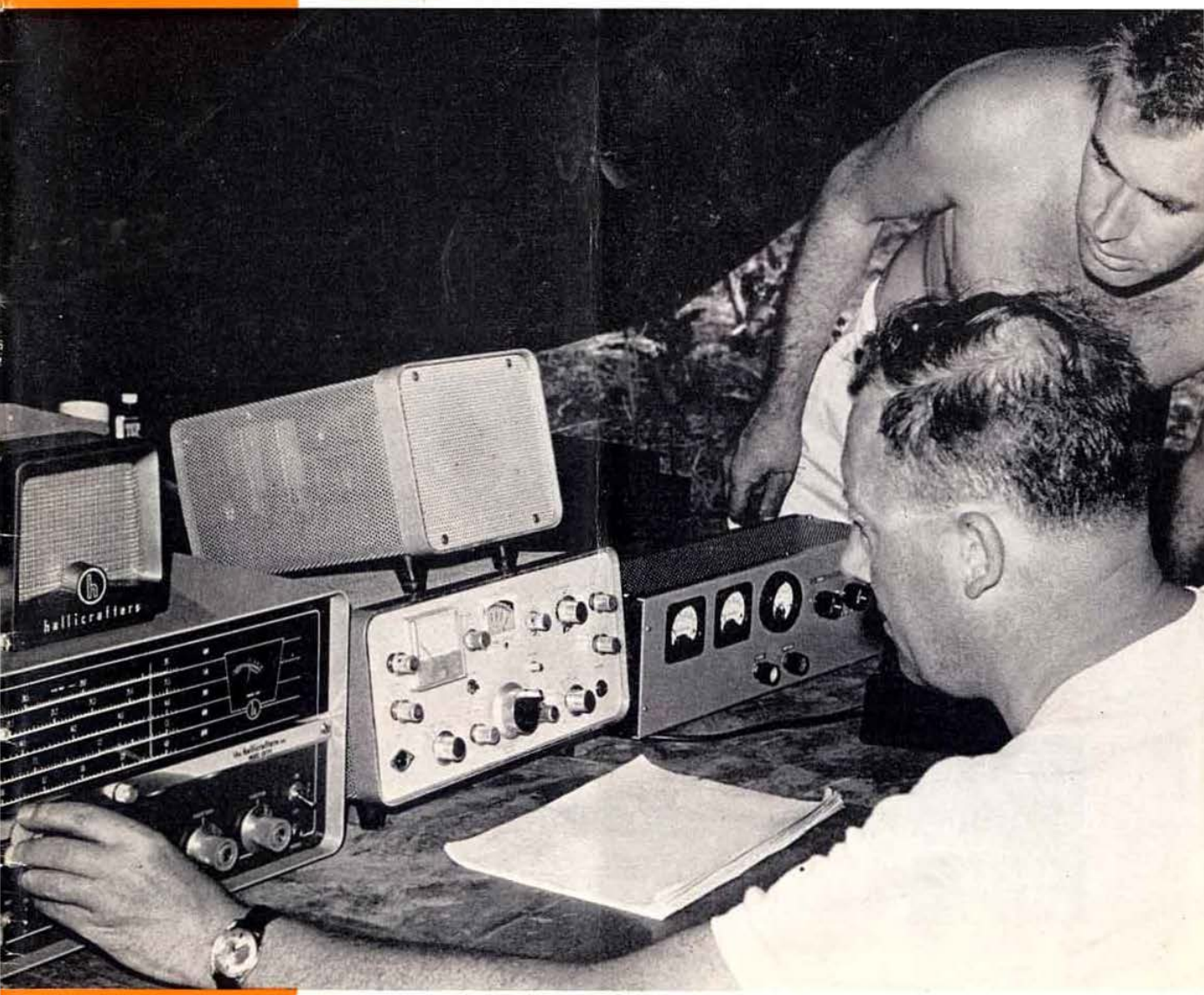
JULY 1968

Radio Communication

JOURNAL OF THE RADIO SOCIETY OF GREAT BRITAIN

5B4SS/P



incorporating RSGB BULLETIN

RADIO COMMUNICATION

ASSISTANT EDITOR
Trevor R. Preece, G3TRP

EDITORIAL ASSISTANT
David A. Evans, G3OUF

CONTRIBUTING EDITOR
Pat Hawker, G3VA

DRAUGHTSMAN
Derek E. Cole

ADVERTISING MANAGER
Mrs P. D. Harvey

EDITORIAL OFFICE
RSGB Headquarters
28 Little Russell Street,
London, WC1
01-405 7373
01-405 2444

ADVERTISING OFFICE
Sawell and Sons Ltd.,
4 Ludgate Circus,
London EC4
FLE 4353

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CLOSING DATES

AUGUST
12 JULY

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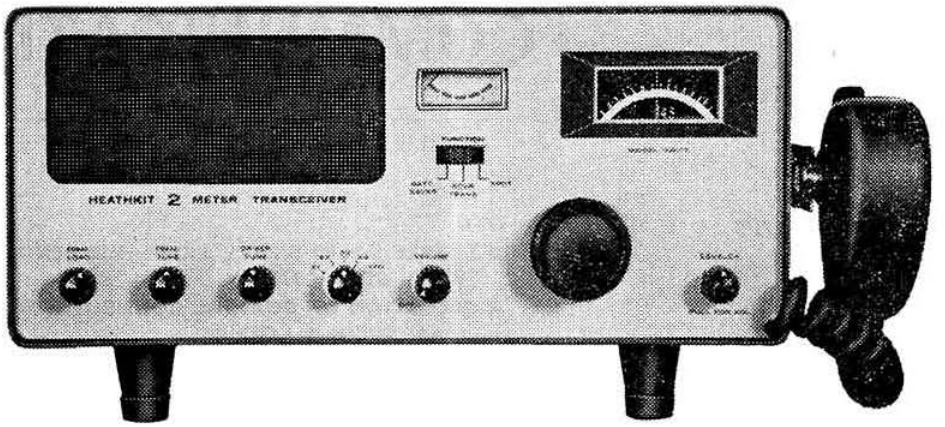
INDIVIDUAL COPIES 4/-.

JULY 1968
VOLUME 44 No. 7

HEATHKIT NEW HW-17 2-METER AM TRANSCEIVER



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Another new Heathkit transceiver . . . this time it's a solid-state 2-Metre AM job that's just right for local ragchewing, NETS, DX,

. . . reasonable power output, sensitive receiver, easy-to-use features, and a low price tag.

The Heathkit HW-17 in detail. It's really a separate receiver and transmitter in one compact, versatile package (the only common circuitry are the power supply and the audio output/modulator). Frequency coverage is 143.2 to 148.2 MHz. The solid-state dual conversion, superheterodyne receiver with a pre-built, pre-aligned FET tuner has a lighted dial with 100 kHz calibration, automatic noise limiter, squelch, and 1uV sensitivity. Selectivity is 27 kHz at 6 dB down, a figure that's consistent with band occupancy and easy receiver tuning. The front panel meter indicates received signal strength and relative power output. A 3-position switch on the front panel has a "Spot" position for finding the transmit frequency on the tuning dial, a Receive/Transmit position, and a Battery-Saver position that comes in handy during those long periods of monitoring while mobile (the receiver draws only 8 watts during this time). A 3" x 5" speaker is built in.

On the transmission end is a hybrid circuit including transistors and valves, with an 18 to 20 watt power input and an AM power output of 8 to 10 watts. Modulation is automatically limited to less than 100%. A front panel selector switch chooses any of four crystal frequencies or an external VFO (the Heathkit HG-10B VFO at £21 15s. is perfect for this job).

Front panel controls include Final Load, Final Tune, Crystal-VFO switch, Main Tuning, Squelch with ANI switch, Battery Saver-Receive/Transmit-Spot switch; rear panel has S-meter Adjust, Headphone jack, Power socket, VFO power socket, VFO input, and Antenna connector (50-72 ohms, unbalanced).

The 15 transistor, 18 diode, 3 tube circuit is powered by a built-in 120/240V AC supply. Circuit board construction averages 20 hours. It's all housed in a low-profile Heath grey-green aluminium cabinet measuring 14⅛" W x 6⅛" H x 8½" D with everything in place. A ceramic PTT mic. and a gimbal bracket for mobile mounting are included.

Move up to 2 metre 'phone operation this new low cost way with the Heathkit HW-17.

Kit HW-17, 2M Transceiver, 17 lbs. ..... **£69.2 p.p. 10/6**

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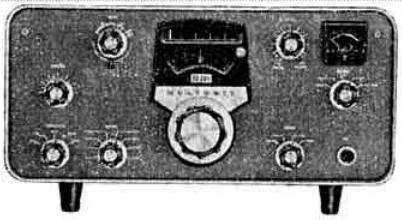

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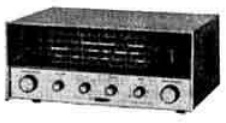

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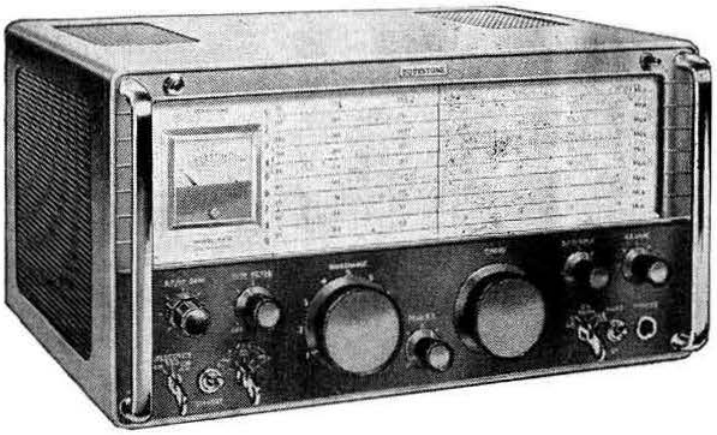

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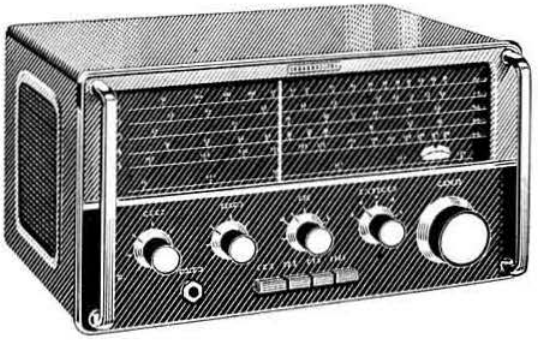

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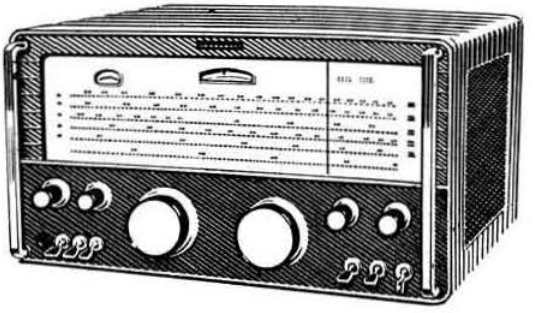

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MBE FOR G8IP
OPERATION FROM CYPRUS REPUBLIC
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MBE for George Barrett

Among those honoured in the recent Birthday Honours list by the award of an MBE was Mr G. F. Barrett known to many members as G8IP, ZC4IP and ZD7IP.

Cyprus Field Day Station

For the first time since 1964, the Cyprus Government has allowed Amateur radio operation from the Republic by issuing a special licence, 5B4SS/P, to the Famagusta Group of the Cyprus Amateur Radio Society for use during NFD on 8 and 9 June. Suspension of licensing in 1964 meant that until now operation from Cyprus was confined to Sovereign Base areas.

A site was chosen near Salamis, six miles north of Famagusta, and operation was continuous from Saturday evening to Sunday evening. For many years, the Cyprus station has provided British Field Day stations with more points than has any other Commonwealth station, and hope to win the same credit this year. A photograph of the station appears on this month's front cover.

Amateur Radio Symposium

A meeting for teachers, youth leaders and young people is planned for 12 July, at Holloway School, Hilldrop Road, London, N7. Short lectures will be offered, and a discussion on " Why Amateur Radio? ", with a view to the forwarding of this movement to young people. Refreshments will be provided, and an exhibition is being arranged, together with a station. The meeting will start at 4.30 p.m. Please let Ken Smith, G3JIX, c/o above address, know if you will be able to attend.

RSGB Amateur Radio Call Book

The 1968 edition of the *Call Book* is now out of print and the 1969 edition will be on sale at the RSGB Exhibition which opens on 2 October. The new edition, following the usual pattern, will be larger than its predecessor, and in addition to the listing of call-signs and Affiliated Societies, will contain a great deal of useful operating data. The price of the 1969 edition will be 6s. 6d. (7s. 2d. post paid) and it may be ordered from RSGB Headquarters.

New Henry's Shop

Henry's Radio Ltd., the well-known London radio component dealers, have opened a new shop a few yards away from their existing premises. The new centre, at 309 Edgware Road, London, W2, will be devoted entirely to the hi-fi, p.a. and test equipment market, releasing space at 303 Edgware Road for even greater stocks of components and accessories. All mail-order business and the accounts dept. remain at " 303." A new catalogue was published in June, now amounting to 280 pages describing some 6000 stock lines. The price of the catalogue is 7s. 6d., plus 1s. postage.

G3HPC Drives Record-Breaking Train

It is an established fact that amateurs come from all walks of life, but we were particularly interested to learn that G3HPC was the driver of the Cornish Riviera Express from Penzance to Plymouth when it made a record-breaking run from Penzance to London on 6 May. The high-speed run was demanded in order to keep to a new summer timetable, which cuts 35 minutes off the normal journey, and as if this was not considerably quicker, the train pulled into Paddington seven minutes early.

Radio Amateurs' Examination Courses

The Carshalton College of Further Education, Dept. of Electrical Engineering, which has run an evening RAE Course for several years, plans this next session to run a parallel part-time day course. The normal evening course will be on Thursdays, and day attendance will be on Tuesdays, starting during the week beginning 16 September. Enrolment will be during the previous week. Fees have not yet been fixed, but apparently should be £2 5s. for students under 18 years of age on 1 September, 1968, and £4 2s. for those over 18. The address of the college is Nightingale Road, Carshalton, Surrey.

RSGB Dinner Club

The meeting on 17 May was attended by 40 members and guests including Eric Lomax, 5N2ABG, President of the Nigerian Amateur Radio Society; 5Z4AA, Bob Tanner and Mrs. Tanner; W1ES and W6ATC.

The next meeting will be held on Friday, 26 July at 7.30 for 8 p.m. at the Kingsley Hotel, Bloomsbury Way, London, WC1 which is only a short distance from RSGB Headquarters. The meeting is completely informal and all members and overseas guests will be welcome. The cost of the dinner is 25s. and bookings should be made to Mrs M. Jardine at Society headquarters, preferably accompanied by a remittance.

Holiday Visitors Welcomed

OMs and SWLs visiting Palma de Mallorca are invited to visit a retired old-timer, V. S. Alexandersen (well-known between 1927 and 1936 as ES3CX). His address is Camino son Toelles 37, St. Augustin, Palma de Mallorca. Telephone 235547.

Pirates Convicted

Following Post Office enquiries into suspected unlicensed use of wireless transmitting equipment, the following convictions have been obtained. The charge is using wireless transmitting equipment without the appropriate licence, contrary to the provisions of Section 1 of the Wireless Telegraphy Act, 1949.

Mr M. G. Bullock, 40 Molesey Drive, North Cheam, Surrey, at Sutton Magistrates' Court on 21 February, 1968. Fined £10 and ordered to pay £3 costs.

Mr D. B. Hall, 4 Steventon Road, Wellington, Salop, at Wellington Magistrates' Court, on 26 February, 1968. Fined £25; £10 10s. Advocate's fee with forfeiture of equipment.

Mr D. Genis, 8 Goodyers Gardens, Hendon, London, NW4, at Hampstead Magistrates' Court, on 27 February, 1968. Fined £1.

Mr R. T. Callow, 88 Davenport Road, Catford, London, SE6, at Greenwich Magistrates' Court, on 29 February, 1968. Fined £10 and ordered to pay £3 costs.

Mr B. C. Smith, 37 Western Road, Wylde Green, Sutton Coldfield, Warks, at Sutton Coldfield Magistrates' Court, on 2 May, 1968. Fined £20, with forfeiture of part of equipment.

Special Events Stations

G3MBL, G3WCE. 12 and 13 July at the Finchley Carnival, Victoria Park, London, N3. Activity will be on a.m., c.w., and possibly s.s.b. 10–160m, plus 2 and 4m.

Grafton Field Day

The Grafton Radio Society will be holding its annual Field Day (subject to GLC permission) on the usual site, Tumulus Hill, Hampstead Heath, London, NW3, on the weekend 6–7 July. It is hoped to have G3VUE on 2m, G3THQ on 4m, the club call G3AFT on 10–80m, and G2CJN on 160m. Visitors, as always, will be most welcome.

Corrections to RSGB Call Book

GM3ULP. G. A. Hunter, The Bungalow, Broomside Braes, Camp Road, Motherwell, Lanarkshire.

G3VED. G. Wilkins, 10 George Vale House, St. Peters Avenue, Tower Hamlets, London, E2.

G4AR. A. E. Dowdeswell, "Silver Firs," Leatherhead Road, Ashtead, Surrey.

G3VBL. C. Peddar, 107 Broad Oak Lane, Penwortham, Preston, PR1 OXA, Lancs.

ARRL Handbook Review

We dropped one on page 373 last month when, in the seventh line from the end of the review, the word "educational" replaced the correct "additional." Sorry! By the way, we can now supply hardbound editions of this Handbook for 63s, including postage and packing.

Affiliated Societies

Back in March we mis-titled one society, by missing out the word "Grammar" in The Amateur Radio Society, Llanelli Boys' Grammar-Technical School.

John Clarricoats, OBE, G6CL, was, until his retirement in 1963, the first General Secretary of the Society. He is now the Secretary Editor of the Region 1 Division of the IARU. Following the recent elections in the GLC area, Councillor, now Alderman, John Clarricoats, was elected Mayor of the London Borough of Enfield, and his wife, Celia, was appointed Mayoress. G6CL first became a member of the Southgate Council in 1945 and was elected Mayor of Southgate in 1955. The present borough of Enfield includes the former boroughs of Edmonton, Enfield and Southgate and has a total population in the region of 300,000.

Taken at the UBA General Assembly at Genval, near Brussels, left to right: ON4VY, National Liaison Officer of UBA; ON4AK, President of UBA; ON4AD, Communications Manager; G3TR, President of RSGB and G2BVN, Vice-Chairman of Region 1 IARU.

Amateur Radio Licences

The following are the total numbers of Amateur Radio Transmitting Licences in force on 30 April, 1968.

Amateur (Sound) Licence "A"	12,785
Amateur (Sound) Licence "B"	872
Amateur (Sound Mobile) "A"	2467
Amateur (Sound Mobile) "B"	55
Amateur (Television) Licence	185

There were also 13,602 Model Radio Control Licences in force.

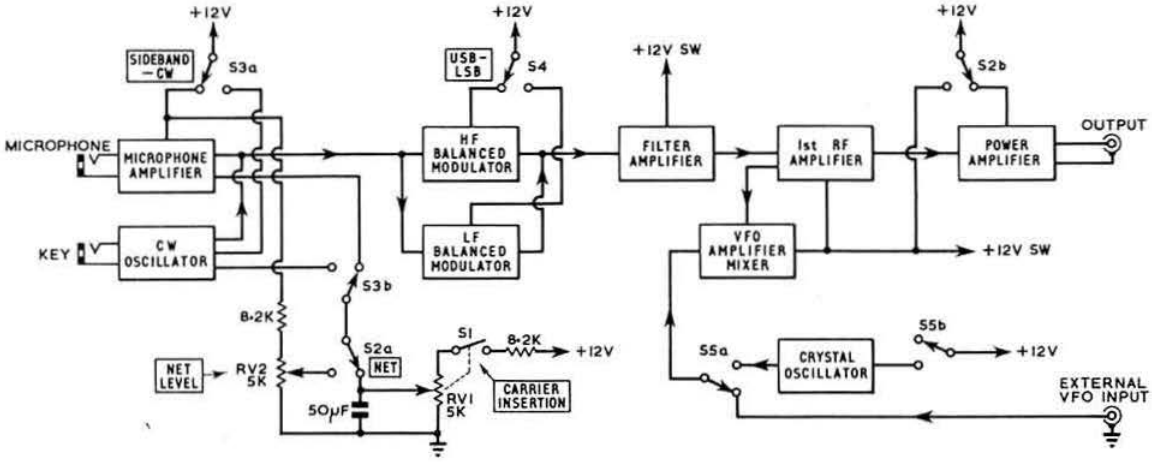


Fig. 1. The exciter block diagram.

A Simple Solid State Sideband Sender

By W. B. HARTOG, G3JEJ*

SOME time ago I despaired of taming my first sideband rig, a simple filter affair, similar to the Imp. One of the most irritating faults of this transmitter was drifting of the carrier null setting, which appeared to be mainly a result of the heating effect of valves adjacent to the oscillator. A successor was therefore considered, and this occurred at about the time that v.h.f. transistors began to appear on the surplus market.

This article does not presume to be an instruction manual on the assembly of the transmitter, but rather a description of the writer's trials and tribulations. It is hoped, however, that sufficient information is provided to enable an intelligent constructor to make it work, even though an exact copy is unlikely to materialize, because of the amount of surplus material I used.

After several false starts on transceivers, I resigned myself to the fact that the only approach likely to come to fruition was a transmitter, and the simplest possible design at that. The minimum requirement was full coverage of 3·5-4 MHz to permit conversion to other bands, and a power output of a watt or so, to permit it to drive a solid-state linear, and fulfill the needs of a valve amplifier. Facilities for netting, a.m., c.w. and inverted sideband I considered to be desirable, if not essential. After some cogitation, the block diagram shown in Fig. 1 was accepted as the basic design.

An h.f. crystal filter design is used as the sideband generator, owing to the ease of obtaining cheap FT243 crystals, and the successful operation of this part in the previous valve design. The nominal frequency used is 6·1 MHz, as originally, six of these crystals had been obtained for an unsuccessful bandswitching transmitter. For a single-band transmitter such as this, the frequency is not critical; although for v.f.o. harmonic suppression about 6·5 MHz would be better. The v.f.o. frequency for 3·5-3·8 MHz output, with a 6·1 MHz filter, is 2·6-2·3 MHz. This should and does give good stability.

Gain in each section is somewhat higher than strictly necessary, for it is far easier to decrease the output level of any unit than to increase it. As can be seen from the block diagram, the device is treated as several separate building blocks, which makes it easier to test parts of the circuit individually, although more important is the screening effect of the block technique. Earlier projects, without screening, were very prone to unwanted coupling and feedback; whereas this device is extremely stable. Unwanted coupling tends to exist more in any case in transistor circuitry, by virtue of the closer packing made possible by the absence of valves

*"Cotton," Top Road, Little Cawthorpe, Louth, Lincs.

and heat. I made use of tobacco tins—rectangular ones—and double outlet electrician's plaster boxes.

Starting at the beginning of the circuit (Fig. 2), the audio module is self contained and conventional, except for the inversion of the transistors to suit supply polarity. I used rather small coupling and decoupling capacitors and admit that an improvement in audio quality could be obtained by increasing the values of these. C1 is to inhibit stray r.f. on the microphone lead, and discourages howl round. R1, the bias resistor for TR2, is taken to the "hot" side of the output transformer primary to give a little negative feedback over this stage, and to reduce the output impedance.

The carrier oscillator and balanced modulator are in one module and are conventional. The zener diode ZD1 is not essential as will be seen later, but was intended to keep the oscillator level constant for best carrier suppression. The balancing capacitor C2 was not required in my case. RFC1 is also not essential, but makes testing this module on its own

the tuned circuit and connecting to the appropriate capacitor, the one to be used in circuit by leads, say, 2 in. long and poking a grid dip oscillator into the loop so formed. Adjustment to frequency is easily made by adding and subtracting turns.

The filter—i.f. amplifier module is next in sequence. Of the six crystals, I selected the highest in frequency for the carrier and reduced the frequency of the three lowest to about 1·7 kHz below the mean of the two remaining h.f. crystals. This was accomplished by rubbing the centre of the faces of these crystals with solder or pencil—just a tiny dot—testing frequently in an oscillator. X2 and X3 should ideally be within 50 Hz of each other, as should X4 and X5. If they are not quite accurate no great harm results, but the edge of the passband becomes a little uneven. A simpler approach is to use crystals with a nominal spacing of about 1·7 kHz, such as the surplus 6475 and 6473·33 kHz crystals. A better amplifier to follow the filter is shown in Fig. 4 and is a crib

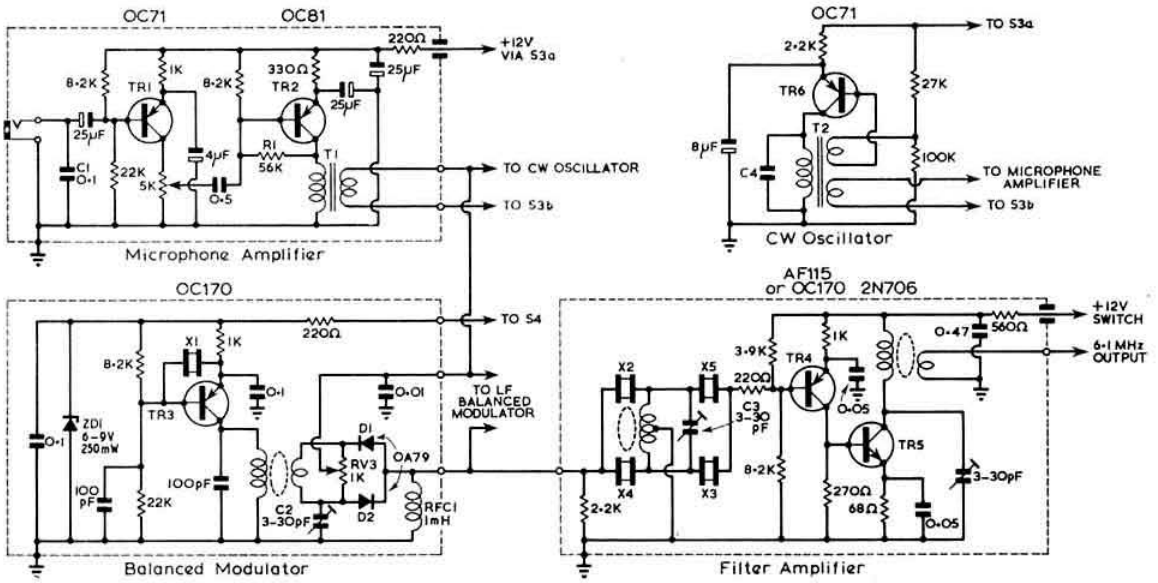


Fig. 2. The audio and i.f. filter stages of the exciter, the crystal filter operates at 6·1 MHz. T1 and T2 are transistor interstage and single-ended class B driver transformers respectively.

simpler. If not used, a d.c. return should be provided when not working into its subsequent stage, to avoid upsetting the carrier null. The oscillator collector coil is not tuned by a variable capacitor as with a toroidal core and close coupling, the *Q* is low and anything between 30 and 200 pF works well here.

Toroids were used here as they are small, give tight coupling and have little external field. Most were obtained from the ferrite rod of a continental portable receiver, sawn up into $\frac{3}{8}$ in. lengths and drilled $\frac{5}{32}$ in. The outer diameter is about $\frac{5}{8}$ in. Similar results have been obtained with the dust cores from American surplus such as the SCR522 receiver i.f. transformers, although these have rather lower permeability requiring larger windings, and the dust cores from Command transmitters. Failing access to an inductance bridge, the cores can be brought to frequency by winding

from WB6AIG *et al* in the May 1967 *QST*. In the circuit used by the writer, the value of the collector load of TR4 has to be adjusted on test to give a reasonable value of collector current in TR5.

The 6 MHz+ sideband is mixed with a v.f.o. or crystal oscillator output in a module which also contains a v.f.o. amplifier. Some care has to be taken in choosing types of mixer to avoid spurious outputs—the type shown has proved satisfactory.

The output of this device is then passed through two stages of amplification on the final frequency of 80m, the measured output being 2 watts. The first r.f. stage running in class A is straightforward and could in fact have a higher value of emitter resistor to reduce transistor dissipation. The final runs in class B and is biased to have a collector current of about 10 mA on no signal. Absence of forward bias yields

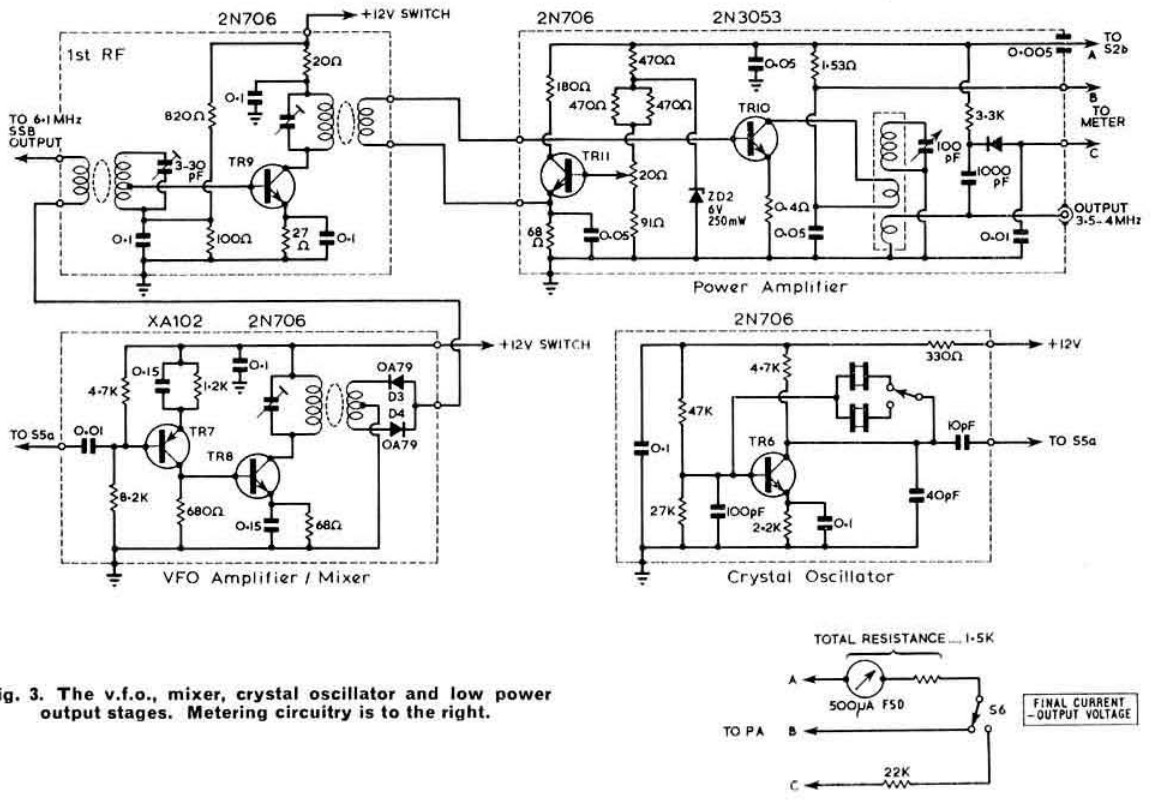


Fig. 3. The v.f.o., mixer, crystal oscillator and low power output stages. Metering circuitry is to the right.

severe crossover type distortion, resulting from the fact that the driver has to provide about one volt peak to peak before the p.a. starts to conduct. Early trials of this amplifier with conventional potential divider biasing were fine at low level, but the amplifier limited at about 200 mA input and at medium to high levels the distortion was ghastly. It was found that the drive power rectified in the base-emitter junction of the 2N3053 produced an e.m.f. opposing the bias and that on full drive the bias became negative. The stage then operated in class C—definitely *not* linear.

One solution is to pass a large standing current through the bias chain and use low value resistors there, but this did not seem an efficient way to the writer as the standing current would have to be 100 mA or more. The solution adopted was to use a 2N706 as an emitter follower. This results in a low standing current, but very good bias regulation in the bias dropping less than 50 mV on full drive and TR10 collector current limiting at over 500 mA. This is above the transistor's ratings so that in normal operation the full rated capabilities of the final stage can be used.

Some other points about the p.a.; on first construction a proprietary heat sink was used for the 2N3053. This worked well, but after a period of transmission the standing collector current rose to 100 mA and the device functioned in class A giving rise to lower efficiency and output. Using the GE Transistor Handbook as a guide the heat sink shown in Fig. 5 was constructed. Thermal drift was then no problem. This heat sink works better than the shop bought variety as the 2N3053 has an all metal header and case and this heat sink transmits heat straight away from the junction without having to traverse the relatively thin and non-conductive (to heat) metal of the top and sides of the case. The emitter resistor is not really essential but, according to the Mullard transistor handbook, should improve efficiency. I found no evidence of this, but it provides a little protection against thermal runaway and some negative feedback. Incidentally, the use of other types of TO5 case transistors may not be

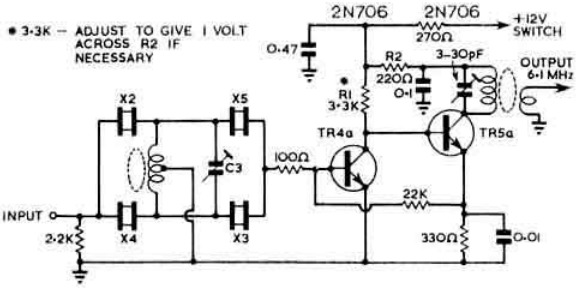


Fig. 4. A crystal filter amplifier which could with advantage replace that in Fig. 2.

quite so successful. Several of my admittedly surplus 2N696s and 7s have given a beautiful demonstration of irreversible thermal runaway in similar circuits.

The output circuit is the simplest and most effective tried so far. It consists of three windings very tightly coupled, preferably in a toroidal or pot core. The turns ratio of the primary to secondary windings are derived from the article by Larsen in the October 1966 *Bulletin*, the minimum winding for reasonable efficiency being two turns. At the same time, to provide a realistic size of tuning capacitor, the highest possible number of turns must exist on the tuned winding. In my case, the p.a. link to tuned winding ratio is about 1 : 10. The actual tuning capacitor is only 100 pF but resonates with the 30 turns on the pot core. With this tight coupling, the p.a. is completely stable on a resistive load with an s.w.r. of up to about 6 : 1 but does become rather prone to self-oscillation with an open circuit output. Neutralisation has been tried on previous designs, but owing to internal transistor capacitance variation with electrode voltages, has not been successful. It seems that one has to match stages within reasonably wide limits.

The control circuit and interconnections are shown in Fig. 1. Facilities are available for upper and lower sideband, netting, c.w. and internal crystal or external v.f.o. selection. An internal v.f.o. was tried but could not be isolated from the p.a. resulting in considerable f.m.—this may be tolerable with a.m., but is catastrophic with s.s.b.

Netting is accomplished by inserting d.c. into the balanced modulator and powering all of the exciter except the output stage. A preset potentiometer RV2 adjusts the amount of netting signal. This principle is also used for s.s.b. + carrier to please our friends with older receivers.

C.w. is derived by inserting a keyed audio tone as insufficient carrier can be fed through the crystal filter on the carrier insertion pot RV2. This method of carrier insertion was used to avoid the usual rather " leaky " switching of r.f.—all switching and variation now being at d.c. Incidentally, by using a variable audio tone level in the c.w. oscillator and by juggling with the carrier insertion a two tone signal is generated for testing. That's one less item of test gear to build! For transceiver operation with transmitter and receiver sharing a common local oscillator, this technique permits netting on c.w. without the necessity for incremental tuning of either.

Alignment is for the most part " cold " with a g.d.o. as mentioned before. An oscilloscope is very handy but probably not essential. The individual modules are best tested individually as far as possible.

The microphone amplifier is straightforward. The balanced modulator is aligned by short circuiting the audio input to earth, and adjusting RV3 and C2 for an output null. The carrier frequency should be adjusted to the usual frequency—about 20dB down on the filter response by, if necessary, inserting a capacitor or trimmer from 5-30 pF in series with X1 to raise the frequency and/or a small toroidal inductor in series to reduce the frequency.

The filter amplifier can be aligned by using a BC221, calibrator No. 10 or similar, varying C2 to give the best response measured on an unselective receiver with an S meter. Tuning for maximum output in the centre of the passband seems to give poor skirts to the response. Too much capacitance gives a double humped response and for most folk this capacitor could well be set to minimum or near. One can spend many happy hours plotting passband shapes. Alternatively one can hook the balanced modulator to the filter amplifier, feeding audio from a variable frequency calibrated source into the former, and inspecting the output of the filter amplifier on a valve voltmeter or preferably an oscilloscope. My final result was good skirt response and a 4dB dip in the centre of the passband. Not hi-fi, but quite adequate, and better than the " Sideband Package " for example.

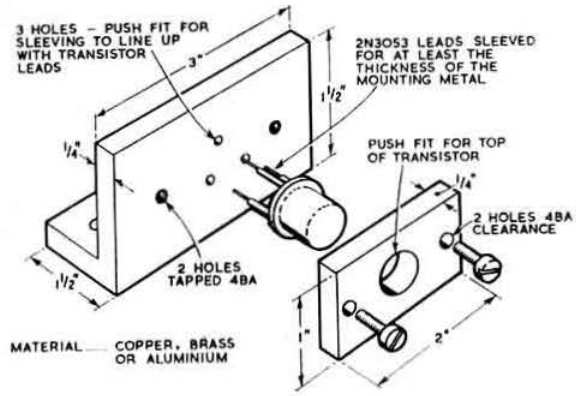


Fig. 5. A high-efficiency heat sink for the output transistor.

The rest of the alignment is straightforward, feeding a fraction of a volt at 2·4 MHz into the v.f.o. amplifier/mixer and tuning the output section stages for maximum output on 3·7 MHz with some carrier insertion. To be on the safe side, if a few millivolts are available on 3·7 MHz, the driver and p.a. can be aligned on their own first—into a test load.

The c.w. oscillator circuit is given, but in all honesty, I have not yet got around to building it. It should, however, work! Likewise, the inverse sideband or l.f. balanced modulator has not yet been tried. The rest of the device, however, has been used both into a transistor 20 watt linear on 80m and via two transverters on to 2m—with success in both cases.

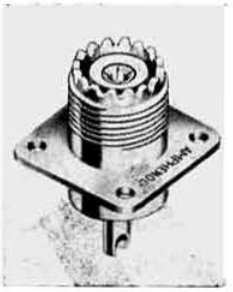
To reduce carrier leakage, a series resistor has been inserted between the 220 ohm resistor of the balanced modulator and S4—not too large to stop oscillation, but enough to reduce the output amplitude. Slight f.m. is evident on speech peaks now though, and a better solution would be to shunt RV3 with 100 ohms or so. Likewise, to prevent overdriving, a resistor was inserted in series with the secondary of T1 until with maximum speech input, no stage in the device is overloaded.

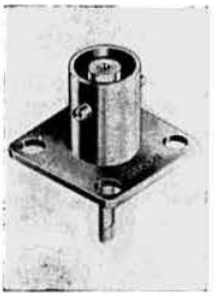
Normally an external v.f.o. is used. Mine employs the Vackar oscillator into an emitter follower, which is loosely coupled to a common emitter amplifier into the output stage, another emitter follower. By using a Command transmitter tuning capacitor and SCR522 receiver oscillator coil former, the stability is superb. Dropping the v.f.o. 6 in. or so on to the table does not seem to affect the frequency, neither does short circuiting the output. It covers the required 500 kHz range from 2·1-1·6 MHz with a little overlap at each end and gives about 10 kHz for each turn of the tuning handle.

Needless to say, the next device under construction will be better. Let's see, synthesizer frequency derivation, better sideband suppression, speech clipping. . . .

A Selection of Coaxial Connectors

By Mrs. K. M. PRIESTLEY, G3XIW*





THERE is such a large and bewildering assortment of coaxial connectors around, how can the ordinary amateur find out which to use in any particular application? Is it possible to buy connectors to fit an uncommon size of cable? How does one rationalize different sorts of connectors on various pieces of equipment?

This article aims to answer these and similar questions by reference to a few of the commoner types of coaxial connector at present being manufactured in this country.

The Manufacturers

I have written on your behalf to manufacturers of the common types of connectors and to a few specialists as well. Almost all of them replied with catalogues, data sheets, price lists and the addresses of their distributors who will be pleased to deal with your orders (see Table 1).

Coaxial Connectors

The general designation covers everything that is designed to connect coaxial cables from the simple TV type to the most accurate, precision made " special."

To qualify as a truly coaxial connector, much more is required than simple d.c. connections of inner and outer. The outer sheath must continue through the plug/socket as a shielding cylinder, and the diameter ratio must be maintained so that the combination looks like a short length of cable. Devices which do only the former are called " non-constant impedance."

* 43 Raymond Road, Langley, Slough, Bucks.

To determine which sort of connector to use in any particular application it is necessary to specify first the conditions of service—impedance, v.s.w.r., working voltage and the size of cable to be used.

Above 500 MHz the connector should match the impedance of the cable. Below 100 MHz this is not important. Between 100 and 500 MHz it depends on the particular application.

One particular plug is designed to work with only a limited number of cables. The next in the list will vary only slightly to accommodate the next size of cable. If you purchase connectors first, be most careful to get the exact cable for your particular connectors, otherwise, not only may the system be a bad match electrically, but you may also have a difficult mechanical job of assembly. The variations seem so slight, but if you have ever tried to put a 0·220 in. diameter connector on to a 0·250 in. diameter cable you will understand!

Assembly

This is not a job to be undertaken lightly. Ideally, the whole system should first be planned with a view to keeping it the same for a few years at least. Additions can of course be made anytime, but connectors are not normally meant to be undone. Where the braid is soldered it is very difficult to unsolder. Plugs with pressure sleeves can be re-used if new pressure sleeves are obtained.

For the odd occasion when you want to make a temporary connection with a UHF type plug with reducing adaptor, use the method shown in Fig. 1.

It is essential to follow the maker's instructions to the

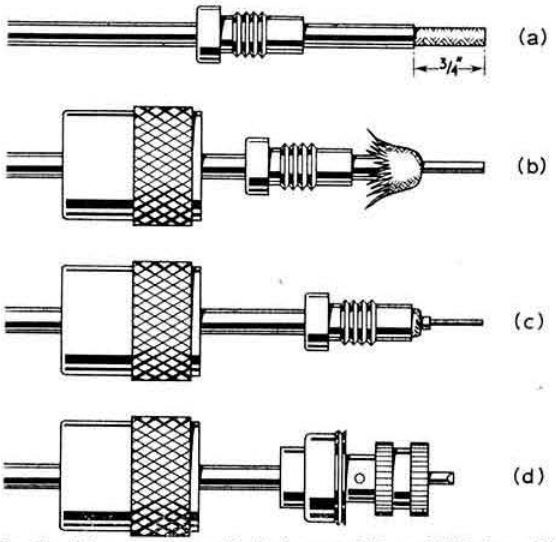


Fig. 1. A temporary method of assembling a UHF plug with reducing adaptor.

Fig. 1. A. Trim off ¾ in. insulation. Tin small end of reducing adaptor before sliding on cable.
B. Fan braid out over end of reducing adaptor and solder lightly all the way round.
C. Trim braid and gently file smooth. Strip centre conductor, leaving ¼ in. insulation and tin.
D. Screw shell on and solder inner conductor.

Table 1

Manufacturer	Products	Distributors
Amphenol Ltd.	UHF BNC N	SASCO in Crawley, Glasgow, Hitchin and Yate Aerocontacts Ltd., Gatwick House, Horley, Surrey Hardman & Co. Ltd., PO Box 23, Hardale House, Baillie Street, Rochdale Townsend-Coates Ltd., Coleman Road, Leicester Simmonds & Robinson Ltd., Victoria House, 44 Park Street, Camberley, Surrey
Cannon Electric (Gt. Br.) Ltd.	UHF BNC N	A.W.P. Electronics Ltd., Rowan House, Smallfield Road, Horley, Surrey
Greenpar Engineering Ltd.	UHF BNC N Accessories	F. C. Lane Electronics Ltd., Albion Road, Horsham, Sussex Lind-Air Electronics Ltd., Kirkman House, 54a Tottenham Court Road, London, W1 Hawnt & Co. Ltd., 112-114 Pritchett Street, Birmingham 6
Belling & Lee Ltd.	Standard BNC	Cables & Components Ltd., Park Avenue, Park Royal, London, NW10
B & R Relays Ltd.	Co-axial Relays	B & R Relays, Temple Fields, Harlow, Essex
Londex Ltd.	Co-axial Relays	Londex Ltd., Anerley Works, 207 Anerley Road, London, SE20

Table 2 STANDARD SERIES

L734/P/Al	Free plug
L1556/Colour	Free plug insulated
L604/S/Cd & /Ni	Panel socket surface mounting
L603/Colour	Panel socket Polystyrene insulated
L734/S	Panel socket flush mounting
L1498	Panel socket printed circuit

This series also includes free socket, straight adaptor, and panel adaptor
Cable size inner 0·048 in. max. 0·125-0·312 in. overall

Al—polished aluminium Cd—cadmium plated. Ni—nickel-plated. Standard colours: Black, blue, green, red, yellow, or white.

Table 3 UHF SERIES

PLUGS

Code No.	Ins.	Dia. A.	Cables
GE40001	PTFE	·437	UR 57, 59, 65, 67, 81
GE40051	MFB	·437	UR 57, 59, 65, 67, 81
GE40054	PTFE	·375	UR 6, 39
GE40046	MFB	·260	UR 41, 56, 70, 84. Telcon PTIYM BICC. RPC 2303
GE40031C10	MFB	·220	UR 43, 72, 76. BICC.T 3010
GE40031C12	MFB	·257	UR 41, 56, 70, 84. Telcon PTIYM BICC. RPC 2303
GE40031C25	MFB	·257	UR 90, 96, 104. BICC. RPC 2896
GE40031C27	MFB	·288	BICC. T3231, T3234. Telcon AS5OM AS93M. Aerialite 499
GE40031C30	MFB	·190	BICC. T3006, T3008, T3171, T3188. Telcon K16M.
GE40031C52	MFB	·220	UR 202, BICC. T3020. T3172, T3173, Telcon PTIM
GE40032C10 etc. P.T.F.E. as above			
GE40040C1	PTFE	·420	UR 57, 59, 65, 67
GE40040C4	PTFE	·440	UR 81
GE40040C6	PTFE	·390	UR 73, 102, 103
GE40040C7	PTFE	·340	UR 39, BICC.T3141, T3205 Aerialite 360
GE40048C1 etc. MFB as above			

REDUCING ADAPTORS for use with GE40001 & GE40051

GE40008	·21	UR 43, 72, 76
GE40009	·26	UR 41, 55, 56, 70, 84

PANEL SOCKETS

Code No.	Ins.	Mounting	No. of holes	Platen size
GE40003	PTFE	·125 in.	4	1 in × 1 in.
GE40029	MFB	·125 in.	4	1 in. × 1 in.
GE40052H	MFB	·125 in.	2	1·3 in. × ·75 in.
GE40052L	MFB	·187 in.	2	1·3 in. × ·75 in.
GE40058H	PTFE	·125 in.	2	1·3 in. × ·75 in.
GE40058L	PTFE	·187 in.	2	1·3 in. × ·75 in.

This series also includes panel plugs, elbow plugs, jacks, panel jacks, bulkhead sockets, straight adaptors, free, panel and bulkhead, elbow and T adaptors, termination plugs, U plugs and binding post adaptors.

Suffix letter: no letter indicates free contact, braid clamp C indicates captive contact, pressure sleeve cable clamp. In panel devices refers to size of mounting holes.

Table 4 — **BNC SERIES**

PLUGS — **50 ohms**

Code No.	Dia. A	Dia. B	Cables
GE35001	·220	·055	UR 43, 72, 76; BICC.T3010
GE3001C22	·110	·052	UR 95
GE3001C29	·220	·052	Telcon K16GM
GE3001C30	·190	·052	Telcon K16M; BICC.T3006, T3008
GE35018	·220	·055	UR 43, 72, 76; BICC.T3010
GE35070	·220	·055	UR 43, 72, 76; BICC.T3010
GE35070A10	·220	·052	UR 43, 72, 76; BICC.T3010
GE35070A12	·257	·052	BICC.RPC2303; UR 41, 56, 70, 84
GE35070C10	·220	·052	UR 43, 72, 76; BICC.T3010
GE35070C12	·257	·052	BICC.RPC2303; UR 41, 56, 70, 84
GE35070C25	·257	·052	UR 90, 96, 104; BICC.RPC2896
GE35071C27	·288	·070	BICC.T3234, RPC2967; Telcon AS93M

CABLE TERMINATION—PRINTED CIRCUIT

GE30015C10G	·220	·125	UR 43, 72, 76; BICC.T3010
GE30015C12G	·257	·133	BICC.RPC2303
GE30015C22G	·110	·064	UR 95
GE30015C29G	·190	·110	Telcon K16GM
GE30015C30G	·190	·091	Telcon K16M; BICC.T3006; T3008

Suffix G indicates 6 BA mounting holes.
Also available E, F, H, K (see sockets) or two hole version.

PANEL SOCKETS

Code No.	Mounting	No. of holes	Plate size
GE35006E	3-56 UNF Tapped	4	·687 × ·687
GE35006F	4-40 UNC Tapped	4	·687 × ·687
GE35006G	6 BA Tapped	4	·687 × ·687
GE35006H	·120 in. drill	4	·687 × ·687
GE35006K	·110 in. drill	4	·687 × ·687
GE35007E to K as above (see Fig. 2)			
GE35083H	·125 in Drill	4	1 × 1
GE35083J	6-32 UNC Tapped	4	1 × 1
GE35083L	·187 in Drill	4	1 × 1
GE35085H	·125 in. Drill	2	1·26 × ·75
GE35085J	6-32 UNC Tapped	2	1·26 × ·75
GE35085L	·187 in. Drill	2	1·26 × ·75

This series also includes elbow plugs, panel plugs, jacks, panel jacks, bulkhead jacks, panel elbow sockets, bulkhead sockets, bulkhead elbow sockets, resistor plugs, straight adaptors, panel adaptors, bulkhead adaptors, elbow and T adaptors, cable feed-through, binding post adaptors, caps and chains.

Suffix letter: no letter indicates free contact, braid clamp
A. indicates captive contact, braid clamp.
C. indicates captive contact, pressure sleeve cable clamp.
In panel devices refers to size of mounting holes.

Table 5 — **N SERIES**

PLUGS — **50 ohms**

Code No.	Dia. A.	Cables
82GB-553-1	·380	UR 73, 102, 103, 105
82GB-553-2	·405	UR 31, 42, 57, 59, 64, 65 67, 78
82GB-553-3	·430	UR 81
82GB-553-4	·350	UR 107, 113
82GB-0527	·450	UR 91

PANEL RECEPTACLE
82GB-572 ·093 dia. mounting, 4 holes

This series also includes angle plugs, straight jacks, angle jacks, panel and bulkhead jacks, bulkhead receptacles.

letter in any critical situation. Measurements must be accurate and trimming precise and clean cut. Careless assembly can spoil the matching by introducing irregularities into the line.

The Series

To simplify this catalogue, four series of connectors have been selected. Only plugs and sockets are itemized, together with printed circuit board terminations where available, though each series contains a whole range of types: jacks, plugs, sockets, adaptors, panel mounting, bulkhead, etc. If you find the terms confusing, look at the Glossary.

Only one manufacturer's list is used in each table simply because the different lists are not directly comparable except in the few cases where a connector has a US military number. The little table of UHF equivalents illustrates this. The selections do not imply any superiority of one maker over another, they merely show the kind of devices available.

A. Commonest of all is BS3041: 1958, the Belling and Lee TV Standard Series connectors. For small cables in uncritical situations, these connectors have the two advantages of cheapness and availability. Table 2 is taken from Belling and Lee's catalogue. The makers quote an impedance of 60-70 ohms and v.s.w.r. less than 1·2 : 1 up to 250 MHz.

B. UHF series connectors are general, low cost devices, originally designed for use with half inch cables. Reducing adaptors accommodate smaller cables, and now Greenpar are making some smaller sizes which do not need reducing adaptors (see Table 3). Impedance is not constant and the makers say they can be used with caution up to 500 MHz. Insulation is p.t.f.e. (Teflon) or MFB (Mica filled bakelite).

C. BNC series connectors are small bayonet lock devices, supplied in either 50 or 75 ohms impedance, to fit a large range of cables. Greenpar, whose list is used in Table 4, say they aim to fit any cable up to 0·35 in. overall diameter and 0·06 in. conductor diameter. V.s.w.r. is less than 1·2 : 1 up to 4000 MHz for a mated plug and jack. The 50 ohm range will mate with the 75 ohm range if impedance is not critical.

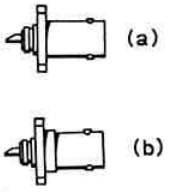


Fig. 2. Two types of BNC panel socket. (a) front of panel mounting (GE3 5006) and (b) rear mounting (GE3 5007).

TNC series is a screw coupling version of BNC.

D. N series connectors are designed for use with larger sized cables at UHF where impedance matching is essential. Impedance is 50 ohms in the Amphenol British made range quoted in Table 5, and v.s.w.r. is 1·25 : 1 max. up to 10 GHz. Owing to variations in tolerance limits, N type connectors of differing dates of manufacture are not necessarily interchangeable.

N.B. In tables 3, 4 and 5, Dia. A is the cable entry and Dia. B. is the conductor entry.

The Rest

Several other series of connectors appear in the manufacturers' lists. For example, C series is a bayonet lock type for larger cables, and GP is a miniature bayonet lock type, S is a sub-miniature, constant impedance, screw-on series.

Equivalents		UHF SERIES
US Military No.	**Amphenol No.**	**Greenpar No.**
PL259	83GB-1SP-1	GE40051
PL259	83GB-822-1	GE40001
SO239	83GB-1R-03	GE40029
UG175/U	83-185	GE40008
UG176/U	83-168	GE40009

GLOSSARY

Plug is male
Jack is female
Socket or Receptacle is female
Panel implies mounting by four screws or two screws
Bulkhead means the whole body goes through the panel
Angle or Elbow is a right angled bend
Adaptors are for joining two plugs or two jacks
Binding Post is a screw terminal
Cap covers panel plug or socket when not in use
Chain secures cap when unit is in use

and Amphenol make Sub-Minax, push-on or screw-on type sub-miniatures. The specialist manufacturers make some expensive special kinds of their own for particular jobs.

There are some obsolescent kinds, like the Pye series, which are marked in the lists as " maintenance types," i.e., you can buy them if you really must, but the manufacturers would prefer you to use something else.

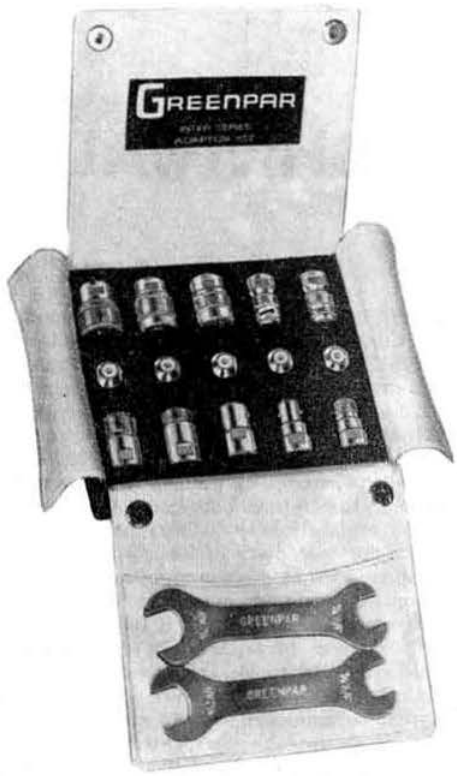
There are also many obsolete kinds in various shapes and sizes to be found on " junk " equipment. If you have a piece of equipment with unknown or unrepeatable connectors, the only thing to do is to replace them with one of the kinds listed here.

Accessories

If you have several sorts of modern devices, you can buy inter-series adaptors of the appropriate sort. Remember though that a chain is only as strong as its weakest link, so there is no point in careful matching at one end if you have a UHF connector at the other!

Inter-series adaptors are available in any combination of BNC, TNC, N, C and UHF as a separate piece of hardware ready sealed, but the ultimate luxury is Greenpar's box of tricks. They call it a kit, but it's so beautifully laid out in its wooden box, it only needs a velvet lining to become a box of jewels! Five plugs, five sockets, five adaptor links and two spanners make any combination you like and with the exception of UHF series, the v.s.w.r. performance is better than 1·1 at 4000 MHz, and all the inner contacts are gold plated. It costs £8 and if it is a luxury for a one man station, it is just the job for an active club.

It may also be of interest to know that Greenpar make a range of Precision Coaxial Attenuators, available in series N, BNC and TNC connector interfaces, either 50 or 75 ohms and 1, 2, 3, 6, 10, 12, 14 and 20dB standard attenuation. V.s.w.r. is less than 1·05 at 1 GHz and less than 1·20 at 4 GHz. Maximum power is 1 watt continuous. The 3dB



The Greenpar kit of inter-series coaxial connector adapters.

type is particularly useful for the accurate measurement of noise figure.

Precision Terminations, i.e., loads and mismatches, are also available with similar specification.

Relays

Having taken a lot of trouble over the coaxial lines and connectors throughout the shack, you won't want to spoil the ship for a ha'p'orth of tar. Look at B & R Relays or Londex and treat yourself to a proper coaxial relay like B & R's AO3, which uses BNC sockets or AO5, which has N series sockets. They are available with an impedance of 50 or 70 ohms and introduce a v.s.w.r. about 1·1 : 1 on the 2m band. The makers quote crosstalk better than 30dB measured at 250 MHz. Londex relays BCX (with BNC sockets) and NCX (with N series sockets) are likewise available with 50 or 70 ohms impedance and the makers say that the v.s.w.r. up to 200 MHz is very low.

Acknowledgements

The author wishes to thank all those companies who responded so generously to the request for information and in particular, Mr G. D. Brittain of Amphenol and Mr D. A. Armitage of Greenpar who kindly supplied the photographs.

REGULAR FEATURE

TECHNICAL TOPICS

By PAT HAWKER, G3VA

A PROBLEM facing all those who contribute to RADIO COMMUNICATION is the extremely wide range of interests of RSGB members: among our ranks are many experienced and knowledgeable engineers, operators and others, often concerned professionally with electronics, broadcasting and communications; but we also range through every shade of expertise to the equally valuable newcomers, just starting to wonder whether they will ever understand fundamentals sufficiently to dare to take the Radio Amateurs' Examination. To pitch explanations so that they make sense at all technical levels is not easy. Some of the new techniques and devices which may soon have practical influence on Amateur Radio are pretty complex, and in truth are often difficult for any of us to grasp, let alone to interpret and pass on to others.

It could well be argued that an " amateur " journal should avoid such topics, at least until they are of immediate practical concern, and concentrate far more on simple and well-tried techniques and dodges, presenting practical circuits using readily available, inexpensive components. One must recognize that there is often latent hostility towards new and imperfectly understood ideas—and readers can easily be put off by finding explanations too involved, or too difficult to understand at the first reading.

For my part, I like to think that the amateur enthusiast is interested in anything which affects—or may soon do so—practical radio communication; but at the same time wants to find plenty of useful circuits he can build up in an hour or two on the kitchen table and try out with a minimum of test gear, or information which helps him find out why equipment does not always work out in the manner expected. If, at times, these sometimes conflicting interests get a bit out of balance, either one way or the other, my apologies to long-suffering readers—it is unintentional!

Progress with Morse

Future radio communications progress depends largely upon finding ways in which the potential capabilities of a system are not at present being fully achieved—and then setting about overcoming the deficiencies. It is also essential to remember that much in radio is governed by logarithmic rather than linear laws—which is a fancy way of saying that in order to make a " breakthrough " it is no good improving signals by 5, 10 or 15 per cent; one has to aim rather at decibels of improvement.

For all these reasons, it sometimes seems to me, the main scope for further significant improvement in both h.f. and v.h.f. amateur operation is to be found in that old, " outmoded " system called Morse (i.e. using a variation of the code which, although usually ascribed to Samuel, was I believe actually devised by his assistant!).

Before every s.s.b. enthusiast immediately gives up reading in disgust, one should perhaps add that this scope exists in c.w. because of its relative systems inefficiency; this does not exist in the same way in s.s.b. since this mode makes reasonably efficient use of its bandwidth (though there is still considerable scope for improving s.s.b. by better signal processing of speech, as the commercial people are doing with Lincompex, now being extended to marine radiotelephony).

In s.s.b., the transmitter and receiver filters are reasonably well matched; whereas in the majority of c.w. contacts there is a violent mismatch. All the information is contained in a bandwidth of under 50 Hz, but received, often enough, in these days of s.s.b. bandpass filters, with a noise bandwidth of 2500 to 3000 Hz.

Some time ago (*TT*, September 1966), we referred to the experimental work done by RCA engineers (*RCA Review*, March 1966) in obtaining reliable operation over distances of 2000 miles with 100 milliwatt transmitters using noise bandwidths of only 0·75 Hz. More recently some further US government sponsored work in this field has been reported by Avco (*Signal*, April 1968) on pocket-sized milliwatt transmitters; but with the important difference that in the intervening years considerable progress has been made in achieving better transmitter crystal-controlled stability, presumably eliminating the need for the ingenious frequency sweeping system and " under-arm " oven adopted by RCA. The Avco article mentions transmitter powers of 333 mW, 1 Hz receiver filters, and the use of temperature-compensated crystal oscillators (TXCO).

This is in line with the importance in moonbounce work in achieving bandwidths of just a few hertz. Yet too many v.h.f. and h.f. operators tend to think that the essential key to receiving weak signals lies solely in the front-end " noise figure," forgetting that this useful concept was deliberately fashioned to exclude the effect of bandwidth on the (signal plus noise)/noise ratio, which is what the operator is really concerned with.

Various phase-locking techniques have been developed to allow v.h.f. receivers to operate with extremely narrow bandwidths, but these are complex and few can cope with on/off telegraphy. In practice, it still looks like narrow i.f./a.f. filters being used in conjunction with the most stable possible receiver. There are, too, some fundamental limitations including Doppler frequency shifts due to the ionosphere (usually under 0·5 Hz at h.f. but rising to about 5 Hz during solar flares), and of course the bandwidth needed to cope with the keying cycle. Even for slow c.w. one would need more than the 0·75 to 1 Hz bandwidth of the RCA and Avco micropower systems; but a receiving system with bandwidth variable between 10 and 50 Hz would be extremely

KEEPING A BALANCE—PROGRESS WITH MORSE WITH NARROW FILTERS—SIMPLE PRODUCT MODULATOR—MONOLITHIC CRYSTAL FILTERS—TRIODE-HEXODE V.F.O.s—ACTIVE AERIAL DEMONSTRATED—SEILER AND VACKAR OSCILLATORS USING FETs—"2PL SPECIAL"—CIRCULAR POLARIZATION—S.S.B. BROADCASTING?

useful, provided that " ringing " of the filters is low. This should be well within modern capabilities, and the stability of transmitter and receiver need only be of a *short-term* nature in that neither must drift so far between overs as to take the signal right outside the bandpass of the receiver. This should be possible, even though much better than many current signals on h.f. and v.h.f.

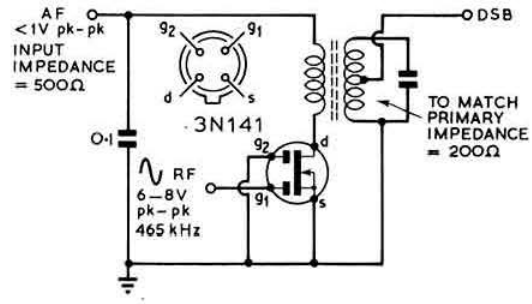


Fig. 1. G3WHC's simple product modulator.

Many of the trick a.f. filter techniques, even in the 'thirties, gave extremely sharp nose (and hence noise) selectivity, but often suffered from blocking. The time may now have arrived where c.w. receivers with superb performance are well within grasp, and could open the way to some interesting really weak signal results.

Simple Product Modulator

David Lovelock, G3WHC, has sent along a field effect circuit for a product modulator which he believes is of almost " ultimate simplicity " in avoiding the need for any balancing adjustments, and so making it ideal for home construction. He points out, however, a disadvantage in that it is not intended for use at much above 465 kHz.

The arrangement, Fig. 1, is based on the earlier Fairchild design which was reported (*TT*, January 1967) by G3TAG, but uses a dual-gate MOS FET rather than a single-gate unit. With an RCA 3N141, a typical gate-one to drain capacitance is only 0·03 pF thus eliminating the need for the neutralization used in the earlier circuit at 465 kHz.

A bread-board circuit has been tested in the Electrical Engineering laboratories of Manchester University and G3WHC says it resulted in a carrier level of − 54dB (relative to peak envelope voltage) provided that the a.f. is restricted to 1V peak-to-peak, and a gate switching voltage of not less than 6V pk-pk used. In practice, the carrier level achieved would be affected by layout and construction.

G3WHC points out that although the gate voltage might seem high, it should be remembered that infinitesimal power is required for switching the MOS FET, so that a transformer with a very high step-up ratio can be used with negligible loading effects on an oscillator.

New Monolithic Filters

The importance of selectivity-shaping i.f. and s.s.b. filters to modern equipment needs no stressing. It is also becoming clear that in a top-grade receiver a good filter is needed at each of the different i.f.s. of a multiple conversion receiver. Good commercially-built i.f. filters are still expensive, but this is an area in which things are happening—what with crystal filters extending up to v.h.f., mechanical filters getting very much smaller, and the arrival on the scene of " monolithic crystal filters " (MXF or IXF) now being claimed to " combine the most desirable performance characteristics of crystal and mechanical filters " to quote a recent Collins leaflet.

Some of the latest Collins filters could be seen at the recent IEA exhibition in London, including new " minifilters " which are mechanical filters in small cylindrical brass or rectangular moulded plastics, only just over 1½ in. long by roughly ¼ in. diameter. At present these are intended primarily for such applications as v.h.f./f.m. mobile services having 15 kHz bandpass (−6dB) and 30 kHz skirt (−60dB). But mechanical filters are usually centred below 500 kHz.

There was also a display of MXFs, which Collins and a number of other firms are now marketing or developing. Apart from Collins " Bulletin-MXF-3000," some useful background information on these devices can be found in " *Bell Laboratories Record* " (February, 1968). Bell, through their Western Electric manufacturing associates, intend to use MXFs for channelling (s.s.b.) filters in telecommunications from 1969 onwards, and an excellent selectivity curve (shape factor about 2 : 1) is shown in the article, for a 3·4 kHz bandwidth filter centred on 8·1 MHz. These MXF filters are usually centred in the h.f. range (Collins, for example, have

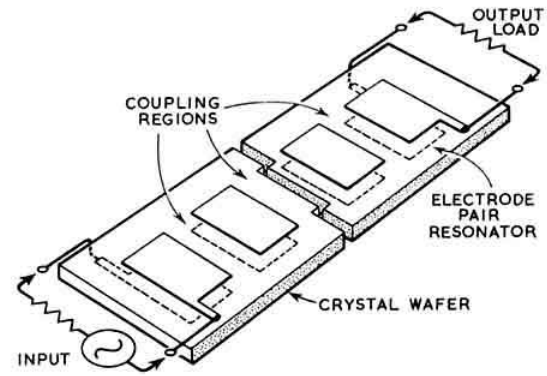


Fig. 2. Monolithic h.f. crystal bandpass filter.

units from 3·5 to 20 MHz), though eventually filters may be available up to over 400 MHz.

It is claimed by Bell that MXFs can reduce the cost of crystal bandpass filters by more than one half, and size by a hundredfold! Some of the less complex types are actually put into TO5 transistor cases, and even filters consisting of 12 coupled resonators in the Collins range are in flat packs 1·59 by 0·73 by 0·36 in. A big advantage of these units, compared with conventional crystal bandpass filters, is that they do not call for transformers, inductors or other discrete components as part of the filters. The entire multiple-section filter is formed on a single quartz plate mounted in a single enclosure.

In essence, the MXF consists of a quartz wafer on to which pairs of metal electrodes are deposited, on opposite sides of the plate: see Fig. 2. The quartz acts as a piezo-electric transducer, converting the input signals into mechanical vibrations, and vice versa. The quartz also provides the coupling medium between the pairs. The metal electrodes lower the resonant frequency of the transverse shear wave in the plated regions only, so that this resonance does not extend into areas without electrodes, but remains " trapped " under the thin metal film electrodes. In its simplest form, an MXF consists of an input and an output resonator, each formed by the thin electrodes on opposite sides of the plate, with some mechanical coupling between them, determined by their separation and various other factors. In more complex filters, series of these resonant pairs are spaced along a quartz plate, and already up to about a dozen or so pairs have been used. The whole filter is thus in many ways analogous to mechanical filters with their resonant discs and couplings.

The simplest filters have relatively poor shape factors: Collins quote 2.6 : 1 (3 to 60dB) for two coupled resonant filters in the h.f. region; but eight coupled resonators bring the figure down to 2 : 1 from 9 to 20 MHz, and the 12 coupled resonator units have a shape factor of about 1·5 : 1. These new monolithic filters thus seem highly desirable filters and there seems no fundamental reason why the price should not come down to amateur levels—particularly in view of that forecast that they will be only half the cost of conventional crystal filters.

It seems only a few years since one was talking hopefully about good crystal filters at h.f.—yet already plenty of amateurs are using 9 MHz units in s.s.b. equipments. In the field of MXFs, a specialist firm, Piezo Technology, are reported to have developed filters at 210 MHz with a bandwidth of 20 kHz and stopband rejection better than 15dB—one obvious use for such devices would be as a first filter in up-conversion receivers.

A Modern " ECO "

E. R. Cook, ZS6BT (one-time G6UO, ZU1J, ZS1AU, ZT6AQ) has been using a form of v.f.o. using a triode-hexode valve to give good isolation between the triode oscillator and the subsequent frequency multiplier. The triode is coupled to the hexode multiplier stage by the injection grid, and ZS6BT says that one can obtain good output in this way, up to fairly high multiplications. For his oscillator he is using a form of Vackar (though the purists may not agree with some of his component values) and altogether he is very pleased at the ability to reduce oscillator breakthrough at the fundamental, and the absence of any pulling of the oscillator.

ZS6BT clearly thought out this use of a triode-hexode,

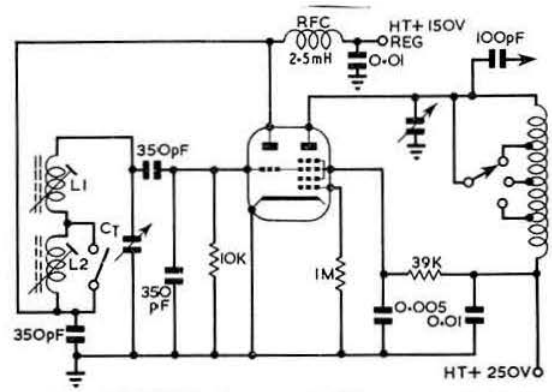


Fig. 3. The ZS6BT Electron-coupled Frequency Multiplier. The values hold good for oscillator frequencies between 200 and 4000 kHz. The oscillator may produce two frequencies (e.g. 700 and 3500 kHz) with L1 being tuned to the higher and L1 L2 added to produce the lower. L3 may be arranged to cover selected harmonics (e.g., 3500, 7000, 10,500 and 14,000 kHz). At low frequencies L3 may be tuned to 10th harmonic and at higher frequencies to the 4th harmonic. A 700/3500 oscillator associated with a 5763 doubler/tripler will produce five-band output to drive an 807 or 6146 buffer.

and finds it " incredible that this idea has been overlooked for so long." However, his description struck a chord in my memory—and sure enough I tracked down a short article in the RSGB BULLETIN of February 1950, reprinting a low-power (5-watt) transmitter by ZL3DT (*Break-in*, June 1949) using a single 6K8 valve with the triode as a feedback oscillator, injection grid coupled to the hexode output stage. In this case a resistor network was used to put a small positive voltage on the signal grid of the hexode; whereas ZS6BT finds it better simply to take this electrode down to earth via a 1 Megohm resistor.

But even if the basic idea is not a new one, it is worth noting that both ZS6BT and ZL3DT found the system useful enough to feel it well worth passing on to others. ZS6BT is using two versions of this oscillator, for which 6K8 or ECH81 would be suitable valve types. In one, the oscillator is on 875 kHz and output on 1750 kHz, running continuously from a 105-volt regulated supply and feeding into an h.f. band-switched transmitter. Another is a switched 700 kHz/3500 kHz oscillator with the hexode giving outputs up to 14 MHz to drive a 5763 switched for the five h.f. bands: Fig. 3.

It could be that the component values suggested may not be quite optimum (particularly the high 350 pF in the oscillator grid circuit, and the absence of any bypassing on the hexode signal grid), but the approach seems a useful one where one wants appreciable output from a single-valve v.f.o.

An " Antennafier " in Operation

Having written in *TT* a good deal about various " active aerials " (i.e., aerials which depend on transistor or tunnel diode amplifiers for their correct operation) without ever having actually seen one in operation, I was particularly pleased to watch a practical demonstration. This was at the Diplomatic Wireless Service centre at Hanslope, and was of a new " aperiodic loop aerial array." This has been developed by EMI-Cossor in Canada—though it is rumoured

that G6CJ was very much concerned with the original proposals.

This very unorthodox aerial (see *Electronics Weekly*, 29 November, 1967 and 12 June, 1968) basically consists of a series of eight small untuned double loops (each loop only one metre in diameter and mounted a few feet off the ground on tripods) extending in a line some 90 ft. long. Each group of two side-by-side loops (to achieve better balance) has its own transistor pre-amplifier mounted in the tubing below, and is spaced 13 ft. from the next pair. The entire system provides a broadband vertically polarized receiving array for use throughout the range 2 to 32 MHz with a directive gain (reference isotropic) of about 8dB at 5 MHz, 13dB at 30 MHz, and front-to-back ratios throughout the range better than 13dB (and considerably better at some specific frequencies). The array is thus comparable to a log periodic or even a rhombic, yet taking up only a fraction of the ground area. At DWS, the aerial was shown bringing in Canadian ionospheric sounder transmissions in direct comparison with an 80 ft. high rhombic, beamed in the same direction. It came out of this stiff test pretty well, though clearly to evaluate any aerial system one needs to note results over quite a period of time.

To " pay " for the small size one has to accept that there will be some noise contributed by the pre-amplifiers, even though they use low-noise transistors. However, a good case can be made to show that on h.f. this extra noise can be disregarded at most sites compared with the inevitable atmospheric and galactic noise, except possibly at the extreme h.f. end.

From an amateur viewpoint, the greatest drawback to these particular systems is that they are for receiving only; then again most amateurs are not primarily concerned with broadband coverage throughout the h.f. spectrum but only with amateur frequencies. Otherwise there would be a rush to develop simplified versions of these " rhombics in the back garden " systems. Certainly, the demonstrations left one with the feeling that the " active aerial " concept is one with a considerable future: good directivity in a mini-system.

Seiler and Vackar V.F.O.s Using FETs.

Jim Fisk, W1DTY, editor of the new *Ham Radio* journal, recently sent along a set of proofs of an extensive article he has written for his June issue. In this he covers stable transistor v.f.o.s, with particular reference to the Seiler and Vackar circuits. He describes in detail the ideas which have developed on this subject since the original publication in *TT* of Len Williams' Vackar circuit, and the W3JHR and G3BIK Seiler circuits.

To follow up all these ideas, he has done some useful work in developing 3·5 to 4 MHz versions of these oscillators using MPF102 FETs and reports enthusiastically on the results achieved. Of the FET Vackar of Fig. 4 he says " it far surpasses any v.f.o. I have ever built, transistor or vacuum tube " with only a 1 kHz change when supply volts were varied from 22 to 9 volts, and no noticeable chirp or drift when keyed.

He then tried a comparable Seiler arrangement (Fig. 5) with equally encouraging results; in fact, apart from a very slight degradation in the output amplitude stability he could detect no difference. Indeed it is beginning to look as though it is going to need a pretty accurate frequency counter to investigate precise drift characteristics of these useful circuits.

The " 2PL Special "

Peter Pennell, G2PL seems to have discovered an intriguing way of using a two-element quad which might well lead to a new form of easily built omni-directional aerial. Normally, his two-element quad is up in the air on a tilt-over type mast, but during some recent gales this was lowered so that the quad was firing directly up into the sky, with the 14 MHz reflector loop touching the ground in places.

Under these conditions, he found the performance of the aerial to be superior to that of a resonated vertical on all three bands (typically S9 from VK on 14, S7 from W6 on 21 and 28 MHz). The feeder s.w.r. was little different from that in the vertical position. The particular array has three feeders about 100 ft. long and terminating in balun toroidal transformers feeding each of the driven elements. When tilted over the height of the 28 MHz driven element was about 7 ft. and that of the 14 MHz element about 12 ft.

Tests at 2PL suggest that the angle of radiation compares with a dipole a half-wave above ground, and he feels that it would be a simple matter to erect such a system using four vertical posts, rather in the manner of the original DDRR hula-hoop aerial (though, at least on h.f., this aerial does not seem to have lived up to its early promise). He feels that the resonant loop aerial is being assisted by the reflector on the ground. It is obviously difficult from limited tests to be sure that the whole system is really working out in the manner

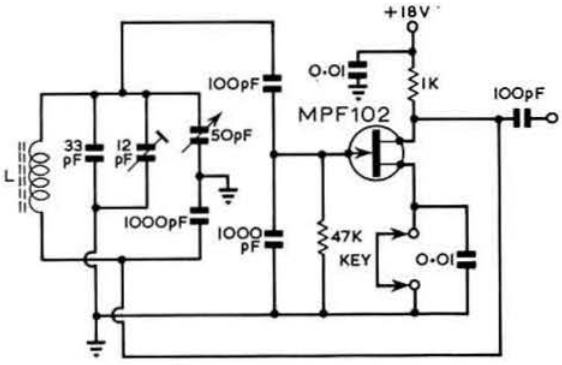


Fig. 4. W1DTY's FET Vackar Oscillator. L, 44t No. 30 on ½ in. ferrite core.

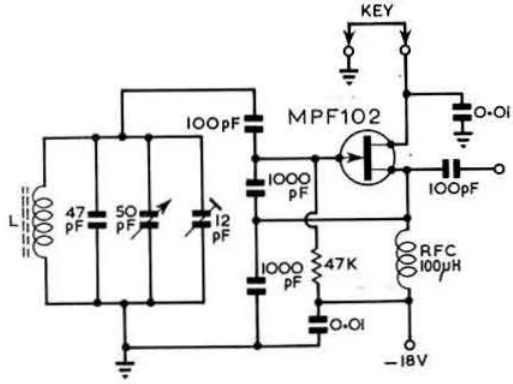


Fig. 5. Seiler FET oscillator. L, 48t No. 30 on ½ in. ferrite core.

described—but it would be interesting to learn if anyone tries erecting a " 2PL special."

Circular Polarization for V.H.F.?

Recently it was learned that the BBC has been doing some experiments at one of its v.h.f./f.m. transmitters with circular polarized signals instead of the usual horizontal polarization. This is thought to improve reception of these signals with car radios or with portable receivers resting on the ground, and possibly in some other circumstances. Circular and dual vertical/horizontal polarized transmissions are now being used by a number of American f.m. broadcasting stations, and the technique might well be a means of improving 144 MHz mobile operation.

Both forms of aerial array use combined horizontal and vertical arrays of approximately equal gain and fed with equal amounts of power. For dual systems the arrays are fed in phase: for circular polarization a similar system is fed in phase quadrature; this results in the electric field vector describing a circle in a plane perpendicular to the direction of propagation once per radio frequency cycle.

S.S.B. Broadcasting?

What with most shipping 'phone on h.f. and on the 2 MHz " intermediate " band due to change over to s.s.b. during the next decade (what the old-time fish fone boys would have said about this would surely have turned the ether permanently blue), the pressure on frequencies is making some broadcasters start thinking seriously about s.s.b. broadcasting. For some years there has been trials and investigations into various forms of c.s.s.b. (compatible single sideband) in which a carrier and one sideband are radiated, permitting reception on an envelope detector and with various techniques used to reduce distortion. There are some stations actually using this system, but the latest feeling seems to be that all c.s.s.b. systems developed so far have snags, mainly in that radiation cannot be confined entirely to the half-channel.

Now one finds it being proposed that true s.s.b. should be seriously considered for broadcasting. This implies finding some way in which Aunt Matilda can readily re-insert a carrier with an accuracy (for music) of better than 2 Hz! This means using synchronous detection. It might be possible using SICs to provide the complex circuitry in an ordinary receiver, but some of the proposals made so far look pretty expensive to implement. One novel possibility (*EBU Technical Review*) that looks a good deal simpler is the radiation of a sub-audible pilot tone (roughly at 27 Hz and about 20dB below peak modulation level) to provide a reference signal for an a.f.c. system.

Here and There

The notes on oscillator noise (*TT*, May 1968) brought in interesting letters from G3JGO and from G3PMR, both of whom point out that noise in transistor oscillators is not the same as with valves so that Edson's comments about high level oscillators do not apply—but both underline the importance of this subject, and we hope to refer to their views shortly.

Other useful ideas have come from G5BB and G3TFX.

THE IDEA BEHIND GB2LO

By SYLVIA MARGOLIS

GB2LO, the Exhibition Station of the 1968 City of London Festival, is one of a series of exhibition stations which we hope to be permitted to operate at every possible opportunity where Amateur Radio, at its most attractive and interesting, can be displayed to the public.

The choice of location was the first of many problems which we had to solve for this project. The station must be installed in a building where we could erect a really high aerial. The building had to be in a prominent location, so as to attract as many passers-by, particularly tourists, as possible, and where a crowd of spectators would not cause an obstruction in narrow city streets. There must be access for the public, but there must be staff to control the access. We had to have a place where we could come and go as we liked, but with maximum security, considering that we shall have well over £500-worth of equipment as our responsibility. We had to have a building with a well-disposed landlord! And all this within the 1·03 square miles of the City of London, the most crowded and expensive real estate in the world!

The *Daily Mirror* building fulfills every one of these conditions. Besides, the circumstances of our association with the *Daily Mirror* will mean that GB2LO will be installed and operated with the minimum of expense to the Society! We are most grateful to the proprietors of the *Daily Mirror* for their wide vision and generosity!

Any operation in a densely built-up area like the City of London will provide great technical problems. We shall publish details of how these are solved in a later issue of *Radio Communication*. In an interview on the BBC World Service programme, *World Radio Club*, I was asked why we are concentrating only on s.s.b. operation and only on the h.f. bands. The reason is that, in my experience, it is the long-distance contacts only which catch the public imagination and make real impact, public relations-wise. S.s.b., as the most efficient means of communication, apart from the esoteric c.w., is the natural choice, where there will be enough technical difficulties to contend with, even under optimum conditions. I was asked, too, why we are using commercially manufactured equipment. One reason is that we do not want to give preference to the work of any one amateur constructor. That is the function of the International Radio Engineering and Communications Exhibition. Another reason is that, for this venture with GB2LO, we want to accentuate the radio amateur's ability to communicate, as a means to international understanding, rather than his ability to devise the means to communicate. The third reason is possibly the most significant—we want to publicise British-manufactured communications equipment at an event which attracts thousands of overseas tourists.

GB2LO, acting, as it will, as a shop window for Amateur Radio on a very ambitious scale, will establish a precedent which can then be easily quoted and followed by RSGB groups all over the country. Arts festivals and big civic events take place all the year round throughout Britain. I feel that Amateur Radio has a rightful place in any programme that is meant to display the British way of life.

GB2LO will be operating 8-20 July. We hope to be on the air most of each day, but there will definitely be operation at the busiest time of day in the City, between 11 a.m. and 2 p.m. RSGB members will be very welcome to visit the station—if they can push through the crowds! And bring your licence if you wish to operate GB2LO!

Panel Finishing

We have recently been sent a couple of press releases describing two ways of enhancing the appearance of your equipment panels at a moderate cost.

The first of these is a self-adhesive p.v.c. layer which can be stuck on to a panel instead of painting it or leaving it covered in scratches. All drilling can be carried out first, and all that need then be done is to peel off a backing sheet, apply the p.v.c. film and cut out the necessary holes with a knife. The surface is perfectly opaque, with a matt white finish which readily accepts Letraset lettering. We have tried a small sample sheet, and agree that it lends a very professional tone to equipment without a hint of a cheap "plastic" appearance. The cost ranges between 0·4d. and 0·7d. a square inch, depending on the panel size. The firm to write to for a catalogue is West Hyde Developments Ltd., 30 High Street, Northwood, Middlesex.

The second step in decorating the equipment involves a little more work, but is not significantly time-consuming. The Keraplate division of Polymark Ltd., Jedda Road, Shepherds Bush, London, W12, are selling a kit for producing one's own coloured anodized etched dials, etc. The process involves laying transparent or translucent artwork over a sheet of anodized aluminium "Keraplate," and exposing under a Photoflood or UV lamp. The plate is immersed in special developer, washed and dried, immersed in Keraplate reducer, and again washed and dried. The result is a very durable plate (we attacked our sample with a knife and made no impression until we became really brutal) that can be fixed to a panel with adhesive or double-sided Sellotape. Colours available are black, red, blue, green, gold or copper, finished matt or polished on 0·018 or 0·008 in. plate. The literature quotes an overall cost of about 2d. per square inch, when a total surface area of about 600 square inches is involved. All the components for a kit are available separately.

A FRESH APPROACH TO THE TVI PROBLEM

By MAURICE MARGOLIS, G3NMR*

WITH the advent of s.s.b. many pioneers of the mode were encouraged by the noticeable reduction, and in some cases, complete elimination of TVI. They had the feeling that their 180 watts p.e.p. was in fact far more potent DX-wise than their 150 watts of a.m. At least it sounds more power! This happy state of affairs continued for most people and we were of course being given many good technical reasons why the condition existed, particular emphasis being placed on the now linear condition of the final, compared with the class C amplifier of the a.m. rig.

Now comes the era of the linear amplifier and a return to the old TVI problems. The purpose of these notes is to try to explain simply why this condition exists and just what can be done about it—which is considerable.

The first requirement in the series of tests was a receiver that was capable of tuning the BBC 1 sound on 41·5 MHz and also the BBC 1 vision on 45 MHz. I managed to get an old Hallicrafters S20R, which, with the addition of an S-meter, did what was required. With this set near the rig and a random length of wire as an aerial, I fed the exciter into a dummy load (totally screened) and tuned for the harmonic of the 14 MHz signal and found it at around 43·0 MHz. Compared to the fundamental signal, it was insignificant. The linear was then switched on and for exactly the same power into the dummy load as with the exciter only, the harmonic level had increased. This seems odd with a linear amplifier until we realise that a "linear" is only (approximately) linear when the relation between input and output envelopes is considered. The actual r.f. waveform can be badly distorted resulting in even harmonics only slightly less than in a class C stage. A linear can also act as a mixer so that the fundamental and second harmonic from the driver can beat to produce the third harmonic, which would otherwise be quite weak. It is therefore necessary to take greater precautions to suppress harmonics after the linear amplifier than were previously considered necessary. It is also now much more important to see that the television receiver has a properly installed and suitable aerial system.

Dealing first with the transmitter and aerial, the most usual arrangement is a tri-band Yagi or quad, fed with 52 or 75 ohm coaxial cable. In spite of an s.w.r. bridge indicating minimum reflected power, it must be appreciated that a Yagi or quad is a balanced aerial and to feed it directly with coaxial is wrong. R.f. is liable to come back from the aerial on the outside of the coax sheathing. This can cause radiation of the fundamental (and any residual harmonics) near the transmitter. Similarly the transmitter end of the coax must be correctly installed to prevent harmonics finding their way on to the outside of the sheathing and bypassing the low pass filter.

There are two answers:

1. Fit a balun to the beam, so that the feeder "sees" an unbalanced load.

2. Feed the beam with twin feeder and have a balun at a point near the transmitter.

The beam can be fed with say BICC cable type T3135, which is screened twin feeder. There is little radiation from the line because, being balanced, the signals on each feeder should cancel and the screen, which need not be grounded at either end and is of course not connected to either of the screened feeders, gives extra protection in preventing radiation. It also reduces received interference from local vacuum cleaners, sewing machines and other electrical equipment. It is of course terminated in a balun near the transmitter. An excellent balun is obtainable from KW Electronics Ltd., for 35s and one such balun will cover all amateur bands up to 29·7 MHz.

Therefore with a properly screened transmitter and linear with harmonic output reduced as far as possible, a low pass filter matched to the line, a balun and screened twin feeder, you have taken all possible precautions. It only remains to ensure that the transmitter is operated in a linear condition. From this point on any TVI complaint will most certainly be due to a defective television set or a bad installation. It is reasonable to expect that a complainant should be prepared to see his television is properly installed. If he is co-operative and you are prepared to assist him with advice, the following suggestions may prove helpful, but it must be emphasized that advice is all you should give. You are strongly advised not to make any alterations or adjustments to the television receiver or the aerial because, if any accidents occur or if the set goes wrong at a subsequent date, it is possible that you will be held responsible, and you may be faced with a bill for repairs.

Let us assume that you have no interference, on your own television receiver. To check the condition of your signal, plug the television aerial into the receiver that is capable of tuning BBC 1 and establish the strength of the BBC signal. Now direct your beam (if one is used) towards the television aerial and modulate the transmitter, using your power up to the legal limits. Tune the monitor set for the harmonic and note its level. You will now know approximately the relative strengths of the television signal and your harmonic and any other aerial installation in your area should be expected to show a primary signal strength of no less than you get on your own television aerial when connected to the same monitor set. Similarly, the level of harmonic received should be no greater than on your own television aerial.

If you are satisfied that the received signal strength is sufficient, an investigation of the aerial should be carried out, to observe that it is in good condition. Bearing in mind that a balun has been fitted to the station aerial, to preserve electrical balance, it should be obvious that the same action should be taken with the television aerial, as precisely the same conditions exist.

A simple balun can be made from a quarter-wave of coaxial cable[1] or a Belling-Lee balun No. L634, may be connected at the receiver aerial input. The addition (if

* 95 Collinwood Gardens, Ilford, Essex.

required) of a high pass filter,[2] home-made or commercial, at the television receiver input should eliminate any remaining interference.

In the event that the aerial does not provide a signal equal to your own, you should recommend that it be resited before any further diagnosis is attempted. If, after all these recommendations have been carried out, the TVI is still bad, it must be regarded as a matter for the GPO to assist the TV owner. The amateur can be confident that he has taken every reasonable precaution and is not at fault.

[1] *RSGB Amateur Radio Handbook* p. 305/6.
[2] *RSGB Amateur Radio Handbook* p. 451/8/9.

TVI and the RSGB

The GPO Liaison and TVI/BCI Committee of the Society exists to provide assistance in cases where members have TVI problems. Regional Representatives were asked in 1966 to consider the setting-up of regional TVI Groups to render assistance in their own areas. Two such Groups are now active: Region 1 under the guidance of B. O'Brien, G2AMV, and in Region 10 where the Chairman is D. M. Thomas, GW3RWX. There are in addition several groups which have been sponsored by Affiliated Societies and Clubs.

TVI problems generally have both social and technical aspects and a local group is in a far better position to suggest a suitable course of action which can solve the difficulties before they are passed from the GPO Region to the Radio and Broadcasting Department at GPO Headquarters in London. Where no local group exists, or where the problems are such that GPO Headquarters are involved, the Society's Committee will deal with the matter on behalf of the member.

It should be noted that the GPO have specifically stated that provided the amateur in question is operating within the terms of his licence they do not give protection to electrical apparatus such as tape recorders, public address or wired television systems. Their action is limited to giving advice on how to reduce interference.

What sources of assistance are available to the member who is apparently causing television interference? The *RSGB Handbook* contains information and this is supplemented from time to time by appropriate articles in *Radio Communication*. Reprints of some articles that have appeared in past issues are available from Headquarters, including informa-

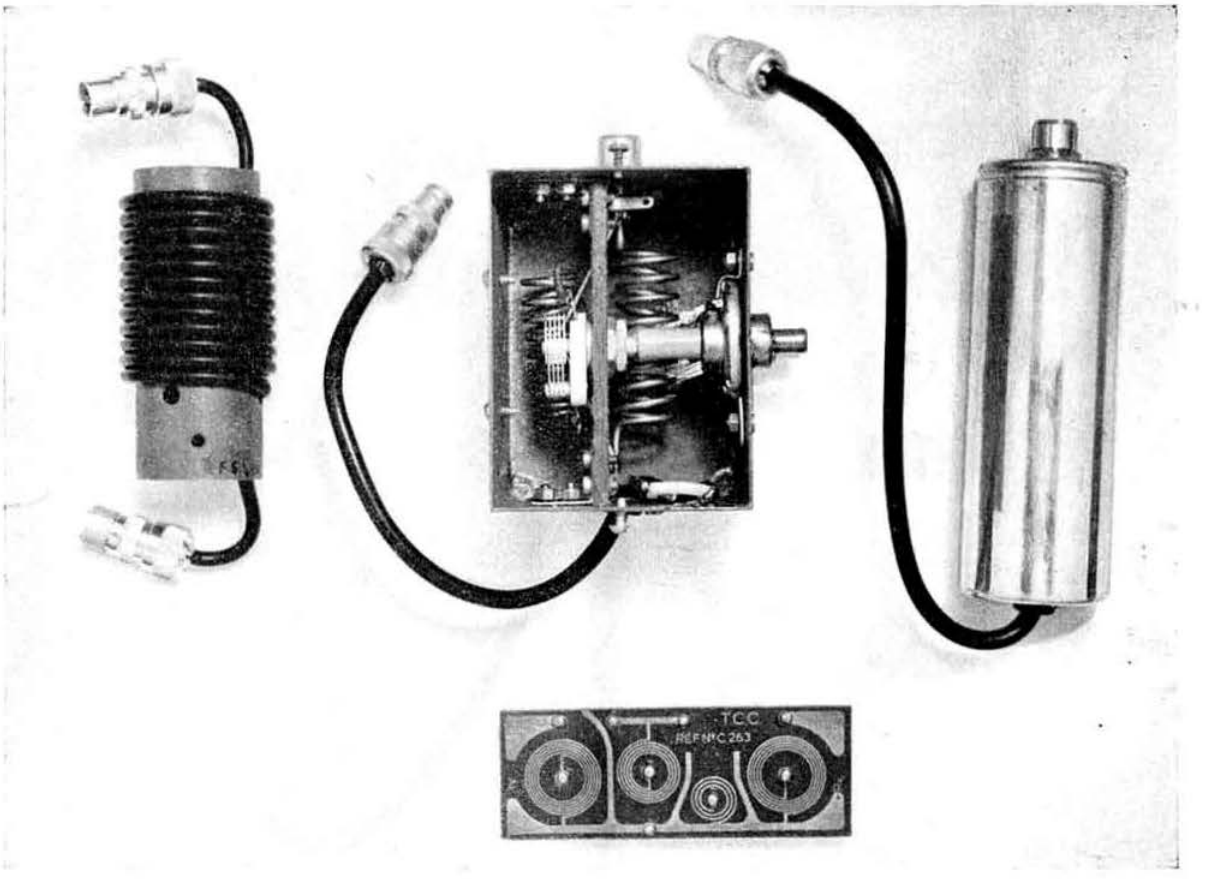


Fig. 1. Left to right: Filter type 49/A; the braid of the coaxial cable is used as the inductor of a tuned circuit and a preset capacitor is adjusted through the larger hole in the former. Type 48/2A, a tunable rejet filter. Type 38A, which contains the printed circuit element shown at the foot of the photograph.

tion on diagnosis and high and low pass filters. The GPO may decide to fit one of their standard range of filters to the televisioner receiver to which interference is being caused and details of these filters are given below.[1] Normally, these filters cannot be obtained by an individual from the GPO (due to the lack of suitable purchasing procedure within the Post Office) but they can usually be obtained by a TVI Group by negotiation with the local GPO Region.

In the commercial market both low and high pass filters are available from *KW Electronics* and, provided that they are correctly installed, they can be of very considerable help. A further device which is small, both in cost and physical size, is the balun and it is of interest to note that in some cases interference has been completely eliminated solely by the use of a balun in the transmitting aerial system. Such a unit is available from *KW Electronics* and for further technical information readers are referred to the article in the July 1966 issue of the RSGB BULLETIN entitled "The G3HZP Balun."

In some cases the introduction of a television receiving aerial having directional properties will improve the position if the relative directions of the amateur transmitter and television transmitting station are such that advantage can be taken of this approach. The *Q-Beam Loop Aerial* for Band 1 manufactured by J-Beam Engineering Ltd., is one such aerial which has sharply defined nulls at the sides. This aerial also has a gamma match which provides assistance in the elimination of pick-up on the feeder, which has proved to be the cause of many cases of interference.

With the advent of colour television and the use of transistorized front ends in television receivers the problems of TVI are not likely to lessen until the time when all television transmissions are moved out of Band 1. The question of the "difficult" viewer is likely to remain with us and the social aspect of TVI cannot always be solved by technical remedies. However, given genuine co-operation by all parties involved, the GPO, viewer and amateur, no case of TVI is impossible of solution.

G2BVN

GPO TVI FILTERS

No.	P.O. Code	Description	Purpose
35A	290118	Dual Bandpass	Passes 40–70 MHz 170–220 MHz
*38A	290132	Filter, Suppression	Rejects below 40 MHz
48/1A	290150	Filter Suppression	Rejects 35–50 MHz (Tunable)
48/2A	290151	Filter, Suppression	Rejects 45–100 MHz (Tunable)
49/A	290152	Filter, Suppression	Rejects 16–40 MHz (Tunable)
48/3A	290153	Filter, Suppression	Rejects 110–220 MHz (Tunable)

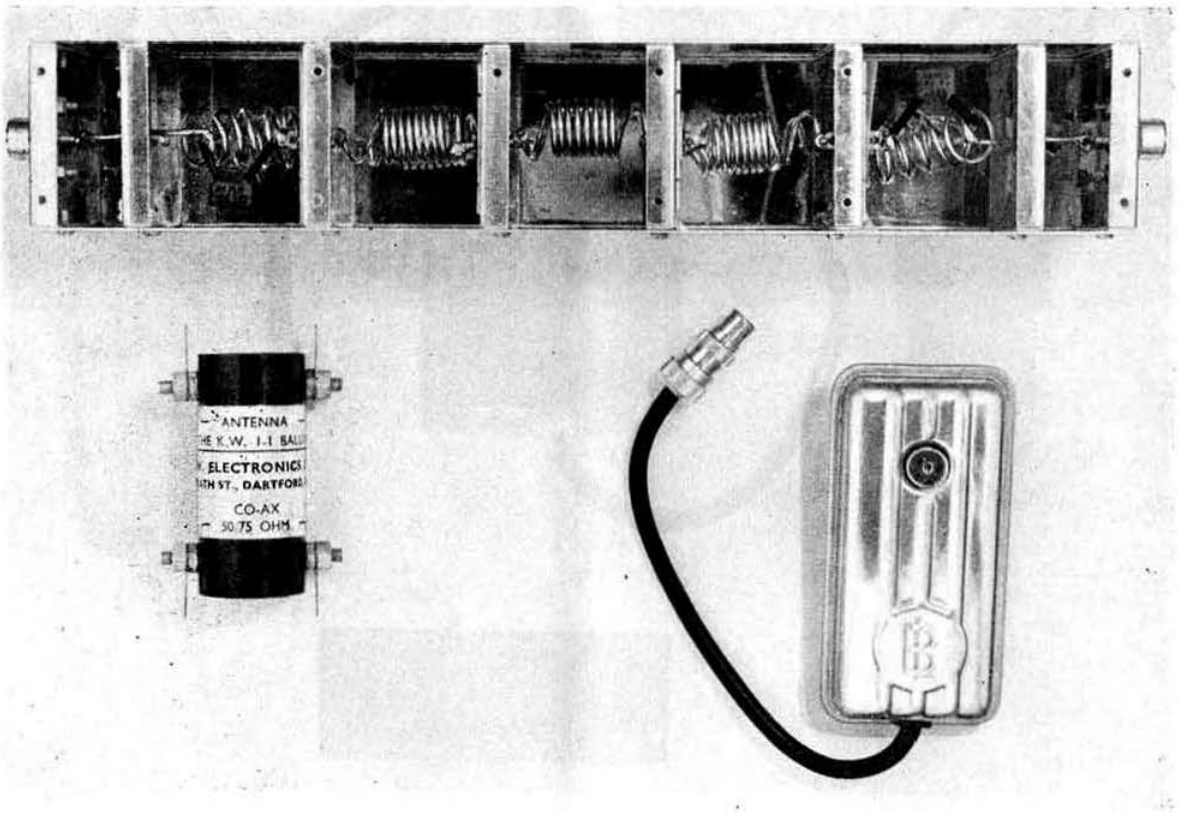


Fig. 2. Three items manufactured by KW Electronics. Bottom left is an encapsulated balun and on the right a high pass filter. Above is a view of a Band 1 52 ohm low pass filter.

Tenth Reunion of Radio Amateur Old Timers' Association

By JOHN CLARRICOATS, OBE, G6CL*

AS an experiment, no guest speaker was invited to attend the 10th Reunion of the Radio Amateur Old Timers' Association held at The Horse Shoe Hotel, Tottenham Court Road, London, W1, on Friday, 3 May, 1968. By reducing speeches to a minimum a much longer period became available after dinner for conversation, and judging by the amount of Reunion ragchew in evidence the new approach seemed to meet with general support.

The chair was taken by Arthur Milne, G2MI (Licensed 1924, RSGB President, 1954) who had the support of four other past presidents, Ernest Gardiner G6GR (1944/6) Victor Desmond, G5VM, (1948/9) "Dud" Charman, B.E.M., G6CJ, (1952) and Roy Stevens, G2BVN (1966). Especially welcomed were Mr Hugh Pocock, PXP in 1912 (who was for many years Editor of *Wireless World*) and Miss May Gadsden who, with Mr Stevens, are honorary members of the Association.

The Founder Secretary, Mr John Clarricoats, OBE, G6CL, reported that membership had increased to 232 with 14 new names added during the year. Four members of the Association (Howard Littley, G2NV, Jim Roe, G2VV, Fred Maynard, G4OU, and Hugh Longuehaye, G8KC) had passed on. Messages of goodwill were read from a number of members who were prevented from attending including four (Arthur Mitchell, G8DF, Philip Trasler, G3DU, Bill Thompson, G2MR, and Frank Inchley, G3AG) who were in hospital.

A proposal that the Association should offer a special tie to members received the full support of all present and further information about the design and price will be published later.

An invitation to contribute towards the cost of meeting the day-to-day expenses of the Association which, heretofore, have been met from once-for-all life subscriptions of £1 1s., resulted in the sum of £23 0s. 3d. being donated in a matter of minutes.

During the evening Mr Clarricoats reported on a recent visit which he had paid to Mrs Irene Marcuse (widow of the late Gerald Marcuse, G2NM). Arising from the visit Mr Clarricoats was able to announce the acquisition of a number of historic documents including, for example, records of the Radio Transmitters' Society (1924), a copy of the initiation ceremony for the Royal Order of Trans-Atlantic Brass Pounders (ROTAB—1925) (as mentioned on page 112 in "World at their Finger Tips,") correspondence from the Royal Geographical Society apropos the contacts made by G2NM with the Hamilton-Rice Expedition to South America in 1925, and a variety of other historic letters and documents which he hoped would eventually find their way into the archives at the Society's new Headquarters in Doughty Street. Great interest was also shown in a number of QSL cards addressed to the late Gerald Marcuse by members of the Association present at the Reunion. Mr Clarricoats took pleasure in returning the cards to the original senders.

For the record the following attended the Tenth Reunion:
G2AK, DX, HP, IY, KI, KJ, KU, MI, NH, NN, OA, PU, QT, UJ. UV, VB, YL.
G2BDP, BLA, BVN, CVV, CZH, DRT, FQD, FYT.
G3HT (ex PZX), 3WW, G4OI.
G5BZ, CV, DJ, LJ, MA, OX, RS, VM, WP, XB, YY.
G6CJ, CL, GR, FI, HR, LK, LL, LQ, MN, NR, NU, OX, PA, RB, RJ, YJ, YP.
G8HV, NY, QO, TY.
Hugh Pocock (ex-PXP), May Gadsden.

* Founder-Secretary, 16 Ashridge Gardens, London N13.

LOOKING AHEAD

6-7 July—Grafton Annual Field Day (see page 472).
26 July—RSGB Dinner Club (see page 434)
15 September—Region 1 (NW) Field Day.
29 September—Region 1 ORM, Southport.
2-5 October—RSGB International Radio Engineering and Communications Exhibition.

Mobile Rallies

6 July—RAFARS Hamfest, RAF Station, Locking, near Weston-super-Mare, Somerset, from 2 p.m. Talk-in stations on 160m and 2m (see page 477).
7 July—South Shields Mobile Rally. Bents Park Recreation Ground, Coast Road, South Shields. Talk-in stations G3DDI on 1980 kHz and G3KZZ on 145·8 MHz, from 11 a.m. The rally will feature a number of trade stands, and competitive events starting at 2 p.m. Light refreshments will be available.
7 July—Cheltenham Festival Rally, Pittville Park, Cheltenham. Talk-in stations will be on 160, 80, 4 and 2m. Camping and caravan facilities will be available in the members' car park at Cheltenham Racecourse. Details from G3MOE and G3LDA.
14 July—Worcester Mobile Rally.
14 July—Reading Mobile Picnic. Childe-Beale Trust, near Pangbourne, Berks. Talk-in on 2m. Car stickers giving half-price entry (2s. 6d. per car) are available from G3LFM. The Trust encompasses some attractive grounds by the river, with peacocks, fountains and pleasant walks, making the event suitable for the whole family.
14 July—Port Talbot Mobile Rally. Aberavon Beach. Car park facilities and talk-in stations on 160 and 2m will be provided.
17 July—Swindon Evening Mobile Rally. Barbury Castle, Swindon. Talk-in on Top Band.
21 July—Cornish Mobile Rally, Pentire Head, Newquay, Cornwall.
28 July—Saltash Mobile Rally.
28 July—Wessex Mobile Picnic Stoney Cross Airfield, in the New Forest. Talk-in stations G3FVU on 1880 kHz and G3WJJ on 144·2 MHz.
4 August—Plymouth ARC Picnic, Yelverton.
18 August—RSGB National Mobile Rally, Woburn Abbey, Bedford.
18 August—Torbay ARS Mobile Rally, Dartmouth Football Ground, close to the Naval Helicopter Station, Tournstall. Talk-in station on 160, 80, 4 and 2m a.m./s.s.b.
18 August—Derby Mobile Radio Event, Ryknеld School, Derby.
25 August—Swindon Mobile Rally, Lydiard Park
1 September—Preston Mobile Rally.
2 September—Peterborough Mobile Rally, River Bank, Peterborough. Trade stands and all the usual attractions plus an exhibition of antique wireless gear. Plenty of free parking and picnic space are at the Riverbank Park, between the swimming pool and boathouse. The entrance is via Bishops Road. The rally will start at 2.30 p.m., although the talk-in station G3DQW will be operating on 1980 kHz from 1 p.m. Further information from G3KPO, Jersey House, Eye, Peterborough.
22 September—Scottish Mobile Rally, The Cartland Bridge Hotel, Lanark.
20 April, 1969—North Midlands Mobile Rally. Drayton Manor Park, near Tamworth, Staffs.

NRSA CONVENTION 1968

19 May, Belle Vue, Manchester

The Northern Radio Societies' Association was formed in 1965 with the object of presenting Amateur Radio to the public. A secondary object was to provide an opportunity for enthusiasts in the North West to meet one another periodically. Successful Conventions were held in the Autumns of 1965 and 1966 and after a break of eighteen months the third Convention was held on 19 May, 1968 at Belle Vue Gardens, Manchester.

With the objects already mentioned in mind the Committee of the NRSA started planning this year's Convention in November 1967. The previous Chairman, through business and family commitments, was unable to continue in office and Mr Wm. M. Furness, G3SMM, was elected to serve in his place. It was thought that this year's Convention should be held early in the Amateur season at a time when it was unlikely to conflict with other events in the nature of rallies or contests.

The clubs in NRSA, namely Ashton-u-Lyne & District RS, Bury & Rossendale RS, East Lancashire RC, Eccles & District RC, Manchester & District ARS, NW V.H.F. Group, South Manchester RC, Stockport RC and Wirral Amateur RS, were to arrange their own stands and displays.

On the day of the Convention the Committee were most happy to welcome Mr R. S. Barratt, the Assistant Chief Constable of Manchester and Salford Police who, after being introduced by the Chairman, made a short address and then opened the Convention. Also in attendance were Mr E. A. Dowdeswell, G4AR, the General Manager of the RSGB and Mr J. Petty, G4JW, the Zonal Representative on the RSGB Council.

Operational stations were set up both in the Kent Suite and in the RAEN and South Manchester RC caravans. The North West V.H.F. Group, who were taking part in the 2m portable contest, operated from a tent adjacent to the Kent Suite.

The signing-in book bore 340 signatures and when one considers that the individual signatories represented parties of anything up to four or five people the total number visiting the Convention who were actively interested in Amateur Radio must have been of the order of five to six hundred. In addition the Kent Suite was open to the members of the public and during the course of the day many hundreds came to browse round.

The Convention Committee is indebted to the Manchester Model Boat Society for a display during the course of the morning of radio controlled boats on the lake at Belle Vue. Another " crowd puller " was the closed circuit Television display by East Lancashire RC.

The preliminary rounds and the semi-finals of the Quiz were held in a Committee Room during the course of the morning and early afternoon with the Final held on the stage after the Draw. The final was between Manchester and District ARS and the Bury and Rossendale RS when, after a close contest the Bury Group emerged victorious.

The Grand Draw attracted a great deal of attention. The first prize of a portable TV set was won by a lady in Accrington, the other prizes being won by people living in widely separated parts of the North West.

To summarize—a long but most successful day. To see so many enthusiasts enjoying themselves was ample reward for the time and energy expended in planning the Convention.

Radio Communication and Staff

At the end of May, John Adey, who for three years was an Editorial Assistant on *Radio Communication*, left the staff to take a three-month holiday on the Continent; a prospect which appeals to us all but few have the courage to implement. This leaves a vacancy on the editorial team which we are anxious to fill immediately.

If you have had some editorial or journalistic experience, are in your late teens or early twenties, hold a call-sign and look favourably on the prospect of working for the Radio Society of Great Britain, drop a line (marked " Confidential") to the General Manager giving details of your education and career to date. Duties will include compiling features such as Club News, editing articles, sub-editing and preparing paste-ups, and reward for these efforts will lie within the limits £600 and £800, depending on age and experience.

While we are trying to fill this post permanently, *Radio Communication* will have the assistance of David Evans, G3OUF, known to many as a member of the V.H.F. Committee, Secretary of the V.H.F. Contests Committee and for the organization of v.h.f. DXpeditions to the Channel Islands. David will remain on the staff until December this year when he commences on a course under the BOAC/BEA Joint Pilot Training Scheme, at Oxford.

Direction Finding

The lack of any mention in *Radio Communication* of how to go about DFing probably leaves many feeling that it must be a lost art. There are, however, several events each year, many sponsored by RSGB, and these are reported in the Contests section of *Radio Communication*. But it seems to us that DFing has a rather limited band of keen supporters, judging by the familiar names which appear in the qualifying events, and some means of promoting this activity would be valuable. We are therefore anxious to publish some detailed gen on the type of equipment which could be taken to such events, but have so far failed to persuade the active DFers to part with the secrets of their winning equipment! So if you have built a successful D/F receiver, why not write an article for *Radio Communication* and receive some financial reimbursement for your efforts? Double spaced, typed, if possible, and we will be glad to give it fullest consideration.

REGULAR FEATURE

THE MONTH ON THE AIR

By JOHN ALLAWAY, G3FKM*

THE current improvement in weather conditions seems to have coincided with a falling off in the amount of news material available to your scribe, and apologies are offered for the comparative shortage of information in this month's *MOTA*. The slack period in DX news has unfortunately caused the demise of one of the world's best known news sheets—the *West Gulf DX Bulletin*. The disappearance of this weekly publication is greatly regretted, and it is hoped that its absence is only temporary. In the meanwhile the Society's sincere thanks are extended to its Editors for their permission to reproduce items from their bulletin over the years, and also for supplying us with complimentary copies each week.

Congratulations to Ken, G4MJ, on being awarded the 1968 " Overseas Ex-G Trophy." This has been awarded to him by the Ex-G Radio Club " in appreciation for deep interest and personal untiring efforts on behalf of the Club and its members."

G3SEA reports that he is being mistaken as the QSL manager for CT2AY, and wishes to point out that this is not the case. All QSL cards received with IRC's will of course be returned, and all others destroyed.

G2MI says that he would very much appreciate hearing from anyone who can supply him with the UK address of ex-VK0CJ. Arthur is also receiving a large number of cards for former VS9 stations, and would be grateful if all holders of VS9 calls would let him know their current whereabouts. He points out that cards for DL5 stations are sent to MARS HQ Station, 93rd Sig. Bn., APO New York, NY 09175, US Forces Darmstadt, Germany, and that they should send their envelopes for incoming QSL's to this address.

Bob Palmer, G5PP, of Coventry, will be in the United States and staying with W2AXU between 8 and 20 July, and with W1NJJ from 20 to 28 July. He will be operating " portable " and will be on the lookout for British stations around 14,250, 21,350, and 28,650 kHz. Bob will be remembered for his Scottish holidays, during which he has activated every Scottish county on Top Band.

Top Band News

A letter from ZC4GM points out that he has no proper 160m aerial but has put out a few hopeful " CQ " calls on his indoor Joystick. He is particularly anxious to receive reports from anyone who may have heard him. One regular reporter to *MOTA* reported Gordon's signals—would he please write to Flt. Lt. G. C. Moore, Officer's Mess, RAF Episkopi, BFPO 53?

G3NXV/Mobile reports more Top Band DX in the form of an A3j QSO with HB9T at 23.30 whilst motoring near Bristol.

G3's UGF and UBI will be visiting N. Ireland between 28 July and 11 August. They will spend approximately three days each in Armagh, Londonderry, Fermanagh, and Tyrone (in that order) and may also fit in a few more counties if the demand exists. Their call-sign will be GB2NI. They will have kites, half wave, and a 200 ft. vertical aerial supported by a balloon! The other equipment will be a KW2000 transceiver and Lelante Electronics Le Mans Transceiver. Their aim is to have at least 1000 QSOs. QSL cards should be sent via G3UGF (see *QTH Corner*, June *MOTA*).

G3's UQL and VAG will be in Scotland between 29 June and 12 July. The part of their trip still outstanding when this is printed will be as follows: 3 July Kincardine, 4 July Banff, 5 July Moray, 6 July Nairn, 7 July Sutherland, 8 July Caithness, 9 July Ross, 10 July Inverness (or Skye), 11 July Argyll, and 12 July Kirkcudbright. Their calls will be GM3UQL/P and GM3VAG/P and they will be active from 19.00 onwards. QSL's should be sent to 27 Ernest Road, Wivenhoe, Essex.

VK6NK (G3NKX) writes to say that a number of VK's are becoming interested in Top Band DX and will be on between 21.00 and 23.00. Anyone interested in fixing skeds is invited to write to VK6NK, C. Waterman, 20 Tavistock Crescent, Lynwood 6155, West Australia. He has heard many W's and JA's and also logged GM3FSY, and G3's MYI, RXH, and UNT between 29 January and 6 April.

Flying Hams' Club

No. 9 FHC Squadron was formed last October, and is now the largest and most active section of FHC. Qualifications for membership are the holding of an amateur licence coupled with past or present pilot rating (aircraft, balloon, or glider!), or having used aircraft communication equipment, air to ground. Applicants should send 10 IRC's or 10s. to Tony Uwins, G3VNX, Ravenscourt, Grange-over-Sands, Lancs. for life membership. There are no other dues, income being derived from the Awards programme (see Awards section). There is a get together of members at 18.30 GMT on Mondays on 3760 kHz, and also a joint net with Chapter 8 of C.H.C. on Sundays at 10.00 GMT on 7070 kHz. This session continues until 17.00, and there is a c.w. net on 7030 at 09.00. Anyone is welcome to join in any of these nets, whether member or not.

News from Overseas

A letter has been received from the RAF Muharraq

* 10 Knightlow Road, Birmingham 17. Send reports to arrive before 15 July for the August issue, 7 August for September and 11 September for October.

Amateur Radio Club, MP4BBA, saying that they are receiving QSL cards intended for operators of the former RAF Club station VS9ASP, of Khormaksar. Unfortunately the log books of VS9ASP appear to have been lost during the departure from Aden, and sincere apologies are extended to all those needing cards from that station, as contacts can no longer be confirmed.

ZD7KH was expecting to leave St. Helena early in May, and should be home in Cornwall by now. He reports that large numbers of QSL cards are arriving for contacts with ZD7SA on c.w. during the last year or so, in spite of the fact that Bobby Freese left the island at least five years ago. The active licensed amateurs at the time of Keith's departure were ZD7's DI, FF, GO, and GS. Roland Whiting, the force behind ZD7WR (the 10m beacon) left at the same time as ZD7KH, but the beacon will continue to be activated from ZD7GO's QTH for the next year or so.

The latest issue of the HKARTS *Newsletter* reports that OZ7SM has finally managed to obtain a Hong Kong licence after waiting 8 years, and is now VS6AD! Guenther, DJ4NF, has also received his and will henceforth be heard as VS6BA. It was thought that these two were about to set up a record by having to wait 10 years for their licences. News of the intended VS6AJ/P activity during NFD was unfortunately received just too late for inclusion in last month's MOTA, but if this was as successful as anticipated there will be a repeat during the High Power NFD on 13/14 July. Successful applicants for the Firecracker Award now total 29.

In spite of the present difficulties in Nigeria NARS manages to keep in touch with its scattered membership. They hope to be able to negotiate for the use of 160m, and some of the v.h.f. bands as soon as peace returns. Other items to be arranged with the authorities are compulsory examinations and c.w. tests for all new licensees, and reciprocal licensing. In 1966 20 of the 22 5N2's then licensed were not Nigerians, and it is hoped that this sad state of affairs will soon be remedied. An interesting point is raised by K4JGS, who is at present in EA0 but unable to get a licence. He works for an oil company which has drilling rigs 19 miles off the Nigerian coast, and wonders whether he is entitled to use an /MM call as the QTH is outside territorial waters!

The Radio Society of East Africa operated 5Z4IR/A from the Electro Show in Nairobi during April. There was a competition among local schools for the best made piece of home constructed amateur gear. The winner was presented with a trophy by the Society's President, 5Z4HW. Society members played a big part in maintaining communications during the Safari Rally, and links on 80 and 40m as well as on v.h.f. were used with considerable success.

G3VPW is leaving on 4 June for the Falkland Is. and will be with the satellite data acquisition stations at Port Stanley. He is taking up a post with the Science Research Council, and will be accompanied by Brian, G3TXH (ex-VS9ABL). G3HVB has already left for VP8. John (G3VPW) has already despatched a KW2000A and a linear to Stanley, and hopes to have his call by early July—the other two also have radio equipment with them. He hopes to be on 20m and also 15 and 10m when conditions permit, and to be on all bands 160 down when he is fully organized. He will of course be looking for QSOs with friends in the UK. Skeds for the l.f. bands may be arranged through G3SJJ, and for the h.f. bands via G3VVU. QSLs should be sent via George Francis, G3TWV, 93 Balderton Gate, Newark, Notts. QSLs for G3HVB's VP8 activity should be sent via G3LDA, 40 Chelmsford Av., Cheltenham, Glos.

In March we described a ballot for President of the YL International S.S.B. Communications System, mentioning Marcia Guest, WA4SBK, a contender for the Office. Another aspiring President is Jessie, WA6OET, who is seen here with her husband Pete, WA6MWG.

G2JL has obtained a French mobile licence to use from his yacht *Reine de Mai* during a cruise along the W. Brittany coast between 15 July and 1 September. His call-sign will be F0GR/M, and he will be on 7019 and 7054 kHz. Outside territorial waters his call will be G2JL/M.

George, ZD7GO, writes to say that he has been active since mid-April (on 10m only). He uses c.w., a.m. and s.s.b., and is at present crystal controlled on 28,020, 28,110, 28,205, and 28,425 kHz. He is looking particularly for contacts with the UK, especially on Saturdays and Sundays. (See *QTH Corner*.)

Expeditions

G3UXV reports that, together with a group of friends, he will be making an extensive expedition around the British Isles during summer 1969. The object is to visit all the rarer G, GM, and GW counties for the benefit of county hunters, and it would be much appreciated if interested readers would drop a line to Steve at 2a Goldings Road, Loughton, Essex, and give him some idea of the counties most needed.

GC3s KNZ, LDH, SVK, and TTN,will be active from Sark (28 to 31 July), Alderney (1 to 4 August), Guernsey (5 and 6 August) and Jersey (7 to 9 August). They will be on all bands 160 to 10m, both s.s.b. and c.w., QSLs should be sent to the respective operator's home QTH, with s.a.s.e. In the case of GC3SVK cards should be sent via G3TZZ or via the bureau. Fred, G3SVK, also hopes to be on from St. Mary's, Scilly, from 31 August to 2 September inclusive. Cards for G3SVK/P should be sent as for GC3SVK.

VK3AEJ is due to leave for Willis Is. (VK4) in mid-June. He will be stationed on the island for six months, and operation on 20 and 6m is forecast. Those needing this one for a new country should be on the lookout for a VK4 with a pile-up!

Paul, VQ8AD, is reported to be arranging to send the transceiver donated to the Indian Ocean area by the Long Island DX Association and Don Miller to Reunion in order that it may be used from Europa Is.

A trip to Andorra will be undertaken by DL3VV and DJ6SZ between 13 and 19 July. Their call-signs will be PX1VV and PX1SZ respectively, and they will use both c.w. and s.s.b. They propose to operate approximately 25 kHz up from the band edges.

WA0TIX, who operates from ET3USA, is said to have a licence for 9U5, and to be going there in December. He is also working on possible three-day trips to Sudan and Mali together with W5QHD. 5U7AL may have operated from Tchad, with a TT8 call during June.

According to Gus, W4BPD, W4HOS has been trying to obtain permission to make a trip to Navassa Is. (KC4) for the last two and a half years. He says that there are several groups making the same effort, but the prospect seems bleak.

Awards

The Westmorland Radio Society are issuing the **English Lake District Award** (ELDA) for working stations the last letter of whose call-signs spell the lakes and mountains Coniston, Ullswater, Windermere, Helvellyn, Scafell Pike, and Skiddaw. Where a letter appears more than once a different station must be worked. There are three classes. First (using all English (G) call-signs), Second (at least 40 Gs), and Third (at least 20 Gs). Log data certified by two licensed amateurs plus eight IRCs or 5s. should be sent to G3VNX, " Ravenscourt," Grange-over-Sands, Lancs. This award is available to listeners, and is free to blind or paralysed applicants. QSLs are not needed.

The No. 9 (United Kingdom) Squadron of FHC have announced an awards programme. These are all available to licensed amateurs and listeners and all cost eight IRC's or 5s. There are no date limits or band restrictions and a GCR list with full log data should be sent in each case to Len Wright, GD3AIM, 5 Elizabeth Rise, Castletown, IOM. QSLs must be in hand for all contacts claimed. The **United Kingdom Maritime Counties Award** is for confirmed QSOs with counties bordering the following sea channels: North Channel (Antrim, Down, Argyll, Wigtown, and I.O.M.). St. George's, (Anglesey, Caernarvon, Merioneth, Cardigan, and Pembroke). Bristol Channel (Carmarthen, Glamorgan, and Somerset). English Channel (Cornwall, Devon, Dorset, Hants, Sussex, and any Channel Is.). The First class award requires 19 counties on four channels, the second class 15 on 3 channels, and the third class 10 on 2 channels. The **All United Kingdom Award** requires contacts with 12 G, two GC, two GD, four GI, six GM, and six GW stations for European applicants, and half these numbers for all others. The three classes call for 30 different prefixes for first, 22 for second, and 14 for third class certificates. Details of two other awards will be given in August MOTA.

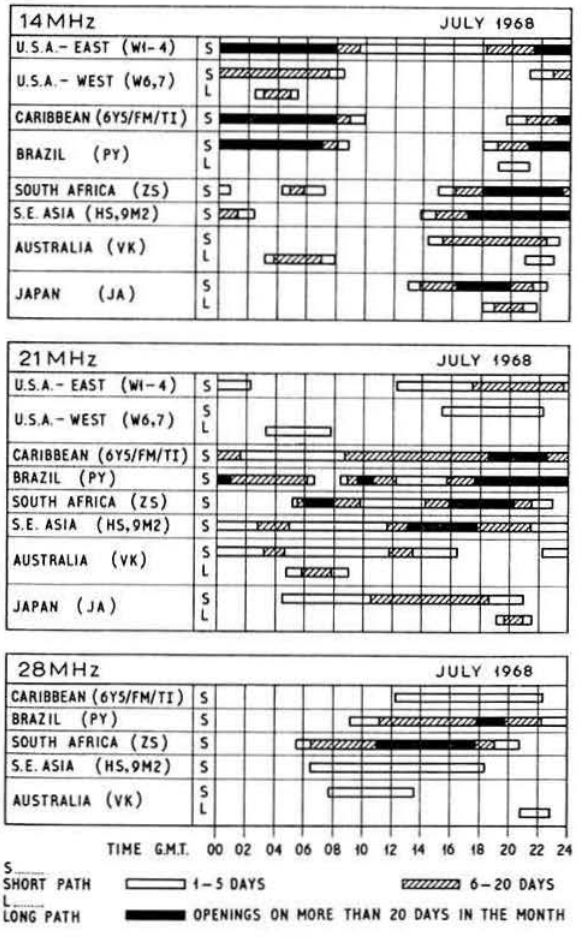
DX News

Those who have been following the controversy over the W9WNV DXpedition will be interested by a suggestion made by K4IIF in his DX column in May *CQ* Magazine. This is that it would be a good idea if the ARRL were to organize a major DXpedition, financed by contributions in the same way that other independent expeditions have been. With ARRL controlling the finances, handling the licensing arrangements and QSLs, and the operator or operators being their own nominees there would be no " credibility gap." It is also pointed out that this would give the DXCC Com-

PROPAGATION PREDICTIONS

During July the propagation conditions will differ little from those of the previous month. On 28 MHz North America will only come through under very exceptional conditions. Reliable contacts with South America will be limited to a few hours only. The most favourable period for traffic with Africa is in the afternoon. Contacts with Asia and Australia will only rarely be possible. On 21 MHz contacts with North Central and South America, Africa and Asia will be workable. America cannot be guaranteed every day, on the other hand with certainty. As in the previous month, sporadic short-skip conditions will occur, making European contacts possible on 28 and 21 MHz. 14 MHz will remain a predominantly night time DX band and a band for European traffic during daytime. The most favourable time for traffic with Western North America is around 03.00 GMT, at which time the Great Circle path coincides with the twilight zone. On 7 and 3·5 MHz there will be no noticeable change in conditions compared with the previous month.

The mean provisional sunspot number for May 1968 from the Swiss Federal Observatory was 128. Sunspot activity was at a high level during most of the month. The predicted smoothed sunspot numbers for September, October and November are 107, 106 and 105.



The QSL card sent out by the Royal Signals ARS after an expedition to Brunei, see paragraph below.

mittee some first hand exposure to the problems of the DXpeditioner.

The Royal Signals expedition to Brunei, VS5RCS, notched up a total of 3350 contacts distributed through 105 different countries. They were confined to 15 and 20m, because they found 10m completely dead, 40m produced only local s.s.b. signals, and the static level of 80m was too high for any QSOs to be made. QSLs should be sent via 9M2NF (see May *MOTA*).

W3LE is believed to be visiting Sikkim sometime this summer. He will be trying to activate AC3.

A new set of call-signs is announced for Indonesia—YB will indicate a 1st class licence holder (permitted 500W), YC a 2nd class (75W), and YD 3rd class (10W). District numbers will indicate W. Java. (1), Central Java (2), E. Java (3), Djakarta (0), and only YB licensees will be permitted to work foreign stations. The existing PK8 stations are legal but will have to apply for new licences within the next year. 9V1OQ will be in Java in June and hopes to operate as 9V1OQ/YB1. QSL's should be sent via MARTS, Box 777, Singapore. DL3KU is also hoping to obtain a YB0 permit and may operate on 14 MHz s.s.b.

Contests

The **1968 VK/ZL/Oceania DX Contest** will take place between 10.00, 5 October and 10.00, 6 October (Phone Section), and the same times on 22/23 October (c.w. section). The object is to contact as many VK, ZL, and other Oceania stations as possible on all bands. Contacts with VK or ZL count 2 points, with Oceania 1 point, and a final score is arrived at by multiplying total QSO points by the sum of VK/ZL call areas worked on all bands (the same call area worked on different bands counts as a separate multiplier). QSO exchanges consist of report and serial number of contact (starting from 001). Logs must show date, time (GMT), station worked, band, number sent, number received, points claimed. Each new VK/ZL call area worked should be underlined, and separate sheets should be used for each band. A summary sheet should give call-sign, name, and address (in block letters), and also detail equipment used. A summary of points and multipliers on each band should also be shown, and a declaration that all rules and regulations were observed should be made. Logs should be sent to Contest Manager, NZART, 152 Lytton Road, Gisborne, New Zealand, on or before 20 January, 1969. Attractive certificates will be awarded to the top scorer in each country in the " all band " category, and on individual bands. This contest is open to listeners who should remember to give the serial number sent by the VK/ZL station. The scoring is the same as for the transmitting section.

The results of the **1967 CQ WW DX Contest** (c.w. section) have now been received. The overall winner of the single operator (all band) category was ZD8J with 1,616,673 points, and the single transmitter multi-operator category 4L3A with 3,084,536 points. World top multi-transmitter multi-operator was PJ3CC with 5,527,788 points. Once again **G3HDA**'s call appears amongst the top ten single operator entrants. It is believed that this is the first time that a G has appeared in the " Top Ten " phone and c.w. sections in the same year. **G3HCT** produced the top world score on 21 MHz, and **G3JVJ**'s score was world fifth on 1·8 MHz. Congratulations to these three on their fine performances, and also to the other certificate winners (listed below in heavy print). Numbers after call-signs indicate: Band (A = All), Score, No. of QSOs, Zones, and Countries worked.

Single Operator

G3HDA	**A**	**878,257**	**1043**	**104**	**243**
G3FXB	A	412,462	657	79	192
G3DYY	A	335,753	587	80	153
G2DC	A	283,777	515	71	192
G2AJB	A	108,876	333	53	119
GM3SVK	**A**	**93,111**	**333**	**56**	**135**
G3TIF	A	87,150	365	47	103
GM3JDR	**A**	**64,030**	**386**	**32**	**63**
G3GGS	A	58,938	196	53	88
G8DI	A	47,082	267	35	98
G3GMK	A	46,629	238	29	70
G3NSY	A	43,470	279	29	76
GM5AHS	A	23,323	217	20	63
G3MWZ	A	12,474	101	24	39
G3JFF	A	9,768	78	33	41
G3POI/A	**28**	**128,180**	**522**	**27**	**64**
G2BOZ	28	81,288	422	24	48
GI3RXV	**28**	**41,800**			
G3KMA	28	32,163	172	25	46
GW3GHC	**28**	**19,916**			
G2BW	28	9,630	94	18	27
G3EUE	28	8,019	98	15	18
G3WP	28	1,156	27	8	9
G3HCT	**21**	**235,209**	**886**	**30**	**81**
G3IGW	21	50,856	282	22	56
G3FKM	**14**	**148,718**	**518**	**34**	**88**
GM5AFF	**14**	**21,206**	**332**	**11**	**35**
GM3SSB	14	11,508	211	11	31
G3OXI	14	4,752	64	14	30
G3ESF	**7**	**67,340**	**587**	**19**	**55**
GM3KLA	**3·5**	**10,296**	**207**	**9**	**35**
G3JVJ	**1·8**	**1,700**	**83**	**4**	**16**
G3NT	1·8	481	37	2	11

Multi-operator, Single Transmitter

G3SSO	**A**	**782,691**			
G3SKY	A	90,440			
G5BK	A	84,392			
GM3SHF	**A**	**74,871**			
GW3VPS/P	**A**	**40,880**			

Apologies to those whose " analysis " is not quoted. The figures omitted were not included in the rush information received from W1WY.

The **County Hunters C.W. Party** (for USA county hunters) will take place between 00.00, 27 July and 24.00, 28 July. Exchanges consist of RST, no. of QSO county and state. QRGs to watch around are 3575, 7055, 14,070 and 21,070 kHz. Stations may be worked once per band and may be

contacted again if they move into a different county. Logs should show date, time, sent, received, band, and indicate each new multiplier (county). They should be sent to South Shore AWA, 32 Elmwood St., Valley Stream, NY 11581, USA by 31 August.

Band Reports

On the whole not a very good month for those looking for super-DX, but DX of the medium variety has been reported on all bands. Many thanks to all who have sent in reports, and especially to the following: G2BOZ, G2HKU, G3AAE, GW3AX, G3HDA, G3OLY, G3PZF, G3RXO, G3SML, G3TBK, GM3UCI, G3WBN, G3WPO, G3XDV, G4MJ, G8JM, G8VG, SM2BYD, BRS6604, BRS27806, A5154, A5390, A5459, A5637, A5662, and A5920.

160m. EI9AW/P (Co. Donegal, 21.00), HB9T (21.13, etc., around 1878 kHz), G3LSF/LX/M (S8 at 21.27), OE5KE (22.35), OE7ZUJ/P (22.38), W1BB/1 (02.00-04.00 RST 579).

80m. G3WMZ/5A (23.30).

40m. CR6JW (19.00), HB0LL (20.50), JA8AA (19.50), TA2BK (00.15), TJ1AL (21.00), TU2AK (23.00), VK3AHO (20.10), ZC4RB (22.00), ZS1's JA, SC, (20.00), 9U5SK (19.45), 9Y4VT (22.15).

20m. BY5LA (05.07), CT2AA (18.51), EA6ITU (15.25), F8TT/FC (09.03), FO8's BV, BY (07.25), HR6AP (08.00), KH6GDQ (10.57), WA1ARF/KL7 (Fletcher's Ice Is. 07.13), KS6CN (07.42), PJ2ME (22.14), PK8YGR (17.15), UA1KED (19.53), UA0YP (Zone 23, 18.25), VK0JW (07.15), VP2VA (19.46), VQ8CJ (21.07), VQ9B/F (Farquhar Is. 20.55), VR1L (11.00), VR6TC (06.50), VS5RCS (20.00, 24.00, etc), VS6AB (17.51), ZK1BQ (16.20), 5R8AF (15.12), 7P8AR (18.47), 9N1BG (19.00).

15m. Open to the Pacific on a few mornings, Africa and Asia during the afternoon and evening hours, and very good into the Western hemisphere until quite late night. EA9AQ (17.03), HZ1AP (12.20—information needed), JA's (07.00 to 24.00), JT1KAA (08.20), JT1's KV, RB (? genuine, 18.30), K0ILI/KG6) (13.10), KH6DQ (07.10), KW6's EJ, GH (10.15), KX6LJ (13.00), MP4DAT (15.50), TA1QR (19.13), TG4SR (19.24), TJ1AL (15.35), TL8DL (11.25), TN8BG (17.12), TT8AN (ET3REL guest op. 09.40, 18.00), VK9GN (T.N.G. 17.25), VP5's DAI, DAJ (both a.m., 21.35), VP8JH (15.10), VQ9B/F (18.09), VS5RCS (17.30), VS6FX (11.09), W6's and W7's (07.30, 23.00), XW8BP (15.10), YJ8BW (10.08), 4S7DA (15.40), 9V1OK (16.25).

10m. Very erratic, but open most evenings on N/S path. CE3NL (17.50), HC5EJ (18.30), HK0BKW (21.12), KV4AD (19.15), OA6BW (18.10), OD5LX (09.12), OX3CJ (19.34), SM6BD (09.50, 2W input, S8), VK6ZW (09.28), VK8AU (11.07), VP8JC (18.00), VQ9V (17.40), VQ9V/F (11.37), XW8BP (10.58), ZD3D (18.46), ZD7DI (18.50), ZD9BE (17.13), 6O1GB (11.45), 6W8XX (18.30), 7P8AB (16.40), 9L1KZ (18.20).

Many thanks to the following for permission to use extracts from these publications: the *L.I.D.X.A. Bulletin* (W2GKZ), the *DX'er* (K6CQF), *DX News Sheet* (Geoff Watts), the *Ex-G Radio Club Bulletin* (W3HQO), the *DX'ers Magazine* (W4BPD), the *Florida DX Report* (W4BRB), *CQ DX* (ARI), the *HKARTS Newsletter*, *DX'press* (PA0FX), and *NARS News* (5N2AAF). Please send all items to reach G3FKM **no later than 15 July** for the **August** issue, by **7 August** for the **September** issue, and by **11 September** for the **October** issue.

1968 Countries Table

	160m	80m	40m	20m	15m	10m	Total
G3IAR	—	33	23	79	53	19	207
G3VPS	12	21	13	30	—	—	76
G3XDV	15	10	17	38	1	18	99
G8VG	5	15	18	39	44	46	167
G3ING	9	11	12	5	11	7	55
SM2BYD	—	14	6	49	16	—	85
G3PQF	6	3	23	36	4	19	91
G3OLY	—	3	—	97	41	48	189
G3VJG	—	2	9	10	16	12	49
G3TBK	—	1	22	23	27	19	92
G8JM	—	—	—	169	94	64	327
9J2BC	—	—	17	106	54	64	241
A5610	10	71	17	35	25	31	191
A4886	14	56	50	187	103	89	489
BRS25429	3	55	54	171	125	93	490
A3942	14	38	36	58	60	50	256
A5662	12	30	35	133	102	95	407
BRS28198	2	32	46	66	32	92	270
A5126	2	31	31	81	53	44	242
A5459	8	25	24	82	31	21	191
BRS27806	5	27	18	148	127	76	393
A5154	3	25	21	134	111	70	363
A5437	3	24	3	19	18	6	73
A5466	3	20	17	79	27	12	158
A5135	3	19	23	84	36	38	203
A5943	5	15	30	29	30	23	162
A5390	4	13	15	128	130	87	477
A5489	—	7	5	58	36	37	143

(This month's table is in order of 160 plus 80m totals)

QTH Corner

CR9AK via CT1BH, Dr A. N. Rodrigues, Rua D. Pedro V 92, Vila Nova de Gaia, Portugal.

CT2AA via WA0/OMN, Randolph Schwering, 1116 Hilliard Rd., Glendale, Mo., USA.

CT2AR via WA4WIP, Richard Tesar, 2666 Browning St., Sarasota, Fla., USA.

CT2AS via K2AGZ, D. A. Mann, 1 Daniel Lane, Kinnelon, N.J., 07405, USA.

DL5 QSL Bureau. M.A.R.S. HQ Station, 93rd Sig. Bn., APO, New York, NY, USA 09175.

FG7TG via W5BUK, 2609 Halsey St., New Orleans, La., USA, 70114.

FO8AA via W5IXQ. Travis Flatt, 1212 Chama N.E., Albuquerque NM, USA.

FR7ZS Michel Daveret, Box 130, St. Pierre, Reunion Is.

G5AGA via WA4IKU, 1018 Woodburn Rd., Spartanburg, SC, USA 29302.

HL9KQ (op'n by K4BAI) W4YWX, P.O.Box 2344, Macon, Ga., USA.

KC6CQ Fred Brown, c/o Peace Corps, Eastern Caroline Is. 96942.

TJ1AL via W2MES, Joseph Hellmann, 65-33-78th, Middle Village 79, NY, USA.

TT8AN (QSO's 2 to 10 June only) W. E. Petty, 3107 Morningside Drive N.E., Albuquerque, N.M.

VK0IA Greg Johnson, 23 Cottesloe St., Lindesfarne, 7015, Tasmania, Australia.

VP2GBG via VE3DLC, R. J. Kreger, 30 Zenith Drive, Scarborough, Ontario, Canada.

G3TXH/VP8 Brian Levitt, Ship Hotel, Port Stanley, Falkland Is.

VQ9B/F, **VQ9V/F** Box 191, Mahe, Seychelles.

ZC4GM via W2CTN, 159 Ketcham Avenue, Amityville, NY, USA, 11701.

ZD7GO G. Owen, Longwood, St. Helena, S. Atlantic. Ocean.

ZD8CC R. C. Strong, c/o RCA-MTP, Ascension Is., c/o Patrick AFB, Florida, USA, 32925.

ZD8JW J. M. Walch, c/o BBC, Ascension Is.

4Z4HF via WB2WOU, H. Rugoff, 306 Hooper Av., Toms River, NJ, USA.

9Y4AT via KV4AM, Harold McBirney, Sugar Mill Estates, Christiansted, US Virgin Is.

RSGB QSL Bureau, G2MI, Bromley, Kent.

REGULAR FEATURE

FOUR METRES AND DOWN

By JACK HUM, G5UM*

Maps

THE QRA Locator system has been extensively used in Europe for telling the other man approximately where you are, quickly and easily. It has its advantages and disadvantages, one of the latter being that it is not sufficiently accurate to conform with the British licence requirement, which is why UK contests require QTH to be given as well.

The Georef system, which could be an alternative to QRA Locator, also has its advantages and disadvantages.

It is therefore for the membership to say which one they want, and for this purpose a questionnaire was prepared to enable them to do so. At its May meeting the V.H.F. Committee took a look at the 50 or so questionnaires which had been returned, and noted that the vote was overwhelmingly in favour of a change to Georef. But what they also noted was that few regular contest operators were represented—and it is in contests that QRA-fixing systems come into their own. So the feeling was that the questionnaire-sample at that time available was both too small and not wholly representative.

Since then many more v.h.f. operators have returned the form to the V.H.F. Committee—and those who haven't are invited to apply to Headquarters for a copy. Groups and clubs with a v.h.f. content have been holding special meetings to decide the question " Georef or QRA Locator?" One such a couple of dozen miles south of London voted for Georef and its members returned individually-completed forms to HQ. Another such a couple of dozen miles north of London voted for QRA Locator and sent a collectively-completed questionnaire back to HQ saying so.

When the " Four Metre Bandplan " questionnaire went out eighteen months ago almost two hundred replies were received. At least this number ought to be returned of the " Georef or QRA " questionnaire before any conclusions can be drawn. Got yours? Then fill it out (or in) and mail fastest!

California, Here We Come (By Moonbounce)

Impossible to work W6 on 23 cm? Until three months ago many people would have said it was impossible to work even W1 on that band, but Peter Blair, G3LTF, did it (see last month's report) over an Earth-Moon-Earth path. Now he is after W6, and some tests conducted at the beginning of June suggest that a two-way with America's Far West on 1296 MHz will not be long delayed.

These tests, between G3LTF at Chelmsford, and Peter Laakmann, WB6IOM, at the Pacific end, took place on 1 June between 16.00 and 20.00 GMT, times selected to give maximum Moon visibility within the available dish movement at Chelmsford. The agreed code was two-second dashes and two-second spaces for identification purposes for ten minutes each way, call-signs at beginning and end. These would change to five-second dashes and spaces if signals were heard.

Within two minutes of his first transmitting cycle WB6IOM was audible at Chelmsford at 4dB over noise in a 100 Hz bandwidth, rising to 7dB at times, the frequency being within 500 Hz of the predicted spot even allowing for Doppler shift! This order of accuracy in the G3LTF receiving set-up was achieved with the help of a new frequency sub-standard using a 1 MHz crystal and phase-locked to the 200 kHz frequency standard from Droitwich long-wave. This permits a setting accuracy at G3LTF of 1296 MHz plus or minus 20 Hz.

The WB6IOM signal was so good that G3LTF started to send the prearranged dashes, but unfortunately received no acknowledgment. In no way discouraged, G3LTF declares that these tests were to him among the most interesting he has yet experienced, more particularly in view of the fact that WB6IOM was using only a ten-foot dish, the smallest from which transatlantic signals have yet been received over the E-M-E path on " 23." It was fed with 500 watts of r.f.

At G3LTF a 15 ft. dish, fed from a 150 watt transmitter, has been improved since the April transatlantic tests by changing the dipole type feed to a circular guide feed which provides a measured 2dB improvement, due to its superior illumination efficiency. And on the receiving side there is a programme of constant improvement aimed at squeezing the last possible decibel out of the system; just how important this is will not be lost on members who heard G3LTF and HB9RG discuss system gain on the E-M-E path at the Whitton Convention.

First M-S on Sideband?

So far as is known, all meteor scatter contacts on v.h.f. have been by means of c.w., ripped out at great speed in order to convey maximum possible information during the few seconds that meteor trails persist.

What is believed to be the first two-way 2m contact in Europe via M-S using sideband occurred on 4 May, when SV1AB worked LX1SI. A second meteor scatter QSO between the same two stations was achieved the next day.

Both contacts were established between 06.00 and 07.00 GMT, and call-signs and reports were exchanged and recorded on tape. At the Athens end some of the M-S bursts lasted as long as twenty seconds, reported SV1AB in passing on the above news via 14 MHz talk link back to G3FNJ (to whom thanks for forwarding it to " Four Metres and Down ").

* Houghton-on-the-Hill, Leicester LE7 9JJ. Send reports for the August issue by 15 July, and for the September issue by 12 August.

The Case for the Cumulatives

Alarm if not despondency seized many people when they read last month's item in " Contest News " to the effect that the Winter Cumulatives might as well be scrubbed for all the support they got. The miniscule entry tabulated last month does not in fact reflect the real situation where the Cumulatives are concerned, for there is no doubt that these fortnightly events have brought a large number of people on to 2m and 70cm who might otherwise have preferred the comfort of the old armchair in front of the fire.

Simply to have said that there would be Activity Periods on 2m and 70cm on alternate Saturday nights would not have brought the men on to the bands: the added piquancy of a contest flavour to these sessions certainly did. At least two 70cm operators we know of worked almost a hundred stations during last winter's Cumulatives.

Few are more qualified to comment on this subject than Bill Scarr, G2WS, of Weston-super-Mare, for as a consistent participant in these contests he was able to secure top place in the 2m sections last winter. He says:

"I hope the V.H.F. Contests Committee will pause to consider why support has tailed off, and will also realize that circumstances have changed with the extension of the Class B licence to include 2m."

G2WS goes on to elucidate his reasons for the poor turnout on " Two." They include inadequate publicity in this journal, the compulsory inclusion of c.w. sessions (though he enjoys them himself), and thirdly the exchanging of continuing serial numbers that reveal large cumulative differences between competitors, thus discouraging many from sending in entries. " This is revealed by the large number of stations active in the first session of a series, and the rapid falling off afterwards," he adds. Believing that now is the time to " cash in on the new 2m enthusiasm of the G8 operators and to revive the 70cm activity," Bill Scarr goes on to offer the following plan for an Autumn Activity Contest:

There should be *four* sessions of three hours each, and any three of these sessions should count for points;

Operation should be on 144 and 432 MHz, phone only:

During each session a station may be contacted once on each band, serial numbers to follow consecutively irrespective of band in use, and contest exchange to consist only of serial number, report and QTH.

Portables and mobiles not to enter, though contacts with them to count for points.

A further thought from Bill Scarr is that weeknights other than Saturdays might be tried. All in all, he believes, a two-band contest along these lines would have a strong appeal, and should produce an entry greater than the sum of last winter's 2m and 70cm entries put together.

* * *

Keeping in a contest frame of mind, a summer 2m contest has been arranged at short notice for 6 7 July. See rules on page 472.

Video Contest on " Seventy " ?

Why not a contest for the " Stroke T " men? The hint dropped here a couple of months ago has been picked up by Malcolm Sparrow, G6KQJ/T, of Wolverhampton, who has had a word or two on the subject with fellow committee members of the British Amateur Television Club (he is its Hon. Treasurer) with the result that a set of draft rules has been sent along to " Four Metres and Down " for comment by readers. Here they are:

1. The contest should be sponsored jointly by the RSGB and the BATC.

2. It should take place at the same time as an RSGB 70cm contest, perhaps concurrently with the next series of Cumulative Contests (another good reason for continuing them next winter!). The communications contest would continue normally but with an added element of TV for those who wished to use it.

3. The contest would be open to all fully paid up members of RSGB or BATC holding the appropriate licences.

4. Television transmissions would take place *only* below 430·0 or above 436·0 MHz (television carrier frequencies to use the 405 line system). Calling CQ-TV on sound should be permitted in the 432-434 MHz area prior to transmitting on television.

continued over

QRA or GEOREF?

Comments added by members to the questionnaires so far returned to Headquarters: a dozen selected at random.

The potential accuracy of Georef is considerably greater than QRA, and as contests are often decided by small margins this is a point in favour of Georef.—G8ANX and G3UBX.

* * *

Georef gives unnecessary accuracy . . . is too long as a group. It will take too long to get the Continent to accept a new system.—G3VXK.

* * *

QRA plus place name is my preference. Why should greater accuracy be required? Is a contest won or lost by a couple of points?—G3JEQ.

* * *

A German is not likely to have a map with, say, Benson on it, but he would have a good idea where it is with a Georef map.—G3JKX.

* * *

Please, please, *no* QRA.—G3PHG.

V.H.F. contests where numbers are exchanged lose their appeal for me. Place names please. I want to know where the other fellow is when I'm working him, not afterwards when I've worked it out by numbers. Stop automating this hobby!—GW3MFY.

* * *

I feel radio contests should be such, not map reading exercises.—G8APQ.

* * *

Georef wins on every count over QRA Locator, particularly with the easy availability of a wide range of Georef overprinted maps.—GM8-AOW.

* * *

QRA *is* repetitive at great range but so far outside normal v.h.f. DX range that it is not of any importance . . . extreme accuracy is not in demand and QRA *is* established.—G3LIM.

* * *

The use of locators tends to impersonalize QSOs but if a system must be adopted the Georef system is to be preferred.—G3JHM.

* * *

As an ex-RAF navigator it took me about a week to grasp the QRA system and about 20 minutes to grasp the Georef system. Need I say more?—G3AAJ.

* * *

Georef being a NATO system, presumably it would be difficult for stations behind the Iron Curtain to obtain maps.—G3COJ.

5. Extra bonus points (probably in a separate class) would be awarded for (*a*) contacts in which TV passed one way with the return report on telephony, and (*b*) contacts in which TV was exchanged in both directions (this would rate a further bonus).

6. The essential contest exchange information, *i.e.*, serial number and QTH, would only be sent visually. The size, form and clarity of the visual display would be specified in *Radio Communication* and *CQ-TV*.

A requirement for a video contest certainly seems to exist, and the body to consider it is the RSGB V.H.F. Contests Committee in co-operation with BATC, to whom the above suggestions from G6KQJ/T have now been forwarded.

Gib Will Not Be Silent

Any moment now the sound of G3SLI/M on the v.h.f. bands may be expected following the return of Ossie from his tour of duty on Gibraltar. He has left behind him a considerable fund of enthusiasm for DX work on " Four," and it is good to know that ZB2VHF has been taken over by the RAF Amateur Radio Society at North Front, Gibraltar (also known as ZB2A).

Before he left The Rock, Ossie had the satisfaction of participating in several substantial Es openings northabout on the 70 MHz band, beginning on 22 May when the Spor E season's first QSOs were notched with G3TTG and EI6AS. Many more contacts with the UK followed, well into June, and numerous reports have been received by G3JHM (who is co-ordinating studies of propagation along the UK-to-Gib path) that ZB2VHF has been widely heard both in its beacon mode and with Ossie behind the key. Among them was one from DE13558, whose log shows that he held on to the signal for some minutes after " Four " had closed to the UK. And on 9 June G2UJ at Tunbridge Wells, with an indoor bi-square at a by no means good site, heard ZB2VHF almost to midnight.

With Ossie now merged into the 14,000 of us here in the UK, what now from Gibraltar? As we say, he has left behind him plenty of willingness to carry on the good work, for in addition to ZB2VHF, there are now ZB2BC (70·28 from a Pye Reporter and a 2-element beam) and ZB2BO, who is John Patrick, ex-G3TWG, using a potent 10 watter which during the May-June opening brought him three UK contacts and EI6AS. Although crystallized for 70·26 MHz, John of course does not wish to share the ZB2VHF frequency, especially during openings, and will normally be found on 70·20 MHz. He suggests that UK operators should monitor both his and the ZB2BC channels as well as the alternative frequency which ZB2VHF has available, 70·215. He also makes the point that if stations back in the British Isles spread themselves across the band a little more they would be more readily workable in Gibraltar.

The current QTH of John Patrick ZB2BO/G3TWG is Flat 5, 163, Main Street, Gibraltar.

* * *

With Gibraltar becoming increasingly popular as a tourist centre, political pinpricks notwithstanding, there is always the possibility that a short-term ZB2 may appear unexpectedly on the band. Hertfordshire's Stan Brown, ex-Navy man and well known to many grateful RAE Certificate-passers as G3RFG, made a recent visit to The Rock, obtained the call-sign ZB2BP and had the unusual experience of operating at ZB2VHF. In fact, it was Stan's key thumping on 70·26 MHz that alerted EI6AS and G3TTG to the fact that " Four " was open, and as has already been reported, these stations were duly worked.

Now returned to England, G3RFG offers a reminder that if ZB2VHF is on auto, its call-sign is followed by a six second dash. If the dash is not heard this means that a listening watch is being kept; British Isles operators should then call ZB2VHF for six seconds. For arranging schedules, a listening watch is kept by ZB2VHF every evening on 14·26 MHz at 1800Z.

* * *

With the good news that the ZB2VHF beacon will continue to pound away, now for some more glad tidings in the beacon context.

Beaconry (Continued)

. . . glad tidings, anyway, to those who have yet to check 144·1 MHz, for by now many 2m operators will have observed the return of GB3CTC on to the band. A spot of tech-trouble had kept it off the air these last few months. One of its nearer customers, G3XC, has praise for the Cornish V.H.F. Group and G3CZZ, the official beacon-keeper, for their efforts in re-establishing the service. It is understood that there is still a possibility that a 70cm service may become available at a later date.

Propagation Points

Fifty megs is in the news at the present time even though we in the UK can't use it for transmission. Its potential for offering long haul propagation surprises has persuaded a number of people to build converters for the band, with ZE1AZC on 50·046 MHz specially in mind. This beacon operates twenty-four hours a day from Fort Victoria in Rhodesia, and needless to say, reports of reception in Britain will be of the greatest interest.

Also in the cause of long path propagation on 6m is a request from W2BOC that the band should be monitored for possible auroral lifts. He predicts 13 July and 5 and 8 August as dates likely to be of significance, and adds: " There have been numerous reports over the past ten years of long single-hop 50 MHz transmission paths (1500 to 2500

BEACON STATIONS

Call-sign	Location	Nominal Frequency	Emission	Aerial Direction
GB3ANG	Craigowl Hill, Dundee	145·985 MHz	A1	
GB3GI	Strabane, N.I.	145·990 MHz	A1	N/SE
GB3GW	Swansea	144·250 MHz	A1	E.N.E.
GB3GM	Thurso	145·995 MHz	A1	N
GB3GM	Thurso	70·305 MHz	A1	N/S
GB3GM	Thurso*	28·185 MHz	A1	N/S
GB3GEC	W. London	434·000 MHz		
GB3SX	Crowborough, Sussex*	28·195 MHz	A1	E/omni
GB3VHF	Wrotham, Kent	14·540 MHz	F1	North-West

* Not operational

GB3VHF

The Society's v.h.f. beacon transmitter frequency at Wrotham, Kent, measured by the BBC Frequency Checking Station (nominal frequency 144·50 MHz):

Date	Time	Error
29 May	09.15 GMT	50Hz low
4 June	15.25 GMT	20Hz low
13 June	10.05 GMT	30Hz low
19 June	09.57 GMT	690Hz low

Four Metres and Down Certificates

Four Metres and Down Certificates

70 MHz Transmitting Section

1 G3EHY	18 G3PHG	35 G3FWD
2 G3PJK	19 GC3OBM	36 GI3HCG
3 G2AIH	20 G3TLA/P	37 G3LAS
4 G3OHH	21 GI3HXV	38 G3HRH
5 G3KEU/P	22 G5UM	39 GM2UU
6 G3NUE	23 G3OJE	40 GI3PGG
7 G3IUD	24 G3SEK	41 G3VPK
8 G6NB	25 G3RWM/P	42 G3RLE
9 G8PD/A	26 G3FDW	43 G3UFS
10 G5FK	27 G3PPG	44 ZB2VHF
11 G3NDF	28 G3FIJ	45 G3OUL
12 G3IMV	29 G3GGL	46 G3UUT
13 GI3HXV/P	30 G3RDQ	47 G5NU
14 G3SKR	31 G3NJF/P	48 G3OZJ
15 G3OUF	32 G3RWN/P	49 GI3HCG/P
16 G3BNL	33 G3NUE/P	50 GI3PGG/P
17 G3PMJ	34 G3AZI	

70 MHz Senior Transmitting Section

1 G3SKR	2 G3RWM/P	3 G3FDW

70 MHz Receiving Section

1 BRS15744

144 MHz Transmitting Section

1 G3HBW	26 G8VZ	51 G3NLR
2 G3BLP	27 G2AXI	52 GM3LDU
3 G3MTI	28 G3JYT	53 G3CKQ
4 G5YV	29 G5UM	54 G5HZ
5 G3BNL	30 G3EJO	55 G3NNK
6 G3MCS	31 G3PBV	56 G6GN
7 G3LAR	32 G3FDG	57 G5ZT
8 G3CO	33 G3OSA	58 G2PL
9 G3BA	34 G3JLA	59 G3FZL
10 GW3MFY	35 GC2FZC	60 G3SAR
11 G3DFL	36 G3BOC	61 G3NUE
12 G3NAQ	37 G3MTI/M	62 PA0EZ
13 G3NNG	38 G3OJY (New QTH)	63 G3AHB
14 G3OJY	39 G3JWQ	64 G3PTM
15 G3KPT	40 G3NOH	65 G3LAS
16 G3JYP	41 G3PSL	66 G3RMJ
17 G3KMT	42 G3LBA	67 G2CDX
18 G3OHD	43 G3FUR	68 G3ORL
19 G3BBR/A	44 G2BJY	69 G2DHV/P
20 G3HRH	45 G3MRA	70 G3FIJ
21 GM3EGW	46 G3AGN	71 G3CXM
22 GI3OFT	47 G3MDH/P	72 G3HRH/P
23 G3OBD/P	48 G3GMY	73 G3BDS
24 G2HIF	49 G3GGK	74 G3FNM
25 G3JDN	50 G3MDH	75 G3IMV
76 G2BQ	87 G3ICO	98 G3BNC
77 G3KHA	88 G3ETH	99 G3SZX
78 G3OHC	89 G2WS	100 G3UKV
79 G3SHZ	90 G3NJF/P	101 GC3OBM
80 G3PKT	91 GW3CBY	102 G3FVC
81 G3UFA	92 G3TLA/P	103 G3BJD
82 G3RST	93 G3JFO	104 G3PWJ
83 G5NU	94 G3TDR	105 G2ATM
84 G2BHN	95 G5UM/P	106 G3ISX
85 G3OZP	96 GM2UU	
86 GW3KYT	97 G3UUT	

144 MHz Senior Transmitting Section

1 G3CCH	7 G3NB	13 G3PTM
2 G3FAN	8 G3EDD	14 G5NU
3 G5MA	9 G3HRH	15 G6GN
4 G3BLP	10 G8GP	16 G3KHA
5 G3CO	11 G3LAS	
6 G3BA	12 G3IMV	

144 MHz Receiving Section

1 BRS22550	6 BRS20108	11 BRS23140
2 BRS22322	7 A3470	12 BRS7323
3 BRS15822	8 A4048	13 A3942/P
4 BRS15744	9 BRS21667	
5 NL687	10 A4871	

144 MHz Senior Receiving Section

1 BRS15744

432 MHz Transmitting Section

1 G3NNG	14 G8AEJ	27 G8AWO
2 G3KPT	15 G8AGG	28 G8AXP
3 G3LHA	16 G8AGU/P	29 G8AHE/P
4 G3BNL	17 G3PTM	30 G8AOD
5 G3MCS	18 G8AAY/A	31 G8AWW
6 G8AAZ	19 G8AGQ/A	32 G8AKT
7 G8ABP	20 G3HRH	33 G8ANS
8 G3AHB	21 G8AJU	34 G8ARD
9 G5UM	22 G8ARM	35 G8AIE
10 G8ACQ	23 G8ADP/P	36 G3PKT
11 GW8ACG	24 G8AUE	37 G8ATK
12 GW8ACG/P	25 G6GN	38 G8ACP
13 G8AHQ	26 G8AQA	39 G8AQZ

432 MHz Receiving Section

1 BRS15744

432 MHz Senior Transmitting Section

1 G3MCS

1296 MHz Transmitting Section

1 G3MCS

miles) on nights of big auroras . . . I assume the same phenomena may be found on other frequencies (72 and 144 MHz)."

W2BOC urges all who can do so to make careful observation of the 50 MHz band during nights of aurora and to report all long distance stations heard, noting particularly the magnetic bearing. " Special alertness should be concentrated between 20.00 and 22.00 hours local time, since most reported occurrences have taken place during this period," he says.

As is well known, it is difficult to predict the likely arrival of aurorae except to say that a manifestation may be expected 24 to 48 hours after a solar flare takes place. And if you have no means of knowing when *that* happens, watch for popular-press stories of " radio blackouts "!

Reports of unusual propagation phenomena on the amateur 6m band should be addressed to the Society's Scientific Studies Committee.

Certificate Holders

Contents clamouring for space in *Radio Communication* help make the appearance of our table of winners of the " Four Metres and Down " certificates all too rare. Anyway, here it is again at last, with increases in all departments since it appeared eleven months ago.

Many G-Eights now on " Two " will be wanting confirmatory cards as they tackle the five countries and thirty counties needed to secure the RSGB 2m award—sufficiently difficult to be challenging but confoundedly frustrating if the other chap fails to reply to a QSL. Nearly always, though, an s.a.e. will produce the necessary. Here's hoping there will be a sprinkling of Class B calls in the 2m Certificate Table next time.

Occupancy, " Two " and " Seventy "

With Class B licensees coming on to " Two " in considerable numbers, the band is being revivified in a way that happened four years ago on 70cm when the G-Eights first appeared there. Regular users of the 144-146 MHz area are finding that more contacts are to be had over a much more extended part of any evening, starting earlier, finishing later.

Out-of-zone operation and sub-standard signals should disappear in due time as the operators concerned find they earn few or no contacts. If the newer Class B licensees are

anything like the originals who did so much for 70cm, they will become a respected body of people noted for their technical advancement and responsible operating. That is how it has been on " Seventy ": may it continue that way on " Two."

Of course, the first fine careless rapture of getting a new band has led to some neglect of the old ones, as was reported here a couple of months ago. To help accelerate the return to 432 MHz some three dozen Home Counties operators have, at the suggestion of G8APQ and G8APZ, agreed to participate in a " Monday night is 70cm Night."

" We are well aware that Monday was always 2m activity night, but we think ' Two ' has enough activity *every* night nowadays," says Robin Lucas, G8APZ—and he's quite right.

What needs to happen now is for this proposal to be taken up all over the country, and for operators not to give up simply because the first two or three CQ calls are not answered. Only to listen does not make an Activity Night.

News of the Groups

" Last month's meeting was the best yet, with 18 present " reports G3OCB of the Cornish V.H.F. Group, which is pretty good going remembering that its adherents are scattered over a wide area of the peninsula. Their help in resuscitating GB3CTC is reported on a preceding page. All Group info from G3OCB at Tregwyn, Stithians, Truro.

After a series of technical meetings the Leicestershire Group will be letting its hair down a bit this month by means of a social evening at a countryside venue. Their Summer Supper is dated for 18 July, and members have by now received a returnable coupon to say if they want to go.

Expeditionaries

For the benefit of anyone who may have missed them over GB2RS here are details of the GB2NI expedition:

Dates: 28 July to 11 August.

Places: Armagh, Londonderry, Fermanagh and Tyrone for three days each, leaving two days spare to visit either Antrim or Down, at the end.

Times: 6 to 9.30 p.m. clock time at least, more if activity warrants. Schedules will be willingly fixed outside these hours for the benefit of members who may be working shifts. Write Richard Constantine, G3UGF, 14 Holdsworth Terrace, Shaw Hill, Halifax, Yorks.

Bands: 4m and 2m, and 70cm., using call-sign GB2NI.

* * *

Among the rarer portables likely to be active during this month's 4m contest are GD3EKP/P and EI7AF/P.

It is good news that James Whittaker, G3EKP, one of the best known operators on " Four," is now sufficiently recovered from a rather serious health set-back to travel to the Isle of Man after all. In addition to operating during the portable contest he will be on 4m most evenings from 20 July to 31 July, plus Sunday morning 28 July. He will have with him a TW Communicator and a 4-element beam.

Bert Williams, EI7AF, plans to go portable from Co. Cavan for the 21 July event, using both A1 and A3. He'll be DX to *any* 4m mainlander. During the 144 MHz Open, 3-4 August, look out for GM5PI/P in Wigtown.

* * *

From Dave Sugden, G8BHL, news that he will be activating some of the rare counties of England and Wales during his holiday late August, early September, from 19.00 hours nightly. He invites any operators who would like to fix schedules to write to him at 40 Berkeley Road, London N8, stating their preference for county or counties, and day. He will be exclusively on " Two," with 14 watts and a 4-ele.

Those who have polished up their brasses may by now have worked the Scottish Counties Expedition at present on tour, but as it moves further north things may become more difficult. This week it is in Kincardine (3 July), then a day each in Banff, Moray and Nairn, and on Sunday in Sutherland. Next week they will follow on with Caithness on 8 July, and Ross & Cromarty on the 9th. On the 10th operation will be from Inverness-shire (possibly even the Isle of

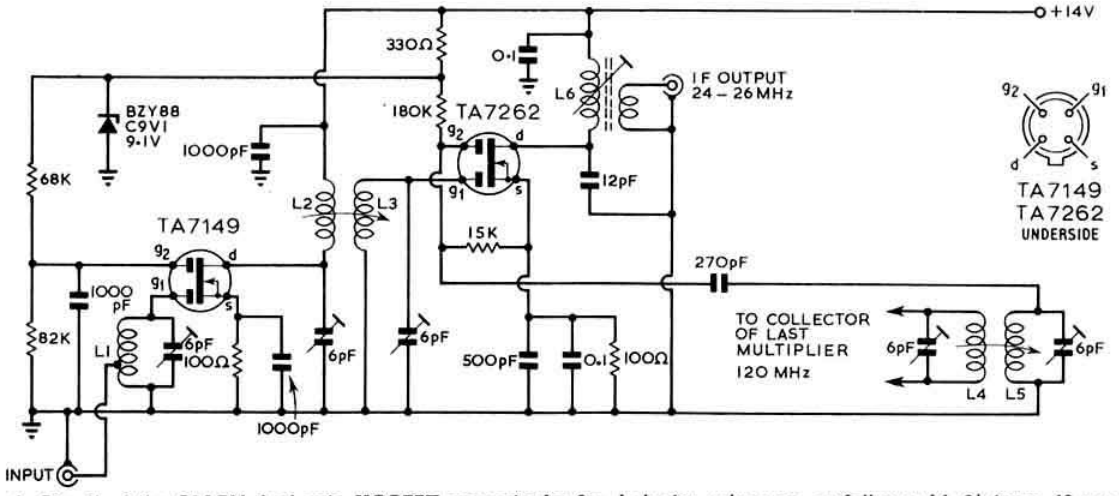


Fig. 1. Circuit of the G8ARV dual gate MOSFET converter for 2m. Inductor values are as follows: L1, 3½ turns, 18 s.w.g., 11mm diameter, with aerial input tapped at about ⅛ turn (adjust its position for optimum noise factor); L2, 5t 28 s.w.g. 5mm diam. L3, 4½ turns 28 s.w.g. 5mm diam. L4, 6½t 28 s.w.g., 5mm diam. L5, 6t 28 s.w.g., 5mm diam. L6, 25t, 26 s.w.g., 7mm diam., with the coupling winding of 3t overwound on cold end. Note: spacing between L2 and L3 should be 2.5mm., and spacing between L4 and L5 5mm.

Skye, which like the Scillies-and-Cornwall carries no special status but would be a rather unusual place to work on "Two"). On 11 July, Argyll, and 12 July Kirkcudbright will bring the trip to its conclusion. Call-signs are GM3UQL/P and GM3VAG/P, and remember to look exclusively at the c.w. end, on 144·054 MHz.

Tech Corner

By G8ARV (David Taylor, of Dudley, Worcs):

The accompanying circuit diagram shows the basis of a dual gate MOSFET converter for 2m, which has been the subject of some experiment at G8ARV. It has the advantage of producing higher gain than most conventional converters which have been tried, while offering a noise factor better than 4dB, and typically 3dB. Although the input stage is in common source, there is no need for neutralization. The transistors cost about 10s. each from RCA. Always use a grounded soldering iron and a shorting wire round the leads when soldering these devices.

Another project, the transistor transmitter which has been mentioned here before, has aroused a degree of interest that has prompted me to have some printed circuit boards made. I am using a copy of the Mullard a.m. transmitter circuitry recently published, a BLY33 preceded by the a.m. low power exciter (see page 246, April "Four Metres and Down"). The printed circuit board is for this low power unit, which delivers 350 to 400mW at 144 MHz, and costs 15s. I shall have a few of these spare if any readers would like to take up the offer.

The fixed resistors, capacitors, coil former and crystal socket are available as a set for 10s. from J. R. Hartley, 2 Waterloo Terrace, Bridgnorth, Shropshire, who I understand can offer a quote for the remainder of the components.

I might add that this design is being adopted by the Worcester Radio Club as their RAEN transmitter. It was the interest shown by the Club, and by other v.h.f. friends, that encouraged the production of the printed circuit boards.

What They Say

"...worked one station during the 144 MHz Open but had to slow down to two words a fortnight ... very few people on v.h.f. know what a key is, or think it is a device for opening doors or starting cars!"—EI7AF.

* * *

"There should be many more ladies at the V.H.F. Convention Dinner. Tell them how good it is so that more will come next year"—Mrs G2BLA.

* * *

"It made me feel ten years younger going to the V.H.F. Convention"—G6FI.

* * *

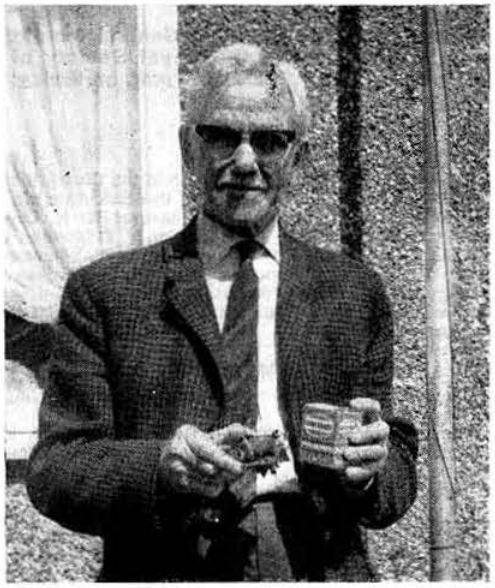
"As neither G3UBI nor G3UGF possesses 70cm gear of their own to use on the GB2NI expedition, the 70cm fraternity whipped round and produced a tripler and converter. Very f.b., don't you think?"—G3UGF.

* * *

"A Dellinger fade-out upset NFD. We nearly degutted G3WKS/P until we discovered on my car radio that the Light Programme was almost alone on the medium waveband ... up to 15m signals very few and far between and unworkable. A subsequent check on 2m showed little out of the ordinary there at that time."—G2UJ.

V.H.F. PERSONALITIES: No. 1,

Fred Ingleton, G6FI, of Staines, Middlesex.



Just old enough to join up in World War I as a signaller, Fred Ingleton was just young enough to be accepted into the RAF in World War 2, most of which he spent as a Warrant Officer in Wireless Intelligence.

Not surprisingly, then, Fred is very much a Morse code man. Licensed in 1927 (before that he was artificial aerial 2AWF), he greatly enjoyed winkling out the DX on 20m c.w., without ever pursuing it to the extent of rabidity. His induction into v.h.f. came four years ago when he was offered a taste of 2m from someone's motor car on a sunny Surrey heathland. When the transmit button was pressed a clump of gorse half a mile away at once burst into flames, and soon the fire brigade were on the scene.

Fred did not really believe this could be done with a QQV03-10 output stage, and insisted on a more extended demonstration at home. When this was arranged, the ease with which contacts could be made around the Home Counties from his QTH only 45 feet above Thames level, at great strength and superb audio quality, persuaded G6FI that v.h.f. was the thing. It persuaded his wife, Eve, too, who for the previous 37 years could summon up little enthusiasm for the bleeps that emerged from the h.f. bands rig. Now she accompanies Fred to the V.H.F. Convention Dinner every year, and has made a circle of new friends whose voices she recognizes coming through the speaker in the top third bedroom that is the G6FI radio room.

Being retired, G6FI can be on the air at almost any time, and is keen to sked other people in like circumstance. He runs a 15 watt transmitter feeding a 4-over-4 aerial. And after 40 years "in the game" his enthusiasm for constructional work is undiminished. The picture shows him with a transistor converter he ran up in an hour or two the other week.

Annual General Meeting

Minutes of the 41st Annual General Meeting of the Radio Society of Great Britain held at the Royal Society of Arts, John Adam Street, Adelphi, London, WC2 at 6.30 p.m. on Friday, 8 December, 1967

Present:

The President (Mr A. D. Patterson in the Chair), the Immediate Past President (Mr R. F. Stevens), the Executive Vice-President (Mr J. C. Graham), the Honorary Treasurer (Mr N. Caws, F.C.A.), Messrs B. D. Armstrong, E. G. Ingram, H. E. McNally, J. F. Shepherd, G. M. C. Stone, J. W. Swinnerton, E. W. Yeomanson, (Members of Council), C. P. Pope (Secretary), A. E. Dowdeswell (General Manager), T. R. Preece (Assistant Editor) and J. J. Adey (Headquarters Staff); Mr J. Clarricoats OBE (Honorary Member) and 62 Corporate Members.

Notice Convening the Meeting

The Secretary read the notice convening the Meeting.

The President introduced Mr A. E. Dowdeswell, G4AR (new General Manager) and Mr C. P. Pope (Secretary/Accountant).

Minutes

Mr J. Clarricoats moved and Mr R. Glaisher seconded, and it was Resolved that the Minutes of the 40th Annual General Meeting, as published in the May 1967 issue of the RSGB *Bulletin* be taken as read, confirmed and signed as a correct record.

Annual Report

The President moved the adoption of the Annual Report of the Council as published in the December 1967 issue of the RSGB *Bulletin*.

The Secretary then read the Supplementary Report of the Council covering the period from 1 July, 1967 to early December 1967. It was then Resolved that the Annual Report of the Council, as published in the December 1967 issue of the RSGB *Bulletin* be approved and adopted.

Report of the Honorary Treasurer and Audited Accounts for the year ended 30 June, 1967

Mr Norman Caws (Honorary Treasurer) in presenting his report made the following comments. Mr Caws said that the total income for the year ended 30 June, 1967 was £3336 more than the previous year. Each pound could be divided approximately as follows:

EXPENDITURE

7s 4d	—	*Bulletin*
2s	—	Postage
5d	—	QSL Bureau
1s 5d	—	Meetings
8s 10d	—	General Administration
£1		

INCOME

17s	—	Subscriptions
2s 2d	—	Profit on Sale—Publications
7d	—	Interest on Investments
3d	—	Deficit
£1		

Mr Caws formally moved adoption of the report.

The motion was put to the meeting and it was Resolved that the report of the Honorary Treasurer and the Audited Accounts of the Society for the year ended 30 June, 1967 be approved and adopted.

The President expressed appreciation of the work carried out by Mr Caws and Mr Pope in looking after the Society's funds so well.

Election of Council for 1968

The President announced that it gave him great pleasure to report that, in accordance with Article 10 of the Articles of Association, the Council had appointed Mr J. C. Graham, G3TR, to the office of President for 1968.

The President then declared the following members elected unopposed to fill the vacancies amongst those Council members elected on a Zonal Basis, which occurred on 31 December, 1967.

J. R. Petty	G4JW
D. M. Thomas	GW3RWX
H. E. McNally	GI3SXG

The result of the ballot to fill the vacancies which occurred among the members of Council on 31 December, 1967 were as follows:

E. J. Allaway	G3FKM	994
B. Armstrong	G3EDD	1322
E. G. Ingram	GM6IZ	1234
C. Penna	G3POI	1021
R. F. Stevens	G2BVN	1594
J. W. Swinnerton	G2YS	1223
R. G. B. Vaughan	G3FRV	991
Zone G Election		
A. F. Hunter	GM3LTW	73
A. W. Smith	GM3AEL	68

The President formally declared Messrs Armstrong, Ingram, Stevens and Swinnerton elected as Ordinary Members of Council, Mr A. F. Hunter being elected on a Zonal basis for Zone G.

The President also thanked the unsuccessful candidates and the scrutineers.

Auditors

Mr Scarr moved, Mr Findlay seconded and it was Resolved that Edward Moore and Sons be re-appointed Auditors for the year to 30 June, 1968, at a fee of 120 guineas.

Other Business

The President announced that in accordance with Article 58, it was necessary to appoint a panel of TEN Corporate Members from whom the scrutineers for the 1968 Ballot for Council would be drawn.

The following members volunteered their services:

R. J. F. Broadbent	G3AAJ	A. W. Rix	G3RYF
J. Clarricoats	G6CL	P. A. Thorogood	G4KD
D. A. Findley	G3BZG	J. W. Bluff	G3SJE
W. E. F. Corsham	G2UV	G. Jessop	G6JP
L. A. Crane	G3PED	Sven Weber	G8ACC

The Meeting terminated at 8 p.m.

INFORMAL SESSION

Mr Clarricoats stated his appreciation for the invaluable work that had been done by Mr Caws and Mr Stevens during the difficult year of 1967. Turning to the subject of publications he very much regretted the change in the name of the RSGB Journal. He said that the vast majority of members would still think of it as the *Bulletin* and not *Radio Communications*. Mr Corsham supported Mr Clarricoats' statement.

Mr Scarr then asked for a vote on the subject and the President replied that they could not hold a formal vote but he was prepared to have a show of hands. This resulted in a majority in favour of the change to Radio Communication.

Mr Craig G6JJ, then asked if when the Headquarters was moved to Doughty Street we could retain our current phone number 7373. Mr Patterson replied that unfortunately this could not be done. Mr Craig then thanked Committee and Council members for attending so many meetings.

Mr MacBrayne, G3KGU, asked who was responsible for the choice of articles which appeared in the *Bulletin*. The President replied that the Assistant Editor, assisted by Messrs Hawker and Stevens, was responsible for the *Bulletin*.

There being no further business, the President thanked all present for attending and declared the meeting closed.

Good progress is now being made with the works at the new Headquarters premises at 35 Doughty Street, WC1. We aim to bring the premises to a condition of decoration and services in keeping with the status of the RSGB as a Society of national and international repute and to give the staff and all the many voluntary workers accommodation where they can work in comfort and in pleasant surroundings.

About one-third of the work contracted for has now been done, the electrical and central heating installations being practically finished.

Thanks are again due to all those members and clubs who are continuing to show such a great interest in the project and assisting towards its completion. It is hoped that other members will make their contribution either as Debentures or donations and help achieve the target of £20,000, which is now only £1,800 short.

IT'S COMING ON

but . . .

THE HARROW CHALLENGE

What's Happened?

Last February, the Harrow Radio Society challenged other clubs all over the country to a fund-raising contest in aid of the new HQ. Sure enough, we have had a worthwhile response in terms of clubs' donations, but everyone seems to have missed the point of the challenge. To set the record straight, the intention was for each club to see how much could be raised, *per member*, a figure being obtained by dividing the total contribution from the club by the number of members. We can then publish a list of contributing clubs in this order, which means that any club, no matter how small, stands a fair chance of being placed well up the table.

Let us have all the figures now and we will be able to start the ball rolling for the next issue.

In the meantime, the encouraging response from the 18 clubs which have sent in donations and Debentures by 10 June is shown below, though without the analyses mentioned above.

Clubs and Groups	Debentures £	Donations £ s. d.
Basingstoke Amateur Radio Club		7 7 0
Bedford & District Amateur Radio Club	25	
Belfast and District RSGB Group	25	
Crawley Amateur Radio Club		5 10 6
Cray Valley Radio Society		10 0 0
Crystal Palace Club		11 0 0
Glasgow University Radio Club	25	
Radio Society of Harrow	25	36 4 0
Mansfield Amateur Radio Club		5 0 0
March & District Amateur Radio Society	50	
Mid-Ulster Group of RSGB	25	
North Kent Radio Society	25	
Painton Radio Society		5 0 0
Reading Amateur Radio Society		3 0 0
South Dorset Radio Society		5 5 0
Stockport Radio Society	50	
Wimbledon Radio Club		2 10 0
Wirral Amateur Radio Club	25	
	£275	£90 16 6

RSGB INTERNATIONAL RADIO ENGINEERING AND COMMUNICATIONS EXHIBITION

Royal Horticultural New Hall, Greycoat Street, Westminster, London, SW1.

2 - 5 OCTOBER 1968

Enquiries relating to the home-constructed equipment exhibition should be sent to Alan Gibbs, G3PHG.

Radio Amateur Emergency Network

By S. W. LAW, G3PAZ*

Honorary Registrations Secretary:
Mr R. A. Ledgerton, G2ABC
1 Latchington Gardens,
Woodford Bridge, Essex.

Honorary Secretary, RAEN Committee:
Mr E. R. L. Bassett, BRS16075
57 Upper St. Helens Road,
Hedge End, Southampton, SO3 4LG

THE long-expected Doctors' Emergency Service seems to be getting " kitted up " nicely. Some of us are a little puzzled over the aerials for the base stations, however. We have seen the " voltage-fed " ground planes used on the portable base stations of certain motoring organizations, but a vertical folded dipole with no parasitic elements whatsoever gives us furiously to ponder on the feeder problems involved. No doubt all will be made clear to us in due course and make further grist for our technical mill. Speaking of which—we have decided that the odd little scrap of technical tip might not be amiss on the RAEN page. We are therefore passing on some that come our way from time to time, and trust that those of our members who have any bright ideas on equipment which make for easier or more efficient operation will pass them on.

Holiday Courtesy

When you read this page it may well be that you will be taking a well-earned break far from the daily " salt-mines." Possibly you may have buried this page beneath a pile of travel brochures and are still in deep thought over the merits of this or that. Whichever, have you had the courtesy to inform your Controller that you will not be available from X to Y? Don't overlook this small point next time you are on the net or at the meeting—or even on the landline! He *would* like to know.

Reminder

Did you send in your Registration Card? The date for renewal was 30 June, so if you forgot your membership has lapsed. Better make sure—NOW!

Those Green Lights

As you are aware, the authorities permit us to use a green flashing light to identify our " signal points " under emergency conditions. This does not apply to exercises unless these are off the public highway, and even then Police permission should be sought as a courtesy as these lights are naturally visible over a considerable distance. We hardly think any of our members are likely to want to " show off " by racing along the roads with a green flasher going on the car roof, but let us nip this in the bud right away. Don't do it! However, those who wish to have these lights available (and their usefulness in the right place is obvious) may have had trouble with the practical aspect. The " pukka " job is somewhat expensive for a voluntary RAEN member and some other expedient is usually called for.

There is on the market a well-known make of hand lantern which has a red dome with a thermostatically operated flasher. These lanterns can be easily obtained with an additional clear white dome which replaces the red one. Don't waste your time trying to get a green one—you'll get some very funny answers! What has been tried, however, is to look around the chain stores for a green plastic drinking " glass." This may readily be cut down with a fine hacksaw so as to fit inside the clear dome of the lantern over the flasher bulb, and this in no way affects the utility of the lantern for its legitimate use as a warning should you be in the unfortunate position of requiring it. For those who feel that something a little more sophisticated is called for, there is a lantern of Japanese manufacture which actually has a revolving reflector with a motor driven by an internal battery. The problem of the green dome remains, however, but no doubt some of our practically minded members will soon come up with the answer to that one. Incidentally we would be glad to know of a source of supply of green " lamp lacquer." To date, all efforts to trace this have been in vain.

Reporter Microphones

Many of our members are using the excellent " Reporter " as a mobile rig. Although considered obsolete from a professional point of view, these transceivers put up a remarkably good performance when adapted for our use. One disadvantage for mobile working in these days of heavy traffic is the handset-and-pressel-switch operation which involves driving with one hand. Some members have overcome this in various ways of their own, but for those who are still pondering on the problem we offer a few pointers. First the microphone itself. A high-sensitivity type is out of place on a car, as any " mobilier " will tell you. On the other hand, a certain amount of power output is called for and this was catered for in the original set-up by the use of a double-button carbon microphone powered from a tapping on the cathode resistor of the EL85 modulator/audio-output valve. Since this power is available it would seem reasonable to stick to the carbon microphone but small double-button types such as might be fixed on a " boom " in order to leave the hands free are not easy to come by. The alternative of a readily-obtainable single-button type means that there will be insufficient modulation power available. There is, however, a well-tried method of overcoming this drawback on the Reporter.

More Gain

In order to raise the output of the single-button microphone to a suitable level on the Reporter, it is possible to utilize the triode portion of the DH77 (6AT6) as a pre-amplifier. The EL85 still performs as a modulator in the normal way. Since the DH77 would normally have its h.t. supply removed when the relay is in the

continued opposite

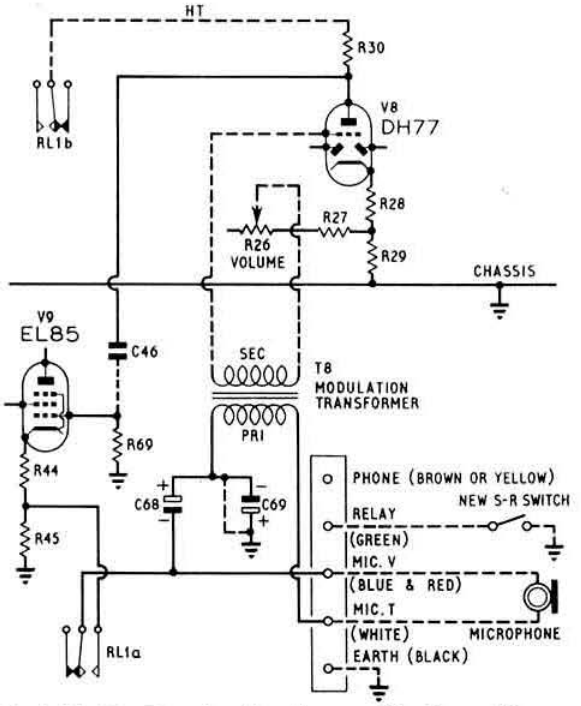


Fig. 1. The Pye Reporter microphone modifications, with new circuitry shown as broken lines

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

SOCIETY AFFAIRS

A brief report on the May 1968 meeting of Council

THE Meeting was held on Saturday, 4 May, and was attended by The President, Mr. J. C. Graham (in the chair), Messrs. B. Armstrong, N. Caws, J. Etherington, R. J. Hughes, A. F. Hunter E. G. Ingram, H. E. McNally, L. E. Newnham, A. D. Patterson, J. Petty, R. F. Stevens, G. M. C. Stone, J. W. Swinnerton, G. Twist, E. W. Yeomanson (Members of Council), C. P. Pope (Secretary) and T. R. Preece (Assistant Editor).

Apologies for absence were received from Mr. D. Thomas (Council Member), and Mr. A. E. Dowdeswell (General Manager).

Membership and Affiliation

Council approved the election of 89 Corporate and 28 Associate members. Council also approved the election to Corporate membership of five Associates and BRS membership to five Associates.

Council resolved to waive the subscriptions of seven members due to blindness or other disability.

The following application for affiliation was accepted by Council: Rhyl and District Amateur Radio Club (formerly Flintshire Radio Society). Hon. Sec. Mr A. Antley, GW3UTG.

City of London Festival

Council considered a report from the Society's PRO, Mrs Margolis who had made enquiries with the organizers with the view in mind of the possible setting up of an Amateur Radio Station. The PRO had obtained permission to use the foyer of the *Daily Mirror* and added that one of the maintenance staff at the building was a Member. Council then approved the setting up of a station, using the call GB2LO, by a small committee under the chairmanship of Mr Dowdeswell.

Recommendations of Committees

The following recommendations of committees were accepted by Council:

H.F. Contests Committee 18.4.68

That the Somerset Trophy be awarded to Mr I. T. Cashmore, G3BMY, and that the Maitland Trophy be awarded to Mr J. Christie, GM3FXF.

Membership and Representation Committee

That Deputy Regional Representatives be allowed the same expenses as the Regional Representatives provided that their names had been notified to Headquarters.

A Visit of the President to Belgium

Mr Graham announced that he had been invited to attend the UBA General Assembly at Geneval on 11 and 12 May and asked Council to consider the matter. Council unanimously agreed to the President attending this function.

Curator of Society Tape Library

Council accepted the kind offer of Mr A. O. Milne, G2MI, to take over the duties of the Tape Library. This office was made vacant by the resignation of Mr G. Milne, on taking up an overseas appointment.

Members' Advertisements in *Radio Communication*

Council considered the overwhelming response to the free "Members Ads" policy of the Society and after a lengthy debate it was resolved to publish in *Radio Communication* a statement on future arrangements. (This appeared in the June issue.)

Radio Communication Handbook

Mr Armstrong reported on the progress of the Handbook and hoped that the anticipated publication date, late September, would be met.

Minutes of Committee Meetings

Council approved the Minutes of the following Committee Meetings: Technical Committee (1.4.68). Membership and Representation Committee (8.4.68). IARU Working Group (9.4.68). H.F. Contests Committee (18.4.68).

The Council was in session for four hours.

"transmit" position, it is necessary to make provision for the valve to remain conducting. The accompanying diagram shows the circuit changes required for this modification.

Step by Step

For your assistance in carrying out the microphone modification, here is a step-by-step procedure:

1. Disconnect the existing handset cable from the terminal strip within the transceiver, noting the terminal arrangement (this is not the same on all models, but should be marked on the strip).
2. Connect the single-button microphone to the two MIC terminals.
3. Connect a suitable single-pole switch between the RELAY and EARTH terminals for "send/receive."
4. Disconnect and retain the 220k resistor R69 from beneath V9 (EL85).
5. Disconnect the two leads from the secondary of the modulation transformer T8 (this is the one in the circular can). These leads normally have R69 across them.
6. Disconnect the lead from the slider of the volume control R26 (normally connected to the grid of V8).
7. Connect the secondary of the modulation transformer T8, one side to the slider of the volume control R26, and the other to the lead removed in 6 above (grid of V8).
8. Disconnect the h.t. end of R30 (anode supply to V8) and connect R30 to the centre leaf of relay contacts RL1b (h.t. supply).
9. Connect the 220k resistor R69 (removed in 4 above) from the grid of V9 (EL85) to chassis.
10. Disconnect R31 (between C46 and chassis).
11. Connect C46 to the grid of V9 (EL85).
12. Connect a short-circuit across C69 to complete the microphone circuit.

Afterthought

For those who prefer to continue with the original handset with the double-button microphone, the procedure above is valid if steps 1, 2, 3 and 12 are omitted.

CONTEST NEWS RULES—RESULTS

Third 144 MHz Contest

The 2m open contest held on the 2–3 of March attracted a total of 32 entries. Section A received 18, section B nine and section C five. Listeners' logs were also received from A3942/P, BRS15822, A5032 A5124 and BRS26234/P, which will be credited towards the Listeners' Championship.

G2JF is to be congratulated as being the overall winner and leading station in the multi-operator section. G3RZP/A was runner up in Section B. Both will receive certificates of merit. G3LAS is to be congratulated as leading station in Section A, with G3USB as runner-up; both will receive certificates of merit. GW3NUE/P is the leading station in the portable section and will receive a certificate of merit. All these awards are, of course, subject to Council approval.

The number of entries was down on last year's second 144 MHz Contest held on this date. Poor propagation conditions were possibly the reason for this, although the leading stations logged well over 100 contacts, G2JF totalling 220 contacts; 75 Gs, 68 Fs, 22 ONs, three DLs, 51 PAs and one GW, the best contact being with F1BL at a distance of 525 km at 5 and 9 both ways.

Activity appears to have been quite good for the first four hours, dropping off to an average of five contacts an hour for the leading stations on the Sunday, with most stations QRT between midnight and 07.00 GMT.

G3USF has suggested a sharper rise in points for distances over 150 km to encourage stations in the North of England to look for the fringe contacts and to go over more onto c.w. G3OHC suggests that a well sited station in the South East could work a great number of continental stations and win the contest, and suggests a worthwhile addition to the rules would be a multiplier for the number of British counties worked.

Multi operator stations are reminded that name and call-sign of operator is required on the cover sheet and the call-sign of operator beside each contact on the log.

SECTION A

Position	Call-sign	Points	QSOs	QTH
1	G3LAS	44,694	140	Hertford
2	G3USB	10,148	65	Cambridge
3	G3WHK	7,735	90	Epsom, Surrey
4	G3PTM	6,624	55	Solihull, Warks
5	G2WS	4,788	44	Weston super Mare, Somerset
6	G3UUT	4,428	41	York
7	G5HZ	4,380	57	Reading
8	G3USF	4,165	49	Newcastle
9	G5UM	2,890	37	Leicester
10	G2BHN	1,980	35	Yeovil
11	G5DF	1,959	36	Reading
12	G3UCS	1,368	32	Kidderminster
13	G3VJO	1,034	32	St. Albans, Herts.
14	G3PKV	990	31	Welwyn Garden City
15	G3UIK	966	34	London, NW11
16	G3THM	480	22	Luton, Beds.
17	G3NBU	84½	10	Basingstoke, Hants.

G5VU disqualified (no cover sheet)

SECTION B

Position	Call-sign	Points	QSOs	QTH
1	G2JF	215,208	220	Ashford, Kent
2	G3RZP/A	62,372	140	Chelmsford
3	G3OHC/A	53,805	141	Dudley, Worcs.
4	G3WSC	22,880	103	Crawley
5	G3WXI/A	7,550	56	Sheffield
6	G3TMG/A	6,860	53	Hayling Island, Hants.
7	G3COJ	3,798½	48	High Wycombe, Bucks.
8	G3AYC	2,725½	55	London
9	G3UBR	924½	41	Acton, W/London

SECTION C

Position	Call-sign	Points	QSOs	QTH
1	GW3NUE/P	31,297½	101	Black Mountains
2	G3SLJ/P	12,354	91	Dunstable, Beds.
3	G3TXR/P	6,385½	55	Broadway
4	G3RZG/P	350	17	Dorchester, Dorset
5	G3CMH/P	28	5	Coombe Beacon, Somerset

First 1296 MHz (Open) Contest

A total of 35 call-signs appeared in the 13 logs received for this contest, held on 4 and 5 of May.

ColinWhittingham, G3GWL, of Bletchley, took first place in Section A with 10 contacts at distances between 20 km and 136 km. His station included an ML8533 tripler with 60 watts input, and a parametric receiver. In Section B, Albright and Wilson ARS were the leaders with G3NZS, G3TGL and G3XHU at the controls. The transmitter used a DET24, while a K6AXN converter fed the S750 receiver. Over-all top scorer and winner of Section C was C. L. Desborough, G3NNG/P, with G8ARL/P a very close second.

Several contestants suggested that stations equipped for 23cm had concentrated their efforts on the 432 MHz Contest, although G3NZS pointed out that the combination of the contests encouraged portable operation. It will be interesting to compare these results with those of the separate contest to be held in October.

The scoring system, which seems to work reasonably well on the other bands, becomes rather involved when combined with the "half points for crossband contacts" rule. It has therefore been proposed that the points-per-kilometre system be used for future 1296 MHz Contests in view of the comparatively small number of measurements involved.

SECTION A

Position	Call-sign	Points	QSOs	Aerial	ft. A.S.L.
1	G3GWL	175	10	4 ft. dish	335
2	G2RD	148	12	3 ft. dish	625
3	G3UQK	63	8	62 ele. slot	220
4	G8AOD	7	3	8/8	400
5	G2WS	2	2	11/11	300
6	G3VYB	1	2	8/8	—

SECTION B

1	G3OXD/A	265	13	4 ft. dish	850
2	G8AOL	23	6	Parabeam	150

SECTION C

1	G3NNG/P	350	14	3 ft. dish	—
2	G8ARL/P	338	14	3 ft. dish	974
3	G3MAR/P	291	14	trough	—
4	G3OAD/P	81	10	corner	—
5	GW3ITZ/P	40	4	3 ft. dish	—

Second 70 MHz (Open) Contest 1968

Keen competition seems to be the keynote of the Second 70 MHz (Open) Contest held on 20–21 April, 1968. This was particularly evident in the Portable Section, with two keen, well-known groups competing for top place. It is interesting to note that the distance score achieved by GW3NUE/P was only four points greater than that of G3PUO/P.

In section A, G3OHH of Mow Cop wins, with G3OYU of Biggin Hill in second place. In section B, G3VPK/A wins comfortably, operating from a 350 ft. a.s.l. site, 8 km east of Chelmsford. In section C a Certificate of Merit will be awarded to GI3VJS/P for a most notable performance and effort from Northern Ireland's highest mountain, Slieve Donard (Incidentally the QRA given by GI3VJS/P was incorrect). The site was 2,796 ft. a.s.l.; 50 watts input was used to four two-element Yagis.

Several comments have been received about the scoring system, nearly all inferring that home counties stations have a significant advantage, because of the station multiplier. For this reason the

contacts over and under 50 km have been placed in the results table. It can be seen that home counties' stations that have scored well have done so by virtue of long distance QSOs and not large numbers of local contacts. In fact stations such as G3UUP (Section B) who have made large numbers of short contacts have not scored very well. Numbers of contacts alone will not win a contest under these rules. Also remember that there is advantage to stations making long QSOs because of the non-linearity of the distance scores. The number who do consider the present system to be unfair is quite small, but comments and alternative suggestions are welcome and will be carefully considered when the rules for 1969 contests are formulated.

Thanks go to BRS27575, BRS15822, BRS28005 and G3VFD for check logs received.

Section A, Single operator, fixed stations

Call-sign	Score	QSOs	QSOs over 50km	QSOs under 50km	County	Best QSO
G3OHH	27501	98	80	18	Staffs	G3DAH
G3OYU	18688	97	50	47	Kent	GI3VJS/P
G3RLE	16093	81	52	29	Yorks	G3WLE/P
G3LAS	15708	80	52	28	Herts	GI3VJS/P
G3NKL	12958	74	50	24	Lancs	G3WLE/P
G3NEO	9652	55	44	11	Yorks	G3WKF/P
G6HD	9396	83	34	49	Kent	G3PUO/P
G3SUV	4816	49	37	12	Essex	GW3EFX/P
G3OCC	4494·5	68	21	47	Kent	GW3EFX/P
G3UUT	4046	40	29	11	Yorks	GI3VJS/P
G3VSA	3312	49	23	26	Lancs	G3VPK/A
G3EKP	3036	45	19	26	Lancs	GI3ILV/P
G3KTA	2400	47	17	30	Surrey	GW3NUE/P
G3PMJ	1836	36	18	18	Lancs	GI3VJS/P
G3UFY	1740	48	11	37	Surrey	G2SUV
GI3WEL	1657	43	8	35	Co. Armagh	G3EKP
G5UM	1633	25	21	4	Leics	G3PUO/P
G3HTP	1616·5	40	13	27	Surrey	G3OHH
G3PKT	405	20	7	13	Kent	G3OHH
G3VKI	377	20	7	13	Surrey	G3OXD/A
G3VCV	240	9	6	3	Cornwall	GI3VJS/P

Section B—Club, /A and Multi-op. fixed

G3VPK/A	44576	120	104	16	Essex	GI3VJS/P
G3OXD/A	25120	87	75	12	Worcs	GI3VJS/P
G3TZR	5160	59	29	30	Lancs	G3WYX/P
G3UUP	4664	76	12	64	Middx	GW3EFX/P

Section C—Portable Stations

GW3NUE/P	67828	126	122	4	Brecon	GI3HCG/P
G3PUO/P	61630	114	113	1	Cumbrld	G3DAH
GW3UCB/P	45450	112	107	5	Caerns	GM3EGW
G3WLE/P	41303	121	101	20	Sussex	G3PUO/P
G3THQ/P	29011·5	118	82	26	Herts	GI3VJS/P
GI3VJS/P	28934	82	66	16	Co. Down	G3OYU
GW3EFX/P	24525	75	74	1	Brecon	G3JQI
G3RCV/P	22576·5	114	59	55	Kent	G3PUO/P
G3OJE/P	17940	91	65	26	Bucks	G3WKF/P
G3TND/P*	15540	62	58	4	Somerset	G3PUO/P
G3KKP/P	14490	79	48	31	Yorks	G3WYX/P
G3NJF/P	12321	56	55	1	Lincs	G3WYX/P
G3TDM/P	9780	73	48	25	Bucks	G3PUO/P
G2ASF/P	9398	55	50	5	Warwick	G3WKF/P*
G3WYX/P	9992	40	34	6	Devon	GI3VJS/P
G5DF/P	5062·5	48	33	15	Oxon	G3PUO/P
G8JA/P	3970	38	32	6	Staffs	G3VPK/A
GI3ILV/P	2905	40	31	9	Co. Armagh	G3EKP
G3WKF/P	1674	17	14	3	Cornwall	G3VPK/A
G2WS/P	224	9	6	3	Somerset	G3NEO

Grafton Top Band Contest

The Grafton Radio Society held its annual " G2AAN " Top Band Contest on 16 and 23 March. Here are the positions achieved by the top six stations in each section:

Open Section			Members' Section		
1	G3RVM	118 (phone winner)	1	G3VYF	92 (c.w. winner)
2	G3LIV	108	2	G3SIL	85 (phone winner)
3	G3IGW	94 (c.w. winner)	3	G3THQ	53
	G3UGF	87 (late entry)	4	G3ONS	48
4	G3VMW	83		G3RDG	48
5	G3UBI	81	6	G3FMO	46

Thanks go to all stations who supported the contest, and GW3SRG, ZC4RB, OK2PAE, SWL's J. Brand, W. A. Jackson and A. W. Jackson, who sent in check logs.

High Wycombe D/F Qualifying Event

The opening shots in the hunt for the champion Direction Finder of 1968 were fired on 12 May, when the first qualifying round of the year took place. The event was organized by members of the Chiltern Amateur Radio Society but took place on the Aldershot (O/S 169) map to show that local teams are supreme even when not on " Home Ground."

The two transmitters were situated within 12 miles of the start at Binfield, Nr. Bracknell, transmitter A dug in on a common near Aldershot and Transmitter B at Burghfield, near Reading. Transmitters were operated by G3TRY/P and G3WQG/P respectively. It was intended to be tough, but both for D/F men and their navigators proved to be too much for several teams. However, six contestants located both transmitters. M. Hawkins, G3WMM, showed his usual prowess by finishing 20 mins. before the next contestant E. L. Mollart. Third position was taken by Bob Curnow, a great achievement, as he had only taken part in two contests previously. These three gentlemen therefore are the first to qualify for the National Final to be held in September.

Those who took part enjoyed a first class day out, but the organizers felt some disappointment that only 12 teams took part. Could it be that most amateurs are content to grow fat in the confinement of their shacks, and not take part in the noble art of DF? Can they not take some sport from their hobby and give family and/or friends the opportunity of seeing the countryside (if nothing else)? (see editorial comment, page 454).

The results of this event have once again proved the supremacy of valve sets over transistor receivers used by some contestants. Any reader who wishes to disprove this statement is challenged to construct himself a receiver and take part in any of the future events.

Tea was served by Mrs Mollart's ladies to 45 competitors and friends in the restaurant so kindly placed at our disposal year after year by Mr Eric Burger. Prizes were distributed and the High Wycombe Challenge Cup presented to M. P. Hawkins for the second year running.

Position	Name	Club	A Station	B station
1	M. Hawkins	Oxford	14.43	15.46½
2	E. Mollart	Oxford	15.00	16.07
3	R. Curnow	Oxford	15.01	16.11
4	I. Butson	Oxford	15.00½	16.11½
5	E. Bristow	Oxford	15.16½	16.17
6	J. Vickers	Stratford	15.19	16.18
7	M. Gee	Oxford	14.59	—
8	P. Tyler	Oxford	15.01½	—
9	B. Mahoney	Rugby	15.15	—
10	R. Pearce-Boby	Oxford	15.16	—
11	G. Peck	High Wycombe	15.17	—
12	D. Newman	Rugby	15.50	—

Salisbury D/F Qualifying Event

The Salisbury RSGB D/F Qualifying Event, organized by Sir Evan Nepean Bt. G5YN and A. Newman, G2FIX, was held on Sunday, 26 May. D. Thom, G3NKS, of the RSGB Contests Committee was there to watch the fun.

The " A " station G3PAV/P on 1920 kHz was located on the old Roman Road near Newton Tony, 7½ miles East of the start. It was installed in a Minivan over which a large frame tent was erected, and well concealed from direct view by bushes. The whole was further protected by a notice saying " Honeymoon couple—do not disturb." The " B " station G3OBW/P on 1880 kHz, located in the northern part of Grovely Wood, 5¾ miles South West of the start, was concealed by trees and thick undergrowth.

Despite threatening weather conditions rain held off in the case of the " B " station until about 15.45 and at the " A " station until 16.30, by which time most parties had located their quarry. All parties commented on the excellent signals received from both stations both at the start and throughout the hunt. The first party home was A. Simmons of Oxford. This was most creditable as it was only his second attempt at a qualifying event. He was followed by B. J. Mahony and M. P. Hawkins. The following qualified for the first time: A. Simmons, B. J. Mahony and W. J. North. At 17.00 everybody, except one party who got his car stuck in the mud near the A station and had to enlist the help of a local farmer and his tractor, assembled at the Scout Hut, Wilton. Here 57 sat down to an excellent tea laid on by the mother of one of the younger members of the club. After tea G5YN welcomed the visitors, announced the results and presented prizes to the winner and to the first lady home. The winner replied and was followed by Eric Mollart who made some interesting and amusing remarks based on his wide

experience of D/F. Having been welcomed at the start by G5YN as "Old Faithful" he said how pleased he was to see the young entry taking first place for a change.

The proceedings were closed by D. Thom, G3NKS, who offered his comments as RSGB observer saying how interesting and enjoyable he had found the day's activities.

Name	Call-sign	Club	A Station	B Station
A. Simmons	—	Oxford	1432	1517½
B. J. Mahony	G3NDM	Rugby	1430	1518½
M. P. Hawkins	G3WMM	Oxford	1434½	1519
E. L. Mollart	—	Oxford	1433½	1532
R. Curnow	—	Oxford	1440	1533
W. J. North	G3TRY	High Wycombe	1432	1536
E.W. Bristow	G3WNN	Oxford	1432½	1543
I. R. Butson	—	Oxford	1434½	1543½
M. Gee	—	Oxford	1545½	1433
D. E. Newman	G8BGD	Rugby	1440½	1546
T. C. Gage	—	Oxford	1546½	1450
P. T. Tyler	—	Oxford	1459	1558
D. Nasey	GW3ATM	Chepstow	1515½	1612
J. Pearce baby	G3JLE	Oxford	1616½	1532½
P. Woollett	G3RQJ	Edenbridge	—	1515
G. T. Peck	—	High Wycombe	1616½	—

80 Metre Field Day 1968

1. Duration: 10.00 GMT to 17.00 GMT on Sunday, 15 September, 1968.
2. Eligible Entrants: All fully paid-up Corporate Members of the RSGB resident in G, GC, GD, GI, GM, GW. A maximum of two operators will be allowed per station: only one call-sign may, however, be used.
3. Contacts: must be made on c.w. (A1) in the 3·5 MHz band only. Contestants should identify themselves as taking part in the contest by including the letters FD during transmission.
4. Scoring: 15 points may be claimed for each contact with a portable or mobile station, and 3 points for each contact with a fixed station.
5. Contest Exchanges: RST reports followed by contact number starting at 001, and the location, e.g. RST 579001 Reigate.
6. Logs: (*a*) Should be submitted on RSGB Contest Log Sheets with column (5) headed "Location of station contacted," and column (6) "**Call-sign of Operator.**"
(*b*) The cover sheet must be made out in accordance with General Rule 4; the location as transmitted must be given and the declaration signed.
(*c*) Entries must be postmarked not later than 30 September 1968.
Log sheets and cover sheets are available from Headquarters on request.
7. Equipment: The total d.c. input to the anode circuit of the valve(s) or any other device energizing the aerial, or to any previous stage of the transmitter, shall not exceed 10 watts. The power for all parts of the station must be derived entirely from storage batteries or accumulators. The practice of "float" charging the storage batteries or accumulators in use, whether from portable generators or supply mains, is not permitted.
8. General Rules relating to RSGB Contests, published in the January 1968 issue of *Radio Communication*, will apply except as superseded by the rules of this contest.
9. Awards: At the discretion of the Council, the Houston Fergus Trophy will be awarded to the winning station and certificates of merit to the runner-up and to the non-transmitting member submitting the best check log.

144 MHz Summer (Open) Contest

1. Date and time. 6 July, 18.00 GMT to 7 July, 18.00 GMT.
2. All entries must be sent to the adjudicator at: V.H.F. Contests Committee, "Summerleigh," Beltinge Road, Herne Bay, Kent.
In addition, the following General Rules will apply: 3a, 4, 5a, 6a, 7a, 8a, 9b, 10a, 11-21, 23-28 (rule 22 does not apply).
This contest has been arranged at short notice to coincide with an IARU Region 1 Contest. This will enable UK operators to make use of a high level of continental activity.

Sixth 144 MHz (Open) Contest

1. Date and time. 15.00 GMT, 3 August, to 15.00 GMT, 4 August.
2. All entries must be sent to the adjudicator at: V.H.F. Contests Committee, 20 Pembury Road, Bexleyheath, Kent.
In addition, the following General Rules will apply: 3a, 4, 5a, 6a, 7a, 8a, 9b, 10a, 11-21, 23-28 (rule 22 does not apply).

Listeners' 144 MHz Contest

The following are the details of the Listeners' Contest to be held at the same time as the 144 MHz Open Contest. Entries will automatically be credited to the Listeners' V.H.F./U.H.F. Championship.
1. Duration. 15.00 GMT, 3 August to 15.00 GMT, 4 August.
2. Eligible Entrants. The Contest is open to all non-licensed fully paid-up members of the RSGB. Only the entrant may operate his receiving station for the duration of the Contest.
3. Logs and Scoring. Entrants will be required to log stations operating in the 144 MHz band. Logs must be set out and scores calculated as described in the rules for the 1968 V.H.F./U.H.F. Listeners' Championship in the January 1968 *Radio Communication*.
4. Entries must be sent to the adjudicator at: V.H.F. Contests Committee, 60 Merlin Grove, Beckenham, Kent, BR3 3HU and must be postmarked not later than **19 August.**
5. Awards. At the discretion of Council, certificates of merit will be awarded to the leader and runner-up.

Oxford D/F Qualifying Event

Sunday, 11 August, 1968.
Map: Ordnance Survey Sheet 145, Banbury.
Assembly Time: 13.00 BST for start at 13.20 BST.
Location: NGR 490246, Lower Heyford.
Frequencies and call-signs: To be announced at the start.
Organizers: E. L. Mollart and M. P. Hawkins.
Entries and Tea: Intending competitors are asked to advise the organizers at 17 Spinfield Mount, Marlow, Bucks, of the number in the party requiring tea.

CONTESTS DIARY

6-7 July	—Summer Top Band Contest (see page 401, June)
6-7 July	—144 MHz Summer (Open) Contest (see above)
6-7 July	—Venezuelan Contest (see page 385, June)
13-14 July	—High Power H.F. Field Day (see page 254, April)
14 July	—Stratford-on-Avon D/F Event (see page 401, June)
20-21 July	—Independence of Columbia Contest (see page 385, June)
21 July	—Third 70 MHz (Portable) Contest (see page 401, June)
28 July	—St. Albans D/F Event
3-4 August	—Sixth 144 MHz (Open) Contest (see above)
4 August	—Region 1 (NW) V.H.F. Contest
10-11 August	—(DARC), 3·5-28 MHz, C.W.
11 August	—Oxford D/F Event (see above)
1 September	—(DARC), 3·5-28 MHz, C.W.
7-8 September	—(DARC), 3·5-28 MHz, Phone
7-8 September	—V.H.F. National Field Day (see page 324, May)
7-8 September	—VU/4S7 DX Contest (C.W.)
14-15 September	—VU/4S7 DX Contest (Phone)
15 September	—80m Field Day (see above)
21-22 September	—(SSA), 3·5-28 MHz, C.W.
22 September	—D/F National Final
28-29 September	—(SSA), 3·5-28 MHz, Phone
5-6 October	—Third 432 MHz (Open) Contest
12-13 October	—28 MHz Telephony Contest (see page 405, June)
12-13 October	—Second 1296 MHz (Open) Contest
19-20 October	—11th Jamboree on the Air
26-27 October	—7 MHz C.W. Contest (see page 404, June)
9-10 November	—7 MHz Phone Contest
11 November	—Seventh 144 MHz (S.S.B.) Contest
16-17 November	—Second 1·8 MHz Contest
1 December	—Fourth 70 MHz (C.W.) Contest

LETTERS

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 300 words in length.

Technicians on Two

From: C. P. Howard, G8ANU, Milford, Stafford

With reference to the letter from G3HRH published in the June edition of *Radio Communication*, it does appear that Mr Hills considers that change in the established pattern of things is itself undesirable.

However, the principal change which he criticizes is the extension of the terms of the Sound " B " Licence to allow operation within the 2m band and this is the matter to which I refer.

In his letter he appears to make the quite usual assumption that conditions around the London area are typical of those in the whole of the UK—for most of the year, in fact, 2m appears very quiet indeed in many parts of the Country and I have worked several Sound " A " stations who have welcomed the extra activity on 2m in the same way that the small number of Sound " A " stations regularly active on 70cm were also grateful for the efforts of the G8 + 3 stations.

Even though, in my experience, very few Sound " A " stations use 70cm regularly—they only seem to appear during contests. I see no reason why the defence of 70cm against commercial attack should be the main reason for the existence of the Sound " B " Licence and I also feel sure that it is not intended to provide transmitting facilities for professional use as Mr Hills implies!

I have been active on 70cm for about eighteen months from a poor location and have also operated /P in an attempt to improve results. I have found the experience rewarding in general although very frustrating on occasions and I shall in future divide my limited operating time between 2m and 70cm.

From conversation with other G8 + 3 stations previously active on 70cm I feel sure that most of them will eventually operate on both these bands, not forgetting the TV and 23cm activities of some of these stations.

In the case of newly issued Sound " B " licences there is admittedly a risk that operation will never be started on 70cm, but this risk is surely even greater with newly issued Sound " A " licences.

It would possibly be a good thing if any resulting QRM drove some of the old 2m stations on to 70cm. Why haven't they been there before?

Possibly because " those not skilled enough for u.h.f.—natter on two " !

From: A. C. Wadsworth, G3NPF, Rochford, Essex.

I feel I must reply to Mr R. C. Hill's comments on the use of 145 MHz by holders of Class B licences. I not only dislike the tone of his letter, but I strongly disagree with most of the points raised.

Firstly, these G8 +3s are holders of " Amateur (Sound) Licence B " and not necessarily inferior operators as the use of the expression " well modulated signals from Class " B " stations which have always characterized the two metre band . . . " would imply.

Secondly, I would like to say that it is most welcome to hear the 2m band becoming well populated, even when conditions are bad. It seems to me that far too many exponents of 2m operating spend more time watching the barometer and general weather conditions than they do actually putting out a signal. What is the use of listening on the band, and if nothing is heard switching off and complaining that the band is dead, if everybody else is doing the same thing. At that rate nobody will ever get a QSO. Is it, perhaps. that these so called experts at v.h.f./u.h.f. operating are not interested in talking to us lesser mortals who regard Amateur Radio as a hobby and are just as pleased to indulge in " nattering " as chasing stations. Surely there are those who are more interested in v.h.f./u.h.f. operating than in the technical aspects of building a transmitter, so why the disdainful comments about those who acquire commercial equipment?

Thirdly, this idea of creating a professionally qualified élite is one which I find singularly disagreeable, and definitely not in the spirit of Amateur Radio.

I.F.D.

From: John Roscoe, GM4QK, Strathaven, Lanarkshire.

You will no doubt be receiving the usual spate of letters about what a good/rotten contest NFD is. I merely wish to point out that the contest is no longer " National ". The idea has caught on throughout the Continent, and support from that area—if you can call these other national contests " support " for ours—was extensive this year. There were also the usual brave souls in VS6. AP5, and the usual very active Ws working nobody but FD stations.

TA

From: Lt. M. J. Francis, R. Sigs. TAVR 8 Hollies Close, Newton Solney, Burton on Trent, Staffordshire.

After the re-organization of the TA the new Regimental Club is thriving and has 18 members of whom 10 are licensees. Many think the TA is no more. We would like to point out that this is not so; indeed we welcome recruits who are Services trained operators. Imagine doing your hobby and getting paid for it as well! If anyone is interested and would like further details, please write to me at the above address.

It doesn't matter where you live, we'd like to hear from you. This includes Service trained Radio Technicians as well.

Any old friends of 92nd or 65th Signal Regts are welcome on the Regimental Amateurs' net on 3·525 MHz on Thursday nights at 21.00 local time. G3LUN is control, c.w., of course, on 3·740. Sundays at 11.30 is phone time.

Extortion (continued)

From: J. B. Roscoe, GM4QK Strathaven, Lanarkshire.

I am sure that your decision to offer a free advertisement service to members was sound. In particular, I am sure this service will attract the cheaper gear, which would otherwise not be worth advertising. As an example, one is offered the choice of about a dozen transmitters this month for £30 or less. There will always be optimists, of course, who place an unrealistic value on their offerings, but there is no need to put up with the extortion that G3BYY fears. This month, for instance, there is one outstanding, in my opinion, example of over-pricing. I do not buy much gear, but I have successfully bought once through these columns, and I am entirely happy with the result; and I also joined a queue of also-rans on another occasion—suggesting that one item was not too expensive.

Hertz—concluded

From: Dr John Allaway, G3FKM, Birmingham.

In reply to the amusing letter by G3OOH in June *Radio Communication* concerning the changeover to the use of the term " Hertz." I should like to draw attention to my remarks in February " Month on The Air " (page 106). It will be clear from these that my objection is to the retrograde step of changing a *descriptive* term into one which means precisely nothing. I cannot recall descriptive terms ever being in use for the units referred to which are named after famous personalities.

The US Services Interdepartmental Committee and the FCC were also reluctant to make the change (p. 115, February 1967 *Bulletin*), and I would have thought it unlikely that they would be influenced by the fact that Mr Hertz did not have a British passport!

From: E. M. Wagner, G3BID/ZD3F/ON8ID/DE1ZWW/PA9BID

Mr Gerald Lander, HB9AJU/G3OOH/DJ0BF/F0FR, is a little unfair in his last paragraph when he suggests that G3FKM, G3CNC (and others) object to " Hertz " because he did not hold a British Passport. As far as I know Volta and Ampere did not hold British Passports, but I have never heard any objection to the use of Volts or Amps.

Surely the point is that if an internationally acceptable name is chosen *early enough*, before other expressions have become current usage, there is no objection.

The objection is to an enforced change in an expression which has been accepted for more than a generation.

When talking German to a German Amateur I have always *translated* kilocycles to kilohertz, just as I translate " choke " into " Spule." But this is a *translation* to his language. I would object to being asked to use " Spule " in English. Similar arguments would apply in talking French when a " choke " is translated either a " Self " or " bobine."

CLUB NEWS

REGULAR FEATURE

Please send all information direct to Regional Representatives, giving full details of future meetings, and any snippets of activities which would be interesting in print. When listing meetings, please be sure to include the date and time, the meeting place, the lecturer's full name and the call-sign to whom prospective members can refer. The last day on which Regional Representatives can accept letters for inclusion is the first of the previous month.

It is unfortunate that we are obliged to open this month's Club News with an apology to prospective club visitors for the very apparent lack of details of meetings. There is not sufficient time to discover the cause of lack of notification to us, but suspect that the holiday season must be the root of the trouble. So, if you are travelling in foreign parts of the country yourself, and hope to drop in on a club in those parts, do not be too hard on our Regional Reps and club secretaries, who are probably out for their annual relaxation and are thus compelled to miss reporting for a month.

When clubs meet at predictable times in the month, we have endeavoured to judge the current dates, but apologize in advance if in one or two cases we send visitors round to empty halls through trying to be too clever!

REGION 1

Ainsdale (ARC).—3, 17, 31 July, 8 p.m., 77 Clifton Road, Southport.

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

Ashton-under-Lyne (AUL & DARS).—Fridays, 7.30 p.m., 6 Stamford Street, Stalybridge.

Blackburn (East Lancashire Amateur Radio Club).—4 July, 1 August, YMCA, Limbrick, Blackburn.

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

Bury (B & RRS).—By this time NFD problems will have been a thing of the past, but no doubt there will be plenty left for next year. The only problem facing them at the moment is how to keep clean the Northern Radio Societies Association's Quiz Trophy which Bury won at the Belle Vue Convention in May.

Whilst G3IVG is digging in the bottom drawer for that " bit of gear " to raffle off for the club funds, G3RSM is preparing his first ever lecture entitled " Colour Television." The results will be seen at the next meeting at the George Hotel, Market Street, Bury, 8 p.m., 9 July. *G3VVQ*

Chester (C & DARS).—Tuesdays, 8 p.m., YMCA.

Crewe & District.—5 August, 8 p.m., 80 Albert Street. All enquiries to the Area Representative, Mr R. Owen of 10 Circle Avenue, Willaston, Nantwich, where visitors will be welcome.

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

Leyland Hundred Amateur Group.—Weekly Net each Thursday at 19.15 GMT (1915 kHz).

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

(NLRC).—5, 19 July, 2 August, 8 p.m., Landsbury House, 13 Crosby Road South, Liverpool, 22.

Macclesfield (M & DRS).—16, 30 July, 8 p.m., The George Hotel, Jordangate.

Manchester (M & DARS).—Wednesdays, 7.30 p.m., 203 Droylsden Road, Newton Heath, Manchester, 10. Hon. Secretary—G. Tillson, G3TJX, 95 Kelverlow Street, Oldham, Lancs.

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

North West V.H.F. Group have unfortunately lost their existing Headquarters, but are now meeting on a temporary basis every Tuesday at 50 Gt. Ancoats Street, Manchester. Members are asked to keep in touch with the Committee for any changes which may take place at short notice. G3FNM, 141 Norris Road, Sale.

Preston (PARS).—11, 25 July, 8 August, Meetings at "Windsor Castle " (Private room), St. Paul's Square. Will all members please note the Preston Mobile Rally will take place on Sunday, 1 September at the Preston North End Car Park. As well as the usual indoor displays, there will be talk in stations on 160m and 2m. There is an attractive park opposite for other members of the family.

St. Helens (SES).—9, 23 July, 6 August, 7.30 p.m., IVS Centre, 55 College Street, St. Helens.

Southport (SRS).—Wednesdays, 8 p.m. and Sundays, 2.30 p.m., The Esplanade.

(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 (SRS).—10 July (No meeting—holiday week), 24 July (Visit to GPO Microwave Station), 7 August (" Colour TV "). Royal Oak Hotel, Castle Street, Edgeley, 8 p.m. New members are always welcome. Further details from G3FYE.

Warrington—Culcheth (CARC).—Fridays, 7.30 p.m., Chat Moss Hotel, Glazebury. Hon. Sec.—A. N. Edwards, 6 Ellesmere Road, Culcheth.

Westmorland.—5, 19 July, 2 August, 7 p.m., The Allen Technical College, Sandes Avenue, Kendal.

Wirral (WARS).—8 p.m., Scout HQ, Harding House, Park Road West, Claughton, Birkenhead. 3 July (Members' surplus equipment sale), 17 July (Evening Direction Finding Contest), 7 August ("Radio Teletype," by Bill Evans, G3VQT), 31 August (Cine Film Show).

During the first meeting in May, several members of the Liverpool University Group, GB2GC, entertained the Society with an account of their most successful series of Expeditions to the Isle of Alderney where they won the V.H.F. National Field Day. The talk was profusely illustrated with cine film and slides. The second meeting was devoted to a very interesting and instructive lecture by the Society's Editor, John Share, G3OKA, on Linear Amplifiers for S.S.B. Transmitters.

It is hoped that the Society will soon be able to take possession of its own premises—a former Civil Defence Headquarters, near the top of Bidston Hill, the highest point in the town, and three quarters of a mile from the present QTH. *G3PXX*

REGION 2

Bradford (BRS).—16 July (Informal and committee meeting), 7.30 p.m., Bradford Technical College, Great Horton Road, Bradford.

Hull (H & DARS).—5 July (" Modulating the Small Transmitter," by G3RDM), 12 July (" Design of Pi-Networks," by G3LNH), 19 July (" Grid Dip Oscillators," by G3OHT), 26 July (" Interplanetary Travel "), 2 August (" Shack Wiring "), 7.45 p.m., 592 Hessle Road, Hull.

Northern Heights.—17 July (Ragchew), 30 July (" Satellites "), In May, a most interesting evening proved to be a lecture by G3USH on an electronic organ that he had built. Other meetings have had to be ragchews owing to members deserting the camp through reasons such as examinations and helping the wife to spring-clean! Towards the end of October the club will hear the famous tape by W1BB " Top Band DXing." 7.45 p.m., Sportsman Inn, Ogden, Halifax.

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

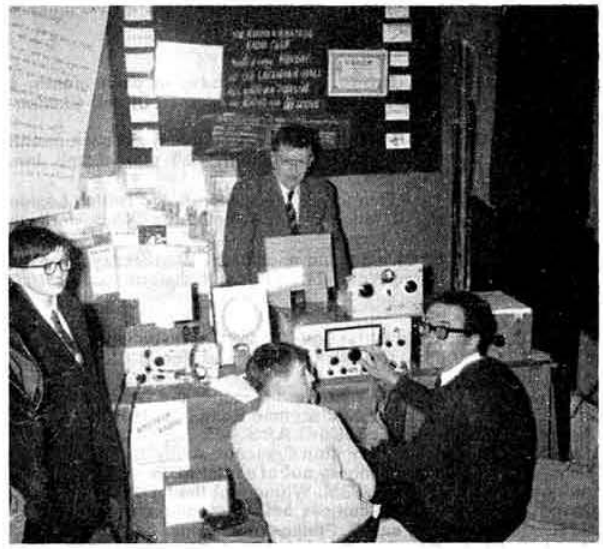
South Shields (SS & DARC).—Fridays, 7.30 p.m., Trinity House, Laygate, South Shields.

REGION 3

Birmingham (MARS).—Third Tuesday in each month, 7.45 p.m., Midland Institute, Margaret Street, Birmingham 3.

(South).—3 July, 7.30 p.m., The Scout Hut, opposite Bob's Cafe, St. Stephen's Church Hall, Pershore Road, Selly Oak.

Our well-travelled President, John Graham, G3TR, found himself at the Medway Amateur Receiving and Transmitting Society's Rally held on 5 May. The photograph sees him presenting a prize to the "furthest travelled" attendant, namely G3VAB/M from Brighton. Providing the narrative on the left is Brian Watling, G3RNL, who you may remember wrote the article "Which Aerial" published in the March issue.



Due to a last minute cancellation by another would-be exhibitor, the Norfolk Amateur Radio Club was invited to participate in a recent Leisure and Hobbies exhibition in Norwich. With only a few hours to go before opening time, this is the stand they erected . . . a true emergency exercise! Over ten thousand visitors saw Amateur Radio in action. The photograph shows G3PTB explaining, with SWL Martin Goodrum logging and G3IOR operating the club call G3PXT.

(Photo by G8AUN)

The Spen Valley Amateur Radio Society held its 21st Annual Dinner on 27 April when the opportunity was taken to photograph officials of the society with two members of RSGB Council. Left to right, standing: Fred Daws, G3HPD (Past President), Les Metcalfe (Treasurer), Ian Lamb, OBE (President) and Ashley Petts (Vice-President). Seated: John Swinnerton, G2YS (RSGB Executive Vice-President). Norman Pride (Secretary) and Jack Petty, G4JW (RSGB Council Member).

(Photo by G3SOP)

(Slade).—Fortnightly, 7.45 p.m., Committee Room, The Church House, High Street, Erdington. Details from D. Grant, 85 Stanford Avenue, Great Barr, Birmingham.
Bromsgrove (B & DARC).—12 July, 8 p.m., Co-op Hall, Bromsgrove.
Coventry (CARS).—Meetings every Friday. Details from G. Jaynes 20 Belgrave Road, Wyken, Coventry, CV2 5AY.
Dudley (DARC).—26 July, 8 p.m., Art Gallery, Dudley.
East Worcs. (EWRC).—11 July, Old People's Centre, Park Road, Redditch.
Hereford (HARS).—5 July, Trinity Hall, Whitecross Road, Hereford.
Lichfield (LARS).—16 July, 7.30 p.m., Swan Hotel, Lichfield.
Leamington Spa (MWARS).—Mondays, 8 p.m., 28 Hamilton Place, Leamington Spa.
North Staffs (NSARS).—Third Tuesday in each month, Moorland Road Junior School.
Stoke-on-Trent (SoTARS).—Thursdays, 7.30 p.m., 2 Racecourse Road, Oakhill.
Sutton Coldfield (SCRS).—8, 22 July, Sutton F.C. Clubhouse, Coles Lane.
Burton-on-Trent (BoTARS).—Details from G3ACR.
Chesterfield (C & DARS).—Details from G3VDI.
Derby (D & DARS).—Every Wednesday, 7.30 p.m., Club Room, Room 4, 119 Green Lane, Derby.
Grimsby (GARS).—11, 25 July, North Lincs. Photographic Society's Room, 8 p.m., back of 50 Welholme Road, Grimsby. *G3RSD.*
Leicester (LRS).—Mondays, 7.30 p.m., Sundays, 10.30 a.m., The Club Rooms, Gilroes Estate Cottage, Groby Road, Leicester. *G3LRS*
Mansfield (MARS).—First Friday in each month, 7.45 p.m., New Inn, Westgate, Mansfield.
Newark (NSWC).—Mondays, Thursdays, 7.30 p.m., Guildhall, Guildhall Street, Newark.
Nottingham (ARCN).—Tuesdays, Thursdays, 7.30 p.m , Room 3, Sherwood Community Centre,Woodthorpe House, Mansfield Road, Nottingham.
Worksop (NNARS).—Tuesdays (RAE Class), Thursdays (Lecture), 7.30 p.m., Club Room, 13 Gateford Road, Worksop.

REGION 5
Bedford (B & DARC).—Thursdays, The Dolphin Inn, the Broadway, Bedford. *G3VBA*
Bishop's Stortford (BS & DARC). Details from Andrew Marriott, G3VWS.
Cambridge (C & DARC).—Fridays, 7.30 p.m., Club Headquarters, Corporation Yard, Victoria Road, Cambridge.
Dunstable (D & DARC).—Details from Roger Bryant, G3WBC.
March (M & DRAS).—Tuesdays, 7.30 p.m., Old Police Headquarters, High Street, March, Cambs.

Shefford (S & DARS).—Thursdays (Morse Class at 7.45 p.m.), 8 p.m.. Church Hall, High Street, Shefford, Beds.

REGION 6

Cheltenham RSGB Group.—First Thursday in each month. 4 July, 8 p.m., The Great Western Hotel, Clarence Street, Cheltenham.

Gloucester (GRC).—Second and fourth Thursdays in each month (Morse practice included each evening), 7.30 p.m., Lamb Inn, Market Parade, Gloucester.

Chiltern ARC.—Last Thursday in each month, the British Legion Hall, High Wycombe. Details from M. J. Pemberton, 205 Bowerdean Road, High Wycombe, Bucks.

Oxford (O & DARS).—Second and fourth Wednesdays in each month, Cherwell Hotel, Water Eaton Road, N. Oxford. *G3UJO*

REGION 7

Acton, Brentford and Chiswick (ABCRC).—16 July (" Prospects for NFD "), 7.30 p.m., Chiswick Trades and Social Club, 66 High Road, Chiswick.

Addiscombe (AARC).—7.30 p.m., Second and fourth Tuesdays in each month, 158 Lower Addiscombe Road (Toc H Hall).

Ashford (Middlesex) Echelford ARS.—25 July (Junk Sale), 7.30 p.m., St. Martin's Court, Kingston Crescent, Ashford. The club was pleased to find that 45 members out of a total of 75 were interested enough to turn up at the AGM. Winners of the " DXA Tankards " in the society's activity contest held throughout the year were G3TLG (transmitting) and G. Phillips (receiving).

Barking (B & DREC).—Tuesdays and Thursdays, 7.30 p.m., Gascoigne Recreation Centre, Gascoigne School, Morley Road, Barking, Essex.

Bexleyheath (NKRS).—11 July (Club Group Project), 25 July (Members' current projects), 7.30 p.m., Congregational Church Hall, Chapel Road, Bexleyheath. These meetings are presumably the result of a note in the May newsletter suggesting that members start some constructional projects, three suggestions being a transistorized converter to feed into a standard car radio, a crystal controlled converter for the h.f. bands using a normal receiver as a tunable i.f., and a Club design for a 2m or 70cm transistor converter. The valid point that it helps to have several members building the same type of gear was brought out, culminating in a command to keep it simple.

Chingford (Group).—Fridays. Telephone 01-524 0308.

(Silverthorn Radio Club).—Fridays, except first in month, 8 p.m., Friday Hill House, Simmons Lane, Chingford, London, E4.

Civil Service RC.—16 July (Discussion on aerials and their suitability for multi-band working from the club's QTH. A feeder length of 80 yards is involved!), 6 p.m., Room 66, Civil Service Recreation Centre, Monck Street, Westminster.

Croydon (Surrey Radio Contact Club).—16 July, 7.30 p.m., Blue Anchor, South End, Croydon. A constructional contest should have taken place on 21 May, with rather an unusual division of entries; it is in three classes, one for large pieces of gear, one for small, and one for exhibition only. Awards are made to winners in the first two sections. We hope that sufficient entries were received to make this scheme practicable.

Dorking (DR & DRS).—9, 23 July, Wheatsheaf, Dorking.

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

Edgware and Hendon (EADRS).—8, 22 July, 8 p.m., St. George's School, Flower Lane, Mill Hill, London, NW7.

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

Guildford (G & DRS).—12 July (Visit to *HMS Mercury*), 13/14 July (High Power Field Day), 21 July (70 MHz Portable Contest), 26 July (Junk Sale), 8 p.m., Guildford Engineering Society, Stoke Park.

Hampton Court (TVARTS).—First Wednesday in each month, 7.30 p.m., " Cardinal Wolsey," Hampton Court.

Harlow (H & DARS).—30 July (" Aerials "), Tuesdays (Club night), Thursdays (Morse Practice and Town Show Committee meeting), Fridays (Juniors), 8 p.m., Mark Hall Barn, First Avenue. An RAE course will be beginning in September. *G3VAD*

Harrow (RSH).—5 July (Practical), 12 July (" 23cm " by G3HWR and G3RPE), 19 July (Practical), Roxeth Manor School. Eastcote Lane, Harrow.

Havering (H & DARC).—10, 24 July, Goodchild House, Western Road, Romford.

Hemel Hempstead (HH & DARS).—5, 19 July, Rucklers Lane Hall, Kings Langley.

Holloway (GRS).—Mondays (RAE), 7 p.m., Wednesdays (Morse), Fridays (Club), 7.30 p.m., Monten School, Hornsey Road, London, N7.

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

Leyton and Walthamstow.—Tuesdays 7.30 p.m., Leyton Senior Institute, Essex Road, London, E10.

London U.H.F. Group.—First Thursday in each month, 7.30 p.m., White Hall Hotel, Bloomsbury Square, Holborn, London, WC1.

Loughton.—12, 26 July, Loughton Hall, near Debden Station.

Maidenhead (M & DARC).—16 July, Victoria Hall, Cox Green, Maidenhead, Berks.

New Cross.—Wednesdays and Fridays, 8 p.m., 225 New Cross Road, London, SE14.

Norwood and South London (CP & DRS).—20 July (" Aerials for NFD " and inquest on results), 8 p.m., Emmanuel Church Hall, near Dulwich Library. The last newsletter seen before we went to press was devoted almost entirely to the (then) forthcoming NFD, and it was apparent that some good organization had been laid, to the extent of commissioning two members' fiancees to look after the hot food while the operators were slaving. *G3FZL*

Paddington (P & DARS).—Thursdays, 7.30 p.m., Beauchamp Lodge, 2 Warwick Crescent, London, W2.

Purley (P & DRS).—First and Third Fridays in each month, Railwaymen's Hall, Side Entrance, 58 Whytecliffe Road, Purley.

Reigate (RATS).—3 July (" RTTY," by R. Vaughan, G3FRV), 7.45 p.m., George and Dragon, Cromwell Road, Redhill. Newsletters seem to be widening their scope; a quote from *Feedback*, " *Q*—What lies on the ocean floor and shivers? *A*—A nervous wreck!"

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

Scouts ARS.—13, 14 July (International Weekend, Gilwell Park), 18 July, 7.30 p.m., Baden Powell House, Queensgate, South Kensington, London, SW7.

Sidcup (CVRS).—4 July (" Radio Over the Years," recorded lecture by the late Capt. P. P. Eckersley, MIEE), 8 p.m., All Saints Church Hall, Bercta Road, New Eltham. For the first time in probably some years we now spell correctly the name of the road in which the club meets. Some sarcastic comments relating to this perpetual error were apparently made in a recent newsletter, and although we missed this item (apologies), the local newspaper picked it up and started investigations into what they thought was a serious suggestion that the name of the road be changed!

Slough (SDR Group).—First Wednesday in each month, 7.30 p.m., United Services Club, Wellington Street, Slough.

Southgate (SRC).—11 July, 7.30 p.m., Parkswood Girls School (behind Wood Green Town Hall).

St. Albans (Verulam ARC).—17 July (Welcome back of an old Club member Bill Bailey, G2QB), 21 August (Stereo Demonstration by Heathkit), 7.30 p.m., Cavalier Hall, Watford Road, St. Albans. There was talk in the last News Sheet of setting up a club net on 2m now that G8 members are allowed on the band. Apparently this was mooted once before but it was felt that too many younger members would be excluded owing to lack of equipment. Presumably for this reason the 160m net will not be abandoned.

Sutton and Cheam (SCRS).—16 July (Surprise night!), 8 p.m., The Harrow Inn, High Street, Cheam.

Welwyn (Mid-Herts ARS).—11 July, 8 p.m., Welwyn Civic Centre, Welwyn.

Wimbledon (W & DRS).—5 July (Annual SARA camp weekend at Tadworth), 12 July (" RTTY," by G3PDB), 8 p.m., St. John Hall, 124 Kingston Road, South Wimbledon, London, SW19.

Wembley (GECARS).—Thursdays, 7 p.m., Sports Club, St. Augustin Avenue, North Wembley. This club is now open to non-GEC employees by invitation. Telephone ARN 1262.

REGION 8

Medway (MAR & TS).—The society appears pleased with the successful outcome of its rally on 5 May, and expresses thanks to all visitors, including members of RSGB Council. A few days before members were treated to the rather off-beat subjects of power boat racing and the development of hovercraft; this was presented as films from BP. Hard work, it seems, is being put in by members busily constructing DF equipment.

Southdown Amateur Radio Society.—The first anniversary has just been celebrated, the occasion naturally being the AGM. The programme is interesting, with a visit to Sussex Police Headquarters on 1 August, and a talk on RAEN by Peter Balestrini, G3BPT, on 5 August. Unfortunately we have no information on where the club meets, so prospective members are referred to the secretary L. E. Tagliaferro, 9 Tugwell Road, Hampden Park, Eastbourne.

Tunbridge Wells (WKARS).—12 July (Junk sale), 26 July, Art School, Monson Road.

REGION 9

Bristol RSGB Group.—15 July, 7.30 p.m., Becket Hall, St. Thomas Street, Bristol 1.

(BARC).—Mondays and Thursdays, 7.30 p.m., University Settlement, 41 Ducie Road, Barton Hill, Bristol 5.

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

Cornwall (CARC).—First Thursday in each month, 7.30 p.m., South Western Electricity Board Social Centre, Pool, Cambourne.

(S.S.B. Group).—Second Tuesday in each month.

(V.H.F. Group).—Third Thursday in each month, 7.30 p.m.

Both groups at the Barley Sheaf, Truro. *G3OCB.*

Exeter (EARS).—First Tuesday in each month, 7.30 p.m., George and Dragon, Blackboy Road, Exeter.

Plymouth (PRC).—First and third Tuesdays in each month, 7.30 p.m., Virginia House, Bretonside, Plymouth.

Saltash (S & DARC).—12 July, 7.30 p.m., Burraton Toc H Hall, Warraton Road, Saltash. On 14 June, the club received a visit from RSGB Council Member George Twist, G3LWH, who gave a lecture on the RSGB. The latest *Tamar Pegasus* provides a useful tip to remove wheel static in cars, by suggesting attaching a carbon conductor (the top and cap from the centre conductor of a U2 battery), spring loaded, to the brake back plate so that the carbon bears on the brake surface. *G3SN.*

South Dorset (SDRS).—First Friday in each month, 7.30 p.m., Labour Rooms, West Walk, Dorchester. *G3AKF.*

Taunton RSGB Group.—12 July, 7.30 p.m., Lecture Theatre, Taunton Technical College.

Torquay (TARS).—Tuesdays and Fridays, 7.30 p.m., Club Headquarters, Bath Lane, rear of Belgrave Road, Torquay. Visitors are always welcome.

Wells (WARS).—Mondays, 8 p.m., EMIE Sports and Social Club, Chamberlain Street, Wells, Somerset. *G3MQQ.*

Weston-super-Mare (WSMARS).—First Friday in each month, 7.30 p.m., Westhaven School, Ellesmere Road, Uphill, Weston-super-Mare. *G3GNS.*

Yeovil (YARC).—Wednesdays, 7.30 p.m., Park Lodge, The Park, Yeovil. *G3NOF.*

REGION 10

Blackwood (BARC).—Fridays, 7.30 p.m., off High Street, Blackwood, Mon. *G6BK.*

Barry College of Further Education (ARS).—Thursdays, 7 p.m., the College, Colcot Road, Barry, Glam.

Cardiff (RSGB Group).—8 July, 7.30 p.m., TA Centre, Park Street, Cardiff.

Llanelli Boys Grammar School (ARS).—Fridays, 3.30 p.m. All amateurs in the area are invited.

Pontypool (PARC).—Tuesdays, 7 p.m., the Educational Settlement, Rockhill Road, Pontypool, Mon.

Pembroke (PARC).—26 July, the Headquarters, Defensible Barracks, Pembroke Dock.

Rhondda (RARS).—Pengelli Hotel, Treorchy. Details from *GW3PHH.*

University College, Cardiff (ARS).—Details from the Secretary, c/o Students' Union, Dumfries Place, Cardiff.

REGION 11

Rhyl (R & DARC).—Second Tuesday in each month, Rhyl Silver Band Room, Windsor Street, Rhyl.

REGION 13

Edinburgh (LRS).—11, 25 July, 7.30 p.m., Board Room, YMCA, 14 South St. Andrew Street, Edinburgh.

REGION 14

Ayrshire (AARG).—3, 17 July, 7.30 p.m., Peter Boyle Bowling Club, Craigie Road, Ayr.

Auchenharvie (A & DARS).—4, 9, 11, 16, 18, 23, 25, 30 July, 7.30 p.m., Auchenharvie Community Centre, Stevenston.

Glasgow University (GURC).—5, 19 July, 7.30 p.m., Arts Guild, Campbell Street, Greenock.

Lowlands Royal Signals Group (LRSG).—16 July, 7.30 p.m., 21 Jardine Street, Glasgow.

Mid-Lanark RSGB Group.—19 July, 7.30 p.m., YMCA, Brandon Street, Motherwell.

REGION 15

Belfast and District RSGB Group.—Third Wednesday in each month, 8 p.m., War Memorial Building, Waring Street, Belfast.

City of Belfast YMCA RC.—Wednesdays and Saturdays, 8 p.m., City YMCA (3rd floor), 12 Wellington Place, Belfast, BTI 6GE.

RAFARS HAMFEST AND DINNER

With the RAF celebrating its 50th anniversary, the RAF Amateur Radio Society is laying on a special Hamfest at the Society's HQ, followed by a celebration dinner. The activities start at 1.30 p.m., with guided tours of the No 1 Radio School's laboratories. To quote, this is a unique opportunity for the non-specialist amateur to see something of modern military communications. The HQ stations G8FC, G3RAF and G3IDZ will be on the air throughout the day, and may be operated by visitors. The station museum will also be open, showing some very early fixed and airborne gear, and there will be an ancient spark transmitter in operation (into a dummy load!). Entertainments, raffles, etc to keep the rest of the family amused will be laid on.

Unfortunately by the time this appears it will be too late to book for the dinner, and you will have to be content knowing that a large number of fellow amateurs and wives will be enjoying themselves at the Great Atlantic Hotel, Weston-super-Mare, dining on Iced Melon, Poached Salmon Hollandaise, Fillet Steak Garnished, etc!

Talk-in stations will be G3RAF—1926 kHz, A3; G8FC—3726 kHz, s.s.b. or A3; G3IRS—2m, A3.

SATURDAY, 6 JULY

RAF Locking, Weston-super-Mare, Somerset

REGION 16

Ipswich (IRS).—31 July (" Short Wave Listening "), 7.30 p.m., Red Cross HQ, Gippeswyk Avenue, Ipswich.

Norwich (ARC).—8 July (Informal meeting), 15 July (" Resistors," Pat Gowen, G3IOR), 22 July (Mystery night), 29 July (Inquest on NFD), 7.30 p.m., the Clubroom, Brickmakers' Arms, Sprowston Road, Norwich.

REGION 17

Basingstoke (BARC).—Third Saturday in each month, 7 p.m., Chireham House, Reading Road, Basingstoke.

Chippenham (C & DARC).—Tuesdays, 7.30 p.m., Chippenham High School for Boys, Hardenhuish Lane, Chippenham. *G3PQG.*

Farnborough (F & DRS).—Second and fourth Tuesdays in each month, 7.30 p.m., 310 Farnborough Road, Farnborough, Hants. *G3NVM.*

Harwell (AEREARC).—Third Tuesday in each month, 7.30 p.m., Social Club, AERE, Harwell. *G2HIF.*

Maidenhead (M & DARC).—First Monday in each month (Formal), third Tuesday in each month (Informal), 7.30 p.m., Victory Hall, Con Green, Maidenhead.

Portsmouth (P & DRS).—Wednesdays, 7.30 p.m., Room 5, Twyford Avenue, Community Centre, Portsmouth.

Reading (RARC).—16 July (Constructional evening), 30 July (" Coils, theory, calculations and construction "), St. Paul's Hall, Whitley Wood, A club net is held at 8 p.m. on Tuesdays between meetings. The club was recently pleased to welcome John Graham, G3TR, President of RSGB, at one of its meetings, and all were glad to learn about the workings of the RSGB.

Southampton RSGB Group.—Second Saturday in each month, 7 p.m., Engineering Lecture Theatre, Lanchester Building, The University, Southampton. *G3HKT.*

Southampton University (SUARC).—Thursdays, 8 p.m., Old Union Building. The club's new shack is finished and the h.f. station is now on the air; 4m and 2m should follow shortly. The AGM was held recently, and G3VRW has taken G3WEA's place as secretary. Interested prospective freshers (licensed or not) are invited to contact G3WXC at 43 Stephen Road, Barnehurst, Kent.

Swindon (S & DARC).—3 July (Informal meeting), 17 July (Evening Mobile Rally at Barbury Castle, Swindon. Talk-in on Top Band), 2 August (Evening Barbecue, Savernake Forest, near Marlborough. Talk-in on Top Band). Meetings are held at 7.30 p.m., Penhill Junior School, Penhill, Swindon. *G3JAP.*

EI-GI CONVENTION

Sunday, 6 October, 1968

Watch for further details

MEMBERS' ADS

These advertisements are published free of charge for the benefit of members. The number of words is limited to 32, not including the address and telephone number. We must receive the advertisement at RSGB Headquarters by the first of the month for the following month's issue, typed or printed on a standard postcard or the form at the back of the issue. It must be accompanied by the current postal wrapper, the address, of course, agreeing with that in the advertisement. No advertisement obviously pertaining to a business can be accepted here, but these can be submitted in the usual way for classified advertisements. We cannot guarantee the inclusion of Wanted Advertisements.

The RSGB cannot accept responsibility for errors, or for the quality of equipment offered for sale in Members' Ads. We advise members to enclose a stamped, addressed envelope when replying to advertisements.

Pye PTC 8710 Tx, 70cm. AM912 TRC linear amp, 4X150 cavity tuned, 100–225 MHz. 12/300V mobile p.p. 70cm converter and preamp. Heath G.D.O. A. J. Hodgkinson, G3LLJ, 30 Moorthorne Crescent, Bradwell, Newcastle-under-Lyme, Staffs. Phone 51509.

Labgear wideband multiplier unit, £3 (carriage paid). G. P. Rigby, G3KTI, 30a Pimbo Lane, Upholland, near Wigan, Lancs. Phone Upholland 2601.

TX. TU9B, 7700 to 10,000 kHz, £1 FHL Xtal calibrator Mk. 1, 6 valves, 10 kHz, 100 kHz, 1000 kHz, £3. Buyer collects. A Solomons, G3ICT, 70 Fairholt Road, Stoke Newington, London, N16.

10in. Philips public address l/speaker, 100V, 1–3–6W o.p., fitted in Rexine covered cabinet, 25s. Also Joystick standard, £3 15s. Buyers collect. No offers. A. R. Preston, 53 Marlowe House, Grove Street, Deptford, London, SE8.

Kokusai MF–455–15K filter, unused, £6 10s. Prop pitch motor, as new, £5. Spiders and bamboos for ARRL two band quad, offers. N. R. Paul, G3AUB, 8 Longden Lane, Buxton Old Road, Macclesfield, Cheshire. Phone Macclesfield 5910.

HRO, B/S, p.s.u. TW 4m and 2m converters. Cannonball s.s.b. TX. Contest winning 4m TX. AM916 2m QRO p.a., 1·5kV p.s.u. s.a.e. for list of equipment, components and v.h.f. test gear etc. A. R. Gold, G3SKR, 12 Hillside Avenue, Wembley, Middlesex.

Junk evacuation. CR100, £15. CDN 29 set, £10. Unused Instamatic cine camera, £18, o.n.o. Enormous quantities assorted junk. Send s.a.e. with wants, or drop in. Just off A616. Require 2m gear. J. A. Cawkwell, Caunton Manor, Caunton, near Newark, Notts.

HRO MX, with p.s.u., l/s, 13 coils including four bandspread, £20. BC221 with original charts and integral mains p.s.u., needs slight attention, £10. J. D. Kay, G3AAE, 75 Roundmead Avenue, Loughton, Essex. Phone 01-508 4669.

Heathkit HW32a, excellent condition, less p.s.u., £45. AR88D, re-valved, resprayed cabinet, re-aligned, £30. P. A. Miles, G3KDB, 28 Scotch Orchard, Lichfield, Staffs.

Over 6ft. high standard 19in. rack, fitted rear opening door, 12in. deep, well constructed, £5 19s. 6d. R. Chamberlain, G3VYU, 40 Elmfield Road, Peterborough.

10 Channel TX RX. Johnson 4m, 2m super regen RX. Numerous books (Odhams 3 in 1) and odd bits and pieces. S. a. e. will ensure reply. Cpl. W. Wynn, G8BEI, Up. 21 C. Coy, AETW, Army Aviation Centre, Middle Wallop, Hants.

Valves type 6060, 2s each plus 6d p & p. Three or more post free. Resistors 470kΩ, 330Ω, 2s. dozen plus 6d. p & p. J. A. Starling, G3WJS, 13 Came View Road, Dorchester, Dorset.

Eddystone RX 840C, gd. cnd., hardly used, £41, carriage paid, or nearest offer. Army 12 set chassis, partly stripped. Peter W. F. Jones, G3ESY, 13 Blenheim Close, Hereford.

Practical Wireless, Jan 65 to June 67. Practical Electronics, Jan 65 to Oct 67. Radio Constructor, Oct 65 to Oct 67. Only 1 or 2 missing. £5 or £2 per set. A. O. Milne, G2MI, Bromley, Kent.

HW12 with H/B, p.s.u. £35 Morgan, G3LWL, 1 Shrapnel Road, Wellhall, London, SE9.

BCC high band 148 MHz mobile transceiver, £2. 1in. c.r.t., 15s. 3 BUY11 10W 30 MHz transistors, 19s. each. 3 4–65A tetrodes, 15s. each. 2 4X250B, £2 each. One base and chimney, 38s. QQV02–6, 15s. T. C. Jones, 8 Alder Dale, Richmond Road, Wolverhampton, Staffs.

Tiger 200 TX. A wonderful example of an a.m./c.w. TX running a full 200W on a.m./c.w., 80-10m. Impeccable performance and looks. £25 o.n.o., buyer collects. G3VUW or c/o G3SEL. Summerleaze Park ARC, G3VUW, Summerleaze Park, Yeovil, Somerset.

FT243 8 MHz Xtals for 2m, 6s. 6d. New 16 amp 400V thyristors, 10s. Lucas 5 watt silicon transistors, 3s. 6d. 2S701, 2S703, GET102, OC139, ACY17, BCY32, BCY39, BSY95A, ZT84, NKT218, OC202, IS103, all 1s. each. T. S. Glazier, 8 Ombersley Road, Worcester.

RCA Hammarlund SP600, 20 valve RX. Frequency range 540 kHz—54 MHz, six switched bands. Also six crystal controlled channels. Six switched bandwidths, 20 Hz—13 kHz. 95V–260V variable, 50/60 Hz. Mint cond., £95. John Page, 2 Beaulieu Avenue, Christchurch, Hants. Phone 5347.

DX100U TX in good wkg. order, external appearance excellent. £40 o.n.o. plus carriage. M. A. Colley, G3SKY, Isle of Wight Radio Society, c/o 13 Hazeley Coombe, Arreton, Newport, Isle of Wight.

EC10 RX, perfect electrically, paint has a few scratches, owner going stateside. £27 for quick sale. I. A. W. Vance, G3WMS, 1 Station Road, Nailsea, Bristol.

Joystick V.F.A., plus type 3a Tuner, both v.g.c. and packed in original box. Both items £5. R. L. Ramsay, 12 Mayfield Road, Northfleet, Gravesend, Kent.

KW Vespa MkII, with a.c. p.s.u. New March 1968. Still under guarantee. £110, will deliver greater London area. A. A. Wickham, G3XHK, 9 Wensleydale Gardens, Hampton, Middlesex.

Tower 60ft., Antiference (Australia), galvanised, four section winch up, bottom section 12in. triangular, tilt-over base plate. All guys, etc. £40. D. C. Cooper, G3GMD, 40 Bettescombe Road, Rainham, Gillingham, Kent. Phone Medway 33616.

KT320 RX, KW Geloso converter, c/o relay. No. 7 calibrator with p.s.u. 5-band TX, 45 W a.m., 90W c.w., sep. p.s.u. Professional job. £55 complete. E. Dahle, GM3UWO, 3 West View, Waterside, Kilmarnock, Ayr, Scotland.

Complete station for sale. KW Vanguard Mk.II, AR88D, or would sell separately. Owner going transceiver. Equipment in daily use. Offers. A. McEwan, GM3WJF, 4 Teviot Road, Hawick, Roxburghshire.

CR45 3 valve t.f.r., factory built, plus coil pack and five coils. Excellent cond., £7, post extra, 10s. C. J. Coward, 48 College Road, Ardingly, Sussex.

Trio 9R-59D RX, as new, £30. Kokusai MF 455-10CK filter, with QCC crystal, £10. R107T tropicalised version, good performance, £10. Can deliver Midlands. I. Buffman, G3TMA, 99 Pennygate, Spalding, Lincs.

R.f. units and i.f. strips, valves, 12V vibrators, two box telephones, 32ft. aerial, R209 RX with spares and headset, plus manual. RX may need slight attention on c.w. Buyers collect. A. Humphriss, 14 Fosseway, Crescent, Tredington, near Shipston-on-Stour, Warks.

Moving QTH, disposing HRO, commercial acorn front-end, 160–10m, needs p.s.u., £15. Minimitter 80–10m converter, £7. D wavemeter, 60s. TCS TX, 160/40m. Elizabethan, 120W a.m./c.w., p.s.u., modulator, etc., sensible offers accepted. Prefer callers inspect. P. F. Vella, G3WVP, 25 Lynmere Road, Welling, Kent. Phone 01-303 8261.

Minimitter whip, 160/80m, £6 19s. 6d. 7ft. high 19in. rack, with door, as new, £4 19s. 6d. KW2000 d.c. p.s.u., £25 19s. 6d. TF144G, £19 10s. TF517, £12 10s. 6d. 4X150, 15s. 6d. R1155, £3 10s. Plus carriage. D. Byrne, G3KPO, Jersey House, Eye, Peterborough. Phone Eye 351.

Hallicrafters SX24, 550 kHz–42 MHz, v.g.c., maintained, but not altered. £18. collection only anytime, but please QSL first. N. Richins, G3VKR, 18 Wade Avenue, Littleover, Derby.

Heathkit Mohican GC1U carefully aligned and wkg. well complete with Xtal calibrator and stabilised main p.s.u. G.N. Glover, G3AAV, 30 St. Chads Avenue, Leeds 6, Yorks.

Brown's "Universal" modern lightweight telephone handsets, 9oz weight, with 2 pole c/over press switch and 5 feet of 6 core retractile cable, as RSGB handbook ad, £2 each or two for £3, post free. Martin Mann, G8ABR, Flat 71, Queens Road, Tewkesbury, Glos.

Minimitter TX, 80–10m, a.m./c.w., 150 watts, as new, £25. R109, 1·8–8·5 MHz, 6V d.c. input. Ideal portable, £2 10s. Two HRO 15m b/s coils, 45s each, inc. postage. M. J. Darkin, G3KTH, 4 Ash Drive, Catshill, Bromsgrove, Worcs. Phone Bromsgrove 5554.

HRO MX, original cond. (inc. S meter), p.s.u., all coils 9 g/c, 80, 40, 20, 15, 10m b/s, £29. Split for right price, all mint. SX28, revalved, overhauled, perfect, nearest £30. Part Exchange. Receivers welcome, especially Eddystone 504 or 640. S.a.e. M. R. G. Snowden, Swainsea Lane, Pickering, Yorks.

Heathkit Apache TX1, £55. Heathkit SB10 adaptor, £30. Star SR550 receiver, £36. Carr. extra. J. Gould, GI3SUM, 13 Maralin Avenue, Bangor, Co. Down, N.I.

150W a.m./c.w. TX, 80–10m, Geloso v.f o , pair 807s. High power modulator (RSGB Handbook, p291) in commercial cabinet. Separate p.s.u. with 650-0-650 and 450-0-450. Mains transformers, relays, switching. Cost £70, bargain £25. J. R. Turner, G3UST, 20 Homemead Avenue, Leicester. Phone 63544.

HW32, 200 watt p.e.p. transceiver, as new cond., little used. Manual, mobile bracket, etc. Performs very well, £40. P. J. Wood, Flat 7, Manor House, 1 Roxwell Road, Writtle, Chelmsford, Essex.

LG300. R.f. perfect, modulator requires attention, £25. TCS12 TX, modified 80, 40, 20m, p.s.u., spare 1625s, £12. Top band TX, homebrew, £5. CR300 RX, good order, £10. The lot, £45. Buyer collects. V. G. Abel, G3NWB, The Cot, North Bersted Street, Bognor Regis, Sussex.

Wolsey LA133 Band I & III aerial amplifier, perfect condition. Price including four consumer units, £6, plus carriage. Original cost nearly £20. Wanted FT243 8·5 MHz and valves EL822, CV172, 6AG7 F. J. Crisp, G3GZJ, Carnmenellis House, Carnmenellis, Redruth, Cornwall.

Saw attachment for Wolf Cub drill, 10s. FTRC delay lines, 12 μS, 5s. each. H.B. TX, 80–10m, 90W, Geloso v.f.o./TT21. Modulator 2 × 808, TVI proofed. £10 Buyer collects. W. H. Fletcher, G3NXT, Holmdale, Martin, Lincoln.

Labgear quad, less bamboo, £6 10s., o.n.o. Decca Deram ARI Transcription arm and pick-up, £5. Valves 813, 30s, GU50, 7s. 6d., 807 5s. CR100 H/B, offers. BC221, with modulation, H/B, not calibrated, less Xtal, £5. N. E. Hall, G3DRF, 8 Radnor Park, Corston, Malmsbury, Wilts.

Pye Consul D/F RX, covers marine bands, 160m and 80m, M/L waves, miniature valves, dry batteries, metal case 14in. × 8½in. × 7½in., ideal for field days. Handbook, circuit included, £12 10s., plus carriage. G. N. Dale, G3PZF, 18 Lezayre Road, Green Street Green, Orpington, Kent, BR6 6BP. Phone Farn 54512.

Philips EL3586 battery/mains tape recorder with case/mike/leads/tapes. New cond., sell £18, or exchange for good cassette recorder. Write, J. Waters, 15a Midmoor Road, Balham, London, SW12.

Jason v.h.f. f.m. turret tuner chassis, all valves integral, 10·7 MHz i.f., £3. Xtals, Cathodeon, 17·9 MHz, 15s. Aristocraft 27·255 MHz, 15s. MacGregor Terry Tone Mk.II transistor single channel 27 MHz RX, £3. Tipper, G3WWL, 271 Blackberry Lane, Four Oaks, Sutton Coldfield, Warks.

Double beam scope, Cossor 339, together with accompanying wobbulated oscillator. Complete with circuits and books. Needs some attention. £10 the pair or exchange for telephone answering machine. S. N. Bennett, G3HSC, 45 Green Lane, Purley, Surrey. Phone 01-660 2896.

Codar Q Multiplier RQ10X self powered, mint cond., £5, p&p 5s. Canadian 52 set station complete with 12V p.s.u. and transformers to convert to mains. £20. Buyer bring own crane. J. Barlow, G3TCJ, The Pippins, Lake End, Liskeard, Cornwall.

Eddystone 888A matching speaker, S meter, blocks, £65 delivered reasonable distance. Crystals QCC/10X ¾in. 7010, 7060, 3737, 1881·5, 1890, 1896, 1908, 5s. each. 4660, 6620, 7124, 7219, 7390, 5460, 6190, 3s. each. S.A.G. Cook, G5XB, Little Orchard, Gallows Tree Common, Reading. Phone Kidmore End 2195.

Partly constructed G3HTA RX, almost all parts s.a.e. further details. De-luxe Joystick + a.t.u.s., £3 10s. Nombrex C/R bridge, £4. Nombrex signal generator (needs attention). £3 10s. C. D. Morris, 1 Richmond Road, Dudley, Worcs.

Valves from one shilling each. Chokes, capacitors, mains fittings and other surplus gear very cheap. s.a.e. for lists. E. H. Trowell, G2HKU, Hamlyn, Saxon Avenue, Minster, Sheppey, Kent.

CR100 complete, with unopened spares kit and service manual, £22. HRO RX p.s.u., manual, spare valves, £20. R1155N Top Band model, matching p.s.u. and l/speaker, £10. Open to near offers. P. Cadman, G3PCC, 13 Alderwick Drive, Hounslow, Middlesex.

Heathkit Mohican, £28. Wideband exciter, 80–10m, 807 p.a., pi-coupled, £8. 75W modulator, push-pull 807s, £5. ZL linear, 813 p.a., screened, £4. AR88D Handbook, new 25s. Valves 813, 30s., E180F, 8s. others s.a.e. R. L. Whorwell, G3CTR, 65 John Kennedy House, Rotherhithe Old Road, London, SE16.

Heathkit RG1 RX, as new cond., £35. KW Vanguard, 160m–10m in v.g.c. and appearance, £35. Offers considered. C. T. Hanley, 81 New Road, Chilworth, Guildford, Surrey. Guildford 67613.

Mullard scope, 3in., completely overhauled, £12. J. E. Henshaw, 15 Grasmere Road, Ellesmere Port, Cheshire.

KW2000A with a.c. p.s.u., plus 14AVQ high gain vertical. All new July 1967. Immaculate condition. Inclusive price £200. J. H. Crowther, GW3KLF, Fford Pentre, Mold, Flints.

LG300 with companion mod/p.s.u., spare 813, £40. Will deliver 50 miles or buyer collects. K. N. Smith G3RB, 15 Malcolm Court, West Monseaton, Whitley Bay, Northumberland.

CR100 RX with S meter, mains operation. Bargain at £20, or nearest offer (carriage extra). J. Thomas, 33 Lloty Road, Upper Tumble, Llanelli, Carms, South Wales.

Lafayette KT320 RX, excellent wkg. cond., 1μV sensitivity 10dB. Electrical amateur bandspread. B.f.o., Q multiplier, a.g.c., m.v.c., a.n.l., 550 kHz–30 MHz. £20 o.n.o., buyer collects evenings/weekends. N Mason, 60 St. Mary's Crescent, Ruddington, Notts., NG11 6RF.

Dial, Eddystone drive unit no. 898, £2. J. Farlow, G3BXI, 49 Mount Pleasant Road Chigwell, Essex. 01-500 4546.

Bench power supplies, 190–320V d.c., stabilised output 100mA + l.t., in cabinets. £1 each. Buyers collect. T. R. Wiltshire, 12 Leslie Road, Winton, Bournemouth, Hants.

Pye 20W 4m base station TX. Built-in modulator and 240V p.s.u., unmodified with handbooks, £18. Deliver 20 miles or collect. M. T. Knights, G3TQY, Ashar, Cross Road, Tadworth, Surrey. Phone Tadworth 3247.

Valves 807 3s. 6d., 832 5s., 832A 6s., 6L6G 3s. 6d., metal 4s. 6d., KT66 4s. Several milliamp meters, 7s. 6d. Headphones, BTH 4000Ω, adjustable, 25s. 0-500mA 4½in. diam., 15s. Xtal calibrator, heterodyne 3 valve 30s., post paid. J. R. Wordsworth, G3JGJ, Rose Cottage, Pepperdon, Moretonhampstead, Devon.

G2DAF Mk II. See Bull, April 1964. 8 off 8550 kHz FT243 Xtals still sealed, 30s. Unused 813s in makers' cartons, 40s. B. Priestley, G3JGO, 43 Raymond Road, Langley, Slough, Bucks. Phone Slough 43595.

R209 RX, 1–20 MHz, 6V, 1·6A operation. Excellent physical and electrical cond. except for intermittent b.f.o. £9 o.n.o. M. J. Brenig-Jones, 113 King George V Drive, Heath, Cardiff, South Wales.

EMI 9677 vidicon tube with base and coils as new in maker's carton, £15. Two re-entrant p.a. horns, 15Ω, bit rough but working, 30s. each o.n.o. P. D. Simmons, 62 Lawes Avenue, Newhaven, Sussex. Phone 465.

Scope, Cossor 339, with H/B, £8. Command TX, 4–5·3 MHz, 30s. TX 127s, 10s. Transformer 1000–0–1000V 250mA, £2 Mod. trans. UM3, new, £3. CR100, needs attention, £8. Carriage extra. G. R. Steele, GM3SIY, 28 Erskine Hill, Polmont, Stirlingshire. Phone OFA43 2025.

CDR rotator, good condition, £13. D. Evans, G3OUF, 80 Argyle Road, Ealing, London W13.

Eddystone 680X, recently aligned and calibrated, g.c., 550 kHz–30 MHz, £75 o.n.o. Would consider exchange for 1966 or 1967 BSA "Bantam" M/Cycle. Regret buyer must collect (no transport). I. W. Gower, 10 Homethorpe, Orchard Park Estate, Kingston-upon-Hull, Yorks.

KT-340 communication RX in as new cond. with voltage stab., mod. and manual. Realigned. £23. M. G. Bay, 13 Elmbank Avenue, Barnet, Herts.

CR100, £8 Buyer collects. M. L. J. Ritchie, Bagley Wood House, near Kennington, Oxford. Phone 35113.

954, OM6, EF36, U404, 6SN7, ECC81, 12AT7, EF80, PY82, PL81, EF91, PY80, PY81, 7AU7, 10F1, ECL80, PY32, PCC84, 12BK5, 10P13, EH90, 5AN8, PCL84, 1X2B, 10C2, 5J6, 3CB6, E91, V888. Any six 10s. G. A. Jeapes, 165 Cambridge Road, Great Shelford, Cambs.

B44 MkIII. Crystal for 70·26 MHz. Tunable RX, 12V positive earth. PTT mike. £8. J. Cleaver, G3OEA, 50 Admaston Road, Wellington, Salop.

REPS tape recorder model R30, 3 speed, 7in. tapes with good freq. response, with mike, tape. V.g.c. A half-track semi-professional machine. £35. Carriage extra. D. A. Bemister, G3OBX, 69 Woodfield Drive, Gidea Park, Romford, Essex.

Pye Ranger, Highband, £10. Pye Highband base station, TX altered for 2m, £25. AR88D, with manual, no case, £30. TW Nuvistor converter with p.s.u., 28–30 MHz i.f., £8. G3IDW, Hook, Swindon, Wilts.

Trio JR6OU, excellent cond., £35 o.n.o. Wright, c/o Sgts. Mess, RAF Bovingdon, Hemel Hempstead, Herts. Phone Chesham 3255.

BC348N RX, £12. AD94 RX, £15. Both original with dynos. G. H. Taylor, G3IUL, 4 Edward Road, E. Bedfont, Middlesex.

19 set complete, 12V p.s.u. RX, £5. HRO/M with a.c. p.s.u., requires case and speaker only, £5. Marconi 52 set, not wkg. but complete, 30s. All collection only. Tape recorder £5. All letters answered. S. K. Harris, 11 Bondfield Avenue, Kingsthorpe, Northampton.

Geloso 4/102V mounted on alum. chassis with integral p.s.u., complete with dial, knobs, escutcheon, etc., £8 10s. Woden UM3 mod. trans., £2 10s. plus carriage. Heathkit 3 in. scope OS2. Mint. £20. Near offers considered. N. Williamson, G3URG, 11 Bramble Gardens, Nottingham, NG8 3EH.

Moving QTH, 2m converter, i.f. 24–26 MHz. Dipole, 40ft. coax, £20. Buyer collects. Equipment little used. J. W. Johnson, 15 Stanley Street, Railway Road, King's Lynn, Norfolk.

Prop pitch motor complete with control board, 240V input, containing low voltage trans., reversing relays, trans. and rect. for Selsyn supply, also two Selsyns (one mounted with compass dial). £19 the lot. Phone after 7 p.m. L. H. Lee, G5FH, Edendene, Knottsall Lane, Langley, Oldbury, Worcs.

KW Valiant TX, newly built, chromed front panel, 60W, a.m./c.w., £25, less carriage. H. R. Gelsthorpe, G3THO, 39 Moorland View Road, Walton, Chesterfield, Derbyshire.

Electroniques QPP166 in cabinet with stabilized p.s.u., Xtal calib. 898 dial, separate Q mult., self powered, £15. J. H. Caldwell G8US, 3 Milton Avenue, Bath, Somerset.

Nine transistor walkie-talkies. RX 28·045, TX 28·500, FB cond., £15. 120 bass piano accordion, Italian. Sell or exchange 2 or 4m mobile gear, must be wkg. Transceivers licensed stations only. A. R. Donohue, 41 Garway, Woolton, Liverpool 25.

Late model Panda PR120V TX. Good cond. but requires only slight attention. Complete with Panda l.p. filter and spares. Little used. Good buy at £30. J. J. Morris, G3PHA, 3 Astley Road, Harwood, near Bolton, Lancs. Phone BN 52384.

Two p.s.u.s, 1200V 200 mA d.c., 200V, 250V a.c., a.m. H.t. rectifiers type 45, unused, £5 each. Prefer buyer inspects and collects. E. A. Coward, G3FJT, 93 Greenside Road, Shepherds Bush, London, W.12

DX100U, mint, £55. Amateur bands RX with numerous refinements: Electroniques front-end, 898 dial, etc., housed in Datum cabinet. Prefer buyer to inspect to ensure satisfaction. Snip at £30. G. R. J. Addis, G3TEB, 44 Knowle Road, Woodley, Reading, Berks.

Minimitter Top Band mobile transistorized RX, internal l/speaker and battery as new, circuit, £8, o.n.o. Uniselectors, 7s. 6d. CR100 H/B, 15s. Pair organ keyboards, suitable for experimenter, 30s. each. D. T. Wilson, G8APS, 177 Dower Road, Four Oaks, Sutton Coldfield, Warks.

CR100 RX, rewired with new set of valves, modified with S meter and manually variable noise limiter. In really FB cond. complete with manual and spare set of valves. £19 10s. S. J. M. Blaber, Lyelands, Bolney, Haywards Heath, Sussex. Phone Cowfold 367.

Power pack,19in. × 10in., polychromatic grey. Partly wired; includes universal primary transformers 500V, ½A and 6 × 6·3V at 3A, ½A choke, controls. £5 or exchange 4X250, base, chimney. Heavy, so buyer collects. R. C. Marshall, G3SBA, 30 Ox Lane, Harpenden, Herts. Phone Harpenden 4815.

Varied assortment of valves. 6L6, 6V6, KT66, 807, EF50, dozens of British and American old type valves available. All cheap. Please write or phone, J. D. Lambert. G3TA, 327 Parkway, Iver Heath, Bucks. Phone Iver 1214.

CR70A RX, 560 kHz–30 MHz in four bands, only 2 months old, still under guarantee. S meter, b.f.o., a.t.u., internal mains p.s.u., logging scale, matching spkr cabnt. with 5in. spkr. Excellent cond. £20 inc. carr. G. Batten, Uplands, Salisbury Road, Marlborough, Wilts.

Dumex TV preamp, internal mains supply, channels 1 and 9, mint cond., 30s. o.n.o. Buyer collects. 38 set, 19 set variometer. Any offers? A few 5U4G, 6s. M. Bonner, 90 Aveling Park Road, London, E17. Phone 527 8893.

Heathkit Cheyenne, Comanche TX and RX with p.s.u. Mobile or home station. Aerial base and three whips. 90W. Complete. Excellent cond., best offer over £45. A. E. White, G3HCU, Timbers Ridge, Peaslake, Surrey. Phone Abinger 215.

Heathkit HW-30 "Twoer", r.f. meter fitted to front panel, complete with crystal, mobile p.s.u., £18 or exchange AT5 and p.s.u. SR600 triple conversion 160–10m, manual. Offers? G. Preston, G3OLA, 80 St. Pauls Gate, Wokingham, Berks. Phone 073-431 4679.

KW500 linear amp., little used, cost £87. Spare 813. Offers? TW Two-mobile RX. Needs realigning. £12 o.n.o. S. Ellis, G3JNY, 2 St. Mary's Close, Garforth, near Leeds. Phone 3058.

Eddystone EC10, No. 2770, guarantee 7-9-1967. Mint in carton, manual, whip, £40. A.c. p.s.u. model 924, £7 10s. Hallicrafter S36A 27–143 MHz. V.g.c., with Thordarson hi-fi o/p trans, 3, 8, 15Ω o/p. £25. J. Casson, G2ACT, 14 Station Road, Upper Poppleton, York.

Mobile DXCC 20m? Yes, with Morris 1800 de luxe, fully suppressed up to 150 MHz, and with Hustler aerials. £800 for car and aerials. 14 months old and immaculate. Reason QSY to 9V1. J. M. Hern, G3NAC/M, 29 Gallaghers Mead, Andover, Hants. Phone 5678.

Canonball TX, £20. Mullard 5-10 amp., baffle box and 8 in. spkr, £5. Philips disc jockey, £2. 1150-0-1150V ½kVA, £3. Variac 200W type £3. QY3/125, pair £4, 813 £1. UM3 £3. G2DMR, 15 Claremont Avenue, Clitheroe, Lancs. Phone 3869.

Two valve TV tuners, complete with valves PCF80, PCC84, made by HDF, Lowestoft. £1 5s. each. N. J. Sears, Roselea, Wycombe Road Stokenchurch, near High Wycombe, Bucks.

RX, 80-10m, including Xtal filter. All new components. Needs new cabinet and some modification. £15 o.n.o. 80 to 15m driver and p.a. TX, £2. TX QRP p.s.u., £2. S. N. Gall, G3UCM, 175 Coulsdon Road, Old Coulsdon, Surrey. CR3 1EJ.

TI406 vidicon professional camera in excellent working order. Camera ccu remote control panel and optical focus. Scan and video reversals, automatic operation. £50 or near offer. Buyer collects. J. A. Rollason, G3WCO, 19 Breamar Avenue, Chelmsford, Essex.

£25 secures Heath SB10 adaptor complete with manual, in mint condition, will deliver radius 25 miles. H. H. Messam, G3DDM, 9 The Square, Petersfield, Hants.

AR77 receiver and PR30 preselector for sale, £14 for both together or separately £12/£3. Or exchange for transistor 2m and 70cm converters with 28-30 MHz i.f. Buyer collects. E. F. D. Baker, G8AZC, 97 Cruick Avenue, South Ockenden, Essex.

Satisfied Joystick user selling G8KW trap dipole. New traps and balun, £6. Carriage free. D. MacLennan, G3KGM, 52 Pinewood Avenue, Sidcup, Kent.

DX100U, modified for SB10, mint cond., with manual, £45. Can deliver 100 miles. A. G. Thorburn, G3WBT, 27 Banklands, Workington, Cumberland.

V.H.F. commercial base station TX and RX, close 2m, £18. ZA39384 RTTY TU+ p.s.u. £5. New Taylor 50 panel meter, 50μA, 5 × 4in., £2. Two R1475, one wkg., £10 both. Exchange items Mini bodyshell? T. R. Preece, G3TRP, 28 Stoneyfield Road, Old Coulsdon, Surrey. CR3 2HG. Phone 71 52138.

Green ECE Mk 5 70cm transistor converter, i.f. 28-30 MHz. 12V d.c. New last April; very little use. £12 o.n.o. P. G. Brooker, G3WXC/G8ATU, 43 Stephen Road, Barnehurst, Kent. Phone Crayford 28566.

LM10 with crystal, no charts, but some calibration on BC221 book, £7. SP600 H/B, £2. National 1-10, one set coils, not working, offers. UM2 mod. trans., £1. B2 RX with circuit. £3. J. S. Haggart, G3JQL, 22 Alnwick Road, Newton Hall, Durham.

BC221, mint, £15. Valves new, QQV06-40A, QQV03-20, RCA 6GJ5A, 35s. QQV03-10, 6080, 10s. PCF86, EF183, ECF80, EBF80, ECC84, EBF83, 6065, EBF89, PCF806, £5. Ex govt. new CV136, 6094, 6C4, CV131, CV4014, 9001, 6058, 2s. each plus postage. K. F. Atter, G3PTI, 17 Goldsmith Road, Grantham, Lincs.

AR88LF complete with manual, in good condition. Will deliver 50 miles. £30. G. Todd, 52 Trevor Crescent, St. James, Northampton.

Remington electric typewriter, perfect, offers around £20 or w.h.y. BRT400 exchange smaller RX with cash adjustment. Various instrument cases for sale, very cheap. S.a.e. R. J. C. Broadbent, G3AAJ, 94 Herongate Road, Wanstead Park, London, E12. 01-989 6741.

Rack fitting 200 watt class B modulator and speech amplifier. Studio crystal mike. Acos crystal mike. Smoothing chokes. Offers please. New Japanese mech. filter, 450 kHz, £7. Wanted meter, 100 μA. A. Parker, G3KH, 133 Station Road, Cropston, Leicester. LE7-7HH.

Vertical aerials (2), Mk. I, 32ft. plus whip. £3 each plus carriage. H. Tonks, G3JFL, 11 St. Edwards Road, Bournebrook, Birmingham 29.

KW Vanguard, 160-10m, good cond. KW201 RX, new. SB10U s.s.b. unit, brand new. Must sell. L. G. Tonkinson, G3NKC, 8 Little Warton Road, Warton, near Tamworth, Staffs. Phone Polesworth 2452.

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Receiver basis, case, chassis, solid state p.s.u. 100 kHz Xtal filter, l.f. stages. £8. Vibrator p.s.u. 12V, 250V, 200mA, 230V, 80mA, £2. Pye mobile p.s.u., 250V, £1, or exchange 6146B, PL504 or w.h.y. C. T. Stagg, G3KPW, 62 Prospect Place, Grays, Essex.

150W a.m. station. Standard radio 5AH TX 1·5-13 MHz Canadian 52 RX + p.s.u., Philips modulator, internal p.s.u. 5AH a.t.u., "match anything," £20. Other gear also. K. Pugh, G3SIK, 182 Colney Hatch Lane, Muswell Hill, London, N10. Phone 883 1136.

R206 Mk. II, no p.s.u., £12. AR88D, with S meter, £40, recently professionally overhauled. 4m base station, type L98U, £15. 28 MHz TX/RX/P, 250mW, Xtal controlled, transistorized, £9. J. P. Ceresole, 58 Nevern Square, London, SW5.

WANTED

Bandspread coil for 10m for HRO RX. Must be in good cond. Replies to G8AVH, 114 Endhill Road, Kingstanding, Birmingham 22C.

Bases for 4X150A-type valves without chimney. Also require length of Eimac CF300 finger stock and low-loss 75 Ω coax relay suitable for high power at 432 MHz. T. J. Thirlwell, G3AHS, 55 The Wells House, Well Walk, Hampstead, London, NW3. Phone 435 9542.

Schedules on 10 or 15m, s.s.b. or c.w., with other railroad hams. F. Sonnek, WA0JUM, Box 59, Mobridge, South Dakota, USA 57601.

Eddystone 898 dial. Small transformers (C core?) normal mains input, output 650V at about 800 mA. J. L. Meddeman, G2CKW, 112 Farnaby Road, Bromley, Kent.

Faulty or not wkg Heathkit Mohican, must be complete. Commercial or homebrew 160m all-transistor s.s.b. transmitter or transceiver for 12V mobile use. M. J. P. Evans, GW3UCJ, 4 Gower Crescent, Baglan, Port Talbot, Glam.

Manual for HRO MX, and details/circuit of conversion to miniature valves. Good price given. J. W. H. Finch, Stanstorp. Box 1005, Hoor, Skane, Sweden.

Third Overtone Xtals type HC-6/U, 18·006, 25·005, 32·22222, 32·77777 MHz. M. Peill, G3WJR, 60 Honister Drive, Workington, Cumberland.

SB10U sideband adaptor, kit or ready-built. H. O. Bradshaw, G3VTJ, 63 Bumbury Road, Northfield, Birmingham 31, Warks. Phone 021-475 1107.

Wanted urgently, tuning units for RDO v.h.f. RX. Will pay any reasonable price for units wkg. Also interested in units not wkg. Will arrange postage and payment from my English address. K. H. Hagemans, Van Hoornbeekstraat 14, The Hague, Holland.

R.f. ammeters, thermo-coupled. 0-350mA, 0-500mA, 0-1A, small quantity of each. Price reasonable please. J. D. Lambert, G3TA, 327 Parkway, Iver Heath, Bucks. Phone Iver 1214.

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Do you want the Scottish county of Bute? Then I want a 2m transceiver so that I can work you. Details and prices to A. T. Morton, GM8BJJ, 4 Mount Stuart Street, Millport, Isle of Cumbrae, Buteshire, Scotland. Phone 478.

HB166 required, also G2DAF RX. Partially built RXs considered. Write giving details. J. Tyas, G3NSG, 2 Claven Street, Barnoldswick, near Colne, Lancs.

Urgently wanted: black perspex nameplate for AR88. R. Weaver, 19 Cranleigh Gardens, Barking, Essex.

Wanted urgently: rotary transformer, Hoover ZA27484, 12V. Top Band mobile receiver, model 2AR. R. G. Barnes, 5 Prospect Drive, Hale Barns, Cheshire.

Eddystone 504 receiver for rebuilding. Condition immaterial. I.f. coils switch, tuning mechanism + capacitor, i.f.s and dial OK and cabinet complete. Consider 640, 740 or similar. Details and price please. M. R. G. Snowden, Swainsea Lane, Pickering, Yorks.

Pye Cambridge(s) or Vanguard(s). Also compact linear c/w p.s.u.or major components. H. N. Storey, 10 Greenacres, Darras Hill, Ponteland, Newcastle upon Tyne.

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Will any kind gent exchange a 50 Ω 90 watt type 701 heavy duty carbon resistor for my 80 Ω ditto for use as non-inductive dummy load. W. R. Steverson, G3JEQ, "Merrydawns," Meadowside, Great Bookham, Surrey.

Exchange for good beam rotator one 3 speed bicycle, 19 in. frame, 26 × 1$\frac{3}{8}$ in. wheels, £10. N. J. Sears, "Roselea," Wycombe Road, Stokenchurch, High Wycombe, Bucks.

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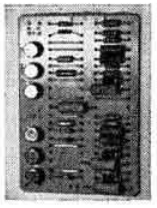

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Swan 500 SSB transceiver, 80–10 metres	250	0	0
Swan 350 SSB transceiver, 80–10 metres	218	0	0
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HA-700 Communications receiver (with product detector)	37	18	0
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K.W. Electronics Ltd.:			
K.W. 201 Amateur bands receiver, 160m.–10m.	111	0	0
K.W. Vespa Mk. II transmitter (with P.S.U.)	135	0	0
K.W. 2000A SSB tranceiver, 160m.–10m. (with P.S.U.)	232	0	0
Mosley Electronics (Beams):			
TA-33Jr. Triband three element beam	27	5	0
TA-32Jr. Triband two element beam	19	5	0
TA-31Jr. Triband dipole	11	11	0
V-3Jr. Triband vertical	8	5	0
TD-3Jr. Wrie trap dipole	6	15	0
Channelmaster rotators	13	13	0
Channelmaster rotators (automatic)	18	18	0
Park-Air Electronics Ltd.:			
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Jet Set Aircraft receiver	12	0	0
Sky Bandit Aircraft receiver	23	10	0
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Swanco/CSE type II A.T.M.A. mobile/fixed/portable antenna	9	15	0
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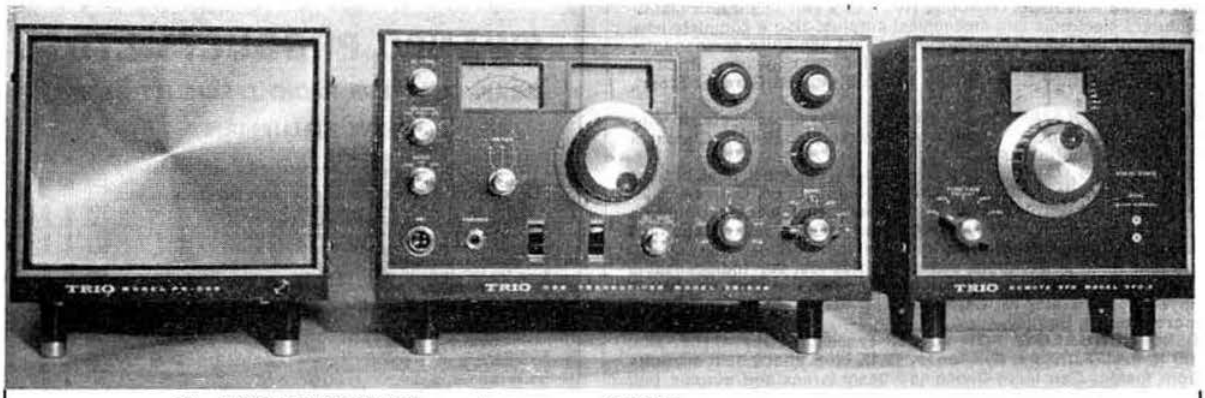

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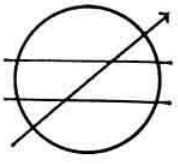

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