s. The −3dB points were at 260 and 2400 c/s with a ripple of 1·4dB.

TVI

The only TVI trouble was with channel 1, where the received TV signal was weak. The 14 and 21 Mc/s bands caused wipe out, but with a high pass filter in the TV lead, and low pass in the KW2000A lead, the trouble cleared. On 7 and 28 Mc/s, transmissions caused slight pattering on channel 1 which cleared with a high pass filter in the TV lead. Channels 5, 6 and 11 were clear without the need for extra filters. These results are very good.

The Power Supply Unit

The p.s.u. is in a separate matching case and also contains the loudspeaker. The two transformers are mounted on a steel chassis; one transformer handles the p.a. h.t. and the other provides 13V a.c., bias and low h.t. Mains taps are 240/250, 230/220 and 200/210V a.c. All the electrolytic capacitors were well within their voltage rating under all conditions. The a.c. input lead is three core, about 68 in. long and the 34 in. screened interconnection lead is terminated in a 15 way Painton 159 series socket.

ON THE AIR

The KW2000A was used on 20m and 15m but mainly on 10m. It was liked by the operators, handled well and tuned up quite easily once one got used to the rather sharp p.a. anode-tune adjustment. An old complaint—described by a ZS as "square bearings in the slow motion tuning control" seems to have been overcome. Some operators found the 200 kc/s sections and limited coverage annoying on 10m.

THE HANDBOOK

The handbook is very good and contains all the information that is likely to be required except a component code list and a mechanical parts list. The separate circuits for the transceiver and the power supply are on large sheets. A small loose sheet gives the microphone plug connections.

GUARANTEE

KW Electronics give a 12 month guarantee covering faulty material or workmanship only, and valves carry the usual three months guarantee subject to reasonable treatment. The labour cost of guarantee repairs may be charged at a reasonable rate. It is necessary to register the guarantee, by returning the card supplied, within two weeks of purchase. KW Electronics request that no equipment is returned to them without prior arrangement.

CONCLUSIONS

The KW2000A is primarily designed to meet the needs of the s.s.b. operator. The c.w. operator would need better selectivity, but the KW *Q* Multiplier has been successfully added as a simple home modification by some owners. The incomplete coverage of 15 and 10m is really the only slight criticism. KW have good reason to be proud of their product.

The Manufacturer's Comments

"On the whole the foregoing review is very satisfactory and does justice to an equipment which is British designed and manufactured to a price to suit the average pocket, and our compliments are directed to the authors. One point to which attention is drawn is the fact that some sections of some bands are missing. What we have tried to do is to provide sections of every band for c.w. and s.s.b. operation; the missing parts are usually occupied by a.m. signals. The only bands affected are 21 and 28 Mc/s but alternative or additional crystals are available and can be substituted easily as the holders are accessible under the lift-up lid of the cabinet. Circuit retrimming is not necessary. It should be noted that by limiting the v.f.o. tuning range to 200 kc/s, better bandspread facilities are provided in addition to excellent broadband responses of the associated circuits. Other comments we would like to make are as follows: the a.g.c. figures quoted, although stated to be adequate, are not to the standard usually achieved in this equipment, and this model is to be rechecked by us when it is returned to the factory. The component parts list will be included in future editions of the Handbook but at present the component values are marked on the circuit diagram. No mention was made of the side-tone facility for monitoring c.w. C.w. operators find this facility an absolute necessity and, of course, the speed of break-in c.w. can be adjusted by the vox control. We believe that in this piece of equipment more facilities are offered than in any other contemporary equipment in this price range. In conclusion, it may be of interest to some members to know that in some export models different frequency bands and panel markings are provided; for example, for USA and Canada the 75m 'phone band is included. Also, a.c. power supply units are available for 100 to 125 volts a.c. input, 60 cycles. The KW2000A is now in use in over 50 different countries."

R. G. Shears, G8KW

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 West England
	11.30 a.m.	South West Scotland
	12 noon	North East Scotland
145·10 Mc/s	9.30 a.m.	Beaming north from London
	10.00 a.m.	Beaming west from London
145·8 Mc/s	10.15 a.m.	Beaming south from Belfast
145·30 Mc/s	10.30 a.m.	Beaming north west from Sutton Coldfield
	11.00 a.m.	Beaming south west from Sutton Coldfield
145·50 Mc/s	11.30 a.m.	Beaming north from Leeds
	12 noon	Beaming east from Leeds

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.

TECHNICAL TOPICS

By PAT HAWKER, G3VA

AMATEUR INACTIVITY—HIGH STABILITY CONFERENCE
U.H.F. TUNABLE OSCILLATOR WITH CRYSTAL STABILITY—CRYSTAL CALIBRATOR
6AS6 PRODUCT DETECTOR—ELECTRONIC TUNING WITH DIODES
SATELLITE COMMUNICATION—G/T RATIO—ELEVATED FEED AERIALS
AUDIO-DERIVED A.G.C. SYSTEM—TRANSISTOR TRANSMITTER TIPS
WAVEMETER/DETECTOR—TOROIDAL TANK CIRCUITS—ACTIVE AERIALS
LOW-PROFILE DDRR ANTENNAFIER—WIDE-RANGE WIEN BRIDGE OSCILLATOR
SYNCHRODYNE TRANSCEIVER IDEAS

IT is very doubtful whether anybody knows even the approximate amount spent each year on buying Amateur Radio equipment in the UK. And the figures given for the US amateur market, though much more detailed than anything available here, sometimes seem to vary according to the mood or the interests of the estimator. One recent estimate (*Electronic News*, 15 May) is $30 million annually, another (in the detailed study made for the ARRL by the Stanford Research Institute) is "approaching $40 million," with a present investment in gear of about $500 million.

These are impressive figures which might suggest that the market is booming, but the signs are that this is not the case. Although gradual expansion is still anticipated, this is not usually now regarded as a good growth field, and in fact the *Electronic News* article was headed "ham radio market described as static."

Perhaps even more significant are some figures ascribed to the sales manager of Hallicrafters. This is an estimate that of the 275,000 or so amateurs in the United States only about 80,000 are active. Now that our American friends have to pay for the renewal of their licences, we could see a fairly dramatic fall in numbers, if this estimate is correct. This in turn would weaken the negotiating power of amateurs in any future arguments about frequency allocations, so that the situation needs watching. I suppose that at any given time, something over one-third of UK calls are not in regular use, but a view that well over two-thirds of American amateurs are inactive is alarming. However, the circulation figures of American amateur journals suggest that this figure is a bit too pessimistic. And I suppose a lot depends on what is defined as "active"—perhaps to a sales manager this implies buying his equipment!

High, Higher, Highest Stabilities

The papers given at a recent IEE conference on "frequency generation and control for radio systems" emphasized just what progress is being made in the field of oscillator stability. A few years ago, a few parts in a million (10^6) was considered very good going: nowadays commercial operators call for one part in 10^8 for h.f. s.s.b. (30 c/s at 30 Mc/s); one part in 10^7 for narrow-deviation f.s.k. radio teleprinters (3 c/s at 30 Mc/s); and good deal closer tolerances for some types of navigational aids. So 10^9, 10^{10} and 10^{11} orders of stability are creeping into the systems field, and proposals have even been made for the use of satellites to provide a world-wide service allowing frequencies to be determined to within one part in 10^{13}, and time measurements to within 10^{-10} second!

This degree of precision, fortunately, is still not called for in amateur operation (though it is worth remembering that a calibrator based on the direct amplification and squaring of the Droitwich 200 kc/s transmitter carrier—as described some years ago in the BULLETIN—can provide a relatively cheap standard of high precision).

The conference also showed that compact frequency synthesizers, using semiconductor integrated circuits (SICs) and based on variable divider digital techniques, are reaching the stage where they will be commonly used in quantity produced mobile equipment. A German paper, however, stressed the importance of achieving very high spectral purity in synthesizers if weak signal working on h.f. is to be possible on adjacent channels. This question is bound up with what is now often termed "noise" in oscillators, and is a matter receiving increasing attention in both receiver and transmitter applications. It may eventually emerge as one of the last outstanding receiver problems when finally our old bugbear of cross-modulation and conventional forms of spurious responses are all satisfactorily cleared up.

Several papers showed clearly the current rivalry between two main methods of achieving higher crystal stability: the miniature fast warm-up oven (Marconi, for example, actually have one in a TO5 transistor can); and the use of improved forms of temperature compensation (TXCO) usually based on thermistor elements. We noted one novel idea from Czechoslovakia in that it is claimed that very small variations of frequency of a crystal oscillator can be achieved by varying the d.c. potential applied across a crystal.

The conference stressed that there is hardly a piece of electronic apparatus that does not incorporate some form of oscillator or "clock"—and we offer this as justification for devoting a considerable amount of space this time to various forms of oscillators.

High Stability U.H.F. Tunable Oscillator

The idea of a tunable u.h.f. transistor oscillator with a stability better than that of many crystal oscillators has obvious attractions. Several elaborately compensated oscillators meeting this specification have in fact been described in the literature, but few of such immediate interest to amateurs as that of a unit described very fully in *Proc. IREE Australia* (February, 1967).

This particular oscillator was developed originally in order to investigate the possibility of building domestic v.h.f./f.m. receivers for use on about 500 Mc/s (since in VK the 100 Mc/s Band II has been allocated to television), so that it had to be suitable for quantity production at low cost, and for use with a 10·7 Mc/s i.f. strip.

Unfortunately this article indicates one of the problems in compiling *TT*, how can some 14 large pages of descriptive material and mathematical analyses be compressed to a few hundred words, without entirely losing the main points? However, here goes.

The design had to satisfy the following conditions: cheap, and of relatively simple construction (i.e., no high-Q butterfly resonators, etc); capable of being accurately tuned in fractions of Mc/s over a range of about $\pm$ 10 Mc/s; flexible enough to avoid the need for careful preselection of compo-

nents, and giving equally good performance from every unit; low oscillator radiation.

The author, Z. Uzdy, identifies and analyses all the more important causes of oscillator instability, and introduces fairly simple forms of compensation to overcome these, including temperature changes (of resonant circuit and of transistor junction) and warm-up drift; see Fig. 1. He reduces the influence of the transistor on the tuned circuit by isolating the tank circuit (a simple cavity) with a small capacitance and tapping it down the cavity. For temperature compensation he depends primarily upon the different expansion rates of invar and copper using two trimmers (one tubular ceramic, the other consisting of two flat plates, one mounted on the end of the invar rod). Increasing the plate capacitor causes the oscillator to drift positively; but if this forms too small an element of the circuit the drift is the usual negative one, so that with adjustment very good compensation is attainable.

Compensation against supply variations (and it is worth noting that the unit is intended for operation from an unregulated 12-volt supply) depends upon the use of a thermistor in the bias network, which by self-heating, lowers the bias voltage at the correct rate necessary to cause cancellation of the drift (most unfortunately, the type number of the thermistor used is not given, but we suspect it to be a standard Mullard unit with a "cold" resistance of about 10K).

The cavity is made from 13 gauge commercial copper pipe, silvered to a thickness of at least 0·001 in. It is not a machined or precision unit. The centre conductor is an invar rod which *must* be silvered to avoid high losses. The invar rod is bolted firmly to the sealed end of the cavity. Silvered surfaces were covered with thin lacquer to protect them from contamination.

In the original 500 Mc/s unit, the cavity was about 9cm long, with external diameter about 3·5cm; a compartment, attached to the cavity, houses the transistor and bias components, and measures 3 by 3 by 2cm.

The article gives detailed performance figures which show that at least over a limited temperature range, the oscillator is capable of a stability comparable with that of oscillators using a good 20 Mc/s fundamental crystal, and considerably better than 100 Mc/s circuits using fifth overtone crystals. Stability is of the order of ± 2·5 parts per 10^6/°C. Frequency drift in the first hour: + 0·001 per cent, − 0·003 per cent.

The application of such an oscillator, for example, to a 70cm tunable converter, or as a calibrator, etc., is clearly promising, even if results do not come quite up to the original. And some of the compensation techniques could be used on transistor oscillators at lower frequencies.

Crystal Calibrator

In *TT* (September, 1965), a "foolproof" little crystal oscillator circuit by DJ2NN was provided. It was useful in having no tuned circuits, and some subsequent tests at G3VA on h.f. crystals proved it a handy gadget to have around.

However, we noted in *Radio-REF* (March, 1967) that a French adaptation of one of DJ2NN's circuits contained the comment that it was unsatisfactory with m.f. crystals, such as 500 kc/s and 1 Mc/s bars. This prompted F8TD to come up, *Radio-REF* (May, 1967), with a further variant which he uses as a 1 Mc/s crystal calibrator providing harmonics up to 145 Mc/s, and claimed to be effective even with very sluggish m.f. crystals.

This is shown in Fig. 2, and includes one *p-n-p* and one *n-p-n* transistor (F8TD says the types are not critical), and consumes around 2·5 mA at 9 volts. In his case, for isolation, the chassis of the unit is connected only to the output coax as shown.

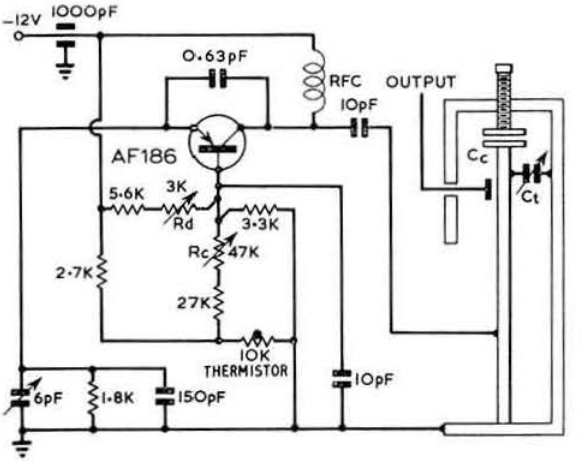


Fig. 1. The high stability u.h.f. (500 Mc/s) oscillator. Compensation of the cavity is by varying the ratio of loading provided by Cc and Ct (the tubular ceramic) trimmers. Rd provides adjustable compensation for supply variations. Rc affects the warm-up compensation. Power output about 0·5 milliwatt into a 50-ohm load, for a power input of about 17 mW.

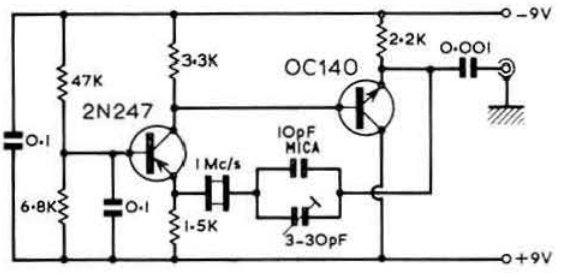


Fig. 2. F8TD's crystal calibrator for use with 500 kc/s or 1 Mc/s crystals.

Electronic Tuning

The principle of using the variable capacitance of a semiconductor diode, when subject to changes in reverse bias, is now well known, and has been referred to on a number of occasions in *TT*, and elsewhere in the BULLETIN. It has many useful applications for remote control of oscillators, using only a d.c. potentiometer at the control point, for such purposes as the simple production of n.b.f.m., and in broadcast v.h.f. and television receivers for automatic frequency control. The system has been used commercially for the full tuning operations of high-grade point-to-point receivers.

Special diodes such as varicaps and varactors have been developed for this application, but it is often more economical to make use of conventional semiconductor diodes—from germanium point-contact signal diodes (though these have only a small capacitance variation) to silicon power diodes, and zener diodes.

A long list of diodes, showing available capacitance variation, has been prepared by ZL1TAH (*Break-In*, January-February, 1967) from which his short-list selection, covering various capacitance ranges, is given in Table I.

The limiting factor with the use of electronic tuning is often the relatively low *Q* of the diodes at h.f. and v.h.f. Nevertheless there are a number of applications where this is of minor

importance. ZL1TAH points out that the technique can be used to provide complete tuning of a receiver with ganged control at r.f. stage, oscillator and mixer (Fig. 3(b)), for which he suggests that a suitable form of potentiometer is a helically wound unit. A problem here is that manufacturing tolerances in the diodes may make it necessary to carefully select diodes to give similar tracking (special diodes have been developed commercially which track within an accuracy of 1 per cent).

Some further useful information on this type of electronic tuning, as used in the Marconi self-tuned h.f. receivers for commercial service, was given in *Point-to-point Telecommunications* (February, 1965) in which it is noted that at low reverse bias voltages the temperature coefficient of the capacitance becomes worse, and what is more serious, the *Q* falls. In this particular design, the lowest reverse bias voltage was limited to 1 volt, although this appreciably restricts the capacitance variation. Another problem is that very strong unwanted signals could cause the diode to conduct, resulting in cross modulation. This problem is much reduced by the 1-volt lowest reverse bias limitation, and a further useful reduction in spurious responses can be obtained by using two diodes in a back-to-back configuration: see Fig. 3(c).

TABLE 1

Diode	Capacitance —9V bias	Capacitance 0V bias	Typical *Q*
OA85 signal diode	2 pF	5 pF	65–70 at 710 kc/s
OA200, 201, 202 signal diodes	3 pF	10 pF	60–70 at 710 kc/s
BA102 silicon diode	10 pF	60 pF	40–60 at 710 kc/s
OAZ207 zener diode	90 pF	280 pF	40–70 at 710 kc/s
BZZ18 zener diode	145 pF	503 pF	35–70 at 710 kc/s
OA126 zener diode	335 pF*	815 pF	30–70 at 520 kc/s

* Measurement up to Zener voltage.

Above diodes selected by ZL1TAH on grounds of economy for various capacitance swings. Some other capacitance swings, under similar conditions, listed by him for power diodes are: OA211 (12-45 pF); BY100 (5-30 pF); BYZ17 (15-55 pF); 40109 (45-105 pF); 40267 (20-60 pF).

Satellite Communication

Recently, at the Signals Research and Development Establishment, we watched an interesting demonstration of a highly mobile satellite communications terminal (known as IDEX), forming part of the experimental programme for using the IDCSP military near-synchronous satellites, of which some 15 are already in orbit (see *Electronics Weekly*, 24 May).

There would seem several reasons why this particular terminal should be of interest to amateurs. For by satcom standards, this is a relatively simple design with a 6 ft. dish aerial, without all the complications of a low-temperature (cryogenic) pre-amplifier. Working in the region of 7000–8000 Mc/s, it uses an uncooled parametric amplifier (with klystron pump oscillator) and a 1 kW transmitter.

The paramp has a noise temperature of around 300°K (say 3db noise figure), and the overall system temperature is about 350°K, but the SRDE engineers tell me that uncooled paramps with noise temperatures as low as 50°K will be possible in the fairly near future, as varactor diodes improve.

This mobile design (it takes less than 30 minutes to set up the terminal on its trailer towed by a Land Rover containing most of the receiving equipment) follows some years of working with moonbounce and what SRDE call "space junk" systems. Space junk consists of using the many satellites and launcher remnants now in orbit as passive reflectors. Both these techniques are of course open to amateur operation, and while moonbounce is obviously already being exploited, space junk operation remains as a possibility,

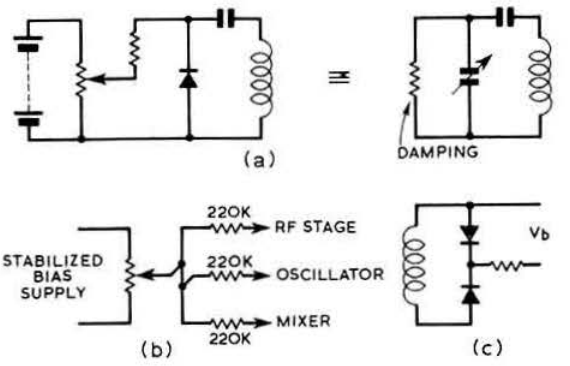


Fig. 3. Principles of electronic tuning. (a) how reverse biased diode replaces variable capacitor; (b) ganged control of tuned circuits; (c) use of back-to-back diodes to reduce spurious responses.

though it poses the additional problem of making orbital predictions.

One point, however, is that such systems really require for optimum results, greater use of microwave bands rather than 144 Mc/s, since the gain of modest aerials can be so much greater on the higher frequency bands.

In this connection, a new term has come into widespread use recently among those concerned with satellite communications, and would seem to have much to commend it as a means of defining performance capabilities of a v.h.f. or u.h.f. station. This is a figure of merit known as the "G/T ratio" or gain-temperature ratio.

This is derived from aerial gain expressed in decibels minus overall receiver system noise temperature expressed in decibels above 1°K. A really large earth terminal, such as Goonhilly, might have a G/T ratio of over 40, whereas the IDEX described above would be around 14 or 15. It is the case of the higher the better—and an effort to get from negative to positive numbers!

A quick guide to how noise temperatures of receivers are related to the more common noise figure in decibels is given in *TTftRA*, page 28.

The term G/T ratio thus gives to receiving systems much the same useful type of overall figure of merit as does effective radiated power for transmission.

More on Elevated Feed Verticals

In *TT* (July, 1966) we gave some details of the Marconi elevated feed aerials showing how the technique could apparently be used to lower the radiation angles of vertical aerials over $\frac{3}{4}\lambda$ long (though warning that full benefits were unlikely to be obtained without good earth conductivity, or alternatively a really effective ground plane). We had hoped to hear some practical work on their use for amateur band operation, but must admit that the response was not exactly overwhelming; at least we noted that the Japanese journal reprinted the item.

Further reference to this system, this time in the form of phased doublets for incorporation in large aperture "Wullenweber" electronically steerable receiving and D/F arrays appeared in *Marconi Review* (First Quarter, 1967), showing incidentally how quite an effective looking directional array can be formed using a pair of these elevated feed aerials. But a full Wullenweber ring is not the type of aerial you can put in a back garden.

But now has come a note from F8ZF on a multiband vertical aerial which he and F3YR (the leading French DXCC-er) have used to good effect at various times. This

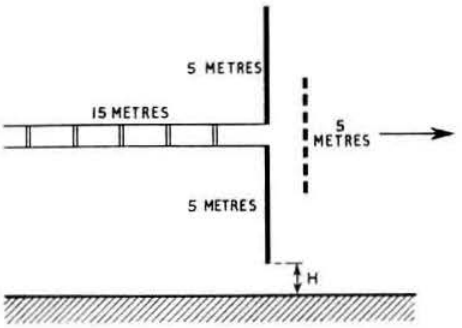


Fig. 4. F8ZF's centre-fed vertical aerial. H can be from 0·5m upwards.

is not the same as the Marconi system (though the feed arrangement is the same as the alternative one we suggested last year), but could well be of interest in view of its simple construction, and apparently good low-angle characteristics.

F8ZF's system (Fig. 4) is, in effect, a vertical version of the familiar centre-fed Zepp (more correctly called a centre-fed doublet) using two vertical tubes, each 5m long, centre-fed by a 15m tuned line. In his case, the bottom end of the rod is only about 0·5m above ground, but F3YR has the same aerial on the top of his house (F8ZF is not sure of the angle at which 'YR runs his feeder).

F8ZF says the aerial will of course tune from 10 to 20m and can also work on 40 and 80m (as a short dipole with aerial coupler, or with feeder wires connected together to form a voltage fed $\frac{1}{2}\lambda$ on 40m and $\frac{1}{4}\lambda$ on 80m).

For an ARRL contest some years ago, one of these aerials was used in conjunction with a very close spaced director on 28 Mc/s (about 90° phase difference which stops backward radiation) to produce a cardioid pattern. During the contest the main aerial was a 90m per leg rhombic beam but it was noted that whenever the band seemed to run out of stations a new crop would answer the vertical.

He points out that the radiator can be extended to 6·4m to form an extended double Zepp on 10m, and then a 10m long director can be used on 14 Mc/s (90° phase difference), though 'ZF feels that phased pairs might be better since the parasitic array is susceptible to high angle signals off the back.

This note reminds me that this form of centre-fed multi-band " Zepp " with tuned feeders really seems to be coming back strongly into popularity (and rather deservedly so). W6PIZ recently described an " inverted-V " form based on a 30 ft. support in the centre and 14 ft. supports at the ends, while in the May 1967 *CQ* W6BLZ describes a horizontal 135 ft. top version as an effective 28 Mc/s colinear array.

Interestingly enough, W6BLZ makes the rather unusual observation that the aerial is not only useful on all bands but " is graceful and beautiful to look at with its ladder type spaced feeders"—as a former user of resonant feeders we must admit to sharing something of this feeling. Open-wire lines with spacers always give one a sense of transmission that just does not go with co-ax or 300-ohm feeder!

On the other hand, they can attract the notice of the neighbours.

Simple Audio-derived A.G.C.

Recently, we referred to the use of transistors as controlled resistors in the emitter circuits of gain-controlled transistor amplifiers. What appears to be a novel technique for applying this principle to valved receivers in order to provide audio-derived a.g.c. is put forward by W6BGQ in *73* (February, 1967): see Fig. 5.

The transistor type is not critical (he has used about 15 types from 2N33, 2N497, 2N2195 etc and all work), but must be an *n-p-n* silicon type providing high collector to emitter resistance with no signal or a small signal applied to the base. The variable resistor can be anything over 50 ohms (typically 10K) and an audio taper (log law potentiometer) is better than linear. The diode can be almost any germanium type (typically 1N34, 1N277). The electrolytic capacitor between base and chassis determines the delay time, and can be varied to suit individual tastes; W6BGQ suggests 40 μF. He points out that the circuit provides fast attack, and tested on three receivers has given an average of 30db compression with the potentiometer at maximum.

In operation, the receiver volume control is set for appropriate strength with minimum signal, and then the maximum signal is set with the a.g.c. potentiometer.

Transistor Transmitter Tips

Also in the February *73* is an item by K0CJF containing some practical tips on building transistor transmitters. Briefly some of the points made are: the usefulness of a simple wavemeter-cum-r.f.-detector to check bands and detect r.f. in low power stages (Fig. 6); advocacy of mixer-type v.f.o.s.; the questionable value of emitter stabilising resistors in p.a. stages (he advocates using heftier transistors); need for large value (e.g. 0·1 μF) bypass and decoupling capacitors (see also below); advantages of a positive chassis; necessity of common-point earthing in view of low impedances.

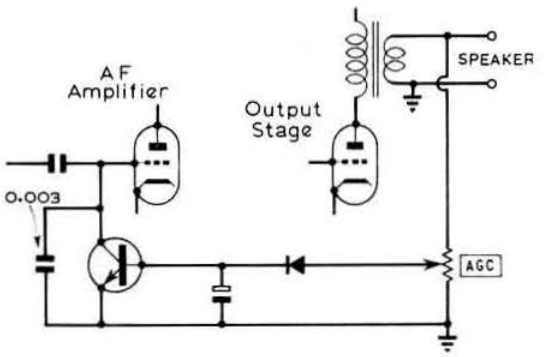


Fig. 5. W6BGQ's audio-derived a.g.c. system. For suggested component values see text.

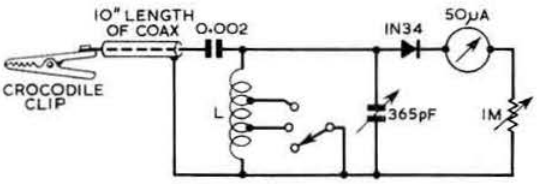


Fig. 6. Simple 3–30 Mc/s wavemeter/r.f. detector recommended by K0CJF for checking low power transistor oscillators and amplifiers. L is 30 turns (No. 20 American wire gauge), 16 turns per inch, tapped at 14 and 5 turns from cold end (former not specified). A less sensitive meter could be used if a transistor d.c. amplifier is fitted.

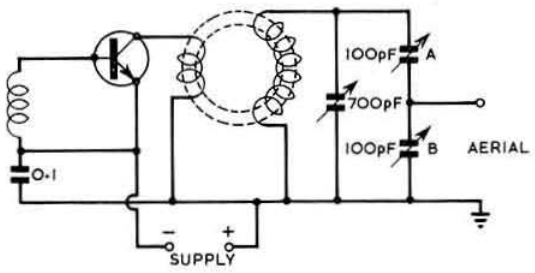


Fig. 7. Transistor power amplifier, illustrating use of toroidal tank coil and differential capacitor aerial matching. A and B preferably differential capacitor, but separate units can be used.

He also goes into the question of using toroidal tank circuits for the p.a. and for interstage band-switched circuits (this provides an alternative approach to the T-matched networks discussed in the May *TT*). A differential capacitor arrangement is suggested for aerial matching: see Fig. 7.

K0CJF also has a solution to the power supply problem: a small battery charger and a couple of compact Honda plastics-cased motorcyle batteries (e.g. 2AH, 6-volt units).

A useful quarterly source of information is *RCA Ham Tips* (distributed in the UK gratis by RCA Great Britain). The Fall, 1966 issue contained a detailed description of a transistor 1·5-watt 144 Mc/s a.m. transmitter using inexpensive overlay transistors, and incorporating some further useful general hints (plus an ingenious diode technique for modulating the driver stage and facilitating upward modulation).

This article also goes into the question of good bypassing; saying: " The greatest single cause of poor transmitter efficiency is ineffective bypassing. The best bypass capacitors are feedthrough types having a ferrite filtering element. An improvement over the single bypass element may be obtained by the use of a second capacitor having a different value. Ceramic disc capacitors are effective in by-passing and have been used in this design wherever practical to reduce cost."

The RCA engineer, WB2EGZ, stresses the importance of adequate heat sinks for silicon as well as germanium power transistors; and that since transistors are easily destroyed by momentary overloads, all connections should be double-checked before transistors are inserted in the sockets, adding that this should never be done (or transistors removed) with the power on. He advocates the use of transistor sockets in this type of application. He also points out that if an unstable transistor stage goes into oscillation the transistor may be overheated, and suggests that a receiver should always be kept turned on while experimenting with the transmitter, since an oscillating stage will emit noise over a wide band. If oscillation is heard, he suggests, turn off the transmitter, correct the problem, and be sure that the transistors are reasonably cool before applying power again.

Another point he makes is that in adjusting modulation levels, preferably using a test tone, once fairly heavy modulation levels are reached adjustments in tuning " should be made very carefully because it is extremely easy to detune the circuit far enough to exceed the rating of the transistor."

With the lower cost of r.f. power transistors, it is becoming less essential to push each unit to the limit of its rating, with consequent easing off of many of the problems which tend to give transistor transmitters a reputation as device destroyers.

Active Aerials

On several occasions in the past, reference has been made in TT to " active aerials " and what are sometimes called integrated aerials, antennafiers, antennamitters, and antennaverters. Such concepts are currently the subject of a good deal of research, and appear to have definite possibilities in the amateur radio field.

The idea, basically, is to get away from the classic belief that an aerial is a linear, passive and reciprocal device designed independently of the transmitter and receiver packages. Put simply, many of the techniques are logical extensions to the development of mast-head pre-amplifiers. Several of the systems which have been described include a number of tunnel diodes in the aerial system itself. Related concepts were also described in a *Motorola Engineering Bulletin* some time ago, in order to integrate aerials in small hand-held two-way units with semiconductors, so as to avoid transmission-line losses and to eliminate the tank circuit. In effect, this is done by locating the r.f. power oscillator or p.a. within the aerial structure, and using the aerial itself as the tank circuit. In the examples given in the Motorola article, this is done by making use of the interesting DDRR form of low-profile aerials (i.e. " hula hoops " of the type described in *TTftRA*, page 85) resulting in what are called " amplifying aerials." In the terminology, an antennamitter is a complete transistor power oscillator in the aerial system; an antennafier places a p.a. in the aerial system, with conventional exciter; while antennaverter is the term given when a mixer diode is also incorporated to form a transceiver set-up.

The Motorola article, by Earl Murphy, outlines some examples of such devices, as applicable to small 300 Mc/s equipments. In the antennamitter the transistor is mounted directly in the ground plane, which thus also forms the heat sink. The transmission line aerial, itself, consists of a $\frac{1}{4}\lambda$ of wire formed into a figure of eight, mounted parallel to, and typically 2·5 electrical degrees above the small ground plane. The aerial is tuned to $\frac{1}{4}\lambda$ resonance by means of the capacitance reactance of the stub connected to the mid-point of the aerial, tuning being carried out by trimming the length of the stub.

This system, but in the form of an antennafier, is shown in Fig. 8. In this case the input power is matched to the base of the u.h.f. power transistor, and precautionary measures taken to prevent feedback (this can be done by using the ground plane as a screen).

The article emphasises that the examples shown are only a few of the many possible approaches to integrated aerial

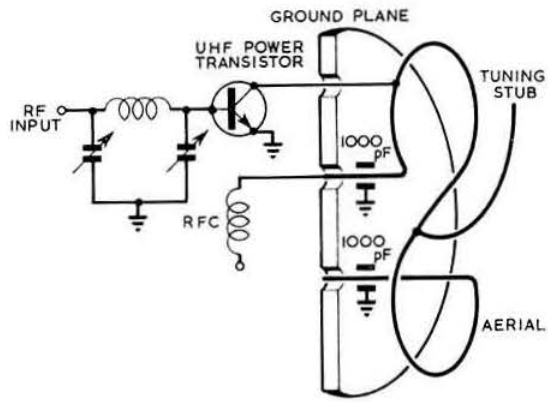


Fig. 8. One form of a 300 Mc/s " antennafier ". It is claimed that average radiated power is 6 to 8db greater than from an equivalent non-integrated aerial and amplifier. Low-profile transmission-line aerials can be fabricated in many shapes, including circular and tight spirals.

concepts: many different types of aerials could be used, in many ways and functions. Low profile ddrr hula hoop aerials, it says, can provide results comparable with $\frac{1}{4}\lambda$ whips, but since they are high Q structures they can also provide preselection and filtering functions on transmission and reception.

In general, and putting aside its use in this form of active aerial, one has the impression that the ddrr hula hoop, originally developed by W6UYH of Northrop, has not yet been fully exploited by amateurs. Admittedly, the h.f. problem of achieving a good enough ground plane is formidable, but this hardly applies to its use for mobile working on 28, 70 or 144 Mc/s. Recently, for instance, we read that communications engineers have been investigating it as a tunable v.h.f. aerial covering 30 to 76 Mc/s for use on aircraft, with a 5 ft. ground plane.

Wide-range Wien Bridge Oscillator

In *TT* (March 1966) some information was given on a Wien bridge oscillator for use up to h.f. Further evidence of the value of this type of oscillator, in the form of an *RC* oscillator capable of supplying an output of good waveform all the way from about 0·5 c/s up to 5 Mc/s (the component values shown provide five ranges of 15–200 c/s; 150–2000 c/s; 1·5–20 kc/s; 15–200 kc/s; and 0·15—2 Mc/s) has been published in a useful Ferranti booklet on *High Fidelity Audio Designs using Silicon Semiconductor Devices* (5s.). This is intended as a multipurpose test oscillator and provides an output of the order of 1-volt r.m.s. An interesting feature is the use of a super-alpha pair (Darlington compound) in the first stage of the amplifier, and the inclusion of a thermistor (STC type R53) stabilizer. Ganged controls provide range switching and frequency control: see Fig. 9.

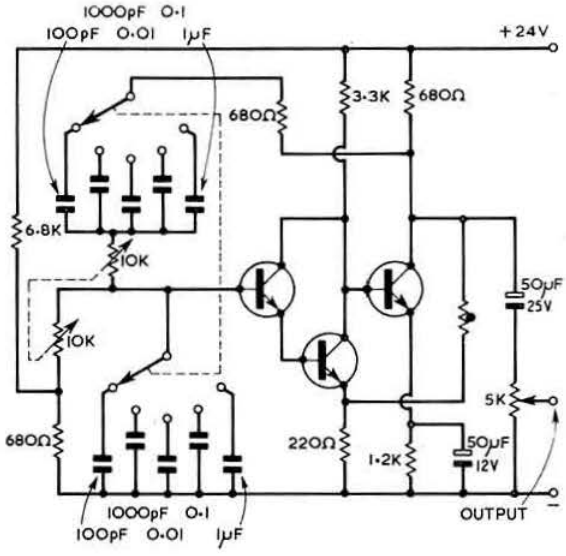


Fig. 9. Ferranti Wien bridge oscillator covering 15 c/s to 2 Mc/s. In original all three *n-p-n* silicon transistors are Ferranti ZTR11. Consumption at 24V, about 15 mA.

The 6AS6 Product Detector

A note from John Parker, G3SOL pays high tribute to the Philco combined a.m./s.s.b./a.g.c. circuit (*TT* January 1965 with correction March 1965, or as in *TTftRA* page 35).

G3SOL had for some time been using a high-gain 6BN6 product detector (also *TTftRA* page 35) in a G2DAF-type receiver but found, as the originators warned, that it was very microphonic. Then, after trying various other circuits, including the infinite impedance detector, he converted his set to the 6AS6 circuit.

He reports " For my money (it actually cost me 4s. 6d. for the valve) it's an absolute winner . . . it all works, and I have been able to find no snags." He considers it is the ideal detector to put into older receivers that need a product detector, and to be well worth looking at for new amateur valved receivers. He concludes: " I, personally, would now not fit anything else in any receiver for amateur use."

This could well encourage others to have another look at the circuit.

Synchrodyne Transceivers

The mention (*TT*, March 1967) of synchrodyne-type receiver circuits, with or without phase-locking, brought forth an interesting suggestion from Charles Bryant, GW3SB (with whom we worked on a Tucker type synchrodyne receiver back in the 'forties). He highlights one most useful feature of this approach for compact transceivers; the fact that the stable oscillator is tuned to the incoming signal frequency and is thus ideal for use as the v.f.o. of an associated transmitter, without any further heterodyning as necessary with superhet transceivers.

He has sketched out some proposals for a multiband c.w. transceiver using a transistor synchrodyne-type receiver and an associated " hot box " forming a valved transmitter. In this case to facilitate band-changing his idea is to incorporate a heterodyne type v.f.o. for the receiver/transmitter, but an even simpler approach, with just a straightforward tunable oscillator, could be used for a single-band rig.

Here and There

Recently, at this year's Montreux Television Symposium, I noted with some interest in the list of delegates the name of Vackar of Tesla, Czechoslovakia. Unfortunately, I was unable to identify him personally, as otherwise he might have been interested to learn that his oscillator is doing well in the UK.

On the other hand, in a coach trip up into the Swiss mountains, during a break in the symposium, I happened to get into conversation with an American sitting next to me in the coach. It soon turned out that he was formerly an amateur and at one time had been a station engineer at the famous pre-war Pittsburgh short-wave station KDKA. This conversation clearly interested my other neighbour, a German. Sure enough he turned out to be DJ3HC, an ardent s.s.b. operator! The Germans, it seem, now have a power limitation based on the anode dissipation of the p.a. valve—an incentive to adopt " Class D " type square-wave drive and high-efficiency p.a. stages?

JAR

But on return from Montreux, the first letter I opened told of the sad death of John Rouse. Others will have written of what this loss means to the Society as a whole, but as one who has been in almost continuous touch with him for many years in connection with the publishing of *TT*, the *Guide* etc, I must express my sorrow.

The relations between editors and contributors are often not of the smoothest. John was the exception. I cannot recall any time when I have not felt grateful to him for his tolerance, unflapability, ready assistance, and real understanding. Times beyond number he has sent along a brief characteristic note such as the one in front of me as I write: (" G3VA—see page 7, any interest?—JAR " the ZL article on electronic tuning was enclosed).

It seems pitifully inadequate to say simply that we have lost a fine and unassuming editor.

THE MONTH ON THE AIR

By JOHN ALLAWAY G3FKM

THE mention of somewhat overdue QSL cards last month has stimulated GM8SV to report the recent arrival of two QSL cards by air mail from W2GCV for a contact in 1938! It seems that W2GCV is a conscientious individual who was checking through some old logs and found some filled out QSLs which had not been despatched, so he decided to forward them.

News from Overseas

Mike Matthews, ZB2AM, reports that he will be leaving Gibraltar for the UK and his G3JFF call in mid-June, having made some 10,500 contacts on all bands 160 to 10m during his stay. QSL cards for all contacts have been dealt with by W1HGT, for whom Mike has great praise. The ZB2AM KW2000 is being transferred to ZB2AP, who together with ZB2AZ will keep ZB2 on the s.s.b. map for a little longer. ZB2AK closed down in May, and ZB2AT has equipment troubles. G2HCA recently arrived and expects to receive his call soon. Five locals took the RAE in May, so it is hoped that there will be five more ZB2's before long! There is apparently a " ZB2F " for whom a considerable number of QSL cards are being received; unfortunately this individual is not in Gibraltar but more likely in the G/DL/F area.

Latest news from CT3AS received via G2MI, is that Harold is rather concerned about the delay in receipt of his QSLs by those stations who have contacted him. He points out that up to the end of January 1967 he QSLd all contacts, and since then he has QSLd all cards received promptly on the day of receipt. This policy resulted from the poor QSL response to those sent out. It seems that any delay now experienced may be at the REP bureau in Lisbon. The only other activity from Madeira seems to be from CT3AM and CT3AV; CT3AL has given up his licence, and CT3AK has now left for Canada, although his call is still being pirated on c.w. Harold says that he is now permitted to run 1 kW input, but is at present running 500 watts to a pair of 4-125As and a ground plane on 21 Mc/s.

ZD8JP has now returned to Ascension Is. after a spell as VS9AJK, only to find a large pile of QSL cards awaiting him for contacts which he had never made! There are about 12 current ZD8 licences, only about half of whom are regularly active. Some of these are on the US space programme tracking station and call-signs change rapidly as personnel move. John says that the population consists mostly of the BBC relay station staff, the Cable and Wireless staff and the Americans. The place is a strange volcanic desert with giant land crabs the size of soup plates, cacti, and wild donkeys, and Green Mountain (2800 ft.) in the centre of the island supports a farm which grows amongst other things bananas, cabbages and coconut palms! All water has to be distilled, and is therefore rather short. Both ZD8SKI and ZD8CX have now left, and members of the British contingent now include ZD8PMG (Paul Geldart, BBC), ZD8RC (Ron Case, BBC), and a C and W man who will probably have a ZD8DM call-sign soon. Finally, some experiments carried out with QRP are worth reporting. On 21 Mc/s on 19 May a contact was had with HM1BW using 4 watts input to a 185 ft. wire. Following this four JAs were worked and reports received ranged from 579 to 599! To investigate further power was reduced to 1 watt, frequency changed, and a CQ call put out—this brought back a number of Europeans who gave 558 to 589 reports. ZD8JP will be on the lookout for UK stations on 21 Mc/s c.w. on Tuesdays and Thursdays between 17.00 and 19.00.

The latest news from 9V1LK is that he has been hearing and calling Europeans on 7 and 3·5 Mc/s between 20.00 and 22.00 with no success. He says that they only seem to be interested in working S9 signals! At the time of writing 21 Mc/s was open between Singapore and Europe from about 07.00 until 20.00, and 28 Mc/s often seemed to be open but devoid of signals. Dick's remarks concerning his visit to the WIA meeting in Adelaide have been answered by VK1QL, who says that he thinks that he gained a false impression partly due to the fact that the most regular attenders at WIA meetings are old timers who mostly confine their activities to the l.f. bands. There is also a very active v.h.f. group, and lastly a prominent VK5 who is renowned for his anti-s.s.b. act which is now so much of a standing joke that he is unable to go on s.s.b. himself, although he would very much like to! VK1QL was formerly G3KQL, and for five years VK5QL.

Those who contacted Col, VK0MI, on Macquarie Island a little while ago will be pleased to hear that he has now fully recovered from the illness which led to his premature return to Australia. He is now in the VK3 area, but has not yet taken out a VK3 call. The present operator on Macquarie is VK0CR, Rod, who reports working a few Europeans and Africans on 10m around 06.00. Signals were mostly short path, but on occasions seemed to be showing no directivity at all.

A reminder is due that the Ex-G Radio Club exists to keep amateurs born in the UK and domiciled abroad together, and in contact with their friends at home. The club has official meetings at 19.00 every Sunday (except during contests) on 14,346 kc/s, and on 14,065 kc/s c.w. at 19.00 on Saturdays. Members may usually be found in informal meetings on weekdays between 11.30 and 12.30 on 14,315 kc/s and on Saturdays and Sundays on 21,350 kc/s between 14.00 and 17.00. When 28 Mc/s is open members may be found between 28,650 and 28,700.

Fred Sawyer, G3SLN, has returned to Kenya after holidaying in the UK in April and May, and is pleased to write that he has at last obtained a licence after a wait of more than two years. His call-sign is 5Z4KO, and he is running a KW2000A with a dipole at present and is on 14 Mc/s c.w. and s.s.b. most evenings and 21 Mc/s during the day at weekends. Six or seven other new licensees include 5Z4KL, KM, KN etc. QSLs should be sent via the address in QTH Corner, or via the 5Z4 QSL Bureau, Box 30077, Nairobi, Kenya.

A further bulletin from Stew, W1BB, summarises the 1966/67 Top Band " season." On the whole this seems to have been a little below the previous season, but not as poor as might have been expected at this stage in the sunspot cycle. He points out that excellent conditions do occur occasionally and that there may well be some good openings for those who keep active on the band. G2WI reported to

• 10 Knightlow Road, Birmingham, 17.

Stew receiving a report of his signals being heard by a listener during a QSO with W2IU at 03.30 on 2 August last year, so it seems that contacts must be possible at this time of the year. Other items of news are that HI8XAL has now left the Dominican Republic, but has left his 160m equipment with HI8BC; and that 5H3KK has been on the band and has worked G3SED, G3PQA, and G3RPB amongst others. VQ8CC, who recently arrived on Mauritius, is said to be interested in Top Band. Encouragement to those of us who are restricted in the space we have available for aerials comes from W6PBR who was heard by W1BB when 4100 miles away across the Pacific. His aerial consisted of a 40 ft. vertical bamboo pole with a 33 ft. wire tied to the side of it and two 33 ft. radials!

The Worcester and District ARC are intending to operate from some of the rarer UK counties during the summer. They would be interested to receive lists of most needed counties from readers as this would help them to decide which ones to activate. Please write to: B. A. Jones, 12 Woodside Road, Larkhill, Worcester.

Although not directly pertaining to Top Band, readers may be interested to hear that KL7WAH (Fairbanks, Alaska) has been listening to Radio Caroline South, and Radio London on the medium waves. The combination of vertical aerials and a perfect reflecting ground are obviously desirable for 160m DX.

Awards

The Hong Kong ARTS issue an attractive certificate printed on vellum type paper and known as the **Hong Kong Firecracker Award.** Stations outside Zones 18, 19, 24, 25, 26, 27 and 28 must have confirmed contacts with four different VS6 stations since 1 January, 1964. In the Zones mentioned eight contacts are necessary. Contacts may have been made on any band and c.w., phone, or mixed endorsements are available. QSLs must be in the possession of the applicant, but need not be submitted. A copy of the log entries certified by a national society will suffice and should show date, time, band, mode, and both signal reports of claimed contacts. A minimum of readability 3 and T8 are accepted. Applications should be sent to: QSL Manager, HKARTS, PO Box 541, Hong Kong, together with five IRCs or equivalent.

A note from LU1DJU says that in future applicants for the " C.C.C." Award (**Certificado Cimco Continents**) must contact each continent on two bands, not one as previously. For this award applicants should send a certified list of log data of two contacts with each of the five continents (N and S America count as one) to: RCA, Carlos Calvo 1420/24, Buenos Aires, Argentina, together with five IRCs.

Contests

The annual **Colombian Contest** is being held between 00.00 22 July and 23.59 23 July. All bands 80 to 10m may be used, and c.w. and phone but not cross mode or cross band contacts made. Exchange consists of report plus progressive QSO number starting from 001, and Colombian stations will also give their district. Points are 5 for contacts with HK stations and 1 for contacts with other participants. The multiplier is the sum of HK districts worked on all bands plus the number of different countries worked. Awards will be made to the top scorer in each country, and a silver cup will be given to the highest scorer outside Colombia. Logs and summary sheet should be sent to arrive before 30 September. They go to: LRCA (Colombia Independence Contest), Box 584, Bogota, Colombia.

Results of the **1966 VK/ZL Contest** have now been received. In the c.w. section the following G stations are listed: G3HDA 1890 points, G6XN 1620 points, G2DC 969 points, G5RF 658 points, G3JAG 80 points. In the phone section G8KG/A was leading UK station with 1955 points, followed by G3UML with 1750 and G6XN with 1729 points. There were 84 logs sent in from Europe for the c.w. and 27 for the phone section.

Fokke Mulder, 5N2ABB, Kadund, Central Nigeria.

The **QRP Amateur Radio Club** is running a QRP contest between 02.00 19 August and 22.00 20 August. There is a limit of 20 hours operating time. Participants exchange QSO number, and RST. US stations will give their ARRL section and club number (if non-member " NM "). Contacts on different bands, modes count as separate QSOs. Activity will be centred around 3540, 3855, 7040, 7260, 14,065, 14,260, 21,040, 21,300, 28,040 and 28,540 kc/s. Available information does not make clear the QSO points applicable to non-W/VE stations and intending participants are advised to contact WB2NDI, 1250 Ocean Avenue, Brooklyn, NY, 11230, USA for fuller details.

The **Illinois QSO Party** runs from 16.00 5 August to 22.00 6 August. Stations may be worked once on phone and once on c.w. on each band if desired. Exchange QSO number, report, and country (or Ill. county). Multiply number of QSOs by number of counties worked to obtain score. Logs should show dates, time, stations, exchanges, band, mode, and claimed score, and should be posted before 1 September to: Cliff Corne, 711 West McClure Ave, Peoria, Ill, 61604, USA. Look for activity around 3600, 7040, 14,080, 14,300, 21,100, 21,300, 28,100 and 28,700 kc/s.

Results of the **1966 *CQ* WW DX Contest (Phone Section)** have been received from W1WY. Over 1000 entries were received, but as usual only a pitifully small number from the UK. It seems that Germany and Japan, although each with fewer licensed amateurs manage to produce four times the amount of interest! The overall winner of the single operator section was VQ9AA/D with 3,624,942 points, second place being held by DJ6QT with 1,519,823. No doubt operating from an all time new country would help W9WNV to obtain 2518 contacts and such a fantastic score. Congratulations to all winners, and particularly to G3HDA who was European leader on 28 Mc/s, his score being exceeded by only one other entrant—LU1DAB with 314,056 points. In the list below number groups after call-signs indicate: Band (A = All), Score, No. of QSOs, Zones, and Countries. Certificate winners are in bold face type.

		Single Operator			
G3TWF	A	**496,982**	**1006**	**68**	**123**
GW3NWV	A	**422,400**	**892**	**58**	**118**
G3KZQ	A	367,640	711	54	128
G4JZ	A	258,279	638	55	92
G3LNO	A	220,364	523	55	123
G3RHM	A	216,631	493	68	135
GM5ABN	A	**204,594**	**612**	**46**	**83**
GM3RFR	A	154,020	497	48	103

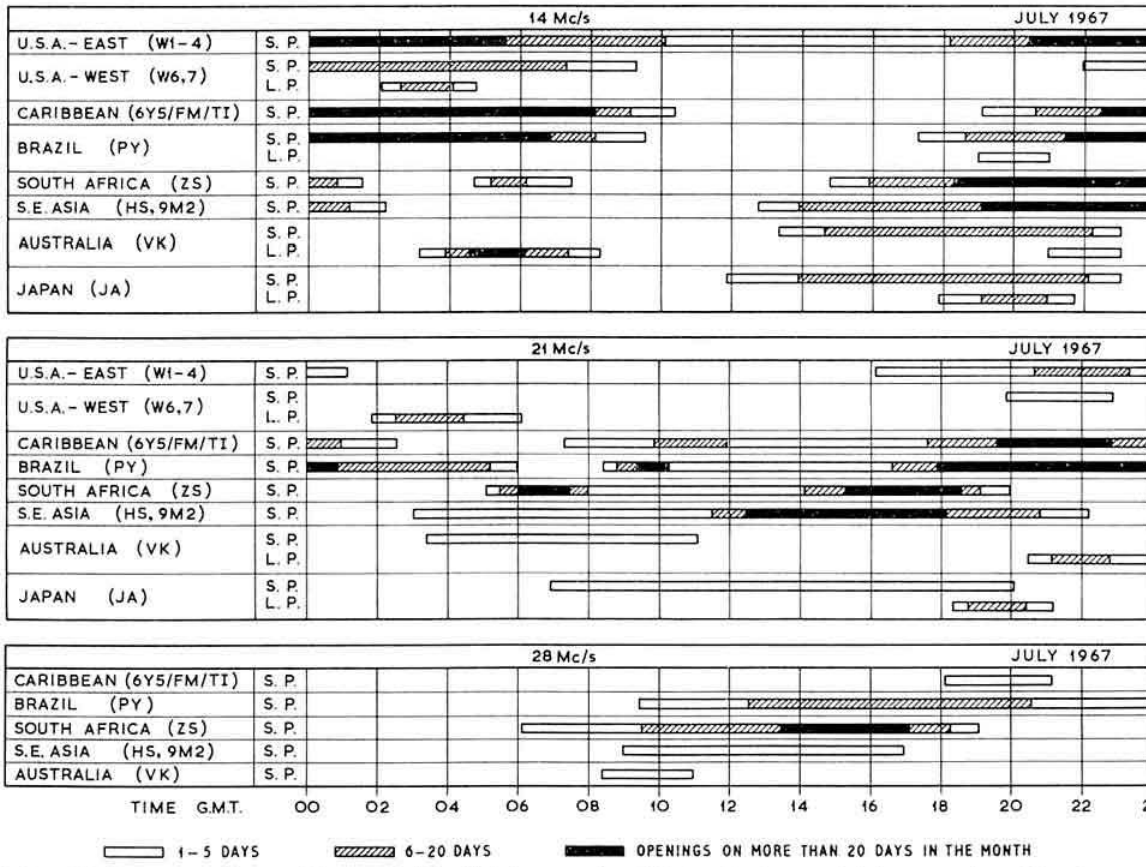
GM3BCL	A	80,181	284	44	107
GD3TIU	**A**	**72,704**	**246**	**51**	**91**
G2AJB	A	66,350	250	45	85
G8DI	A	50,427	273	33	84
G3MWZ	A	30,358	189	29	57
G3HDA	**28**	**171,567**	**631**	**30**	**69**
G3UML	28	83,498	256	29	53
G3LZQ	28	33,390	215	19	34
G3OHP	28	21,460	135	22	36
G3PEU	**21**	**97,650**	**396**	**29**	**61**
GM3KGT	**21**	**19,600**	**284**	**10**	**15**
G3LSF	**14**	**238,392**	**726**	**37**	**92**
G3OIE	14	192,038	897	31	55
GM3JDR	**14**	**67,956**	**473**	**26**	**58**
G3RJH	14	37,600	193	25	55
GM3SFH/A	14	36,075	332	20	45
G5HZ	**7**	**21,970**	**197**	**17**	**48**
G3ESF	**3·5**	**600**	**41**	**3**	**12**

Multi-operator—Single Transmitter (All Band)

GB2USA (G5AAB, G5ACP, G3KVF)			
375,920	**923**	**52**	**96**
G3IAR (G3IAR, G3RYV)			
177,184	416	75	149
GB3GJ (G3KVG, G3VDV)			
64,676	291	32	60

The results of the **C.W. Section** are to hand and will be published in August in detail. **G2BOZ, G3HCT,** and **G3FKM** appear to be European leaders on 28, 21 and 14 Mc/s respectively. Top G's in the All Band, 7 Mc/s and 3·5 Mc/s sections are **G3HDA, G3RRJ,** and **G3IGW** respectively. **G3SSO** came fifth in world listings in the Multi-operator single transmitter section. Congratulations to all concerned. One point mentioned by W1WY is an idea to change the dates of the 1968 contests to the first full weekends in November and December. Frank would be pleased to receive comments on this idea.

Propagation Predictions



During July the propagation conditions will differ little from those of the previous month. On 28 Mc/s North America may only come through in exceptional conditions. South America also, will not be heard every day. The most favourable period for traffic with Africa will be in the latter half of the afternoon. Traffic with Asia and Australia will be relatively rare. On 21 Mc/s North America is not certain to be heard every day. Central and South America, Africa and Asia should be workable however. As last month sporadic short skip conditions should occur and will make possible European contacts on 28 and 21 Mc/s. 14 Mc/s will continue to be an excellent DX band during the hours of darkness and good for European traffic by day. The most favourable time for contacts with Western North America will be around 04.00 GMT because at this time the great circle coincides with the twilight zone. On 7 and 3·5 Mc/s there will be no significant change from the previous month.

The mean sunspot number for May 1967 was 82·1 with the period of greatest activity occurring during the last ten days of the month when daily numbers were as high as 197. The predicted smoothed sunspot number for September, October and November are 99,102 and 106 respectively.

Expeditions

In a circular dated 13 May **Don Miller** announced that his DXpedition would be resumed in the near future, provided that sufficient funds were available. Possible locations for further operations were listed as VQ8 (Rodrigues), VQ8 (St. Brandon), FR7 (Tromelin), FR7 (Europa), 1G (Geyser Reef), LA (Bouvet), VU (Laccadives), YI (Iraq), ZA (Albania), KC4 (Navassa), VP8 (3 locations), EA9/EA0 (3 locations), and XU (Cambodia). A mention was also made of a possible three more " new " countries being activated. A postscript added that WA6SBO would be joining Don immediately. Direct QSLs are promised to friends and supporters; on completion of the DXpedition Don will QSL all others 100 per cent. Direct cards will either be mailed on the spot, or via the Long Island DX Association. The scheduled departure date is given as 30 June, and the first stop expected to be VQ8CB/R (Rodriguez Is.).

The Chester and District Radio Society are expecting to have a station on the air from **Orkney** for the RSGB Top Band Contest. They will be commencing operations on the evening of 8 July, and will continue until 14 July. Operators will be G3ATZ, G3DRB, G3TZO, GW3TOW, G3UOH, GW3AOC and G3NFB. Skeds may be arranged with G3TZO.

Ken Cantrell, K1OTA, will be on the air from **Luxembourg** from 25 July to 4 August with a K1OTA/LX call. He will use the following frequencies: 7,015, 14,015, 14,200, 21,015, 21,350, 28,015 and 28,650 kc/s. He will also be on from Gibraltar from 5 August to 15 August, but his ZB2 call is not yet known.

PA0GHB will operate from 3A2 between 13 and 16 July, from ZB2 between 2 and 9 September, and from PX between 27 and 29 August and again between 13 and 16 September.

According to the latest copy of the DX'ers Magazine our old friend Gus, W4BPD, has started to develop itchy feet again! He has started a DXpedition Fund, and says that if it grows like he hopes it will he will take off on another trip. He goes on to say " No black balls for anyone, no favourite modes, and all band operation from every stop. . . . You can be sure there will be no gripes or grumbling from any trip I ever go on. I will not stir up a lot of controversy among the DX'ers. I will return every cent sent me for this DXpedition if by chance it never takes place." Contributions will be kept in a special bank account and accurate records kept of donors, and Gus says he is interested in seeing how many are interested in a good clean DXpedition! From Gus's previous record it is quite certain that he is the ideal DXpeditioner with remarkable patience and forbearance. Those who would like to support the venture should write to: W4BPD, The DX'ers Magazine, Route 1, Box 161a, Cordova, SC 29039, USA. Incidentally, it might be mentioned that the magazine itself costs $23 per year of 36 issues to Europe by air mail. Since the postage on each copy is 40c the magazine itself is a very good buy.

Howard, G2HFD will be visiting the **Isle of Man** between 23 July and 11 August, he will be active mainly on s.s.b. on all bands 10 to 80m. His equipment consists of a KW2000 plus linear, and GD2HFD/A will be found on or near 25,590, 21,375, 14,140, 7040 and 3740 kc/s. Eighty metre activity will take place on 30 July and 6 August at 21.00. QSL *via* G2MI, or to 20 Lock Close, London S.E.3.

Band Reports

The recent fine weather appears to have taken its toll of reporters this month, however it would seem that those who have not been active have not missed a great deal of DX. So far only one correspondent has expressed disapproval of this section, the other few who commented were in favour of its continuance. The low poll may be due to the fact that most readers do not read this far through MOTA! Conditions were apparently good over the weekend of NFD, with West Coast W signals at good strength at 02.00 on 14 Mc/s and 21 Mc/s open nearly all day on the Sunday. Your scribe must agree with a number of correspondents who wonder why, in these days of so much compact commercial equipment, it should be necessary to restrict entrants in NFD to an artificially low power input level. From personal observation on the bands some entrants seemed to have remarkably good signals with their 10 watts. The advantage gained from cheating by excess power usage if 150 watts were the limit would be negligible, and of course also illegal.

Only one DX signal has been reported on **3·5 Mc/s s.s.b.** —OD5FC at 21.50. On **7 Mc/s s.s.b.** quite a lot of DX has been heard between 20.00 and 23.00. This includes CR6's IS and IV, KA2JP, MP4TBC, all districts of PY, PZ1CF, ZD8RD, and ZS5JY. On **7 Mc/s c.w.** there have been W signals in the early mornings and CX8CZ (04.50), TA2AC (21.38), VP9BN (20.00), and 9X5MW (21.00) have also been reported. **14 Mc/s** has not been as interesting as it was a few months ago, but occasional openings into the Pacific have been reported in the mornings and good signals from VK have been coming in around 07.00. Interesting calls heard include FW8RC (07.59), FY7YM (23.25), HQ0QA (San Andres Is. 08.08), UA1CK/JT (15.53), KH6EDY (Kure Is. 17.50), TR8AG (21.55), UA0YP (Zone 23, 19.08), VP8IU (21.05), VQ9HJB (19.30), XE1EH (04.35), ZD9BI (19.38), 9K2AM (19.30), and 4WIL. All these on s.s.b.

21 Mc/s appears to be very erratic at present although all continents have been coming through from time to time. From the area of the Pacific KH6BFU (08.35), KH6BV (13.16), KL7WAH (07.30), W0ITJ/KM6 (10.12), and VR5RZ (08.37), have been received on s.s.b. and signals from Japan have been audible as late as 17.00. Other s.s.b. stations recorded include CE6BH (21.55), CP1AF (19.09), FP8DD (20.35), HK0AI (San Andres Is. 21.50), KR6AB (10.30), TJ1AG (16.13), VQ8CG (18.26), W7/W6's (18.00 to 23.00), XW8AX (15.30), YA1FV (13.55), ZD7KH (17.16), ZD8CX (20.15), ZS8L (17.30), 4S7PB (18.52), 5R8AS (15.00), 9V1MY (14.40), and 9X5BW (19.45). On c.w. CE8CF (20.15), CR4AG (11.22), VP9EP/P (16.35), VS6FX (15.58), VS9MB (18.22), 4S7NG (08.12), 4X6AA (15.50—QTH " Box 69, Ramallah, Israel "), 5Z4KL (15.40), 9M8II (16.20), ZD8JP (20.50), 9V1NV (13.46), and 9Y4LA (Tobago 11.15).

Lastly **28 Mc/s**, probably the worst of the h.f. bands this month. On s.s.b. CP5ED (16.47), CR6EW (11.15), EP2GI (10.30), HC8FN (Galapagos, 16.40), OA4BE (16.34), ZD3I (17.41), ZD7DI (19.37), ZD8CK (13.45-19.35), and 4U1ITU (16.17). The only interesting calls heard on c.w. were CR6AI (13.46), PY1MCC (17.45), VS9MB (15.29), ZD3I (13.30), and ZS1AC (16.06). No doubt the story will be very different in the autumn when the band should be fully open again.

Very many thanks to all correspondents, and especially to the following who provided the information for this section: G2BOZ, G2HKU, G2LB, GW3AX, G3HCT, G3HDA, G3KSH, G3OHC, G3PQF, G3SML, GM3SVK, G3VJG, G3VWC, G4MJ, G8DI, G8JM, G8VG, SM2BYD, BRS28198, A3941, A4568, A5126, and A5224.

DX Briefs

Lloyd and Iris Colvin have now left Gambia for **Portuguese Guinea (CR3).** They managed 6,000 QSOs in the three weeks they were in ZD3, and worked 123 countries. The new station in **Sao Thome**, CR5CA, has been very active on 21,080 c.w. at around 22.00. He expects to be on 14 and 28 Mc/s soon.

According to OD5BZ who says that he has checked with the licensing authorities, the recent MP4Q activity was unauthorized. Bob was hoping to arrange some operation from there himself during August and September. This was being planned before the present state of unrest in the Middle East.

QTH CORNER

FP8DD	via WB2RSW, 43-10 Kissena Blvd, Flushing, NY, USA.
GB3IS	via G3UJI, Steve Turner, 51 Hilton Road, Harpfields, Stoke-on-Trent, Staffs.
GD3VBL	via DOTM
HI8LAL	PO Box 951, Sante Domingo, Dominican Rep.
HZ1AT	R. G. Cary, 43 Foxhills Crescent, Lanchester, Co. Durham (not via G8KS)
I9RB	Gian C. Bavassano, Via Bossolasco 8, Turin, Italy.
UA1CK/JT	via Box 639, Ulan Bator, Mongolia.
KS4CE	via K6QPG, Mary J. Garlow, 5506 Clark St., Lynwood, Calif. USA.
KS6CJ	Box 1207, Pago Pago, American Samoa.
KV4FA	via W2CTN, 159 Ketcham Av, Amityville, NY, 11701, USA.
K1OTA/LX	(Home Address) 36 Pembroke St, Quincey, Mass, 02169, USA.
TJ1AG	Martial Prunier, BP20, Bafoussam, Cameroun.
TU2BD	via CR6GO, PO Box 73, Luso, Angola.
VK1 stations.	PO Box 1175, Canberra City, Australia.
VK9RH	Ray Hoare, PO Box 97, Norfolk Is.
VK9VM	PO Box 502, Rabaul, Territory of New Guinea.
VQ8CB	via LIDXA, PO Box 157, Westbury, NY 11591, USA.
VQ9CC	Box 14, Curepipe, Mauritius.
VQ9HJB	via 5H3 Bureau, PO Box 2387, Dar-es-Salaam, Tanzania (not via G8KS)
VR5RZ	J. W. Atkinson, 17 Nerang Street, Southport, Queensland, Australia.
YJ8BW	via W9QLD, 2016 Devonshire-Box 554, Waukegan, Ill, USA.
ZD9BI	via DOTM, PO Box 7388, Newark, NJ, 07107, USA.
ZS9L	via VE4OX, 647 Academy Road, Winnipeg 9, Manitoba, Canada (with s.a.s.e.)
4S7NG	Noel Gunesekera, Radio Ceylon, Seeduwa, Ceylon.
5N2ABL	Les Hickingbotham, College of Technology, PMB 1108, Enuga, Nigeria.
5Z4KO	Fred Sawyer, PO Box 30417, Nairobi, Kenya.
9M8II	via 9V1NT
9Q5SR	(ex-TL8SW), via W1BPM, T. Dick Dunn, West Scarboro, Maine, USA.
9U5DP	via W2SNM, 2483 Third Av., East Meedow, NY.

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RSGB QSL Bureau, G2MI, Bromley, Kent.

Hermann, HK1QQ, is now said to have an EA0 licence for operation from **Spanish Guinea** (EA0AH). Sideband equipment is being sent to him by the Florida DX Club, and his QSLs will be dealt with by W4DQS.

It is reported that WA6ZZD will operate from **Starbuck Is.** during the last week in July. Your scribe believes that this would count as ZK1 (Manihiki) for DXCC purposes, but according to reports received the island is owned by a Japanese company. Fred also plans to operate from **Kingman Reef**, located north of Palmyra. This reef is above water for only four hours daily. DXCC status is being sought!

A new station is due up from the **Solomon Is.**—VR4EK will be on 14 Mc/s c.w. and s.s.b. It is believed that VR4CR will handle his QSL cards.

Roger, MP4TBO, will close down on 26 June. During his three years in Trucial Oman he has had over 20,000 QSOs with some 250 countries. His UK address will be: Moorfield, Hardstoft Road, Pilsley, Chesterfield, Derbyshire.

ZD9BI is now on and is said to be found regularly at 18.30 on Tuesdays and Thursdays between 14,240 and 14,260 kc/s. It seems that this is the call-sign issued to G3NTZ, not ZD9BH as reported in May *MOTA*. QSLs will be dealt with by W2GHK as previously stated.

Rumour has it that ZL4PH and ZL4MO are planning a trip to **Chatham Is.** late this year. If they do they say they will have three operators, and will be on c.w and s.s.b.

West Gulf DX Bulletin, 14 June, reports that W9WNV and WA6SBO have raised enough money to proceed with their trip to the Indian Ocean. It goes on to say " Contrary to the current rumours going around there are no obstacles keeping them from going. A letter from Don on 13 June mentions that he will meet with W1LVQ in Newington on 26 June, but only to discuss the upcoming trip regarding a collective effort to promote goodwill abroad." Readers are referred to the DXCC News paragraph.

VK4HG is said to be due to open up from **Willis Island** on 23 June for a six month stay. He will run 50 watts to a 20m vee beam, and asks for QSLs via the VK3 bureau.

DXCC News

A copy of a letter dated 2 June from W1LVQ to W9WNV re-opens all the controversy that those of us who enjoy working DX had hoped was finally laid. This document shows that ARRL have been in communication with the Department of Communications of the Government of India. That department alleges that the letter which was produced by Don Miller as evidence of his permission to operate from Laccadive is a definite forgery, written on obsolete note paper. They also deny the genuineness of the telegram from the Indian Consul in East Africa. Neither the office in Mombasa nor the Indian Mission in Nairobi authorized any Dr Miller at any time to operate any radio station from Laccadives. It was confirmed by the authorities in India that Dr Miller never landed in any of the Laccadives during the period. It is apparently necessary to report to the authorities at Mahé when returning from the Laccadives—this was not done. The report goes on to discredit the particulars of the boats alleged to have been used, one of the ones named was according to the ARRL in the Pacific Ocean.

VQ9BC, a technician at the US Tracking Station at Mahe, alleges that the signals from VQ9AA/C beamed from the West, not East, also they exhibited groundwave characteristics. The statement goes on to say " In view of this evidence, indicating you were never actually in the Chagos (nor the Laccadives), the Award Committee sees no alternative but shortly to announce deletion of credits for the VQ9AA/C operation. The Awards Committee is disturbed to note that in your letter of 17 May to me, you renege on your earlier promises to " work everyone " in the future, regardless of previous difficulties. You made this promise to the Awards Committee on 3 March, and separately and personally on the same day to President Denniston. Your promise was a substantial factor in the action of the Awards Committee to lift a ban on credits for your future operations. This reversal on your part, plus the very serious situation described earlier in this letter concerning your actual presence at claimed locations, has again raised the question of credit for future DXpedition operations. The Awards Committee plans to meet again later this month to determine whether the suspension for future credits should be re-imposed. (Ed. note—one of Mr. Huntoon's earlier documents established the right for any amateur to contact or not contact anyone he chooses according to his own wishes. This now seems to be rescinded!)

Commonwealth Call Areas Table

	1·8 Mc/s	3·5 Mc/s	7 Mc/s	14 Mc/s	21 Mc/s	28 Mc/s	Total
G3IAR	10	48	45	138	104	57	402
G8JM	1	—	12	160	72	41	286
GM3SVK	16	15	35	121	98	24	309
9V1LK	1	4	21	85	55	42	208
G8DI	—	21	33	71	69	23	217
7Q7LZ	—	—	5	80	66	29	116
G3KSH	3	30	32	47	38	43	193
G8VG	1	18	25	45	55	54	198
SM3BYD	—	19	57	—	51	—	127
G3PQF	2	23	26	23	15	37	126
G3VOK	14	36	6	38	1	7	102
G3OJV	1	1	22	21	16	20	81
G3VWC	3	5	22	19	24	3	76
9J2BC	—	—	2	29	16	43	89
G3VJG	—	3	8	20	21	69	121

G3LNS	1	9	—	16	9	8	43
G3ING	3	11	6	4	6	1	31
G3JVJ	14	10	2	1	2	4	33
A4886	8	27	35	218	87	53	428
A4568	9	40	37	157	128	93	464
BRS28198	1	41	36	131	63	50	327
A3942	12	51	55	110	76	63	367
BRS27806	3	23	40	116	121	103	406
BRS25429	5	53	40	114	77	76	365
A5004	4	54	29	112	41	48	288
A4038	7	12	15	97	156	82	369
A5273	5	45	31	79	53	47	260
A4182	3	29	25	69	56	48	230
A5105	1	25	10	78	62	40	216
A4552/VK	—	1	2	80	10	2	96
A5126	3	18	11	60	32	10	134
A5153	2	17	12	57	31	8	127

This table is in the order of 7 plus 14 Mc/s totals.

Sincere thanks are extended to all contributors, and special thanks and acknowledgements are due to the following: *NARS News* (5N2ABA), *The LIDXA Bulletin* (WB2EPG), *The DX'er* (W6PHF), *DX News Sheet* (Geoff Watts), *The DX'er's Magazine* (W4BPD), *The West Gulf DX Bulletin* (WA5LES), *Florida DX Report* (W4BRB), *CQ DX* (A.R.I.), *On The Air* (ON4AD), *DX'press* (PA0FX), *The HKARTS Newsletter*, and the *Ex-G Club Bulletin*. Please send all items to arrive no later than **12 July** for the **August** issue, by **16 August** for the **September** issue, and by **6 September** for **October** issue. **Please note the especially early deadline for the October issue.**

Experiences with the SB-1OU

By B. PRIESTLEY, G3JGO*

ALTHOUGH the phasing method of s.s.b. generation tends to be regarded as outdated, a fundamental frequency phasing adapter such as the SB-1OU has the advantage of simplicity in converting an existing A3 transmitter to A3a. Also the theoretically better sideband suppression of the filter exciter can be degraded considerably by the intermodulation distortion of the average amateur linear. However, as it stood, the writer's SB-1OU could be improved, and the following notes are a record of experiences up to the present. Circuit references are those appearing in the Manufacturer's Manual.

Phase Modulation

If the sideband switch is set to A.M. and carrier is inserted by unbalancing the " B " modulator, the result is mainly phase modulation. This is accompanied by some amplitude modulation which can be removed in a following class C amplifier or frequency multiplier. Indeed multiplication is almost essential, since the modulation index must be limited to about 0·2 to avoid excessive distortion. However, this seems to be a possible way of producing 145 Mc/s f.m. with a 7·2 Mc/s crystal oscillator and a suitable audio low pass filter.

TVI

Some SB-1OU units, including the writer's, apparently produce a peculiar type of odd harmonic radiation. Daystrom were consulted, and they suggested that a parasitic in the balanced modulators was responsible and could be cured by soldering the leads from the 12AT7 anodes to the " wrong " ends of the stator bars on C20, which reduces the lead length considerably. In the meantime however, the radiation had been reduced to the satisfaction of the GPO by screening and filtering all leads leaving the SB1OU cabinet, using screened wire for control leads, ferrite beads on power leads and 470 pF disc capacitors on both.

Drive

As with most exciters, the output of the SB-1OU fell from a considerable excess on 3·5 Mc/s to barely sufficient at 28 Mc/s. Since varying the drive with the microphone gain reduces the effective carrier suppression, this was not considered adequate, and so ways to improve matters were sought. The original SB1O circuit used the much higher gain 6CL6 and EL84 for V9 and 10 respectively, and so experiments were made with an EF80 and an EL84 which gave considerably more drive. The chokes in the anode circuits of V9 and V10 caused the latter to go into a t.p.t.g. oscillation, but this was cured by the expedient of damping the choke in the anode circuit of V9 with a parallel resistor (3·3 K ohms) until oscillation ceased! A 6CH6 was found too prone to t.p.t.g. oscillation, probably due to its rather large anode to grid capacitance. The connections to pins 1, 8 and 9 of V9 need slight re-arrangement. Having obtained the excess drive, it was equalized by removing R11 and adding individual damping resistors across L2 to L6. In some cases a little extra capacity was added to make the cores resonate exactly and so a g.d.o. is helpful but not essential.

The remaining slight excess drive was removed by connecting a resistor (8·2 K ohms in my case) in series with a 0·01μF blocking capacitor across C32, which also serves to stabilize V10 and the following amplifier.

VOX

When first used, the vox relay only closed when spoken to loudly, and tended to chatter in opening. V6, the relay valve, is a 6C4 in the SB-1OU, as against the more sensitive $\frac{1}{2}$12AT7 in the original, and this may have some significance, but perfectly satisfactory operation was obtained by replacing R36 temporarily with a 2·5 K ohms potentiometer, which was then adjusted for satisfactory operation. The potentiometer was then measured and a resistor of the appropriate value substituted for R36.

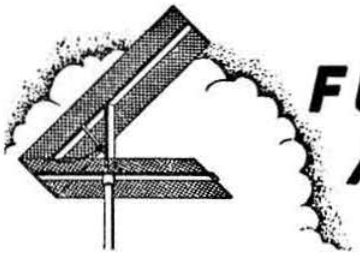
V.F.O.

Any instability in the transmitter v.f.o. will appear on the output signal, and this is particularly noticable at 28 Mc/s. Several users of the DX100 equipment have found that not all 6AU6s are equally good, and G5AEX/W7BDY found that a " reliable " version of the 6AU6 gave much better results. Allowing the v.f.o. to run continuously, and keeping the heater on when the transmitter is off, as in the " Apache," will reduce warm-up drift.

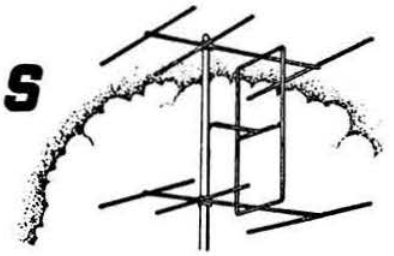
Single Sideband

We hope to publish a reply from Electroniques (STC) Ltd. next month relating to G2DAF's comments in the June " Single Sideband " feature.

* 43 Raymond Road, Langley, Slough, Bucks.



FOUR METRES AND DOWN



By JACK HUM, G5UM*

Conditions and All That

"CONDITIONS have been the poorest ever on v.h.f. . . . I haven't worked very much at all." The phrase has been heard on and off during the recent Spring and early Summer months of tumultuous weather that threw at us almost everything it had got.

Yet it is arguable that conditions are never poor at v.h.f., only normal, above-normal and super-normal. What we experience for most of the time are normal conditions: the kind that provide quasi-optical propagation (rather more for the well sited). Sustained high barometric pressures presage an extension of this range. So do the more fleeting targets of sporadic-*E*, aurora, meteors and satellites.

For most of the time these range-extending phenomena are not with us (in the UK at any rate). If they were, the professionals would find life difficult indeed, for their television services and point-to-point v.h.f. links are established on the basis that ranges will be predictably to the horizon, plus a bit of overscatter, in other words, on normal conditions.

For the greater part of the year this is precisely the situation the amateur movement experiences on 4m and down. Long distance performance by anomalous propagation is the exception—a bonus to be enjoyed while it happens. To remain off the air when it doesn't is self-defeating in the sense that if *everyone* stayed off when conditions were normal then nobody would be on v.h.f. at all.

Speaking personally, we would say that it is time the amateur movement did some rethinking on how it uses the "very highs." For example, the development of v.h.f. for local net operation has been explored to only a limited extent, and for regional net operation, where one net can link into another further up country, not at all.

Whatever spells of "good conditions" favour us, you can be quite sure that "situation normal" will ensue before many days have passed. What do we propose to do about it? No, *you* say!

From the Far South . . .

As if to show that v.h.f. is not quasi-optical for all of the time, the past month has turned in some exciting periods of what we call above "super normal" conditions, or more prosaically by the professionals anomalous propagation.

Consider the case of young Chris Miles, G3TOT, hemmed in by houses at his Knebworth QTH, a 400 ft. ridge blanking him off to the south and a British Railways (Eastern Region) main line railway embankment level with the top of his home to the east. Inevitably for most of the time the G3TOT contacts on 4m are of the short haul high quality type characteristic of normal v.h.f. working.

On 2 June he worked ZB2VHF, Gibraltar, on phone at RS59 both ways, the second G to do so among the many who, prompted by the forecasts of probable sporadic-*E* propagation between the UK and ZB2 which had been made by the South Hants Group, were lying in wait for "Ossie" of ZB2VHF.

The G3TOT contact went to show that when anomalous propagation is in evidence site disadvantage counts for little.

Chris was pipped by only two minutes from being the first G to work ZB2 on "Four": that honour went to G3RIK 200 miles further north at Rochdale. Third man was G3IFF, one of that energetic South Hants Group, and G3JHM, another of them, notched the fourth contact.

These four QSOs came within a space of 12 minutes, followed by 28 more in the ensuing hour—a tribute indeed to the magnificent operating of ZB2VHF and of the great restraint of the mass of G stations who *could* have cluttered the band but didn't; instead, they quickly moved off to make room for others.

Later that memorable evening ZB2VHF went back to beacon operation with a keying motor almost worn out after continuous use since last September. The South Hants Group are building him another.

Next day (3 June) the 4m band opened again at much the same time (17.13 GMT) to produce a further 29 contacts for ZB2VHF before he left for his RAF night duty. On this day was made the first "Stroke M" contact: ZB2VHF to G3PLX/M, who, using a $\frac{5}{8}$ wavelength whip, was on the road at the time.

Total ZB2VHF score for the two days' operating amounted to 64 contacts with 49 different stations in 14 counties.

On several subsequent days in June the ZB2VHF beacon was logged in many parts of the UK. And sporadic-*E* reception of many Eastern European broadcasting stations at great strength has been reported.

Says G3JHM: "We (meaning the South Hants Group) are now considering our next project which it is hoped will enable us to set up a trans-equatorial 70 Mc/s station in Southern Africa. Work on this is already under way. This will confirm the work already done by ZE2JV/ZC4IP but will be much more detailed at 70 Mc/s."

Don himself has turned in a fully documented account of the anomalous propagation events of June: this will be passed on to the Scientific Studies Committee. So will a detailed description by G3GVM of how ZB2VHF's beacon signal built up in strength in the preceding weeks ("Like a local, RST599, when I was mobile near Marlborough in Wiltshire," he says). He adds two further illuminating pieces of information: first, that during the various ZB2 openings interference on television Channel 1 was not particularly severe, and secondly that the RST599 reception reported by a number of stations on 21 May was known to be via "Storm type sporadic-*E*," one of the rare occasions that this type of propagation has been observed on amateur bands.

As if to show that the above results were not just a flash in the pan, the sporadic-*E* conditions produced on 11 June even more fantastic DX: that evening ZB2VHF made contact with GM3EGW and GI3PDD, again at local-sounding RST599. Clearly, whatever fruits or frustrations "Spor-on-

* Houghton on the Hill, Leicester. Send reports for the August issue by **10 July** and for the September issue by **14 August.**

Four " may have for us over the next few months, the thing to do is to keep beams trained on ZB2 during early evenings, and to put out frequent CQs on the key as well as on A3.

. . . and From the Far North

It was because people had been alerted to the possibility of sporadic-*E* openings that the DX was worked by so many on 4m last month: they were lying in wait for it at the right times and before long the break occurred.

The same has applied to the 2m band. Sunspot counts and Dellinger fadeouts on the h.f. bands had suggested to the knowledgeable the possibility of auroral openings at v.h.f., and once again surely enough those who lay in wait were rewarded. The trouble with aurora, though, is its fleeting transience, and its awkward habit of appearing at times when people are at work or in bed. Many a DX contact off that far northerly reflecting curtain has been missed through force of human necessity.

For those who *were* around at the right time, whether by chance or by long-sitting patience, some magnificent returns from the Northern Lights were enjoyed in the course of another opening to add to the several aurorals which have predictably shown up this year as the Sun's 11-year activity develops.

How valuable it can be to check the band " just in case " was borne in on G3BHW of Margate, who, returning home about midnight on 25 May after a party, did just that—and found another party on, an auroral one. In an hour he worked six countries, including two SMs, all with the typical spark-like " A " notes. Beam heading northish, of course: " The focal point appeared to shift from slightly west of north at 23.30 GMT to east of north about 25 degrees true at 00.30 GMT with GB3VHF reading RST55A at 25 degrees true bearing."

Whereas spor-*E* and tropogation (forgive us!) can be selective in their favours, aurora-bounce seldom is: if an aurora is about you'll work them, if *you're* about. Example: GW3MFY, a 200-mile baseline to the west of G3BHW, worked many of the same stations, again in six countries. Both report with regret that SP2RO was a gotaway.

Midway between the two Bill Lord at Reading, G5NU, reports UR2CQ as *his* gotaway, and many other people's, too: " Many called, few were chosen " as he puts it. But he *did* work that SP to give him seven countries worked over the same couple of hours around and just after midnight. " I found no need to change my beam heading the whole time from roughly NE," he adds.

What gave him the clue that aurora was about was hearing G3JYP and G3UUT in (comparatively) local contact: each had an " A " note as heard at Reading. And peculiar things were happening to the beacons: GB3VHF exhibited a strong auroral tone, while that from GB3CTC was even stronger. No auroral effect was evident on GB3GW nor, believe it or not, on the most northerly beacon, GB3LER.

In spite of the lateness of the hour some dozens of UK stations were in evidence during the opening, many staying on until well after 2 a.m. clocking up the 2m DX while it lasted.

As a tailpiece to the above some fascinating information has come to hand from SM3AKW, who is 230 miles north of Stockholm. He receives (and has taped) GB3LER so well that he was beginning to wonder if its beam really did point south. His experience with aurora—frequent occurrence in his territory—is that it will get him as far south as Denmark but no farther. He asks GM operators to check for c.w. between 144·0 and 144·2 Mc/s for the considerable number of stations in northern LA, OH, SM and UR who work between these limits. All of them are well aware that GM and GI are to be found between 145·8 and 146 Mc/s, and regularly comb that area.

SM3AKW runs 500 watts on 144·075 Mc/s, an array of *four* 10-element beams and a switch-out AF239 pre-amp at the masthead. His first Scottish contact was with GM3EOJ of Aberdeen, but none were made during the big auroral opening of 25 May.

Armed with this insight into what life is like in the auroral belt itself, UK stations will be more than ever ready to train their 2m beams northabout.

With sporadic-*E* on " Four " and aurora on " Two " it has been an exciting month on the DX front—topped off, as we write, by an extensive tropo opening and 70cm filled from end to end with G8s and lots of Continental DX being worked. May these conditions persist for the two major portable contests scheduled for July—but no matter if they don't: there will still be plenty to do on four metres and down if all of us get on as often as possible.

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

Call-sign	Location	Nominal Frequency	Emission	Aerial Direction
GB3ANG	Craigowl Hill, Dundee	145·985 Mc/s	A1	
GB3CTC	Redruth, Cornwall	144·10 Mc/s	A1	North-East
GB3GI	Strabane, N.I.	145·990 Mc/s	A1	N/SE
GB3GW	Swansea	144·250 Mc/s	A1	E.N.E.
GB3LER	Lerwick*	145·995 Mc/s	A1	S
GB3LER	Lerwick*	70·305 Mc/s	A1	N/S
GB3LER	Lerwick*	29·005 Mc/s	A1	N/S
GB3VHF	Wrotham, Kent	144·50 Mc/s	F1	North-West

* Not operational.

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
9 May	15.35 GMT	318 c/s low
17 May	09.09 GMT	302 c/s low
31 May	08.57 GMT	320 c/s low
6 June	10.45 GMT	370 c/s low

The 1296 Mc/s Open Contest

Assessing contests for the part they play in advancing the art of Amateur Radio, there can be little question that the most important one of the year so far has been the 1296 Mc/s Open, over the third weekend of May.

Path distances were covered, especially by the portable entrants, which would have been considered pretty respectable on 70cm ten years ago. But operating fixed-station from his home at High Wycombe, Bill Hawthorne, G3MCS, connected with no fewer than 20 stations to raise his score to 19 counties worked and two countries. His prowess on " 23 " has fired many other operators to try the band, e.g., Peter Sterry, G3CBU, of Basingstoke, who says: " Rising to the bait laid by G8AGM and G3MCS, I hurriedly commissioned an old K6AXN converter and with the aid of an 8-over-8 aerial *à la* BULLETIN, managed to copy G3MCS over 34 miles. Not to be outdone I built the G2RD cavity tripler and got it working two evenings before the 23cm contest, managing to work G3MCS, G3NNG/P and G8ARL/P during the contest."

G3MCS, too, had praise for the G2RD design: " Gives more r.f. than the old flat line device," he reports.

A few 23cm tech points, also, from G3LHA. Ray, operating from a 720 ft. site in Northants had a 2C39 tripler at 25 watts with a mini-trough reflector, a version of the corner reflector. A transistor pre-amp was available for the K6AXN converter but no improvement was discernible. Contacts were with G3NNG/P, G3OXD/A at Rowley Regis in Staffordshire, and G3GWL at Bletchley. Being single-operator, there was difficulty in holding the aerial on bearing:

those who were around for the event will remember that the weather earned the " tumultuous " epithet.

Herewith a pertinent comment from G3LHA: " Enjoyed the contest thoroughly, but why, oh why, make it so long? Not everyone in Amateur Radio is on a five-day week . . . surely there is not enough activity to justify a 24 hour event. Let's have Sunday contests again for 23cm and 70 cm."

At G8ACE in the flat lands near Hatfield Airfield a new radial cavity transistor converter was completed in time for the contest and showed its paces on such DX-y (for 23 cm) stations as G3NNG/P and G3EFX/P at distances of 50 miles or so.

Who's Where on "23"

The response to the request for operators' frequencies in the 23cm band has been a handsome one, and we are glad to be able to show this month a first list in frequency order, *not* call-sign or QTH order; it's the spot-on-the-dial that's required by active 23cm men.

The list will be held in type and up-dated as further frequencies are reported, and it will be reprinted as often as circumstances dictate.

Many of the frequencies given are those observed to be in use during the recent 1296 Mc/s Open Contest and may not necessarily be those used at home—but probably are. A few are guesstimates.

Mc/s	Station	Location
1296·48	G3CBU	Basingstoke
1296·6	G8AMK	Bracknell
1296·85	G3TND	Felton, Somerset
1296·9	G3NNG/P	Berkshire Downs
1296·9	G8ACE	Hatfield
1296·96	G3MPS	Bridgwater
1297·03	G3EFX/P	Oxford
1297·2	G8AGM	High Wycombe
1297·2	G3OBD/P	Wiltshire Downs
1297·2	G8AII	Chepstow
1297·2 (contest)	G8AGM	High Wycombe
1297·25	G5FK	Wembley
1297·25	G3OXD/A	Dudley
1297·4	G3MCS	High Wycombe
1297·42	G3FP	Thornton Heath
1297·5	G2WS	Weston-super-Mare
1297·5	G8ARI	Manchester
1297·7	G8AMA	Wembley
1297·8	G8AOD	East Grinstead
1297·85	G8AEJ	London SE20
1297·9	G2RD	Wallington
1297·9	G3GDR	Watford
1297·9	G3GWL	Bletchley
1298·1	G8ABB	Bletchley
1298·2	G5DT	Wallington
1298·2 (normal)	G8AGM	High Wycombe
1298·64	G8AJU	Wembley
1299	G3GWL	Bletchley

Other Contest Commentary

Sour as was the weather during the weekend of the 1296 Mc/s Open Contest, it turned positively acid for the 432 Mc/s Open which was scheduled for a week later. A rough time was had by the many portable participants, but they can take comfort (though it may have been wet comfort at the time) from the fact that they enormously increased the potential totals and path distances workable by fixed station entrants.

Once again G3LHA/P was one of them, and though unable to go out on the Sunday he managed to work 40 stations from a 600 ft. site near Coventry during Saturday evening (" Weather shocking, pouring rain and generator soaked "). Ray applauds the outstanding signals and operating of G3NNG/P and GW3RUF/P, the latter a benefactor indeed to the many who had never before worked Wales on " Seventy."

From BRS15744 in Sussex (he logged 48 during the 70cm contest) an aerial point: " I have been using a 14 element beam on 70cm which has a high gain but its narrow beam width makes it too sharp for contests and signals were easily missed. I have added a 4-over-4 which has a much wider beam width. By using the two, controlled by a changeover relay, one gets the best of both worlds."

On the subject of contest scoring, Johnny Haydon, G3BLP, comes up with a few observations on the G3AHB suggestion to handicap entrants according to the height of location above sea level. He reminds us that the goodness of a site is not solely determined by its height, but rather by the lack of obstruction. " More scientifically, one can say that a site is good if no obstruction subtends more than half a degree or less to the aerial," he adds.

John is of the opinion that the Thames Valley where G3AHB lives offers an example of a low site which is a good one (" . . . verified by the large number of DX stations he can hear which I can't "), and quotes the top notching performances in early 2m contests of such operators as G2NH, G2MR and G8IP, all of whom are in the same river basin.

Beaconry

A member has suggested that GB3VHF should be keyed so that there is a one minute break. This is held to assist identification at extreme range. Do members prefer the keying cycle to remain as it is or is any modification required? Comments to the V.H.F. Committee, please.

* * *

It is reported by G3GVM that equipment for the Malta beacon has been received in the Island. Operation on 70·1 Mc/s under the call-sign 9H1MB may commence before the next BULLETIN is out, so check *that* one, as well as ZB2VHF, when spor-*E* hunting.

* * *

A suggestion from GW3LQE of Penarth: " Would it not be a good idea to have a 4m beacon located in the southern half of the country beaming roughly westwards? Possibly on the GB3VHF site? Apart from receiver alignment and as a propagation guide, such a beacon would have an immense psychological effect in TV Channel 4 and 5 areas as providing a signal at all times to regions where there is little activity at present."

The Television Serial

1. Association of Ideas

More news of DX television reception. Mike Dransfield certainly started something when he opened the discussion on this subject in April—and very usefully, too. More light on video is shone this month by Steve Birkill, G8AKQ, of Barnsley, so much of it in fact that we are going to have to serialise his contribution. Steve says:

" In 1960 at the age of 14 my attention was caught by reading of the success of Ian Beckett of Buckingham in receiving broadcast television pictures from the Soviet Union. To try to do likewise I made the necessary 625-line modifications to an old GEC 14-in. model and received my first sporadic-*E* signal (from Leningrad) in July, 1961, and after that from several other European countries.

" In the Summer of 1962 a gathering was held at the QTH of Charlie Rafarel in Poole of all known television DX-ers in the UK, a grand total of 10! At this meeting was born the idea of the Europa DX-TV Club, and this was formed largely by the efforts of Charlie Rafarel and M. Jacques Herreman of Belgium. The Club amassed a membership of over 100 throughout Europe before being disbanded in 1964 due to pressure of work on the directors.

" Much exchange of ideas took place on propagation, receiver circuitry and aerials, and a monthly magazine in four languages was published in Belgium."

Next month: QRX on Eight Bands.

Tech-Corner

From G3RIN (R. Wells, Redhill):

As the useful range of surplus HC6U overtone crystals in the 30-40 Mc/s region seems to be no longer available, I have been utilizing FT243 crystals in the circuit shown at Fig. 1. The crystals oscillate at fundamental frequency.

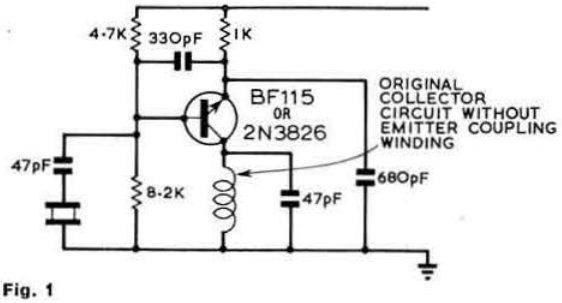


Fig. 1

This oscillator may be used to replace the overtone oscillator in the G3HBW FET converters for 2m and 4m, and with a little extra screening and using i.f.s. in the 2-4 Mc/s region gives stable operation.

For 4m using an i.f. of 2·1 to 2·7 Mc/s an 8500 kc/s crystal is required, collector tuned to 17 Mc/s and the second transistor quadrupling.

For 2m using an i.f. of 2-4 Mc/s a 7100 kc/s crystal is required, collector tuned to 35·5 Mc/s as before.

From G8ARV (David Taylor, Dudley):

In the light of recent comment about the potency of low power signals, and secondly of using 216 Mc/s as a multiplier frequency to 70cm, the accompanying block diagram (Fig. 2) of an all-transistor transmitter used at G8AXV may be of interest. Using collector modulation an RS55 signal can be sent over the 40 mile path between G8AXV and G8ARV. The significant thing is that the device gives 40 milliwatts of r.f. at 432 Mc/s.

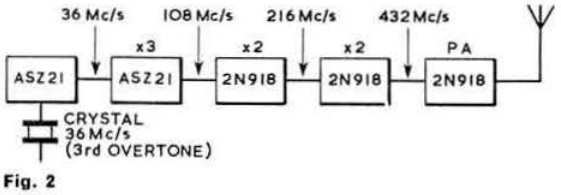


Fig. 2

Several other stations in the West Midlands are using "valveless" transmitters with success. For example, the work of G8AEO has been reported and is well known. At G8AEV, Bridgnorth, also, a fully transistorized transmitter is in use; delivering about 3 milliwatts of r.f., frequency modulated, it is always Readability 5 at the writer's site 15 miles away.

Those members who have worked G8ARS/P will probably know that he generally uses a varactor tripler driven by two RCA 40282 transistors delivering 10 watts of r.f. at 144 Mc/s. I understand he is experimenting with collector modulation of the 40282 pair, an interesting development of valve technique, where for full modulation it is sometimes desirable to modulate the 70cm driver as well as the p.a.

From **G8AVX** (L. Williams, Birmingham 24):

I am a fairly new G8 plus 3, but have already come across a few signals on the 70cm band with a frequency stability rather less than satisfactory. I think this is often due to overtone operation of the crystal oscillator using the Squier circuit.

An analysis of the series resonant overtone mode of operation shows that the crystal should be fed from and terminated in a low impedance. This condition is not satisfied by the Squier circuit as usually used.

A circuit which does fulfil the low impedance source and termination requirement is the Butler oscillator but this is not very popular in amateur transmitters because it requires two valves and gives low output. The circuit shown at Fig. 3 uses one valve and gives quite a reasonable output; the low source impedance is obtained from a link coupling of one or two turns, and the low termination impedance by operating the valve in grounded grid connection.

A high gain valve (EF184 but half an ECC85 does quite well) provides high output with modest crystal drive—and this of course means good stability. The link, situated at the cold end of the tuned circuit, must be connected in the correct phase to produce oscillation. Adjustment of feedback is very easy by comparison with the rather less flexible arrangement of tapping into the anode circuit.

I have found this circuit to work very well with any of my small collection of third overtone crystals having frequencies from 24 to 45 Mc/s.

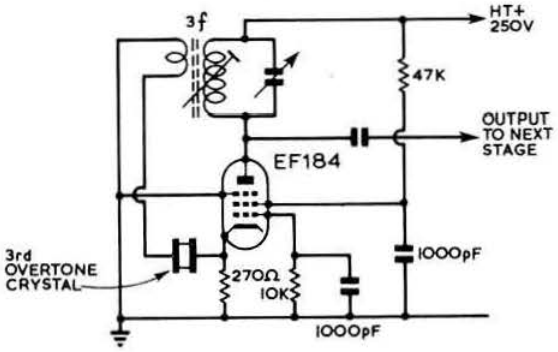


Fig. 3. G8AVX's Butler oscillator.

Expeditionaries

Once again Paul Casling, G3MWZ, of Lincoln, is holidaying in Ireland and putting EI9BF ("Yes, that really is the call!" he says) on the air from time to time. Dates: 27 July to 2 August, Co. Cork; 3-6 August, Co. Kerry; 7-9 August, Dublin city. Frequency: 145·5 Mc/s. Equipment: Heathkit HW30 at 5 watts, and 4-element beam.

From the Worcester ARC comes a generous offer: "We are prepared to operate from some of the rarer counties. If readers will send us a note of wanted counties we will see if we can operate from them on 2m, and possibly 4m and 70cm, preferably during the last two weeks of July, though we will activate Welsh counties at weekends if required." Write G8ASO, B. A. Jones, 12 Woodside Road, Larkhill, Worcester.

Now get ready for it: "GB2GC is to strike again!" says John Whittington, G3SHZ. Operation will probably be from 24 August until V.H.F./NFD. Special efforts are being made to achieve the best possible reliability of equipment on 4m, 2m, 70cm and 23cm, and the aerials in particular will be arranged to stay on a wanted signal even if the customary Force 8 gale is blowing. Those interested in arranging tests or skeds on the u.h.f. bands should write to G3SHZ at 19 Dorset Road, Harrow, Middlesex.

If you want some useful Scottish counties for your 70cm certificate listen for GM8AAP/P on 29 July near Cupar, Fife

and on 30 July from Dumfries and Kirkcudbright. Frequency (the only one presently available): 433·44 Mc/s.

On the Friday after this BULLETIN appears the G3BA/G3BHT expedition to Ireland will be under way. Here are details: call-signs, EI2AX/P in the Republic of Ireland, GI3BHT/P in Northern Ireland. First evening of operation: Friday, 7 July, from Co. Wicklow. Then the tour will continue over a clockwise course up through the centre of the Republic into GI and back down again to Dublin.

The watchkeeping schedule is: on 145·9 Mc/s c.w. from 7-10 p.m. clocktime each night, and 10.30-11.30 p.m. The period 10 to 10.30 p.m. will be devoted to s.s.b. on 145·41 Mc/s only. This will continue for 10 evenings from 7 July, in a different county each night.

A sked list and operating details have gone to all who deposited stamped envelopes.

Anchor-men back in G-land will be G6CW, Nottingham, and G6HV, Tiverton. The expedition will be in contact with them each evening from 6.30-7 p.m. on 3690 kc/s sideband. Anyone wishing to change sked arrangements or make new skeds is invited to call in at that time.

Equipment: 60 watts of r.f. to a 10-element Skybeam. The receivers have transistor front ends and noise figures better than 3dB. The gear is duplicated as much as is feasible.

Altogether a thoroughly organized show that should make itself heard across the water whatever the propagation conditions may be.

Skeds Wanted

By G8AYD, R. M. Clarke, " Hillside," Quickedge Road, Mossley, Ashton-under-Lyne, Lancs., on 70cm any evening except Monday and Friday. The QTH, which is near Oldham, is 975 ft. a.s.l., and has a 12-element Yagi fed by a 7 watt transmitter.

By G3GWL, Colin Whittingham, 5 Roche Gardens, Bletchley, Bucks., on 23cm either with operators new to the band or with anyone prepared to undertake DX skeds at over 100 miles.

Skeds Operative

By EI6AS, Dublin: he calls CQ on the key every night at 21.00 GMT, on 144·003 Mc/s, and asks that UK beams be directed westwards from time to time.

By G3GWL, Bletchley, with G5DT, Wallington, on 1299 Mc/s nightly at 18.30 GMT (the path frequently produces S9 signals via a 4 ft. dish and parametric amplifiers).

Here and There

" How about a certificate for 13cm limited to counties only? "—G3MCS.

* * *

Just to remind you that the bandplan for " Four " is now more than half way through its six months trial period that started on 1 April. Any observations? (See March BULLETIN, page 158.)

* * *

And another reminder: the annual V.H.F. contest laid on by the RSGB North Western Region will take place on Sunday, 13 August, from 09.00 to 17.00 GMT on 4m, 2m and 70cm. The G2CIP Shield goes to the winner, plus band award certificates. Copies of the rules from Regional Rep G2AMV or from Ainsdale Radio Club sec. G2CUZ, 34 Sandbrook Road, Ainsdale, Southport.

* * *

" Question: may we have an explanation of the sunspot figures given on the RSGB News Bulletin? "—GW3MFY.

* * *

" At the lab where G3WLE, Plessey West Leigh Amateur Radio Club, is located, we have a receiver and pen recorder continuously monitoring the ZB2VHF channel on 4m to catch any opening even if we are at work."—G3JHM.

* * *

" Haven't transmitted on v.h.f. for years, having become a DX man keen on quads . . . now getting keen on stacking self-excited quads on 2m . . . hope to meet some of my old buddies of the 1948-50 days . . . we *did* have fun then trying to get 6V6s to work on ' Two '."—G3CAZ.

* * *

" A look at the log for the Third 144 Mc/s (Portable) Contest of May showed that in eight hours one could pick up 77 stations and earn 837 points for the V.H.F. Listeners' Championship. Yet it took 16 hours' operating time on 4m during the April 70 Mc/s Open Contest to increase to 97 stations and earn only 74 more points. This suggests that of all our v.h.f. bands ' Two ' is still the home ground."—BRS15744.

* * *

" Write to the M.O. Valve Co. for useful info on 70cm transmitter circuits " advised G8AKR in Tech Corner last month—and many people have. They've been asking about the DET19 referred to in the note. This should have read DET24, which is the valve that gives 10 watts at 432 Mc/s. So they will get the info about *this* one.

* * *

Don't worry if you haven't had a QSL from GW3ITZ, the RAF Sealand Amateur Radio Club. Says GW8AAP, who is its officer i/c: " We have a current backlog of 1,500 but have been waiting since January for a special card to be done. It should be worth the wait."

* * *

Pre-Knokke treat for George Haylock, G2DHV: he attended the Whit UBA rally in Brussels, where special-activity station ON6BS was on the air. Later he attended the VERON Radiokamp at Amersfoort, where 400 PAs camped out. PA9DHV worked many on 2m, handshook many more. George will be wearing his third call, ON8IR, when he attends Knokke in September.

OZ to G on 23cm

During the mid-June opening, GSLTF (Chelmsford) and OZ7SP made contact on 1296 Mc/s over a 450 mile path. OZ7SP was also heard by G8AEJ.

P.A. for the BCC 69 Available

Electroniques (STC) Ltd. are stocking a quantity of the 3B/240MEQ grounded-grid v.h.f. power triode, which is a slightly wider tolerance version of the 3B/240M used in the BCC 69 mobile transmitter-receiver. The possible differences between the two types should have no effect on the operation of the BCC equipment. The price of the 3B/240MEQ is 29s. 6d. direct from Electroniques (STC) Ltd., Edinburgh Way, Harlow, Essex.

THIRD INTERNATIONAL RADIO AMATEUR CONVENTION, BELGIUM

15, 16, 17 SEPTEMBER, 1967

Lectures, rallies, a contest, an exhibition and social events will provide an extremely interesting programme for the full three days. Full details of the convention and temporary licence arrangements are available from the Secretary:

Lucien Vervarcke, ON4LV, Lippenslaan 284 Knokke, Belgium

MEMBERS' ADS

Starting next month, we will be publishing free advertisements for members. Naturally, to keep this column under control, there must be restrictions, so the number of words is limited to 30 (not including the address), and we cannot give any guarantee that an advert will appear in any specific issue. We will have to receive the advertisement at RSGB Headquarters by the first of the month* for the following issue, and it must be accompanied by the wrapper from the previous month's BULLETIN. The address on the wrapper must, of course, agree with that in the advertisement. We cannot accept any responsibility for mistakes, but please print or type the advertisement to minimise the chances of errors being introduced.

No trade announcements can be used, but these can be submitted in the usual way for Classified Advertisements, which are not being discontinued.

** We are relaxing the closing date for the August issue. If your advert is received at RSGB Headquarters by Friday, 7 July, we can include it in the column.*

A Successful Slow Morse Course

By D. I. GOULD, G3UEG*

DURING my Christmas vacation I decided to transmit an experimental Slow Morse Course for the benefit of short wave listeners and G8 + 3 licensees trying to obtain a Class A licence. The success of the series was very encouraging indeed.

I was prompted to conduct these transmissions by the difficulty I experienced when learning the code; I had found the existing transmissions totally inadequate, for three reasons—(i) once a week was insufficient, (ii) the transmissions were invariably too fast, and (iii) only a short time was spent on each lesson. Proof of this was soon found when I had access to a tape recorder, for only then did I progress to the required standard of 12 words per minute. Obviously, a much more intensive service was required, and this I set out to provide during the available fortnight at the end of 1966. Every night for the first week I sent passages at 6, 8 and 10 w.p.m., followed during the second week with speeds of 8, 10 and 12 w.p.m.

My faith in the success of the experiment is based not only on the letters received from SWLs and the opinions expressed by amateurs, but also on the progress of a neighbouring listener who I know very well. At the commencement of the series he could receive at a speed of about 6 w.p.m., and by the end he was copying over 50 per cent of the passages sent at 12 w.p.m.

The main purpose in writing this short article is to try and encourage other individuals, or clubs, to conduct such series of practice transmissions. My effort seems to have produced results, and although I should like to continue, pressure from a college course prevents this. If anyone can take over where I have left off, he will undoubtedly be helping many aspiring amateurs to win their licences.

* 14 Stamford Road, West Bridgford, Nottingham.

G3UEG's station, from where the Slow Morse course signals emanated, showing all the equipment with the exception of the a.t.u. which couples into a 260 ft. long end-fed wire, 35 ft. high. On the right hand side is the fully automatic key and a Vibroplex paddle which gives a speed range of 6 to 18 words per minute with correct timing and spacing.

I wish to thank all the people who have written to me, and also the amateurs who provided me with signal reports after the transmissions. If the opportunity arises I will definitely conduct another course, and will therefore be glad to hear from anyone who has any suggestions to offer concerning the format of the programme.

Amateurs contemplating conducting a series of transmissions should register with Mr M. A. C. MacBrayne, 25 Purlieu Way, Theydon Bois, Essex, the Society's Slow Morse Practice Transmissions Organizer, who will arrange publicity. This also automatically provides permission for the operator to transmit code groups.

PROFILE

CONTINUING A SERIES OF PROFILES
OF THE SOCIETY'S COUNCIL MEMBERS

J. C. FOSTER, G2JF

DURING the lifetime of the participant in any hobby there are usually highlights which seem to be of major significance only to the person concerned, but sometimes such items may be of interest not only to his contemporaries but also to those who are embarking, however unknowingly, on a lifetime's interest in Amateur Radio. A profile on any person can, at best, be only sketchy and must concentrate on the major features. In this respect, one's mind automatically associates the name of Jim Foster with v.h.f. activity in post-war years.

In fact Jim Foster's interest in Amateur Radio spans all of 46 years, back to the time when, as a 15-year-old, he was serving an engineering apprenticeship with The Lancashire & Yorkshire Railway Co. and became a member of the Horwich Radio Society. This Society had, as its Headquarters, rooms on the top floor of the old Reform Club in Winter Hey Lane in Horwich, Lancs. He was also from 1925 to 1930 in the Royal Corps of Signals, TA, a local Company attached to the 55th West Lancs. Div. Signals.

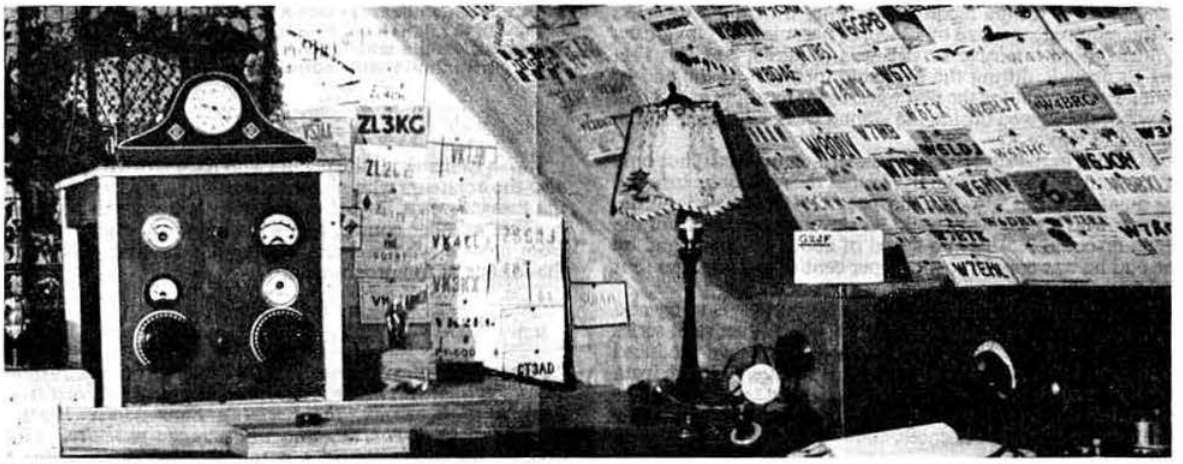
Jim Foster left Lancashire in 1930 to take up an appointment in North Scotland and took out his Amateur Transmitting Licence in 1935. Between then and the close down in 1939 he was appointed a Controller in the Civilian Wireless Reserve, call sign MQX (Group B), his colleagues in this group being G8MU, G6GH, GW6AA, G5JU, G2YY, G8GC, G5CJ, GM6ZP, G8AC and G6TR, many of whom are no longer with us. Of special significance during this early period was a contact with the Soviet North Pole and Ice Drift Expedition (call-sign UPOL) on 31 October, 1937, in the 14 Mc/s band. The position given was 85° North 35° East by the operator who was no less a personality than Ernest Krenkel who today holds an eminent position in the Soviet Department of Communications and also holds the highest award in the Soviet Union for his part in this memorable event.

Members may be surprised to learn that in the year 1936, Amateurs in the United Kingdom had a frequency assignment at 112 Mc/s and although G2JF had equipment built in duplicate for this part of the frequency spectrum to a design by C. G. Lemon (G2GL) no contacts with other amateurs were ever made due to the remoteness of North Scotland from the centre of the meagre activity in the Southern area.

A recent photograph showing part of the v.h.f. equipment.

In 1939 an appointment and tour of duty as Assistant Engineer with a gold mining company in the Gold Coast was followed for the rest of the war period with Air Ministry Directorate of Works as a Grade I Station Engineer. During this term of office a further tour of duty in West Africa was made to Sierra Leone from where he resigned his appointment on the completion of his tour and the end of hostilities to take up his present appointment as Maintenance Officer in the University of London, at Wye College.

When licences were re-issued in 1946, operating was resumed on 160m and Jim developed such a deep and continuing interest in contest events that he eventually took both the premier awards, namely, the Victor Desmond and Somerset Trophies.



The pre-war station of G2JF.

However, since 1953 an ever increasing interest has been developed in v.h.f./u.h.f. fields and in recent years an active part has been taken, with the help of local amateurs, particularly G3DAH, G3EMU, G3IIZ, G3BGP, G3OIZ, G2DCG, G3BHW and G2QT in the IARU September V.H.F. Contests in which there is usually an entry of upwards of 400 contestants. It is interesting to note that he attained the premier award for first place in this contest, namely, the PZK Trophy, in 1962, 1963 and 1966.

Some idea of the intensity of G2JF's activities on 2m can be formed from the fact that he has contacted over 3200 *different stations* in 24 countries in Europe, as far afield as Spain, Jugoslavia, Poland and Sweden, a feat probably not equalled by any other station in Europe. It is pleasing to record that many of these 3200 operators have since become more than just contacts but real personal friends of Jim Foster, and this, surely, is one of the attractive features of Amateur Radio. G2JF made the first " G " contact on 2m with Andorra (PX) and Spain (EA) in June 1965. As a further point of interest he will shortly be recording his QSO No. 50,000. It is felt that, in passing, mention should be made of the unique location from where G2JF has operated since 1961. This is a site at 600 ft. a.s.l. which more or less overlooks the English Channel and the Straits of Dover and has falling country-side in other directions; without a doubt the v.h.f./u.h.f. man's dream site and where G2JF hopes to retire in three or four years time.

Earlier in this profile mention was made of highlights of significance perhaps only to the individual concerned and one such event occurred in 1965, when G2JF was selected as the United Kingdom representative in a documentary film on Amateur Radio for the Belgian Television Services. This film was presented as a national feature during the period of the Knokke Convention 1966.

G2JF was invited to shoulder some Society administrative work in contests in 1963 and he became a Council Member in 1964. Eventually he became a member of the V.H.F. Committee and Building ad hoc Committee and Chairman of the V.H.F./U.H.F. Contests Committee. He has been a v.h.f. GB2RS news reader since September 1965 and with Mike Dormer (G3DAH) G2JF was co-founder of the recently formed South East V.H.F./U.H.F. Group, which meets at Wye College, University of London and Rutherford College, Canterbury, University of Kent and of which he is at present the Chairman. He has also been invited to accept the Chairmanship of the V.H.F./U.H.F. Sections of the third Knokke International Convention in Belgium in September of this year.

G2JF is a life member of the Royal Corps of Signals Amateur Radio Society and the Radio Amateurs Old Timers' Association. He is also an old member of the First Class Operator's Club.

MOBILE RALLIES

JULY

Sunday, 9 July, 1967

RSGB National Mobile Rally
Gilwell Park, Chingford, NE London.
Camping permitted overnight. See page 413, June *RSGB BULLETIN*.

South Shields Mobile Rally
Bents Park Recreation Ground, Coast Road, South Shields.
Talk-in stations: G3DDI on 160m (from 11 a.m.) and G3SFL on 145·8 Mc/s (from 12 noon). See page 381 June *RSGB BULLETIN*.

Sunday, 16 July, 1967

Colchester Mobile Rally
Colchester Zoo.
Talk-in stations on 160m, 4m and 2m.

Pembroke Bucket and Spade Party
Regency Hall, Saundersfoot.
Talk-in stations on 1875 kc/s and 144·35 Mc/s.
Activities include D/F Hunt and Buffet.

Reading Mobile Picnic
Childe Beale Trust Pavilion, Lower Basildon. Pangbourne, Berks.
Talk-in station: G3ULT, 160m and 2m.
Admission to grounds reduced to 2s. 6d. by display of club sticker. Send s.a.e. to G8APH.

Worcester Mobile Rally
Hill County Secondary School, Upton on Severn, NGR SO839399.
Talk-in stations: 160m, 4m, and 2m.
Manufacturers' exhibits, refreshments will be available. Further information from G3TQD.

Sunday, 23 July, 1967

Cornish Mobile Rally
Pentire Head, Newquay, Cornwall.
Organized by the Cornish Radio Amateur Club.

Sunday, 30 July, 1967

Saltash Mobile Rally
Calstock Playing Fields, Nr. Saltash.
Talk-in stations operational on 160, 80m, 4m and 2m.
Attractions include "World's Smallest Mobile" Contest (who will be the first roller skate mobile?) and a Pedestrian D/F Hunt.

AUGUST

Sunday, 13 August, 1967

Derby Mobile Rally
Rykneld School, Bedford Street, Derby.
Talk-in Stations: G3ERD/A on 160m, and G2DJ/A on 2m and 4m.
Events include: Children's Treasure Hunt, Radio Controlled Model Aircraft, Demonstration of Karate, Fire Fighting Equipment, Trade shows and Contests, etc.

SEPTEMBER

Sunday, 3 September, 1967

Swindon Mobile Rally
Lydiard Park, near Swindon, Wilts.
Organized by the Swindon and District Radio Club.

Sunday, 10 September, 1967

RSGB Woburn Rally

Sunday, 24 September, 1967

Harlow Mobile Rally
Organized by the Harlow and District ARS.

Radio Amateur Emergency Network News

By S. W. LAW, G3PAZ

Squeaks, But No Oil!

THE very live Group in Pembroke Dock has really had some bad luck with 4m. As Channel 5 TV is of the order of " fringe reception " around this area, it has proved quite out of the question to use the 70 Mc/s band there. Not to be deterred, they have achieved worthwhile coverage by a judicious mixture of Top Band and 2m. Thus prepared, they were ready for any unlucky change in the weather that might bring that ill-fated oil from the wrecked tanker bearing down on their beaches. Fortunately they were spared, and have been able to concentrate on the finer aspects of Group organization, and the winkling out of radio " holes " in the Welsh mountains. G3UQK in Manchester is still puzzled how a 2m mobile rig got a signal through those mountains from Pembroke!

Rain in Manchester

The average rainfall in Manchester is just over two inches in the Merry Month of May—this is a source of pride rather than otherwise to Mancunians, but a whole inch in three hours is beyond a joke. When the worst storm in 25 years broke on 11 May, it proved a little too much even for the carefully protected landlines set aside for Police communications across the city. The RAEN Group thereupon donned their waders and swung into action. The equipment already installed at various Police Stations in the area some time ago was soon manned, and communications were established between the various divisions. By next day the GPO engineers had re-established contact and the RAEN members relaxed well satisfied with a job well done. Thanks were expressed by the authorities and the Press gave full credit to a good effort. Once again that voice is confounded—" It can't happen here, Old Man! "

Insurance

We *do* keep on, don't we? Have you re-registered? If you have, you are covered by insurance in case of any mishap in connection with your activities in an emergency. If you are not registered, whilst your intentions may be of the very best, you are neither of any use at an incident (the Police won't let you through without a valid card!) nor will you get any sympathy if you " come unstuck." The address of the Hon. Registrations Secretary is: R. A. Ledgerton, 1 Latchmore Gardens, Woodford Bridge, Woodford Green, Essex.

Plenty of Exercise

This is evidently the season for RAEN exercises. We have news of several in May, but full details cannot be given in this issue as copy must of necessity go to the printer some weeks ahead. Just a few snippets to interest members—Essex fixed an exercise for 14 May but had " Agatha Christie " trouble—remember " Ten Little Niggers "? Those intending to take part didn't get slain as did those unfortunate fictional folk, but illness and misfortune took a heavy toll of the would-be participants. Down in Surrey the User Services ran " Exercise By-pass " on 24 May at NGR 843-466 (on Farnham By-pass). Needless to say the Surrey Group took part, no doubt regarding the affair as an appetizer for their own " Exercise Puffin " on the following Sunday. Both these will be fully digested in due course—at the " inquests "! The exercises we *are* waiting for are those of the Manchester Independent Group with their all-band-plus-teleprinter mobile trailer unit, and the next User/Group incident-to-base exercise using the Hampshire Group's mobile television link!

Are you Listening?

We have said it before—and we say it again. If you are a Short Wave Listener you are a useful cog in the RAEN set-up. Even if you are not a member we would welcome your reports on stations heard, on what bands, in what conditions and at what distance (not the chap next door, of course!). Why not drop a line to G3NRB (County Controller, Herts.)? The Herts Group have a very comprehensive operating schedule on 4, 10 and 160m, and a stamped addressed envelope can bring you a copy of times and frequencies. The address is in the RSGB *Call Book*. Perhaps you heard this Group during their last two exercises on 13 April and 7 May? If so, we are sure they would welcome any fringe reports to check on the coverage.

Getting Started

For those who are in the throes of starting a RAEN Group, don't be afraid to profit by the experience of those who have been through it. In this connection, may we draw your attention to a useful pamphlet on this very subject compiled by the Surrey Group and obtainable by an s.a.e. to the County Controller, G3VK. (QTHR).

On the Map

How near can you read your National Grid Map? We had words with a dedicated Motor Rally type recently and we learnt a thing or two. Have you seen the neat little location scales that cut out all this " estimated Tenths of a Kilometre," and even encourage you to estimate a half or even a quarter of a tenth? We are after one right now!

Broad Aspect ?

We often receive letters from the other " Postal Code " area in Norwich—very interesting too. It has crossed the writer's mind (comment uncalled for!) that Norfolk has many places exasperatingly inaccessible in a hurry due entirely to one of the County's most famous features—its delightful and popular waterways. Having had some pleasant times " water-mobile " on the odd cruiser, it seems to us that here is a specialist field that might have a useful angle in counties where bridges and ferries are not as plentiful as might be desired. We await with interest news of the first RAEN exercise making use of " cruiser-mobiles " for sites without easy access by road.

Holidays

Our best wishes to all for your holiday this year. Just one thing though—please, *please* tell your Controller when you are going and for how long. If you haven't already done so, do it now!

It Can't Happen Here?

But it did! Manchester Group were called out once again on Sunday, 4 June, to provide emergency communications to an aircraft disaster at Stockport. A report on this will appear next month.

* 11 Chisholm Road, Croydon, Surrey CRO 6UQ.

RAEN Contest 1967 Rules

1. The contest is open to all RAEN members and consists of two sections;

(*a*) *Transmitting*, which includes operation from any fixed, portable or mobile installations.

(*b*) *Receiving* which is for RAEN members operating receiving stations. All stations must be individually operated, and multi-operator entries are barred.

2. The contest will take place on Saturday, 7 October, 1967 from 18.00 to 22.00 GMT and on Sunday, 8 October, 1967 08.00-12.00 and from 15.00-19.00 GMT.

Operation will be in 1·8, 3·5, 144 Mc/s bands and on 70·375 Mc/s ±25 kc/s.

RSGB band planning and licensing regulations will be observed. Any mode of transmission may be used. A station may not be contacted more than once in any period by the same mode. Both stations making a contact must use the same mode of transmission. The chosen mode of transmission must be maintained for at least 30 minutes in any one period of the contest. Portable and mobile stations must be sited at least one mile from their normal fixed site and must not be connected to a public mains electricity supply.

3. Scoring—*Transmitting Section.*

Outstation to outstation	6 points
Outstation to fixed station	4 points
Outstation to non-RAEN station	3 points
Fixed station to outstation	3 points
Fixed station to fixed station	2 points
Fixed station to non-RAEN station	1 point

Bonus points will be awarded for inter-group contacts, and will be as follows:

Group member to group member (county boundaries coincident) + 50 per cent

Group member to group member (county boundaries NOT coincident) + 100 per cent

Only 20 contacts with non-RAEN stations may be counted for the entire contest.

Claimed scores will be the combined scores of the best two periods of operation, but log sheets must be submitted for all periods operated.

4. Participants will apply to the Honorary Contest Secretary, 95 Cavendish Road, Hazel Grove, Stockport, Cheshire for a test phrase, log sheets and declaration form, enclosing a stamped addressed envelope (8 in. by 3½ in. minimum).

5. Scoring contacts will consist of the exchange and acknowledgement of receipt of the following:

Signal reports: NGR (sheet no. and 6 figure ref.) of station location; test phrase received (after the first contact with a RAEN station) from the immediate previous RAEN station contacted. The test phrase received from the Hon. Contest Secretary will be used for the first contact with a RAEN station. Test phrases will not be sent to non-RAEN stations.

6. Stations will call "CQ from Raynet station . . ." by telephony, or "CQ RC de . . ." by Morse. *Use of the letters RAEN is specifically forbidden.*

7. Standard RSGB Log Sheets and Declaration Forms will be issued. Column 5 will be used for test phrase sent; column 6 for test phrase received, and column 7 for map reference received. Declaration forms must contain entrant's map reference(s), and must be signed.

8. Completed entries must be sent to the Hon. Contest Secretary to arrive by first post on Tuesday, 24 October, 1967.

9. Receiving Stations

Receiving stations will score three points for each RAEN station heard in contact with another RAEN station, and two points for each RAEN station heard in contact with a non-RAEN station, provided that the log is completed as required with all details of the contact. Receiving stations operating /M or /P will receive a bonus point for each contact correctly logged. Rules for /M or /P operation will be as for transmitting stations. Scores will be based on the best two periods of operation. Logs will be submitted on the issued sheets, and declarations completed and signed. Entries to arrive as in section 8 above.

10. Awards will be made to the leading stations in each section. An award will also be made to the RAEN County or Independent Area Group having the highest score computed as follows:

The sum of the valid points accrued by entries from a group will be divided by the group strength as certified by the Hon. Registrations Secretary as at 1 October, 1967. All or any periods of operation to count. Entries in both sections to count.

27-30 SEPTEMBER 1967

BOOK THE DATE NOW

THE PLACE: THE ROYAL HORTICULTURAL NEW HALL, VICTORIA, LONDON, SW1.

THE EVENT: THE INTERNATIONAL RADIO ENGINEERING AND COMMUNICATIONS EXHIBITION.

At the new venue the RSGB Show will have new facilities and features: the latest equipment from the Radio and Space Research station at Chilbolton; the prototype of OSCAR III; and communication receivers of many types.

Make certain that your item of home constructed equipment will be on show. We would like to receive offers now and enquiries should be sent to Alan Gibbs, G3PHG, who is co-ordinating the home construction exhibit.

All HM Services will be represented and several Government Departments will show their latest equipment.

News from Headquarters

Home Constructed Equipment for the Exhibition

Following the excellent response last year the Society's Exhibition Committee has decided that the same pattern shall be followed in 1967. Only exhibits of a high technical or constructional standard will be displayed under the following arrangements:

(i) All items submitted for exhibition will be subject to acceptance by the Exhibition Committee.
(ii) Entries will be accepted (*a*) as items which have been the subject of published articles in the RSGB BULLETIN during the period January 1966 to date. It should be made clear that only the member writing the original article will be allowed to enter; (*b*) from members who are prepared, if required, to write a constructional article for publication in the RSGB BULLETIN featuring their entry, this article to be paid for at the normal rates.
(iii) Entrants will be required to certify that their entries were constructed entirely by themselves from commonly available materials and components.
(iv) RSGB members only will be eligible.
(v) The Horace Freeman trophy will be awarded for the most original piece of equipment on show.
(vi) Additional prizes may be awarded at the discretion of the judging Committee.
(vii) Members wishing to enter should send a brief description of their proposed entry to the organizer, Mr A. J. Gibbs, G3PHG, 6 Dairyfields, Gossops Green, Crawley, Sussex, to arrive not later than Thursday, 31 August 1967.

ZD7WR Beacon Station

ZD7WR is a station established on the island of St Helena, by R. A. Whiting, who was responsible for the operation of ZC4WR during the period of the IQSY. The station is transmitting 24 hours a day on a frequency of 28,991 kc/s and automatically keys " Test ZD7WR " followed by a continuous carrier before the keying sequence is repeated. The transmission is frequently heard in the UK, often for periods of several hours at a time, and at times when there appear to be few other signals on the band. Reports on the transmission should be sent to the Scientific Studies Committee c/o RSGB Headquarters.

It is hoped to set up beacon stations on 50 and 70 Mc/s but the late arrival of equipment has caused delay to this project.

RSGB QSL Bureau

The Society's QSL Bureau will be closed from 9 September to 9 October inclusive this year. Members are asked not to send cards which would arrive between these dates.

Headquarters Fund—List No. 33

The following are additions to the list of those who have contributed to the Fund: W. C. Torode and A. C. Doty, K8CFU.

Total amount contributed to date: £2282 5s. 2d.

US Postage Rates

Members who wish to send stamps or IRCs to the USA to defray return postage on QSL cards or other items should be aware of the new postal rates already in operation. Charges to the UK are now: *surface mail:* postcards 8 cents, letters 13 cents; *air mail*: postcards 13 cents, letters 20 cents.

RSGB Dinner Club

A meeting of the RSGB Dinner Club will be held on Friday, 21 July at the Kingsley Hotel, Bloomsbury Way, WC1 at 7.30 for 8 p.m. Tickets for this informal meeting are 25s. and reservations should be made to RSGB Headquarters as soon as possible, accompanied by a remittance. It is hoped that members will bring this meeting to the notice of any overseas amateurs whom they know will be in London on this date and who will be particularly welcome.

Hospitality Scheme

The Civil Service Radio Society, G3CSR, has launched a Hospitality Scheme, for the benefit of Country Members. Broadly, this is a scheme whereby country members who wish to attend functions of radio interest in or near London will be accommodated, free of charge, by a town or London member. Fuller details available from the Secretary or any Committee Member. Membership of the Civil Service Radio Society is available to any Civil Servant in the United Kingdom.

Imperial College Radio Society

As from October 1967, the City and Guilds College Radio Society will be known as the Imperial College Radio Society, incorporating City and Guilds College, Royal College of Science and the Royal School of Mines. The society call-signs, G5YC and G6SYY/T will remain the same. The address for all future correspondence is: The Secretary, Imperial College Radio Society, c/o Electrical Engineering Dept., Imperial College, Exhibition Road, London, SW7.

Pirates Fined

As a result of Post Office enquiries into the suspected unlicensed use of Wireless Telegraphy transmitting equipment, the following convictions have been obtained for using wireless telegraphy apparatus without the appropriate licence, contrary to the provisions of Section 1 of the Wireless Telegraphy Act, 1949.

At Seaham Magistrates' Court, 15 March, 1967 and fined £5 plus £1 1s. costs were:

Mr Norman Gardner, 8 Chapel View, West Rainton, Houghton-le-Spring, Co. Durham,
Mr Henry Campbell, 78 The Avenue, Hetton-le-Hole, Co. Durham.
Mr Richard Heron, 37 Fletcher Crescent, New Herrington, Houghton-le-Spring, Co. Durham.
Mr Thomas William Turnbull, 10 The Leas, Newbottle, Houghton-le-Spring, Co. Durham.

Fined £10 with £5 5s. costs:

Mr Edwin Robinson, " Rossairn," Durham Road, Wheatley Hill, Durham.

Fined £20 with £5 5s. costs were:

Mr Robert Davison, 29 Landsbury Way, Castletown, Hylton, Sunderland, Co Durham.
Mr Dennis Robson, 14 Ellen Terrace, Washington, Co Durham.

At Long Eaton Magistrates' Court on 18 April and fined £10 with £5 5s. costs was Mr William Ernest James of 5 Wilne Road, Sawley, Long Eaton, Nottingham.

At Greenwich Magistrates' Court on 25 April, 1967 and fined £25 with £8 8s. costs was Mr Terry Vaccini, 146 Waller Road, London, SE14. In all cases confiscation of apparatus was ordered.

Society Affairs

THE meeting was held on Friday, 12 May, 1967, and was attended by Mr A. D. Patterson (President), Messrs. B. Armstrong, N. Caws, J. Etherington, J. C. Graham, E. G. Ingram, H. E. McNally, L. E. Newnham, J. F. Shepherd, R. F. Stevens, G. M. C. Stone, J. W. Swinnerton, E. W. Yeomanson (Members of the Council) and Mr John A. Rouse (General Manager) and H. J. Hallen (Headquarters Staff).

Apologies for absence were submitted on behalf of Messrs J. C. Foster, G. Twist, and D. W. Robinson (Assistant General Manager).

Title of the Bulletin

Council accepted a proposal that the secondary title of RADIO COMMUNICATION be used on the title page of the BULLETIN.

Rating of Aerial Towers and Masts

The opinion of Counsel was further discussed and it was agreed that an interview should be arranged with Mr David Trustram Eve, QC, to obtain further information.

Wireless Telegraphy Bill, 1967

A full report of the position was given to Council and copies of Hansard (18 April) and minutes of the Standing Committee (2 and 4 May) were tabled. In its efforts on behalf of all radio amateurs the Society had received support from both sides of the House of Commons. (An announcement appeared on page 400 of the June BULLETIN.)

Membership and Affiliation

The Council elected 175 members (145 Corporate and 30 Associate) and approved 10 transfers from Associate to Corporate membership.

Affiliation was granted to the following:

Dynamics Radio Club (Hawker Siddeley).
Hemel Hempstead & District Amateur Radio & Television Society.
Leicester Regional College of Technology Amateur Radio Society.
RAF Gibraltar Amateur Radio Club.
South East U.H.F./V.H.F. Group.
University of Birmingham Radio Society.

A brief report on the May, 1967, Meeting of Council

Knokke Convention 1967

It was noted with pleasure that this would now be an event sponsored by the UBA and organized by the Knokke section of the UBA.

Visit to AERE Harwell Club

A report was tabled by Mr Stevens. Following a suggestion made at the meeting it was agreed to arrange for details of the Scheme of Representation to appear in the Call Book.

London S.S.B. Dinner

It was noted with pleasure that the President was to attend this function as the Guest of Honour.

Region 14 ORM, Culzean Castle, 23 September, 1967

Mr Graham and Mr Shepherd will attend this as delegates from the Council.

Society Trophies

In view of the considerable increase in the cost of engraving, providing miniatures and maintenance, the Council reluctantly decided not to increase the number (40) of Cups and Trophies awarded annually. The matter will be discussed at a subsequent meeting.

Members Classified Advertisements

Council accepted a proposal that members' classified advertisements should be accepted free of charge subject to certain conditions. (An announcement appeared on page 400 of the June BULLETIN.)

Subscription to Region 1 IARU

The payment of the subscription for 1966 of £428 10s. was authorized.

New Headquarters Building

The proposal to purchase a property in Doughty Street, WC1, was discussed at considerable length. It was decided that in view of the importance of this matter that further information on the financial aspects of the purchase should be obtained and directly this was available a special meeting of the Council would be called.

Owing to the length of the meeting, discussion of Committee minutes was held over to the June meeting.

The Council was in session for 4 hours.

Region 1 XYL

Region 1 has recently acquired two new lady licence holders; Mrs Mary Goldsbrough and Mrs Eileen O'Brien have now passed the Morse test, having previously passed the RAE. They are the wives of G3ERB—(the Council Member for Zone A) and G2AMV (the Region 1 Representative).

Mrs Goldsbrough is G8AJO and applying for a class A licence and Mrs O'Brien is on the air with the call G3WIO.

Amateur Licences

The following are the total numbers of Amateur Radio transmitting licences in force on 31 May, 1967.

Amateur (Sound) licence " A "	12,283
Amateur (Sound) Licence " B "	575
Amateur (Sound Mobile) Licence " A "	2284
Amateur (Sound Mobile) Licence " B "	14
Amateur (Television) Licence	182

There were also 11,398 Model Radio Control Licences in force.

Affiliated Societies

Will the secretaries of all Affiliated Societies please note that the existing entries in the *RSGB Call Book* will be repeated in the 1968 issue unless Headquarters are immediately advised of any change. If your entry requires amendment please write to Headquarters now under the heading " *Call Book* amendment."

Obituary

J. G. Stonestreet, G2JN

The death occurred on 27 May, 1967 of James George (Jim) Stonestreet, G2JN, of Sturry, nr Canterbury, Kent.

Licensed in the early 1930s, Jim Stonestreet was active on most bands and up to post war days active only with the use of batteries running about 2 watts, his results often envied by other amateurs.

To his widow Muriel we extend our deepest sympathy.

D.N.T.W.

Third London S.S.B. Dinner

Officially it wasn't a Radio Society of Great Britain occasion, but to all intents and purposes the Third London S.S.B. Dinner was one of the most glittering, happy and significant events the RSGB has enjoyed for a long time.

The London S.S.B. Dinners were started in 1963 by Joe Steele, G3KZI, Norman Fitch, G3FPK, and Jim Farlow, G3BXI, because the demand for events of this calibre was, "like Everest, *there*!" The Third Dinner, on Saturday, 20 May, at the Royal Garden Hotel, London, was perhaps even more memorable than its predecessors because of the luxury and sophistication of the hotel, which was opened only recently, overlooking Kensington Gardens, and because the presence of several members of RSGB Council, for the first time, created a happy link with the Society—"something," was the comment, "that should have happened years ago!"

Guest of Honour was RSGB President, Mr A. D. Patterson, GI3KYP, with Mrs Patterson. RSGB Executive Vice-President, G3TR, John Graham, with Mrs Graham, was there, and so was the late John Rouse, G2AHL, RSGB General Manager and Secretary, with Mrs Rouse. This was the last official radio occasion John attended and his presence that night will be a happy and serene memory for those of us who were privileged to talk and joke with him. He passed away six days later.

Another distinguished guest was Dr J. A. Saxton, Director of the Radio and Space Research Station. Nearly 200 people, including radio amateurs from Belgium, Finland, Peru, Canada, Tristan da Cunha, Aden, Italy, Australia, Germany, Persia and the USA attended.

It is tradition that prizes at the S.S.B. Dinners are elaborate, but Barney Patterson commented that never before had he had the pleasure of handing out such a lavish cornucopia which included transistor radios for all the children present and bottles of whisky or brandy to one lucky visitor at each of the tables!

Top prize for the gentlemen, a KW201 receiver, generously presented by KW Electronics Ltd., was won by ON4IZ, Dr Henry Van Kets. Top prize for the ladies, a mutation mink hat and 3-skin tie, was won by VE2QA, Mr Joseph Sky, who said it was going to cause no end of problems when he got home, because he has four daughters as well as a wife to share it among!

Something that made the Third London S.S.B. Dinner a particularly notable occasion was the announcement, in a speech by Barney Patterson, that RSGB was at the final stage of negotiations for their new Headquarters Building. This was the first public disclosure of the news. When the organizers of the Dinner offered the profit which had been made, the sum of £20, to the Building Fund, two personal donations were promptly made; one from a German, one from a British visitor, which raised this total to £30.

Rowley Shears, G8KW, hands over the KW201 receiver which he donated as First Gentlemen's Prize, to the winner, ON4IZ, Dr. Henry Van Kets. On the left are Joe Steele, G3KZI, Norman Fitch, G3FPK, Les Cooper, G5LC and RSGB President, Barney Patterson, GI3KYP.

Cables of good wishes were received from W2GHK, Stuart Meyer, and from G2BVN, Roy Stevens, Immediate Past President of RSGB, who was "looking after the store," by representing the Society at another European event that night.

Dancing to Cyril Stapleton's Band, with a glittering cabaret, went on until 1 a.m. During the cabaret, when the floor was filled with gorgeous, sequinned, leggy girls, somebody put the rumour about that "Clipperton was on—FO8!" but all the DX-fiends in the audience were so engrossed with what was going on that nobody bothered to rush out to the mobile gear. This proves conclusively that Amateur Radio isn't half so obsessionist a hobby as we had all thought!

Whether or not there is a Fourth London S.S.B. Dinner, presumably in 1969, is still under debate, but popular opinion was adamant that such a relaxed, happy, distinguished *and non-technical* event should certainly come under the official auspices of RSGB, no matter what form it takes.

Sylvia Margolis

Fred Collins, W1FRR, with Mrs Collins, extreme l., and centre: Bob Lane, G5AAM, with Mrs Lane.

DJ2YA, DJ3YL and DJ4ZN (l. to r.), who travelled to England especially for the dinner.

IARU

Region 1 calling

INTERNATIONAL AMATEUR RADIO UNION

Reciprocal Licences

A booklet giving details of the licensing arrangements in countries with which the UK has reciprocal agreements has been prepared by RSGB and ARMS and single copies are available without charge to members. The cost to non-members is 2s. 6d. Prepared in looseleaf form additions and amendments will be made as required and the booklet will represent the latest information available.

South Africa

It has been announced by the Under Secretary of the Telecommunication Department of the Republic that the maximum input power allowed under the terms of the transmitting licence will shortly be increased to 150 watts. If it is intended to apply for a licence in South Africa it is strongly advised that a copy of the *Radio Regulations* should be obtained and studied before commencing operation.

Czechoslovakia

The 1967 European Fox Hunting Championships of the Region 1 Division of the IARU will be held between 22–26 September at Tabor about 80 kilometres from Prague. Visitors from all countries will be welcome in addition to competing teams. The fee of accommodation for the duration of the championships is 35 dollars. Preliminary notification must be given to the Central Radio Club, PO Box 69, Prague, by 15 July and final arrangements completed by 31 August 1967.

Radio Society of East Africa

Until recently, and since Kenya became independent within the Commonwealth, the telecommunications administration has not issued any new transmitting licences although allowing existing holders to operate as previously. However shortly after the RSEA became members of the IARU the government relaxed the restrictions and new calls are now being heard on the air. The RSEA is holding classes for those wishing to obtain licences and it is hoped that amateur radio in Kenya can look forward to a period of expansion.

The Gambia

The formation of a national society followed a recent visit by G3BID and the front page of a Bathurst newspaper carries news of the opening of the club station at the Technical Training School. The Prime Minister of The Gambia, Sir Dawda Jawara, is the Patron of the Society.

Intruder Watch

Regular reports of intruders in exclusive amateur bands are submitted to the UK GPO and several administrations have taken steps to remove interfering transmissions. However Radio Peking continues to be jammed by Radio Moscow at the l.f. end of the 7 Mc/s band and the unidentified " noise " transmission creates severe problems between 6997 and 7008 kc/s. The Hellschreiber transmission on 14,140 kc/s has reappeared after an absence of some time and the Tass transmission on 28,049 kc/s is probably a spurious signal from an unidentified fundamental. Several European societies are commencing intruder watch activities and in order to co-ordinate reporting and filtering, the Region 1 Division will consider setting up a regional organization. The RSGB Intruder Watch is an activity which does not receive wide publicity but whose members spend many hours in work which is of benefit to the entire amateur movement.

G2BVN

Affiliated Societies

The following societies are now affiliated to RSGB:

LEICESTER REGIONAL COLLEGE OF TECHNOLOGY AMATEUR RADIO SOCIETY:
A. Tranter, Department of Electrical Engineering, Leicester.

RAF GIBRALTAR AMATEUR RADIO CLUB:
A. C. Osborne, Royal Air Force, Gibraltar.

UNIVERSITY OF BIRMINGHAM RADIO SOCIETY, G3IUB:
R. A. Cooney, The Union, University Road, Edgbaston, Birmingham, 15.

DYNAMICS RADIO:
B. H. Twist, Industrial Automation Division, Hawker Siddeley Dynamics, Whitley, Coventry, Warwickshire.

SEE AMATEUR RADIO SOCIETY:
REME Aborfield, Reading, Berks.

SOUTH EAST U.H.F./V.H.F. GROUP:
Group Captain A. H. Dormer, Summerleigh, Beltinge Road, Herne Bay, Kent.

HEMEL HEMPSTEAD & DISTRICT AMATEUR RADIO & TELEVISION SOCIETY:
J. B. Adams, 8 Lindlings, Chaulden, Hemel Hempstead, Herts.

ADDISCOMBE AMATEUR RADIO CLUB:
S. E. Fuller, 116 Shirley Way, Croydon, Surrey. CRO8PE.

STAMFORD SCHOOL RADIO AND ELECTRICAL SOCIETY:
K. Sharpe, 3 The Drove, Nassington, Peterborough.

STAFFORDSHIRE COLLEGE OF TECHNOLOGY AMATEUR RADIO SOCIETY:
P. Kemble, Beaconside, Stafford.

Representation 1966-68

The following members have been appointed Area Representatives for:

GREAT YARMOUTH:
A. D. Besford, G3NHU, Great Yarmouth Radio Club, 49 Blake Road, Great Yarmouth, Norfolk.

ILFORD:
F. F. Ruth, G2BRH, 103 Heath Road, Chadwell Heath, Romford, Essex.

Affiliated Society Representatives

The following member has been appointed affiliated Society Representative for:

TORBAY AMATEUR RADIO SOCIETY:
B. E. Symons, G3LKT, 52 Reddenhall Road, Babbacombe, Torbay, Devon.

Can You Help?

● H. Fenton, G8GG, 24 Cavendish Road, St. Annes, Lytham St. Annes, Lancs., who wishes to correspond with members who have used the FB5 Ferrite Bead Loaded Aerial as described in the March 1962 RSGB BULLETIN.?

● F. Allen Herridge, G3IDG, 96 George Street, Basingstoke, Hampshire who requires details of any novels involving Amateur Radio?

Beru 1967

RESULTS OF THE CONTEST HELD ON 11 AND 12 MARCH

THE thirtieth BERU contest held on the 11-12 March, 1967, resulted in a win for Don McVicar, VP7DX, who achieved a record score of 4803 points from 623 contacts with 97 call areas. This was in no sense a runaway victory, as there was a continuous battle for first place for most of the contest between VE3KE, 3C2NV and VP7DX. At the halfway stage VE3KE was ahead with 3C2NV a close second, and VP7DX close on his tail. With 12 hours to go, all three stations were neck and neck on points, although VP7DX was managing a higher QSO rate than the others. At the finish it was the number of contacts that decided the issue and VP7DX emerged a clear winner, even though the runner-up had collected 120 more bonus points.

VP7DX's equipment was a Collins KWM-2A transceiver, supplemented by a Racal receiver, together with Cubical Quads for 28, 21, 14 and 7 Mc/s, and an inverted Vee for 3·5 Mc/s. Don McVicar is, incidentally, perhaps better known by his Canadian call VE2WW.

The runner-up, Vic Williams, VE3KE, made 541 contacts with 103 call areas for a total score of 4740 points. In third place is 3C2NV with 4497 points.

The Colonel Thomas Rose Bowl, for the leading British Isles entrant, goes to F. J. U. Ritson, G5RI, who was fifth overall. He secured the greatest number of bonus points in the contest by contacting 115 call areas. The second highest UK entrant is D. Courtier Dutton, G3FPQ, who was the runner-up in last year's contest.

Low Power Section

The H.F. Contests Committee was sorry to note the very small number of entries for the Junior Section. Interest in this section of BERU has steadily delined over the years and perhaps the time has come to delete this section altogether. Unless there is more support in the 1968 event, the Committee will have to give this question serious consideration.

The small number of entrants in no way detracts from the very excellent performance of A. L. Manwaring, VK2QK, who was the Junior winner with 1537 points from 116 contacts with 48 call areas. In second place is A. Shawsmith, VK4SS, with 1245 points.

Receiving Section

This year it is the turn of Eric Howell, BRS24775, to head the list with 3580 points. In second place is E. H. Sherlock, BRS6604, with 2943 points. The standard of receiving logs was generally of a high standard and only a small number of points was lost by competitors because of log-keeping errors. The usual interesting log was received from Eric Trebilcock of Victoria, Australia. He has now competed in 26 BERU receiving contests—certainly a wonderful record.

Conditions

Almost without exception, entrants found that conditions on the three h.f. bands were generally good. The 28 and 21 Mc/s bands were open for long periods and 14 Mc/s was good for the whole 48 hours of the contest, particularly over the North Atlantic path. For some competitors, 7 Mc/s performed well, but others had problems due to the combination of weak signals and QRM from other contests. Many entrants found that the going was very slow on 3·5 Mc/s, but many good contacts were made including a number between the UK and Canada, Canada and VK/ZL, G and VK/ZL and between Africa and South East Asia.

" 14 and 21 Mc/s much improved this year." (ZL4BO).

" MUF was 50 per cent better than predicted, median figures giving what I imagine must have been some of the best BERU conditions for years." (G3SSO).

" Conditions ideal for a change." (3C2YU).

" The best conditions I have known since my first entry in 1961. 28 Mc/s in excellent shape but 3·5 Mc/s very poor." (VO1FB).

" 14 Mc/s open right round the clock." (G2DC).

" H.f. band conditions wonderful but 80 and 40 have not been so poor for me in any previous BERU." (G3GGS).

" Conditions generally poor on all bands, so the 30th BERU was a struggle for the antipodeans." (ZL1HV).

" Conditions generally were good, and very good on 28 and 3·5 Mc/s." (G3JVJ).

" A very hard BERU. Didn't think conditions could be so poor for so long on all three h.f. bands. Only signal heard on 40 was 9V1MT, band hopeless, so was 80. Pity as it will be my last BERU from here." (VS6FO).

" Conditions best yet, except for 80." (VP7DX).

Comments

The Committee wishes to thank the many entrants who took the time to send comments with their logs. This year so many comments were received that it is impossible to include them all, in the space available for this contest report. In general, most competitors now seem to favour the combination of contact and bonus points, over a band and call area multiplier. This is a reversal of the pleas for a straight multiplier in previous years. A number of entrants have queried the 1966 results and point out that some of the published scores were not exact multiples of 5. Examination of the results table for this BERU will show a similar situation in respect of many competitors' scores. This is as a result of the marking system used by the Committee which is based on a percentage deduction for errors in call-sign, RST and numbers logged. A number of logs were received which were completely unscored. While the Committee will always try and help a competitor who does not know the rules, to completely recast a 12 page log and cross-check for duplicates, bonus points, etc., from entrants who have participated in previous BERU contests, is just not on. Several such logs were sent in for this BERU and have been treated as check logs—very sorry chaps. One or two entrants may be surprised to see that their published scores are very different from those that they claimed. Over 10 per cent of the logs had to be rescored, a few up, but mostly down. In nearly every case the rescoring was necessary due to errors in addition, or double claims for the same bonus points. Many stations did not claim points for contacts with stations who refused to give serial numbers. As a general rule, the Committee will usually allow points credit in such cases. This is a point worth remembering for future BERU contests.

" How nice to see so many of the old timers on from G; renewed contact with several who I haven't worked for 19 years." (9V1MT).

" Seem to have had more luck this time with the weak ones. Suppose it's because everyone hears the S9 ones." (G3JKY).

" Many VK's now use commercial gear with higher power, which makes it much more difficult for us flea power boys." (VK4SS).

" My first BERU, but certainly not my last." (G3URX).

" As usual too many 5 point UK contacts and not enough bonus points. Why should all UK count as one country whilst VE and VO count as nine." (ZB2AM).

" Why not allow contacts between the countries of the British Isles." (G3KSH).

" Inter UK working should count for points, with bonus as for VE, etc." (3C6VO).

" BERU is now a contest between G, VE and VK/ZL. There is too little participation from other parts of the Commonwealth. Unless something is done this contest will fade into oblivion." (VE2BV).

" The finest DX contest that I have ever entered." (3C2YU).

" Keeping out of the way of G6CJ and G3KMA, who are local to me, was my biggest problem." (G3OXI).

" Had to take time off from the contest to go out and purchase a replacement 6146." (G5VU).

" Ropey notes non existent in this contest." (G3FBA).

" Great trouble once again with WSEM contest. Suggest the Committee considers moving BERU date." (G3JVJ).

" What a pity that our Char and Chirp friends always seem to pick BERU dates for one of their internal contests." (G2DC).

" With all bands open a computer might help." (VE2LY).

" I wonder if the day of the 48 hour contest is not over and BERU should be limited to 24 hours." (ZL1HV).

" Some stations persisted in calling me VP2GL. This call has not been in use for past two years, suppose they lost points." (VP2GLE). (Yes a few did OM).

HIGH POWER SECTION

Position	Call-sign	Total points	Bonus points	QSOs	Power
1	VP7DX*	4803	1780	623	100
2	VE3KE*	4740	2060	541	400
3	3C2NV*	4497	1900	520	150
4	VE1TG*	3945	1360	483	750
5	G5RI*	3864	2300	318	150
6	G3FPQ*	3739	2220	310	150
7	G5WP	3702	2200	303	150
8	ZL4BO*	3692	1740	393	140
9	G3FXB	3675	2220	296	150
10	VE3AU	3630	1600	406	600
11	VE2WA	3457	1460	401	600
12	G3SSO	3452	2020	300	150
13	ZB2AM*	3430	1200	464	75
14	G2DC	3350	2040	265	130
15	3C2YU	3252	1400	388	350
16	G3GFG	3070	1900	240	150
17	G6CJ	3035	1900	232	150
18	G5RP	2915	1780	229	150
19	3C2BV	2875	1240	329	500
20	VE2AYY	2870	1380	301	180
21	5N2AAF*	2805	1040	354	150
22	G2QT	2801	1780	207	150
23	VK3AXK*	2755	1560	262	100
24	VO1FB*	2750	1260	298	500
25	VP9BK*	2590	1080	304	150
26	VK7SM*	2425	1420	220	150
27	G3GGS	2410	1680	148	100
28	VE2LY	2360	1120	258	170
29	G6XL	2355	1560	160	150
30	G2DU	2165	1360	163	150
31	3C3ES	2140	920	269	500
32	9V1NV*	2120	1120	201	150
33	9L1TL*	2110	800	275	150
34	G3IAR	2080	1300	159	150
35	3C2DCW	2077	920	244	75
36	VE3BWY	1997	800	240	600
37	G3VW	1950	1340	124	135
38	G3KSH	1930	1240	141	150
39	VE1WL	1895	840	216	600
40	G3OHP	1837	1360	97	150
41	G3APN	1830	1140	143	150
42	VE1EK	1825	680	229	90
43	6Y5BS*	1800	760	215	150
44	VO1AW	1785	500	257	150
45	G3VDL	1745	1200	111	60
46	VE1IM	1740	600	212	115
47	G2AJB	1725	1120	121	150
48	VE3BJK	1722	1000	200	180
49	VK2PV*	1680	900	156	150
50	G3GEW	1670	1040	127	150
51	G5VU	1642	1080	117	75
52	MP4MAW*	1625	720	182	150
53	G3HRY	1580	1020	115	100
54	VS6FO*	1545	840	142	150
54	G3KHA	1545	1060	101	100
54	G2BLA	1545	11	81	90
57	ZL1HV*	1525	1060	93	125
58	GW3CW	1515	1020	99	120
59	G3KMA	1495	1060	87	150
60	G3JKY	1465	960	101	100
61	VE3BMB	1452	700	152	180
62	G3JJG	1440	1000	88	150
62	G8DI	1440	960	101	150
64	GW2DPD	1430	940	102	100
64	GM3JZK	1430	1020	82	150
66	VK3UM	1405	840	115	70
67	VK2VN	1390	640	150	100
68	G5ZK	1275	840	87	120
69	9V1MT	1245	740	101	75
70	G3HZL	1240	820	85	150
71	G3TTK	1225	820	85	150
72	5Z4SS	1220	600	128	150
73	G3EBH	1180	840	71	50
74	G3JFY	1075	740	67	50
75	G3OXI	1060	865	75	50
76	VE5PM	1040	620	85	350
77	G3GJX	975	640	67	150
78	GW3MPB	945	660	59	50
79	ZE3JO	930	420	102	75
80	MP4BFK	920	420	101	90
81	G5DF	915	640	57	150
82	G8QZ	875	620	51	150
83	G2HLU	865	600	57	100
84	G8KU	855	540	63	125
85	VP2GLE	820	320	102	150
85	G3MWZ	820	580	48	150
87	5Z4KPB	775	400	75	30
88	VK3KS	750	500	50	150
89	G3JVJ	735	560	35	70
90	G3GSZ	670	440	47	150
91	3C3ADV	645	440	41	100
92	3C6VO	642	400	52	250
93	G2VV	617	400	44	80
94	3C2MZ	600	240	74	275
95	G2HAO	590	380	42	100
96	GM2HCZ	585	400	38	150
97	G3NKQ	595	440	31	100
98	G2ZR	560	360	40	90
99	G3TFS	480	340	28	60
100	VK3XB	420	260	33	150
101	5H3KJ	405	100	63	100
102	G3FBA	400	280	24	150
102	G3LQI	400	300	20	50
102	G3NSY	400	280	24	150
105	G3WP	395	280	23	130
106	VK4FH	390	80	48	150
107	GM4GK	385	280	21	75
108	VE1AE	335	140	40	150
109	G3URX	315	200	27	150

* Certificate winners

LOW POWER SECTION

Position	Call-sign	Total points	Bonus points	QSOs	Power
1	VK2QK*	1537	960	116	24
2	VK4SS*	1245	860	77	25
3	VK4UC*	740	460	57	25
4	G3GNS	710	460	50	25
5	G3APZ	300	220	15	15

* Certificate winners

RECEIVING SECTION

Position	Call-sign	Total points
1	BRS 24775*	3580
2	BRS 6604*	2943
3	BRS 15822	2540
4	BRS 2292!	1820
5	BCRS 195*	1225
6	A 2956	1075
7	A 3942	1035

* Certificate winners

" In retrospect it was a tactical error to have started at 04.00. I never managed to catch up." (G3SSO).

" VP7DX will be hard to beat." (ZL4BO).

" Was only on for a short while and was not familiar with the rules, so I hope the boys will excuse my muddle." (ZD3G).

" Stations noticeably missed were G2MI and 9J2DT. Always good to meet the old BERU stalwarts again. Hope to see you all again many more times." (VE1TG).

" My goal is still 5000 plus. Missed some good openings this time due to 21 Mc/s TVI." (3C2NV).

" My score severely cut by unasked and unwanted callers. Kept a side log and made WAC, 43 countries and 35 states from non BERU QSOs. Found it better to work them, than to buck their QRM. Some would just not go away and I threatened to send back the RCAF 6 Group to one guy in Berlin." (VP7DX).

Finally, the Committee would like to thank all those that sent in check logs for this contest. These include GM3FIU, G6LX, VE6SX, VE7HQ, VP1MW, VU2JA, YO8-7099, ZD3G, 3C1DB, 3C3DHN, 3C3DU and 9M2LO.

CONTEST NEWS — RESULTS—REPORTS—RULES

Second 70 Mc/s Contest (Open) 1967

Section A (Single operator)

Position	Call-sign	Points	Contacts	QTH	RX Input	TX Output	Power	Aerial
1	G3RLE	11456	70	Cleckheaton	E88CC	6-40A	50	4 ele
2	G3EKP	9254	70	6 S Blackburn	—	3-20A	22	4 ele
3	G3TCT	7444	87	2 NE Guildford	E88CC	—	25	3 ele
4	EI6AS	6888	33	10 S Dublin	6CW4	3-20A	25	4 ele
5	G3TCU	6842	88	2 N Guildford	E88CC	6-40A	50	6 ele
6	G3SUV	5996	52	16 NW Colchester	6CW4	3-20A	25	5/5
7	G3FDW	5540	38	East Retford	6CW4	6-40A	50 (110 p.e.p.)	6 ele
8	G3UUT	4417	33	York	AFZ12	6-40A	50	4 ele
9	G3PMJ	4185	44	E. Manchester	E88CC	3-20A	25	5 ele
10	GM3EGW	4182	16	Dunfermline	FET	—	40 (100 p.e.p.)	4 ele
11	G3OYU	4001	40	Biggin Hill	EF183	6146	50	3 ele
12	GC3OBM	3904	18	St. Peter Port	6CW4	6146	40	4 ele
13	G3LVP	3669	61	3 W Ilford	TW Conv.	6-40A	50	4 ele
14	G3TOT	3062	32	4 S Stevenage	AFZ12	3-20A	12	4 ele
15	GI3VIB	2997	18	4 E Belfast	E88CC	3-20A	28	4 ele (indoor)
16	G3JMB	2309	22	Margate	B44	B44	8	4 ele
17	G6HD	2617	30	Bexley	E88CC	3-10	15	dipole
18	G3JDM	1985	18	12 SW Gailey	6CW4	832	15	4 ele
19	G3OCC	1747	14	Chislehurst	E88CC	3-20A	23	4 ele
20	G3KPU	1296	13	Retford	6CW4	B44	9	3 ele
21	G3UBX	908	17	1 SW Wolverhampton	6CW4	4-7	15	dipole

Section B (Multi-operator)

Position	Call-sign	Points	Contacts	QTH	RX Input	TX Output	Power	Aerial
1	GW3RUF/P	25610	139	17 E Brecon	TW Comm	TW Comm	10	4 ele
2	G3OXD/A	19080	127	2 SE Dudley	6CW4	6-20A	40	4 ele
3	G3UUP/P	17133	154	Ditchling Beacon	EC88	6-40A	45	6/6
4	G5FK/A	16750	155	Woodcote, S. Oxford	A2599	6146	50	4 ele
5	G3OHH	16077	100	Mow Cop, Staffs	6CW4	3-20A	20	4/4
6	G3PIA/P	16066	128	10 W Wantage	6CW4	6-40A	50	4/4
7	G3NJF/P	14606	82	Claxby, N Lincs	6CW4	3-20A	20	4/4
8	G5HZ/P	13070	121	10 SW Newbury	—	3-10	17	4 ele
9	G3EFX/P	13036	125	15 NE Oxford	GM0290	3-10	10	4 ele
10	GW3UCB/P	12128	81	7 N Llangollen	2N3823	3-20A	30	6/6
11	G3RIK/P	11491	79	6 SE Rochdale	B44 Mk. 111	B44 Mk 111	10	4/4
12	G3VPK/A	11477	109	8 E Chelmsford	6CW4	6-40A	45	4 ele
13	G3TJW/P	11456	61	10 SW Taunton	—	6146	50	5 ele
14	G3JHM/A	11321	116	10 N Worthing	E88CC	—	50	4 ele
15	GI3PGG/P	11289	78	8 N Belfast	6CW4	3-20A	50	6/6
16	G3PUO/P	10868	85	9 N W Burnley	2N3819	829B	35	4 ele
17	G3OJE/P	9118	120	8 S Aylesbury	6CW4	6-40A	25	4/4
18	G3VRW/P	7524	71	4 S Burnley	AF139	TT15	18	6 ele
19	GW3RWM/P	6461	35	13 S Bala	GM0378A	3-10	14	4 ele
20	G3BRK	4158	69	3 E Bromley	6CW4	832	20	4 ele
21	G5UM/P	3447	26	15 E Leicester	—	3-10	9	4 ele
22	GI3VAW/P	3241	45	6 SE Limavady	B44	B44	12	4 ele
23	G3TDM	2744	56	2 S Enfield	6AK5	3B240M	6	4 ele
24	G3OUL	1832	21	Central Liverpool	6AK5	6-40A	200 p.e.p.	4 ele

Entries for this contest totalled 45; 21 in Section A and 24 in Section B. There were three entries from GW, three from GI, one from GM, one from EI and one from GC, with all the remainder from England.

The general opinion seems to have been that conditions were a little above average, and so too with activity. Many contacts over 300km were reported, with several over 400km, notable among which were GI3PGG/P (with G3NJF/P) (410), G5HZ/P (486), G5FK/A (486), G3PIA/P (460) and G3EFX/P (454).

The winner in Section A was G3RLE, with G3EKP runner-up. Winner of Section B and overall winner was GW3RUF/P, with last year's winner, G3OXD/A, as runner-up. Subject to Council approval, the V.H.F. Manager's Trophy will therefore be awarded to GW3RUF/P with Certificates of Merit to the other winner and the runners-up.

Comments

From contestant's letters it appears that the band plan was not widely observed, many stations calling out of zone and tuning " low to high " to catch the greatest activity which was on the lower frequencies. There was some increase in c.w. operation compared with previous contests. GI3VIB calls attention to the use of s.s.b. transceivers and transverters in this connection, where unless split working is possible, the band plan cannot be easily observed. We agree, but suggest that CQ calls should always be made within the local zone, with a warning that replies will be on the calling station's own frequency. After the QSO, the calling station reverts to his zone frequency for further CQs.

In future 4m contests, scoring will be on a points per kilometre basis.

No comments were received on the timing of the contest, nor on TVI problems. We do not, therefore, propose to split the contest into two sessions at this stage.

Points from Letters

GI3PGG reports a flying visit, at a few hundred feet, from GI3KYP, the President of the RSGB, in his own aircraft. He says . . . "after a couple of low runs he departed apparently satisfied with what he saw " (He must have seen the log with all those 400 + km contacts).

" There is no need to ask who has won the Contest, as usual it will be *that* GW. (Ssshhh—you know who.)" (G3PMJ).

GW3UCB/P asks if fixed station and /P using the same basic call are counted as two contexts. The answer is in General Rule 3: the best contact only is counted.

" Too many stations still give no clue to their tuning intentions." (G3JKY). (It is even worse on 2m, where there are 2 Mc/s to cover.)

G3HWR sends in an interesting summary of contacts per hour which shows very clearly the lack of activity during the "wee sma' hours." He further comments "... only one thing went wrong, the electric cooker was not hot enough and the lunch was spoiled. Any suggestion that the mains voltage was unusually low will be met with blank stares."

From G3FDW. "... could only be on for a limited time as I was engaged in producing the 50 c/s stuff used by the other competitors." (G3FDW).

GM3EGW regrets that he was not on for a longer period but he was engaged at the time in unsuccessful EME tests with GM3FYB/A and W2IMU. Don't think QRM from 4m was the cause!

Reports

Listener reports were received from A5032, BRS15822, A4752, A4674, BRS15744 and BRS28005. Check logs were sent by A5323, G3PAO, G3WS/P and GM2UU. Many thanks.

A.H.D.

G3LMT operating and G3TJW logging during the 70 Mc/s contest. The station was established 10 miles S.W. of Taunton, using the call G3TJW/P.

Cumulative Activity Contests—Spring 1967

"A successful experiment," commented one of the entrants and this at least as far as 70cm is concerned is the view of the V.H.F./U.H.F. Contests Committee. This first series of Activity Contests did achieve an excellent degree of activity, but unfortunately this is not reflected in the number of entries. Furthermore, despite the large number of call-signs that appear in the few 2m logs received, entrants on 2m considered the going rather slow.

Awards

Congratulations go to G3NNG for winning both the 2m and 70cm contests and to G2WS and G8AKE as runners-up on 2m and 70cm respectively.

Three ideas really sparked off this series of contests.

(i) The need for a short contest.
(ii) To encourage co-ordinated activity.
(iii) To encourage activity from areas which are not highly populated (radio wise), as stations in such areas would be certain of activity on the band.

This latter aim was only successful in part, and to achieve a better response from outlying areas it is suggested that awards be made on a more regional basis.

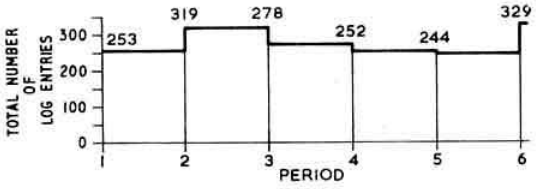
Two Metres

A disappointing number of entries was submitted despite the levels of activity in some areas. Certainly a large number of stations took advantage of the activity periods. Comments strongly suggest that the 2m event should continue and so it can only be hoped that a few more logs will be sent in next time.

Seventy Centimetres

The 70cm band produced 31 entries of which 27 were G8 + 3 calls; a remarkable demonstration of how the Class B licence holders have greatly improved 70cm activity (long may this continue).

For an exercise rather than anything else a nomogram has been drawn showing the total number of log entries on all 70cm logs received for each activity period. The committee had hoped to see from the graph that activity had increased as the contest progressed. However, as can be seen, this was not quite the case although the last activity period did produce the highest amount of activity. Perhaps this indicates that with more publicity there may have been more activity!



As with the 2m event the Committee hopes to see more entries in future from the Class A licence holders!

70cm Cumulative Activity Contest

Call-sign	Posn.	Score	QSOs	QTH	TX(P.A.)	RX(P.A.)	Aerial
G3NNG	1	7499	97	Faringdon	DET24	2N2857	6/6 slot
G8AKE	2	6433	73	Melton Mowbray	4CX250B	AF139	14/14
G8ARH	3	5517	114	Gt. Bookham	DET24	GM0290	18 ele
G8ABP	4	5392	97	Birmingham	6/40 A	GM0290	14/ele
G8ANC	5	5142	77	Nr. Newbury	3/20A	GM0290	14/ele
G2XV	6	4183	54	Nr. Cambridge	6-40	AF186	40 ele stack
G8ADC	7	3482	68	Nr Luton	3-20A	2N3478	14 ele
G8AMU	8	3262	57	Reigate	3-20A	AF186	14/14
G8AOD	*	3113	67	East Grinstead	2-6	EC88	10 ele
GW8ASA	*	3099	50	Barry	3-20A	GM0290	18 ele
G8AHF	9	2676	55	Cows	3-20A	AF180	14/14
G8AQD	10	2648	102	Croydon	2-6	AF139	8/8 slot
G8AAJ	11	2510	90	Dulwich	3-20A	AF186	10/10
G8AOL	12	2114	75	Bexleyheath	3-20A	BF180	—
G8ACJ	13	1994	42	Guildford	3-20A	GM0290	18 ele
G8AWO	14	1923	47	Welwyn-G.C.	3-20A	BEN139	8/8 slot
G8ANS	15	1840	65	Hatfield	3-20A	2N3478	18 ele
G8ALM	16	1804	85	Leytonstone	3-20A	AF139	8/8
G8ART	17	1516	57	New Barnet	3-20A	AF139	24 ele
G8ARH/P	18	1370	14	Nr Oakham	DET24	GM0290	14 ele
G8AND	19	1187	38	Nr St Albans	3-20A	A2521	14 ele
G8AIE	20	1161	42	Barnet	3-20A	AF239	6/6
G2WS	21	1160	33	Weston S.M.	3-20A	AF139	6/6 slot
G8ANY	22	861	21	Blackpool	3-20A	GM0290	5 ele
G8AKT	23	814	25	Letchworth	3-20A	AF139	24 ele
G8LTN	24	760	15	Andover	6-40A	AF139	18 ele
G8ARD	25	578	14	Yeovil	3-20A	AF139	18 ele
G8ACK	26	529	34	NW3	2-6	GM0290	14 ele
G8ABZ	27	507	23	Rotherham	3-20A	AF139	10 ele
G8AAC/A	28	338	8	Nr Sheffield	2-6	AF139	8/8
G8AAC	29	5	1	Barnsley	12AT7	ECF80	8/8

* No declaration, see Rules Entries (iii)

2m Cumulative Activity Contest

Call-sign	Posn.	Score	QSOs	QTH	TX(P.A.)	RX(R.F.)	Aerial
G3NNG	1	7373	75	Faringdon	3-10	FET	6/6 slot
G2WS	2	6104	—	Weston SM.	6-40A	6CW4	4/4 slot
GW3FSP	3	4565	43	Penreal	4X150	6DS4	10 ele
G3USF	4	3765	54	Keele	3-10	6CW4	6 ele
G3EHM	5	1313	20	Stoke-on-Trent	—	EC88	6/6

Rules

Surprisingly few comments were received on the rules. About the only point raised is that not all the activity periods should count towards the contest. Quite a few in fact missed one or two periods. It is suggested that say two-thirds of the periods should count and that those who operate in all the test periods should select their best evenings. The rules for the Autumn contest may be modified to incorporate this feature.

The V.H.F./U.H.F. Contests Committee thanks all those who took part and especially those who sent in entries, and also to the following member for his check log, BRS15744.

High Wycombe D/F Qualifying Event

Position	Name	District or Club	Time (Station " A ")	Time (Station " B ")
1	M. P. Hawkins	Oxford	15.18	14.30
2	E. R. Mollart	Oxford	15.54	14.52
3	I. R. Butson	Oxford	15.05	16.01
4	W. North	Chilterns	16.02	14.31
5	E. W. Bristow	Oxford	16.02½	14.29
6	K. R. Vickers	Stratford on Avon	16.25	15.04
7	R. Pearce-Boby	Oxford	15.31	16.26
8	J. R. Mordaunt	Oxford	—	15.01
9	D. E. Newman	Rugby	—	15.03
10	P. Tylor	Oxford	15.13	—
11	G. H. Taylor	Rugby	—	15.56
12	T. Gage	Oxford	—	—
13	P. Woollett	Edenbridge	—	—

Subject to confirmation, the first three, Hawkins, Mollart and Butson qualify for the Final.

The High Wycombe Qualifying event took place on 21 May, in favourable weather, the heavy rain which had been forecast for the early afternoon fortunately not arriving until after the contest was over. Thirteen parties assembled at Winter Hill, a local beauty spot near Marlow, and strong signals were received from both stations.

Most competitors found on their second fixed transmission that signals from Station B were almost or completely inaudible, and it soon transpired that this transmitter must have been close to the start. It was in fact well concealed on the lip of an old quarry, a little over ½ mile from the start, the operator, G8VZ, enjoying a grand-stand view of the competitors searching the stinging nettles and debris at the base of the quarry for the transmitter perched at the top. The aerial was a very fine and almost invisible wire against the face of the quarry which radiated a strong signal directly towards the start but little in any other direction.

The second transmitter was some 12½ miles away on the top of the downs to the west, while it could be approached from three directions, each necessitated a lengthy distance on foot. The gale force winds made it difficult to set up the tent and some of the competitors walking along the ridge found progress difficult, the noise of the wind almost drowning the signals they were listening for. After the contest some 40 enthusiasts sat down to tea at Marlow through the generosity of Mr Berger who placed his restaurant at our disposal. At the conclusion the third High Wycombe Challenge Trophy was presented to M. Hawkins, the previous two trophies having been won outright by E. Mollart after six consecutive wins. Thanks were expressed to the organizer, Mr G. T. Peck and his helpers and to G8VZ and G3SRJ who operated the transmitters.

Stratford on Avon D/F Qualifying Event

The following are details of the Stratford on Avon D/F Qualifying Event.

When: 30 July, 1967.
Organizer: I. A. Cobbold, G3RPJ, 5 Avenue Road, Stratford on Avon.
Map: Ordnance Survey, Sheet 144, Cheltenham and Evesham.
Assembly Time: 13.00 BST.
Location: Dovers Hill 2½ miles NE Broadway Worcs. NGR 136395.
Frequencies and call-signs: To be announced at the start.
Entries and Tea: Intending competitors should notify the organizer by 23 July, stating the number in their party requiring tea. Note: G3RPJ will be on holiday from 8-22 July, but messages may be left by telephone at Stratford on Avon 2167.

Region 1 V.H.F. Contest 1967

This event will take place on Sunday, 13 August 1967. Fully paid up members resident in Region 1 and operating in Region 1 may compete. The bands in use will be 70 Mc/s, 144 Mc/s and 432 Mc/s. Further particulars may be obtained from the Regional Representative, B. O'Brien, G2AMV, 1 Waterpark Road, Prenton, Birkenhead, Cheshire. It is hoped that there will be a high level of activity.

Low Power Contest

G3JKY's entry was regrettably omitted from the results published last month. He scored 1100 points using a power of 0·6W.

Second 432 Mc/s (Open) Contest 1967

This contest has been introduced into the calender to provide more contest activity with the increasing activity on the 432 Mc/s band.

1. **When:** 17.00 GMT Saturday, 12 August, to 17.00 GMT Sunday, 13 August, 1967.
2. The **General Rules** for RSGB Contests published in the January 1967 issue of the RSGB BULLETIN will apply except as superseded by the rules of this contest.
3. **Stations** may operate from more than one site in sections 2 or 3, but if this is done they must *clearly* indicate to stations that they contact that they have changed locations. If a station is worked from more than one site, only one contact (the best) may be claimed for points.
4. **Contacts** may be made on any mode permitted in the entrant's Amateur (Sound) Licence except A2 (m.c.w.) on frequencies between 432 and 434 Mc/s.
5. **Scoring** will be on the basis of one point per kilometre.
6. **Contest Exchanges.** (*a*) RST or RS reports followed by serial number. (*b*) Location information. Both QTH and QRA locator should be given. The QTH must be a distance in kilometres and a bearing from a town. The town must be identifiable on the Ordnance survey " ten mile map."
7. **Sections.** A. Fixed stations (single operator). NB Log keepers are NOT operators.
   B Club stations, /A stations and fixed stations (multi-op).
   C Portable stations.
8. **Logs.** Should be submitted on RSGB Contest Log Sheets. QTH in column 5, QRA in column 6, column 7 call-sign of operator sections 2 and 3, and points claimed.
9. **Entries** (i) Should be submitted on RSGB Contest Log Sheets obtainable from HQ.
   (ii) The cover sheet must be made out in accordance with the General Rules and the declaration signed. Multi-operator entries should be so marked and the operators listed.
   (iii) Entries must be post-marked not later than **Monday, 28 August, 1967.**
10. The entry should NOT be sent to RSGB HQ, but DIRECT to the adjudicator of the Contest, at the address given below:
    V.H.F./U.H.F. Contests Committee,
    c/o J. Foster, G2JF,
    Wye College (University of London),
    Ashford, Kent.
    Those wishing for acknowledgement of receipt of entry should enclose a stamped addressed postcard.
11. At the discretion of Council, awards for winner will be made in each section and awards for runner-up will be made if there are ten or more entries in a given section.

V.H.F./U.H.F. Listeners' Championship

The interim results after the first three contests are shown below.

			1st 144 Mc/s	1st 70 Mc/s	2nd 144 Mc/s	Total
1	A. Goacher	A3942	1059		1085	2144
2	R. Ham	BRS15744		509	1466	1975
3	R. Thomas	BRS15322	284	350	1103	1737
4	E. MacDuff	BRS26234		462	1232	1694
5	C. Baker	A5032		278	1270	1548
6	A. Watts	A4871			792	792
7	D. Poulter	A4048		593		593
8	R. Whitbread	A4674		455		455
9	T. Cooper	BRS28005			353	353
10	P. Briggs	A4752		261		261
11	M. Arnold	A5271			222	222

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By ARRL HQ Staff

Virtually all subjects connected with Amateur Radio are treated in detail, with both theory and practice given proper attention. Twenty-five chapters encompass roughly 600 pages.

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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.

Converting the W1191-A Frequency Meter

With reference to the March 1967 BULLETIN article " Mains Conversion of the W1191-A Frequency Meter," I have carried out this conversion but the following points arise.

(i) P. 170, Fig. 1(b), (*c*), (*d*): the figures 3 and 5 against the grid and anodes of the 6J5 valves have been transposed. I did not spot this and had quite a session fault-finding before it came to light.

(ii) I think it should have been stressed that at least two 6J5s are needed, as 6J5Gs are no use owing to lack of room.

(iii) It is necessary to mount the valveholder for V3 on pillars, as the original valveholder was a baseboard mounting type and no chassis hole is provided.

(iv) R17 on my frequency meter was 250 K ohms.

Otherwise it was a very useful article and the frequency meter as modified performs very well.

While I am writing may I say how much I appreciate the general content and standard of the BULLETIN. It is certainly the best Amateur Radio magazine I know, and may it remain so.

D. P. Filer, BRS13277

Loughborough, Leics.

(*Versions of the W1191-A do possess a valveholder for V3 on pillars, the author's being of this type.*)

What are the Dit Dits?

For a considerable time, the h.f. amateur bands have been plagued by transmissions which take the form of a double pulse, each pulse of approximately 1mS duration with a space of 2 mS between. The amplitude varies considerably from pulse to pulse, some are quite faint and some of enormous strength. The signals are aperiodic and are audible over about 2 Mc/s at any one time.

They appear in the early mornings around 28 Mc/s and are on 21 Mc/s about 13.00 GMT. They appear on 14 Mc/s just about dusk and last for about an hour.

When audible on the 14 Mc/s band, they spread from 13 Mc/s to about 15·5 Mc/s. I understand that they have been heard as low as 6 Mc/s and all over the world. The loud pulses are coincidental when received on three separate receiver and aerial installations and displayed on a single scope. The weaker pulses are not.

I have made exhaustive enquiries but no one seems to know what they are. In view of the fact that they come from a north-easterly direction, I feel that, if their origin really is not known, then it is about time someone made it their business to find out. Are they some form of inosphere research, do they come from outer space or have they some more sinister meaning?

One thing is certain, on our exclusive amateur bands, they are an infernal nuisance.

A. O. Milne, G2MI

Bromley, Kent.

What I Shall Say—Over The Air

A traditional and predictable concomitant of the coming of Spring, with its mysterious quickening of new life, is the inevitable Letter To The Editor proclaiming the appearance—imagined or otherwise—of the first cuckoo. Equally inevitable, although perhaps less portentous, is the annual Trump of Doom which is unfailingly sounded in the correspondence columns of the BULLETIN by some well-intentioned zealot.

Mr G. E. Spark is dead on cue with his solemn pronouncements in the May issue of the BULLETIN, although he is to be congratulated at least in having evinced a deal more industry and preparation than the majority of his lugubrious predecessors. However, the overall effect is equally gloomy if one could believe that his chiding strictures are substantially justified. Unhappily one forms the impression that we have been through all this dreary business before.

Mr Spark (who, with commendable modesty, refrains from flaunting his call-sign) would appear from his letter to harbour only four viable *bêtes noires*, namely: (*a*) Prolixity, (*b*) " *Nauseating* " use of *Q* code during telephony, (*c*) Traditional phonetics and (*d*) " Diction ". When one considers the extravagant catalogues of censure which have appeared in these pages from time to time, it is indeed refreshing to discover a complainant who is willing to restrict himself to four indictments only. When, however, one examines the triviality of these indictments, it is perhaps surprising that the suggested remedy should involve a ponderous syllabus of no fewer than 19 items according to " Spark's Doctrine "—to be attested and annually re-affirmed by the amateur fraternity at large under penalty of the non-renewal of their licences.

The *ne plus ultra* of hilarious absurdity is surely achieved in the suggestion that there exists a case (" much stronger than for Morse ") for " Diction " to be included in the licence examinations. Does your correspondent envisage Elocution being included as a compulsory subject in the RAE Course at local Technical Colleges, and the RSGB Slow Morse Transmissions being supplemented with a programme of Slow Speech readings to enable earnest candidates to attain the required minimum standard of declamation?

Come off it, Mr Spark!

G. C. MOORE, G3MCY

RAF Benson, Oxford

QSLing

Having read the letters in recent issues of the BULLETIN concerning the QSL situation I feel that I must air my views.

I have been an SWL for almost four years and the number of QSLs I have sent in that time totals less than 50.

The reason I send reports is mainly, as G8ON wisely says, to tell stations facts about their transmissions that they do not know already. I feel this is a service we owe to the " amateurs " for the hours of enjoyment that they give us.

Many SWLs feel that the station is under some obligation to " Be a pal and QSL." This is utterly ridiculous and if I am ever lucky enough to get my ticket I am sure that the majority of SWL QSL's will go into the waste bin due to lack of detail.

As a guide to QSLing I find the following very useful.

Do not send reports to:

1·8 Mc/s stations less than 150 miles distant.

3·5 Mc/s British stations and near Europeans.

7 Mc/s All Europeans.

14, 21, 28 Mc/s Europeans and East coast of USA.

On v.h.f., because of varying locations, most stations would probably appreciate a report.

There are, of course, exceptions such as QRP stations or stations needed for awards. Even then the report should be as comprehensive as possible and remember that if G3XYZ down the road worked a DX station it is not much use to the operator to know that you heard him too.

If the operator decides that my report deserves acknowledgment in the form of his QSL, I am duly pleased. I usually send postage with my direct reports (*not* as a subtle form of blackmail) to relieve the operator of as much inconvenience as possible.

So let's be sensible for a change chaps and say, " Hats off to the amateurs."

M. R. ARNOLD, A5271

High Wycombe, Bucks.

The Bulletin

I have been a member of the RSGB for two years and thought it was about time I wrote a letter of appreciation. I wish to say thank you for all the time and effort that must go into the preparation of the BULLETIN. I find this a most interesting and informative publication, and I have learnt a great deal about Amateur Radio from its pages.

My annual subscription is enclosed, together with a modest contribution towards the HQ fund.

Thank you, once again, and every good wish for your success in the future.

W. C. TORODE, BRS26870

London, WC1.

CLUBROOM

A Monthly Survey of Club and Group Activities

For further information on membership or the activities of a particular club, application should be made to the person whose call-sign is indicated at the end of the item. Full addresses may be obtained from the RSGB Amateur Radio Call Book.

FOLLOWING last month's report from Malta, come three overseas contributions for this month's Clubroom. The first is from the Radio Society of East Africa, second from the Malta Amateur Radio Society and third from the Radio Society of Rhodesia. The RSGB has affiliated societies spanning most Continents and *Clubroom* would welcome reports from these. If any overseas member reading this belongs to a local club which is not affiliated, why not persuade them to join. Fees are 10s. 6d. or $1.50 (US) annually and if the society or club can certify that 75 per cent. of members belong to the RSGB this sub is reduced to 5s. or 75 cents (US). For an additional 10s. 6d. annually, affiliated societies receive a copy of the RSGB BULLETIN. These rates are the same for the UK. Advantages of full membership include free use of the RSGB QSL Bureau and free ads in the BULLETIN. To join, send a copy of your society's constitution, a list of club officers, a statement of the number of members and the affiliation fee plus subscription to the RSGB BULLETIN, if required. Further details from RSGB HQ.

Now for the news. From 5Z4HW, president of the Radio Society of East Africa we learn that the Kenya Government is to continue issuing licences. There were also interesting comments from E. Robson, 5Z4ERR who lists the pro's for h.f. Yagis rather than quads. These include the two dimensional properties inherent in Yagi design.

From the Malta Amateur Radio Club Barry Stuart, 9H1AM, sends a lengthy (nine page) letter following *appointment*—press ganged—call it what you will, into PRO. The club now has about 50 members including SWLs. Of interest to UK members may be the G Net held on Sunday mornings on 21150 kc/s at 1000Z. In the chair is 9H1AM.

From the Radio Society of Rhodesia we learn of monthly news bulletins taking place on 3573, 7050 and 7090 kc/s on s.s.b. The last date we have was 4 June and previous to that 14 May so we leave it up to you to work out future transmissions. They take place at 09.30 local Rhodesia time using the call-sign ZE1JSY.

Addiscombe ARC is still meeting regularly and has 50 members. Recent meetings have included a talk on semi-conductor techniques by Ian Davis and a Natter Nite. *G3VLJ.*

From the **AERE (Harwell) ARC** *Newsletter*

"The voice of dissension, heard rather more frequently in the Provinces, proclaims the RSGB to be too remote from the majority of its members. The nebulous image of a rather inert HQ, wherein a faceless Council meets to attend to matters above the concern of the ordinary amateur, continues to persist." (*G2HIF*)

We are doing what we can, but any constructive suggestions on how to change any *Big Brother* image will be very welcome.

Basingstoke ARC's membership is continuing to increase and has now reached 54. The next meeting is scheduled for 15 July, when Peter Steery, G3CBU, will talk on constructional techniques. *G3CBU.*

Bradford RS is now attempting to acquire equipment of its own following this year's NFD. This year it was necessary to borrow members' equipment, a procedure which the club now wishes to change. A recent sale of surplus equipment gave funds a welcome boost, and a raffle for odd items—left over from the sale—at each meeting, is also making a regular contribution. *G3HJP.*

Bromsgrove and District ARC's Mobile Picnic will be held on Sunday afternoon, 27 August, on Doderhill Common with G2CLN providing talk-in. On 8 July the club is staging an exhibition station at Townsend Farm, Bromsgrove, Methodist Fete. *G3VGG.*

Cambridge and District ARC has a rather unusual accommodation problem. The club's junior section recently had a very good write-up in the local press, and now the youngsters are turning up in such numbers that it is becoming difficult to house them all. It is something that the older members are putting up with quite cheerfully, even if soldering irons are wielded rather dangerously at times!

The **Civil Service RS** meets on the third Tuesday of each month, until August, after which, meetings will be held on the first and third Tuesdays of the month. At the meeting on 16 May, Major Hesse, of the USAF, lectured on the American Space programme and included in his talk a colour film of man's first walk in space with commentary by the late Lt. Col. Edward White. *G3KGM.*

From **Clifton ARS** the following report: "It is perhaps a sign of the times that nobody took a Morse key to the NFD trial at Farleigh! Keying was achieved with a six-inch nail plus a leather glove for the operator."

A group of members also operated G8APV/P from Tatsfield during a recent 70cm contest. *G3JKY.*

Crawley ARC will be holding its Annual Mobile Evening at the layby on the south side of the Guildford-Farnham Road, halfway along the Hog's Back on Wednesday, 26 July. Nothing has been organized, but all are welcome to participate. Recent events included NFD and the application for a Club licence. *G3FRV.*

Dorking and District RS continues to meet regularly, with participation in v.h.f. contests taking preference over h.f., hence the absence from NFD. And now for episode two of the continuing story of the ex GPO van. A replacement cylinder head has been located and it is hoped the van will be on the road again shortly. Episode three next month? *G3MBK.*

Harrow RS received a lecture from RSGB Vice-President John Graham, G3TR, on 5 May. The subject of his lecture—Air Traffic Control—was well illustrated with monochrome 35mm slides showing details of radar systems used by Gatwick Airport. On 19 May the Constructional Contest was held with 30 entries from senior members and two from junior. After much deliberation, the winner was chosen—G3HBW with his fully transistorized all-band transceiver, incorporating a frequency synthesizer with the receiver tuning 10 kc/s to 31 Mc/s. Second prize went to G3UHN for a mobile transceiver, and third prize to Malcolm Pym with his h.f. converter. An automatic telephone exchange capable of handling 10 lines gave David Looser the Junior Cup. *G3JVM.*

Mid-Hertfordshire ARS raffled high grade equipment at the June meeting to produce a welcome addition to club funds. After the draw club chairman G3AAZ promised an even greater

Attending a recent meeting in the Isle of Man, were *Back Row, L to R* **GD3VWN, SWL Dickenson and Parnell, GD3PRO, GD3JIV, GD3IWP, GD3FXN, GD3FOC.** *Middle Row, L to R* **SWL Kennaugh, GD3RFK, SWL Powell, GD3VEM.** *Front Row, L to R* **GD3FBS, G2AMV, GD3TIU, SWL McEvoy and Malarky.**

(Photo by courtesy of the Isle of Man Weekly Times)

sale during the July sausage supper. The NFD inquest and V.H.F. NFD planning were taped to record members comments and suggestions for future years. *G3PKV.*

Lothians RS report an excellent constructional competition last month. The standard of equipment entered reached a high, which is gratifying in days of commercial equipment. First prize went to Alister Mitchell, GM3UDL for his 2m transmitter. Later in the month Tom Simpson, GM3BCD spoke on his 23cm activities and aired his views on v.h.f. activity in Scotland. *GM3SRV.*

Mansfield ARS is in the process of arranging a visit to the Radio Telescope at Jodrell Bank in the near future, but in the meantime no programme has been arranged. *G8HX.*

After the effort that must have gone into the production of *Challenge* the 26 page magazine of the **Norfolk ARC** we feel obliged to give it a mention. Some of the features included, "A Few Facts on Sunspots," by P. J. Gowen, G3IOR, "Topical Technics," by WW! and "Electronics Glossary". And from Electronics Glossary: Crystal Counter—Bench in Jewellers Shop. Fringe Area—Edge of Mini-Skirt, etc. Other activities included participation in NFD, followed by a Post Mortem and a Junk Sale (to dispose of NFD gear?). *G3PNR.*

Northern Heights ARS recently heard G3TCS lecture on his home-built linear amplifier and again entered NFD (not with the linear!). On 5 July a visit to Holme Moss Television station has been organized with a D/F foxhunt taking place on 19 July. *G3MDW.*

Purley and District RC met on 5 May for the usual Natter Nite followed on 19 May by an excellent talk on v.h.f. presented by John Hobbs, G3JQN. The club is continuing to increase in size and during the past year it has had a net increase of 26 members. Despite rising costs they are still able to keep the annual Sub to 5s. for the coming year. *G3FTQ.*

Reigate ATS participated in NFD during the first weekend in June and members are very satisfied with the score obtained of about 1700. The only complaint was from an overweight member whose chair kept sinking into the mud! The committee was very pleased to see a large proportion of the young SWL members of the club present, and was impressed by their keenness and enthusiasm. *G3NKS.*

Silverthorn RC reports a generous equipment donation by the family of the late George Clark, G3NJL, In order to perpetuate his memory, it has been decided to provide a trophy to be given annually to the club member constructing the best equipment during the year. *G3SGF.*

Southgate RC will be meeting on 13 July at Parwood Girls School, Wood Green, when committee members will *waffle* for 15 minutes on a subject of their own choosing. Members are also reminded that there will be no August meeting, the next meeting following July being a Junk Sale in September. The club continues in vain to find a new QTH and any suggestions on this point would be welcomed by G8ANJ. *G8ANJ.*

South Manchester RC has written for the first time for many months to " allay any fears that the Club has become extinct." The SMRC now has 34 fully paid up members and ensures a good future by having a reasonable number of young members. It is interesting to note that in a recent Constructional Contest, the first three places were taken by younger members. *G3SMM.*

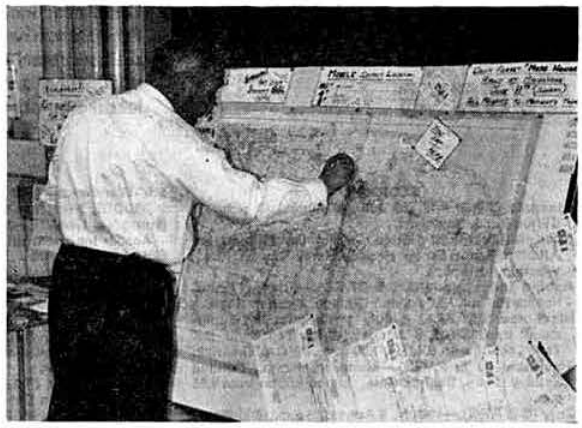
Stoke on Trent ARS continues to meet at 2 Racecourse Road, Stoke on Trent where at the recent AGM the following officers were elected President, J. Brindley, Chairman, K. H. Parkes and Secretary A. Bucknall. The Society meets on Thursdays at 7.30 p.m. *G6TES/T.*

Stourbridge and District ARS met on 4 July when Frank Bills, G3CLG, talked on Tape Recorders. Stourbridge is another club looking for new premises, suggestions to R. A. G. McIntosh 50 Field Lane, Oldswinford, Stourbridge, Worcestershire. *G3BMY.*

Sutton Coldfield RS met on 8 May for an interim AGM to elect a new Chairman and Committee member. The following were elected Chairman, A. V. Williams, and to the position of committee member Ted Workman. Following the AGM a Junk Sale was held, auctioneer being Alan Denniss. *G3LNN.*

Thames Valley ARTS reports a well supported and successful NFD, and it is hoped that this year's result will show an improvement over 1966. Meetings continue to be held at the Court Restaurant, Hampton Court, at 8.30 p.m. on the first Wednesday of the month. *G3JKA.*

Mid Warwickshire ARS reports high activity at the club with the enlarging of the club shack to accommodate more transmitting equipment. The club now meets formally on Mondays and for a trial period it holds an activity night on Thursdays. *G3UOD.*



G3TXJ, Chairman of the Medway Amateur Radio and Transmitting Society, adjusting positions on a map during its recent Mobile Rally.

(Photo by G3TVH)

Westmorland RS now seems to be settling down, with reasonable support at meetings. On 28 May the Society held a Field Day at Flookburgh near Grange over Sands which despite heavy rain and thunder was well attended. *G3UEC.*

Wolverhampton ARS held its Annual Dinner on Monday, 15 May and reports a small profit which has since been added to club funds. Earlier on 1 May, G3THW won a construction contest with his 23cm converter and 70cm varactor tripler. G3RWR recently described a home constructed s.s.b. receiver and surprised many with his thoughts on modern receiver design. The present trend it would appear is towards single conversion and t.r.f. design. How long before the crystal set is re-discovered was one comment passed. *G3UBX.*

Worthing and District RC entertained G3PLX on 23 May who presented an excellent lecture on RTTY. The club station is now operational on 70·26 Mc/s, on which frequency there are always four or five mobiles to work (in Worthing at least!). *G3LQI.*

Newsletters were also received from the **Cornish RAC, Coventry ARS, Cray Valley RS, Echelford ARS, Guildford and District RS, RS of Harrow, North Kent RS, RAIBC, Saltash and District ARC,** and **Southgate RC.**

It would be of assistance to the compiler of " Clubroom " if reports could be concise, typed double spaced and submitted before the final deadline if at all possible. In hand written reports, please spell unusual words in block capitals.

Deadline for the **August** issue is **8 July** and for the September issue **10 August.**

Coax or Twin

The tenth paragraph of a letter from E. G. Wagner published last month on page 398 should have read as follows:

If twin feeder is used on transmission, the current in one leg will be 180° out of phase with the current in the other leg and their radiation will cancel. If twin feeder is used in reception the current in the two legs will be in phase, and will therefore not affect reception after use of a balun.

Corresponding with Headquarters

Members who correspond with Headquarters and cannot type are asked to print their name and address on letters. This will greatly assist Headquarters staff and help to avoid replies being misdirected.

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. Standing instructions cannot be accepted.

REGION 1

Ainsdale (ARS).—12, 26 July, 9 August, 8 p.m., 77 Clifton Road, Southport.

Allerton (Liverpool) (SRHS).—Thursdays, 8 p.m., 3rd Allerton Scout Group Headquarters, Church Road, Woolton, Liverpool.

Ashton under Lyne (AUL & DARS).—Fridays, 7 p.m., Rooms F52 and F53, Ashton College, Beaufort Road.

Blackburn (ELARC).—6 July ("Constructing Equipment" by G3SXC), 3 August (WIBB Top Band DX Tape Lecture with Slides), 7.30 p.m., YMCA, Limbrick.

Blackpool (B & FARS).—Mondays, 8 p.m., Pontins Holiday Camp, Squires Gate. Morse tuition from 7.30 p.m.

Bury (B & RRS).—11 July, 8 August, 8 p.m., Old Boars Head Hotel, Crompton Street (private room).

Chester (C & DARS).—Tuesdays, 11 July ("Our Shacks" by Messrs. Walsh & Mather), 18 July (President's Night—G3EWZ), 25 July (Brains Trust arranged by G3ETH), 1 August (Net Night), 8 p.m., YMCA, Chester.

Crewe & District.—7 August, 8 p.m., Nantwich Road Social Club.

Eccles (E & DRC).—Tuesdays, 8 p.m., Patricroft Congregational Schools, Shakespeare Crescent, Patricroft. Every Thursday Club Top Band net 20.30 hours.

Liverpool (L & DARS).—Tuesdays, 8 p.m., Conservative Association Rooms, Church Road, Wavertree.

(ULARS).—No more meetings until October owing to examinations.

Macclesfield (M & DRS).— 18 July, 1 August, 8 p.m., The George Hotel, Jordangate.

Manchester (M & DARS).—Wednesdays, 7.30 p.m., 203 Droylsden Road, Newton Heath, Manchester 10.

(SMRC).—Fridays, 7.45 p.m., Rackhouse Community Centre, Daine Avenue, Northenden.

Morecambe.—5 July, 2 August, 125 Regent Road.

North West V.H.F. Group.—Tuesdays, 8 p.m., Club Headquarters, Chapeltown Street, Manchester 4.

Preston (PARS).—13 July, 10 August, 7.30 p.m., "Windsor Castle" (private room), St. Paul's Square.

St. Helen's (SES).—11, 25 July, 8 August, 7.30 p.m., IVS Centre, 55 College Street.

Southport (SRS).—Wednesdays, 8 p.m., and Sundays, 2.30 p.m., The Esplanade. D/F Contest on first fine Sunday each month. 12 July (Capacity Measurement by G3BLX), 19 July (Transistor Dip Oscillator by G3OYC), 26 July (Lining Up Domestic Receivers by N. K. Waring), 2 August (Rectification by G3OYC).

(73 S.S.B. Society).—Tuesdays, 8 p.m., (all commencing with a talk on part of the RAE Syllabus), 73 Avondale Road North, Southport.

Stockport.—12 July (4 metres by G3DHH), 26 July (Talk by G4HK), Royal Oak Hotel, Castle Street, Edgeley. (Please note change of address.)

Warrington—Culcheth (CARC).—Fridays, 7.30 p.m., The Harrow Inn, Culcheth.

Wirral (WARS).—19 July, 2 August, 8 p.m., Harding House, Park Road West, Claughton, Birkenhead.

REGION 2

Bradford (BRS).—18 July ("RTTY," by D. M. Pratt, G3KEP), 7.30 p.m., Bradford Technical College, Great Horton Road, Bradford.

Northern Heights.—19 July (Arrangements for D/F Foxhunt and JOTA), 26 July (Visit to Manchester & District Radio Club), 2 August (Communications in Modern Industry," by J. Hodgson), 7.45 p.m., Sportsman Inn, Ogden, Halifax.

Scarborough (SARS).—Thursdays, 7.30 p.m., rear of 3 Trinity Road, Scarborough.

REGION 3

Birmingham (MARS).—Third Tuesday in the month, 7.45 p.m., Midland Institute.

(South).—Third Wednesday in the month, 8 p.m., Scout Hut, Pershore Road.

Bromsgrove (B & DARC).—Second Friday in the month, 8 p.m., Co-op Hall.

Cannock (CCARS).—First Thursday in the month, Bridgtown Social Club, Walsall Road, Cannock.

Dudley (DARC).—14 July, 28 July, 8 p.m., Art Gallery, Dudley.

Mid-Warwickshire (MWARS).—10 July ("Radar," by G3UOD), 7 Regent Grove, Leamington.

Nuneaton (NARS).—Fortnightly commencing 6 July, Anchor Inn, Hartshill.

Salop (SARS).—13 July (Visit to Jodrell Bank), 27 July (Station Activities), Old Post Office Hotel, Milk Street, Shrewsbury.

Stourbridge (STARS).—7.45 p.m., The Library, Longlands School, Stourbridge.

Stratford (S-u-A & DRC).—30 July (D/F Qualifying Event). Open House alternate Thursdays, 8 p.m., Halls Croft, Old Town.

Sutton Coldfield (SCRS).—10 July, 26 July, The Fox, Walmley, Sutton Coldfield.

Wolverhampton (WARS).—17 July, 8 p.m. (Discussion on V.H.F.), Nechells Cottage, Stockwell Road, Tettenhall.

Worcester (W & DARC).—Informal meeting each Saturday, 8 p.m., 35 Perdiswell Park, Droitwich Road, Worcester.

REGION 4

Burton-on-Trent (B-o-T & DARS).—16 July (D/F Contest—7 mile radius centre of Tutbury, 3 p.m. to 5 p.m. Start at SK 280210), 26 July (D/F Practice—7 mile radius centre of Ticknall, 7 p.m. to 9 p.m. Start at SK 241349).

Derby (D & DARS).—5 July (Surplus Sale), 12 July (Colour TV—Part I), 19 July (Film Show), 26 July (Colour TV—Part II), 7.30 p.m., Room 4, 119 Green Lane, Derby.

Grimsby (GARS).—13 July (D/F Hunt—Long Distance), 27 July (Visit to Immingham Dock and Ships Radio), 7.30 p.m., Grimsby Model Engineers Club Room, Fletchers Yard, Wellowgate, Grimsby.

Leicester (LRS).—Mondays, 7.30 p.m., Sundays, 10.30 a.m., Club Room, Gilroes Estate Cottage, Groby Road, Leicester.

Loughborough (LARC).—7 July (Colour Television by L. Sharrock, G3BNL), 7.30 p.m., Club Rooms, Bleach Yard, Wards End, Loughborough.

Newark (NSWC).—Mondays, Thursdays, 7.30 p.m., The Guildhall, Guildhall Street, Newark.

Nottingham (ARCN).—Tuesdays, Thursdays, 7.30 p.m., Room 3, Sherwood Community Centre, Woodthorpe House, Mansfield Road, Nottingham.

Peterborough (P & DARS).—Fridays (8 p.m., Informal), Old Windmill, behind The Peacock Inn, London Road (opposite Murkitts Garage).

Worksop (NNARS).—Tuesdays (RAE Class), Thursdays (Lecture Night), 7.30 p.m., Club Room, 13 Gateford Road, Worksop.

REGION 5

Bedford (BARC).—HQ "Dolphin Inn," Broadway, Bedford. Apply to Ken Hatton (Honorary Secretary), G3BVA, for details of programme.

Cambridge (C & DARC).—Fridays, 7 July ("Mobile" Demonstration by Members), 14 July (Talk and Demonstration on Transverters—Richard Baker, G3USB), 7.30 p.m., Club Headquarters, Corporation Yard, Victoria Road, Cambridge.

Luton (L & DARS).—Tuesdays, 8 p.m., ATC Headquarters, Crescent Road, Luton, Bedfordshire.

March (M & DARS).—Tuesdays, 7.30 p.m., rear of Police Headquarters, High Street, March, Cambridgeshire.

Royston (R & DARC).—Wednesdays 8 p.m., Manor House, Melbourn Street, Royston, Hertfordshire.

Shefford (S & DARS).—13 July (Club Quiz), 20 July (Programme Planning), 27 July (Modulation Techniques—G3ROL), 3 August (Aerials and ATU's—G2DPQ), Thursdays 7.45 p.m. (Morse Classes). Meetings 8 p.m., Church Hall, High Street, Shefford, Bedfordshire.

REGION 6

Cheltenham RSGB Group.—First Thursday each month, 8 p.m., Great Western Hotel, Clarence Street, Cheltenham.

Gloucester (GARS).—13, 27 July, 7.30 p.m., Lamb Inn, Market Parade, Gloucester.

Oxford (O & DARS).—Second and fourth Wednesday in the month, 7.30 p.m., Cherwell Hotel, Water Eaton Road, North Oxford.

REGION 7

Acton, Brentford and Chiswick (ABCRC).— 18 July, (Discussion—"Solid State Field-Day Gear"). Chiswick Trades and Social Club, 66 High Road, Chiswick.

Addiscombe (AARC).—25 July, 7.30 p.m., 158 Lower Addiscombe Road (Toc H. Hall).

Ashford (Middlesex) Echelford (ARS).—13, 27 July, 7.30 p.m., St. Martin's Court, Kingston Crescent, Ashford.

Bexleyheath (NKRS).—13 July (K.W. Electronics), 27 July (Members' Projects), 8 p.m., Congregational Church Hall, Chapel Road, Bexleyheath.

Chingford (SCR).—16, 30 July, 8 p.m., Friday Hill House, Simmons Lane, Chingford, E4.

Croydon (SRCC).—20 July, 7.30 p.m., Blue Anchor, South End.

Dorking (D & DRS).—11 July, 8 p.m., Wheatsheaf, 25 July, 8 p.m., Star & Garter, Dorking.

Ealing (E & DARS).—Tuesdays, 7.30 p.m., Northfields Community Centre, Northcroft Road, Ealing, W13.

East Ham.—First and third Thursdays, 7.30 p.m., 12 Leigh High Road, East Ham.

East Molesey (TVARTS).—First Wednesday, 7.30 p.m., Prince of Wales, Bridge Road, East Molesey.

Edgware & Hendon (EADRS).—10, 24 July, 8 p.m., John Keble Hall, Church Close, Deans Lane, Edgware.

Gravesend (GRS).—Third Wednesday each month, 8 p.m., RAFTA Club, Overcliff Road.

Guildford (G & DRS).—7, 23 July, 8 p.m., Guildford Engineering Society in Stoke Park.

Harlow (DRS).—Tuesdays and Thursdays, 7.30 p.m., Mark Hall Barn, First Avenue.

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

Havering (H & DARC).—12 and 26 July, 7.30 p.m., Romford.

Holloway (GRS).—Wednesdays and Fridays, 7.30 p.m., Montem School, Hornsey Road.

Hounslow (HADRS).—14, 28 July, Canteen, Mogden Main Drainage Department, Mogden Works, Isleworth.

Ilford.—Thursdays, 8 p.m., 103 Heath Road, Chadwell Heath, Romford.

Kingston (K & DARS).—Second Wednesday each month, 8 p.m., YMCA, Eden Street.

Leyton and Walthamstow.—11, 25 July, 7.30 p.m., Leyton Senior Institute, Essex Road, London, E10.

London U.H.F. Group.—6 July, 7.30 p.m., White Hall Hotel, Bloomsbury Square, Holborn.

Loughton.—14, 28 July, 7.30 p.m., Loughton Hall (nr. Debden Station).

Maidenhead (N & DARC).—18 July, 7.30 p.m., Victoria Hall, Cox Green, Maidenhead.

New Cross.—Wednesday and Fridays, 8 p.m., 225 New Cross Road, London, SE14.

Norwood & South London (CP & DRS).—Third Saturday of each month, 8 p.m., C.D. Training Centre, Wood Yates Road, SE12.

Paddington (P & DARS).—Wednesdays, 7.30 p.m., Beauchamp Lodge, 2a Warwick Crescent, W2.

Purley (P & DRC).—7, 21 July, 8 p.m., Railwaymen's Hall, Side Entrance, 58 Whytecliffe Road, Purley.

Reigate (RATS).—12 July, 7.30 p.m., George & Dragon, Cromwell Road, Redhill.

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

Science Museum (CSRS).—11 July, 6 p.m., Science Museum, South Kensington.

Scouts (SARS).—20 July, 7.30 p.m., Baden Powell House, Queensgate, South Kensington, SW7.

Sidcup (CVRS).—6, 20 July, 8 p.m., All Saints Church Hall, Bereta Road, New Eltham.

Slough (SDR Group).—First Wednesday every month, 8 p.m., United Services Club, Wellington Street.

South London Mobile Club.—8, 22 July, 7.30 p.m., Clapham Manor Baths, SW4.

Southgate & District.—10 July, 7.30 p.m., Parkwood Girls' School (behind Wood Green Town Hall).

St. Albans (Verulam ARC).—16 July, 7.30 p.m., Cavalier Hall, Watford Road, St. Albans.
Sutton & Cheam (SCRS).—13 July, 8 p.m., The Harrow Inn, High Street, Cheam.
Welwyn (Mid Herts ARS).—13 July, 8 p.m., Welwyn Civic Centre, Welwyn.
Wimbledon (W & DRS).—14 July, 8 p.m., St. George's Road, Wimbledon, SW19.
Wembley (GECARS).—Every Thursday, 7 p.m. This Club is open to non-GEC Employees by invitation. Telephone ARNold 1262 first. Sports Club, St. Augustin Avenue, North Wembley.

REGION 8

Canterbury (EKRS).—1 August ("Receivers," by D. N. T. Williams, G3MDO), Further details of future events from Honorary Secretary D. N. T. Williams, G3MDO.
Crawley (CARC).—12 July (Informal for details contact G3FRV), 26 July (Annual Mobile Evening), Hog's Back, Guildford, at lay-by on Guildford-Farnham Road, all visitors welcome, 8 p.m.
Medway (MARTS).—17 July (Visit to GPO station at Tolsford Hill, nr Folkestone), 22 July (Club Exhibition Station GB3BP at BP Family Day, BP Club, Hoo).
Worthing W & DARC).—11 July (V.H.F. NFD arrangements and V.H.F. procedure discussion).

REGION 9

Bath.—21 July, 7.30 p.m., RNR Training Centre, James Street West, Bath.
Bristol RSGB Group.—Details to be announced in Newsletter.
(BARC).—Mondays and Thursdays, 7.30 p.m., 43 Ducie Road, Barton Hill, Bristol 5.
Burnham-on-Sea (BoSARS).—Second Tuesday in each month, 8 p.m., Crown Hotel, Oxford St., Burnham-on-Sea.
Camborne (CRAC).—First Thursday in each month, Staff Recreation Hall, SWEB Headquarters, Pool, Nr. Camborne.
(CRAC V.H.F. Group).—Third Thursday in each month, 7.30 p.m., The Coach and Horses, Ryder Street, Truro.
Exeter.—First Tuesday in each month, 7.30 p.m., George & Dragon Inn, Blackboy Road, Exeter.
Plymouth (PRC).—Tuesdays, 7.30 p.m., Virginia House, Bretonside, Plymouth.
Saltash (S & DRAC).—Alternate Tuesdays, 7.30 p.m., Burraton Toc H Hall, Warraton Road, Saltash.
South Dorset (SDRS).—First Friday in each month, 7.30 p.m., Labour Rooms, West Walks, Dorchester.
Taunton.—Alternate Thursdays, 7 p.m., Lecture Theatre, Taunton Technical College.
Torquay (TARS).—Last Saturday in each month, 7.30 p.m., Club HQ, Belgrave Road, Torquay.
Wells (WARS).—Mondays from 8 p.m., EMIE (Wells) Sports and Social Club, Chamberlain St., Wells, Somerset.
Weston-super-Mare.—First Friday in each month, 7.30 p.m., Technical College.
Yeovil (YARC).—Wednesdays, 7.30 p.m., Park Lodge, The Park, Yeovil.

REGION 10

Blackwood (ARC).—Fridays (Lecture Programmes with section devoted to RAE), 7.30 p.m., Blanche Cottage, off High Street, Blackwood, Mon.
Cardiff (RSGB Group).—10 July (Discussion of RAEN), 7.30 p.m., TA Centre, Park Street, Cardiff.
Pembroke (RSGB Group).—Sunday, 16 July, Bucket and Spade Party, Regency Hall, Saundersfoot, Pem.

REGION 11

Llandudno (CVARC).—20 July (Activity Evening), operating a portable from a site on the Great Orme, Llandudno.

REGION 14

Ayrshire (AARG).—12, 26 July, 7.30 p.m., Seaforth House, Seaforth Road, Ayr.
Auchenharvie (A & DARS).—11, 13, 18, 20, 25, 27 July 7.30 p.m. Auchenharvie Community Centre, Stevenston.
Glasgow RSGB Group.—14, 28 July, 7.30 p.m., Christian Institute, Bothwell Street, Glasgow.
Glasgow University (GURC).—12 July, 7.30 p.m., Engineering South Building, University of Glasgow.
Lowland Royal Signals (ARC).—11, 13, 25 July, 7.30 p.m., 21 Jardine Street, Glasgow.
Greenock (G & DARC).—14, 28 July, 7.30 p.m., Arts' Guild, Campbell Street, Greenock.
Mid-Lanark RSGB Group.—21 July, 7.30 p.m., Carfin Hall, New Stevenston, Motherwell.

REGION 16

Basildon (BDARS).—Details from G3IJB.
Chelmsford (CARS).—No meeting in August.
Colchester (CARC).—Meetings each Wednesday during term, 7 p.m., Room 40, Colchester Technical College, Sheepen Road, Colchester. RAE class Tuesday evenings. Details from G3SJO.
Great Yarmouth (GYRC).—Fridays, 7.30 p.m., The Manager's Office, the Old Power Station, Swanstons Road, Great Yarmouth.

OFFICIAL REGIONAL MEETING
REGION 10

University College, Park Place Cardiff

Saturday, 16 September

Tickets 12s. 6d.

Full details will be published in the August and September Bulletins.

REGION 14

Event: Mobile Rally & ORM
Month: September, 1967
Venue: South West Scotland

Full Details Next Month

Ipswich (IRC).—26 July ("Stable Power Pack" by G3UJR), 7.30 p.m., Red Cross HQ, Gippeswyk Hall, Ipswich. 17 August, Visit Tolly Cobbold (Brewery).
Norwich (NARC).—Meetings every Monday at Old Lakenham Hall, Mansfield Lane, Norwich.

REGION 17

Basingstoke (BARC).—Third Saturday in the month (except August), 7 p.m., Immanuel Hall, Wote Street.
Harwell AERE (ARC).—Third Tuesday in the month, 7.30 p.m., Social Club, AERE Harwell.
Portsmouth (P & DRS).—Wednesdays, 7.30 p.m., Room 5, Twyford Avenue Community Centre, Portsmouth.
Southampton (RSGB Group).—Second Saturday in the month, 7 p.m., Engineering Lecture Theatre, Lanchester Building, The University, Southampton.

LOOKING AHEAD

13 August.—Region 1 (NW) V.H.F. Field Day.

26 September.—Electronics, Instruments, Controls and Components Exhibition and Convention, Belle Vue, Manchester.

27-30 September.—RSGB International Radio Engineering and Communications Exhibition, New Horticultural Hall, Vincent Square, SW1.

Can You Help

● D. Byrne, G3KPO, Jersey House, Eye, Peterborough, who requires information on the Avantic SP21 control unit?

● S. Haseldine, A5114, 31 Ellesmere Road, West Bridgford, Notts., who wishes to borrow or purchase a handbook for the R1475 receiver? He would also like to tape-spond with any other SWL around the age of 16. Tapes should be recorded at 3¾ i.p.s. on a maximum spool size of 5¾ in. Four track recordings can be played.

CONTESTS DIARY

8-9 July	—1·8 Mc/s Summer Contest
16 July	—Oxford D/F Qualifying Event
23 July	—Third 70 Mc/s Contest (Portable)* (see page 340, May)
30 July	—Stratford-upon-Avon D/F Qualifying Event
12-13 August	—Second 432 Mc/s Contest (Open)* (see page 474)
2-3 September	—V.H.F. NFD/IARU Contest (see page 108, February, 1967)
10 September	—80 Metre Field Day (see page 259, April)
7-8 October	—Second 1296 Mc/s Contest (Open)*
7-8 October	—RAEN Contest (see page 465)
7-8 October	—VK/ZL Oceania DX (Phone) Contest 1967
14-15 October	—RSGB 21-28 Mc/s Telephony Contest (see page 257, April)
14-15 October	—Third 432 Mc/s Contest (Open)*
14-15 October	—VK/ZL Oceania DX (C.W.) Contest 1967
15 October	—D/F National Final
28-29 October	—RSGB 7 Mc/s DX Contest (Phone) D/F National Final
11-12 November	—RSGB 7 Mc/s DX Contest (C.W.)
18-19 November	—Second Top Band Contest
3 December	—Fourth 70 Mc/s Contest (C.W.)

*Qualifying contests for V.H.F./U.H.F. Listeners' Championship.

K.W. Corner

Dartford,

Dear O.M.,

Just recently we have received more than our usual quota of bouquets, particularly regarding the KW2000A Transceiver. I suppose that it is because of the increasing competition from abroad, and the general feeling amongst many radio amateurs in this country that they support British industry. You are, of course, getting full value, as there is no tax whatsoever on this type of equipment unless it is imported, and then the Customs duty amounts to 17½% of the invoiced value plus freight charges.

The most frequent favourable comment that we hear about the KW2000A is about the I.R.T. (independent receiver tuning) control which to many is a "God-send." This control is particularly useful for c.w. operation and, incidentally, if you require additional selectivity in the receiver section, we offer the facility of our "Q" Multiplier which can easily be connected at the plug at the rear of the transceiver. There are not many transceivers available with these two facilities, and as far as I know the KW2000A is the only transceiver available with Top Band, a facility which sells the equipment in the USA. Then, of course, there are no extras to buy as upper and lower sideband switching is provided, also vox control and 100 kc/s crystal calibrator. Also automatic linearity control is included in the transmitter section, and special attention has been given to TVI proofing. Altogether in the KW2000A you have 14 crystals, besides such facilities as selectors to the mains transformers for 200/250v. or 100/125v. Just compare this value with the competition—we certainly value your support, and your support helps us to design, develop and produce more equipment which in no small way helps the country's export effort.

One other point this month that will interest you is that we are expecting shortly to offer cubical quad antennas with fibre-glass spreaders, and for the DX man this may be well worth waiting for. See you next month.

Yours faithfully, **ROWLEY SHEARS** Sgd.
Managing Director, G8KW

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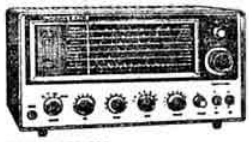

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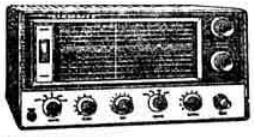

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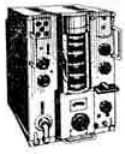

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(Reference M3D/62916/RC)

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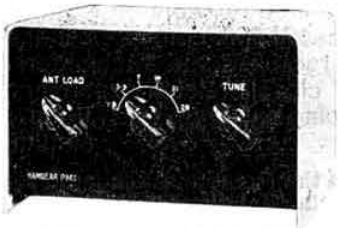

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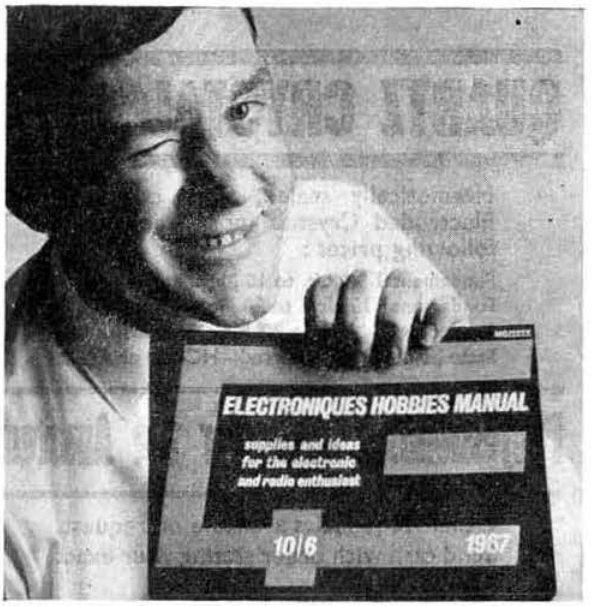

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Antenna Roundup (Vol. 2, *CQ*)	30/–
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CQ Anthology, 1952–59, (*CQ*)	23/6
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World Radio-TV Handbook (1967)	32/–

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Listener's and Observer's Log	7/3
Martin's Log	22/6
Mobile Mini-Log	3/10
RSGB Standard Log	7/3
RSGB V.H.F. Contest Log	7/3
Radio Station Log	7/3

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Easibinder Year Stickers (1965, 1966 or 1967)	1/6
Great Circle Maps (Admiralty) (in postal tube)	8/–
RSGB Countries List	1/–
Transfers, Panel Signs (*Data*)	
Set 3: white wording	4/9
Set 4: black wording	4/9
Set 5: dials (clear background)	4/9
Set 6: dials (black background)	4/9
Blick Dry Print Lettering (letters and numerals, black)	2/6

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