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KW SSB EQUIPMENT
for reliability

SEE THE LATEST EQUIPMENTS ON STAND 16
ROYAL HORTICULTURAL HALL—OCTOBER 2—OCTOBER 5

KW 2000A
SSB TRANSCEIVER
180 watt PEP, 10-160 metres, complete with AC psu, VOX, P.T.T.

KW VESPA MARK II
TRANSMITTER
For all HF Bands, 220 watts PEP SSB, AM, CW.

KW 1000
LINEAR AMPLIFIER
1200 watts PEP with built-in psu and SWR indicator

KW 201
AMATEUR BANDS COMMUNICATIONS RECEIVER
SSB CW, and AM; 10-160 metres

Write for illustrated detailed specification on the above and our list of KW Tested, “Trade-in” equipment

K. W. ELECTRONICS LTD.
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TELEPHONE: DARTFORD 25574 CABLES: KAYDUBLEW DARTFORD

Other KW Products 14 Antenna Switch (3 position) E-Z Antenna Match Unit PEP Meter Match SWR Indicator Low-Pass Filters Trap Dipoles Balun Dummy Load Q Multipliers
Eddystone
Amateur communications receivers

EA12
An amateur bands double-conversion superheterodyne receiver, for a.m, c.w, and s.s.b reception. For all amateur channels between 1.8 MHz and 30 MHz in nine 600 kHz bands with 28 MHz to 30 MHz in four bands.

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

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

940 H.F communications receiver
An outstanding 13-valve receiver with two r.f and two i.f stages, silicon diode noise limiter circuit and high quality push-pull output. Built to a professional specification, facilities include provision for c.w, a.m, and s.s.b reception over the range of 480 kHz to 30 MHz in five bands. Suitable for 110/125 V and 200/250 V, 40-60 Hz a.c mains.

Comprehensive information from your Eddystone distributor or: Eddystone Radio Limited, Eddystone Works, Alvechurch Road, Birmingham 31. Telephone: 021-475 2231. Telex: 33708
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G3TWV

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SECOND-HAND GEAR

BARGAIN OF THE MONTH
EDDYSTONE 830/7

93 Balderton Gate, Newark, Notts.
Tel. 4733; After 6 p.m. 2578
Show time here again—as I write this it's still a long way off, but I had better start getting ready. No matter what I do, though, there'll be the last minute panic—"You packed it, didn't you?" "No, I thought you did." Happens every time. Ah well, the smiling, happy, easy-going Bill you see on the opening day bears little resemblance to the purple snarling hair-tearing Bill of the day before. Mind you, if you got stuck into the Royal Horticultural New Hall bar like me, you'd be smiling, happy and easy-going too. Anyway, you'll see my load of stuff and I think you'll like it. You'll get a chance to compare it price for price with what else is available. This I like—does my pocket a power of good!

I suppose I'll have to answer the usual daft questions—"My AR88 has a slight hiss when I switch the BFO on, what do you think is wrong with it?" "Nothing, sir, it has probably just taken a dislike to you." "I am next door to a teletype station and his frequency is the same as my I.F. Is there a mod. I can do so I don't hear him?" "Yes, sir, disconnect the loudspeaker." Any daft questions, chuck 'em at Alan Whitford, G3MME. He's the better looking one and has the patience of Job. I'm not too bad (the little fat one with glasses), but Mike Crowther-Watson, G3IAR, the bearded oaf, is likely to say "Don't be a Very Rude Word." I might just add at this point—don't take this drivel too seriously! Don't know whether John will be around—depends on how busy the Service Dept., is, but if he isn't and you want to delve into technicalities and niceties of design, Alan can hold his own with the best. Don't ask me—I'm stupid.

Anyway, Stand 18 will encircle as fine a bunch of Yobos as you'll meet—all of us snatching the folding stuff off you as fast as our hot greedy hands can move. You will see all the stuff I advertise—Sommerkamp, Star and Inoue in all their glory, keyers, CW monitors, converters, speech compressors, VTVM's, GDO's, SWR bridges, headsets, microphones, sundry bits and pieces and so on. I will also find room somehow for some nice second-hand stuff, small parts etc. In addition, said he, somewhat furtively, I shall have a surprise job—don't want to let the cat out of the bag, but it's a neat 80-10 transceiver with all the gubbins sporting a pair of 6146B's at a price which will cause many of you to dive for your wallets on the spot. Anyway—don't believe me, come along and see for yourselves on Stand 18. If you can't make the Show, you can of course, see it all at Matlock, or for those of you in the Deep South, honey chile, try Alan Whitford G3MME at 37, Chestnut Drive, Polegate, Sussex (just outside Eastbourne) Polegate 4659—he has a goodly load of my best stuff and is just as anxious to get your money as I am.

The Bandit.
Amateur Electronics G3FIK

TRIO TS-500 TRANSCEIVER. We sincerely hope that we do not sound presumptuous but the prospective purchaser of a TS-500 cannot afford to ignore the home QTH demonstration service which we are offering with this equipment. To the best of our knowledge, we are the only club offering this facility and G3VGR is fully committed in conducting this service and can provide a full specification demonstration QTH at very short notice. The TS-500 has no competitor on the U.K. market and is truly excellent value for money for a full specification Transceiver which lacks nothing in construction, appearance, and performance. Full specifications and details by return post of current equipment.

TRIO 9R-50B. Small stocks remaining at the old price of £35.

Trio KX-35. Superb Hand-held Transceiver.

KW VIGERO SSB TRANSMITTER. Latest model in unmarked condition.

COLLINS 75-MA. In most excellent mechanical and electrical order. 

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TTC HRO SENIOR HAMLOAD DUMMY LOAD.-8A. Absolutely brand new and can be used for any brand.

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HEATHKIT Amateur Radio Equipment

DEFERRED CREDIT TERMS BY ARRANGEMENT (OVER £10 U.K. ONLY)

HW-30 2 Metre Transceiver... For fixed, portable, or mobile. Ideal for local and RAEN purposes. Input 5 watt. CC. Tunable regenerative RX. Size 9 1/4" x 8 1/4" x 6" deep. (For 230v. operation if required).
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A complete line of test instruments for the Amateur Radio Station. The V-7A VFM and RF probe. The MM-1U Multi-meter. The OS-2 Portable Oscilloscope and many more instruments are fully described in the latest Heathkit catalogue.
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LOWEST POSSIBLE INTEREST RATES TO ASSIST OWNERSHIP OF HEATHKIT MODELS

HW-100 S Band SSB-CW Transceiver . . . . Solid-state FET VFO. Covers 80-10 metre bands. Switch selector USB, LSB or CW. 180 watts input PEP SSB—170 watts input CW. Crystal filter.
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Ready to use A/HW-100 £165. 0. 0. P.P. 9/-.

SB-101 80 Through 10 Metre SSB Transceiver . . . . 180 watts PEP SSB, 170 watts CW (the practical power lever for fixed/mobile operation). Features USB/LSB on all bands, PTT & VOX. CW sidetones and more. Unmatched engineering and design.
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SB-401E Amateur Band SSB Transmitter . . . . 180 watts PEP SSB, 170 watts CW on 80 through 10 metres. Operates "Transceive" with SB-301—requires SBA-401-1 crystal pack for independent operation.
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GR-64 Short Wave Receiver . . . . Covers 1 MHz. to 30 MHz., plus 550 kHz. to 1620 kHz. AM band. Many special features for such a modest price. For 115-230v. 50/60 Hz. A.C. mains operation.
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CRYSTAL CONTROL TYPE DOUBLE CONVERSION COMMUNICATION RECEIVER
* Superior stability performance is obtained by the use of a crystal controlled first local oscillator and also, a VFO type 2nd oscillator.
* Frequency Range: 3.5 MHz—29.7 MHz (7 Bands)
* Hi-Sensitivity: 1.5uV for 10 dB S/N Ratio (at 14 MHz)
* Hi-Selectivity: ±2 KHz at −6 dB, ±6 KHz at −60 dB
* Dimensions: Width 13", Height 7", Depth 10".

Model 9R-59DE
BUILT IN MECHANICAL FILTER & TUBES COMMUNICATION RECEIVER
* Continuous coverage from 550 KHz to 30 MHz and direct reading dial on amateur bands.
* A mechanical filter enabling superb selectivity with ordinary IF transformers.
* Frequency Range: 550 KHz to 30 MHz (4 Bands)
* Sensitivity: 2uV for 10 dB S/N Ratio (at 10 MHz)
* Selectivity: ±5 KHz at −60 dB (±1.3 KHz at −60 dB) When use the Mechanical Filter
* Dimensions: Width 15", Height 7", Depth 10".

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3-band R.D.F. 9 transistors
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Units are completely portable and operate on 4 x 1.5v. internal batteries and are covered by our unconditional 10-day money back guarantee.

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Fast Mail Order for the Amateur Radio Enthusiast!

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THE ONE & ONLY EC10
Fully transistorized general coverage Communication Receiver. £64 AC. PSU £6.

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AC/DC Receiver for home or shipboard use. 500 kHz to 30 MHz £70.

THE FAMOUS 940
2 RF and 2 I.F. Stages 550 kHz-30 MHz in 6 bands Logging scale, variable selectivity. The ultimate for the listener. £143

TRIO

THE JR-500SE
Crystal controlled, double conversion receiver. 3.5 MHz-29.7 MHz in 7 bands, £68 only. The finest value ever!

THE 9R-59 DE
General coverage bandspread receiver. Mechanical filter, 8 tubes, £39.15.0. Also ex stock TS500E Transceiver with separate VF05 unit £231 complete.

KW

THE FAMOUS 2000A

THE YESPA II

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Astro Telescope, 60 mm. Refractor, Altazimuth mount, 35, 76, 120x-240x, Sun filters, case, tripod. New ... 35 17 6
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A Nauticraft 330 Inflatable boat with Evinrude 9.5 outboard engine, brand new 3rd August 68. Showroom condition.

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THIS IS THE GREAT NEW TRIO SYSTEM

**PS-500AC**
**POWER SUPPLY AND SPEAKER**
- Utilizes a silicon voltage rectifier to supply the high 900V. requirements of the TS-500 transceiver.
- B supply lines requiring 300V. and lost are taken from the centre of the capacitor stack and voltage dropping resistors are used in series to form the 200V. and 150V. supplies.
- A half wave silicon rectifier circuit is used to obtain block bias voltage of 120V.
- Two 12.6V. 3 amp., secondary windings supply heater voltages for the transceiver valves.
- The primary windings are connected for operation from 240V. line sources.
- The power supply jack incorporates speaker line terminals, as well as the power transformer primary connections so that AC power switching is made from the transceiver.
- Incorporates specially designed 6″ in. communications speaker—frequency range 150-5000Hz.
- Size 7½ x 8½ x 11½ in.

**TS-500 SSB TRANSCEIVER**
- Precision, double gear tuning mechanism and linear tuning condenser provides 1kHz direct reading divisions on all bands.
- Besides SSB, AM (A3H) and CW communication is provided.
- Operates with a max. input of 200W. PEP on SSB and CW.
- Undistorted output more than 1W.
- Covers all amateur bands from 35 to 29.7 MHz with a 7 band tuning system in both transmitting and receiving modes.
- Double conversion type superheterodyne receiver.
- Solid state VFO circuitry assures high stability performance.
- Receiver sensitivity 1μV S/N 10 dB (14 MHz), selectivity 2-7 kHz (–6 dB) 50 kHz (–55 dB).
- The transmitter frequency range from 14 MHz to 30 MHz.
- Uses 7 valves, 3 transistors and 15 diodes.
- New Trio developed crystal sideband filter provides superior shape factor and clear, crisp SSB quality.
- Highly effective AGC circuit prevents fading, permits easy reading of signals.
- Built-in crystal calibrator circuit works with 500 kHz, 1-3 kHz crystals.
- Built-in crystal calibrator circuit works with 500 kHz, 1-3 kHz crystals.
- Built-in circuits include VOX, PTT, ALC, RIT, CAL, RF-HV METER, and connections for EXT. VFO and ALC.
- Used with a remote VFO a special switching circuit permits, in effect, the operation of two transmitters.
- Power supply from sep. PS-500AC unit.
- Size 13 x 8½ x 11½ in.

**VFO-5**
**VARIABLE FREQUENCY OSCILLATOR**
- Equipped with the same high precision double gear dial mechanism and linear variable frequency capacitor as the TS-500, enabling direct reading of frequencies at 1kHz intervals.
- Oscillator frequency range covers all the amateur bands, as the TS-500.
- Built-in crystal oscillator section assures crystal controlled transmitting/receiving.
- Unlike ordinary VFO units, this VFO permits four different functions through the utilization of a "cross-cross" function switching scheme.
- Outstanding frequency stability due to cool operating all transistor circuitry, adoption of a Vactar oscillator circuit and temperature compensation features.
- Rugged LC box and solid construction throughout make this unit practically impervious to mechanical shocks.
- All power requirements are taken from the transceiver through a single connecting cable.
- Uses 4 transistors and 2 diodes.
- Size 7½ x 8½ x 6½ in.

**COMBINED PRICE £203.0.0**

Illustrated technical information leaflets for these and other Trio models on request.

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STAND No. 19
GO MOSLEY BRITISH AND BEST

THE FAMOUS TA-33 Jr. FROM MOSLEY OF ENGLAND
BRITISH MADE FROM BRITISH MATERIALS

Provides outstanding performance on 10, 15 and 20 metres, coupled with light weight (20 lbs.).
All aluminium alloy and stainless steel construction, exceptional broad band characteristics, over full Ham bands, exclusive trap design, choice of mast fittings, single coax 52 ohm feed point.
Power ratings: 350 watts AM/CW, 600 watts, p.e.p. SSB, input to final. Forward gain up to 8dB. Front to back ratio 20dB or better. Standing wave ratio 1.5 to 1 or less.
Maximum Element length 26ft. 8in. Boom length 12ft. Turning radius 14ft. 9in.

Variations: 2 Elements which is known as the TA-32 Jr.
Dipole driven Element known as the TA-31 Jr.
(Use Horizontal or Vertical.) Conversion kits available.

Prices: TA-33 Jr. £27.5.0 fits up to 1½in. mast.
TA-33 Jr.E. £27.15.0 fits up to 2½in. mast.
TA-32 Jr. £19.5.0 fits up to 1½in. mast.
TA-32 Jr.E. £19.15.0 fits up to 2½in. mast.
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SHORT WAVE MAGAZINE
(GB3SWM)

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AMATEUR RADIO ARRAYS PRICE INCREASES

For the past few years we have been able to maintain prices throughout the range of our Amateur Aerials, apart from one or two slight changes. In this length of time however, we have had to sustain a number of cost rises in our raw materials, which we have been able to partially offset by greater manufacturing efficiency.

With devaluation however, in November last, there was a sharp rise in Aluminium, since then, other materials have also been substantially increased in price. It is regretted therefore, that as we can no longer absorb these increases, we have with great reluctance been forced to increase all our prices by 10% as from January 1st, 1968.

### Parabeam 14 Element Yagi

Parabeam 14 element Yagi for 2 Metres. The new Parabeam with increased gain of over 15 dB—and broader bandwidth.

**Overall Dimensions:**
- Length 234”
- Width 41”
- 595cm.
- 104cm.

Horizontal beamwidth between half power points 24°. CAT. No. 2/14P.

<table>
<thead>
<tr>
<th>Aerials Band</th>
<th>Cat. No.</th>
<th>Description</th>
<th>dB Gain over Dipole</th>
<th>Current Price</th>
</tr>
</thead>
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<tr>
<td>10 Metres</td>
<td>10/4Y</td>
<td>4 Element array with twin crossbar</td>
<td>7.0</td>
<td>19 16 0</td>
</tr>
<tr>
<td>4 Metre</td>
<td>4/3Y</td>
<td>3 Element folded dipole yagi with 1/2” boom</td>
<td>5.7</td>
<td>2 17 6</td>
</tr>
<tr>
<td></td>
<td>4/4Y</td>
<td>4 Element folded dipole yagi with 1/2” boom</td>
<td>7.0</td>
<td>3 18 0</td>
</tr>
<tr>
<td></td>
<td>4/6Y</td>
<td>6 Element folded dipole yagi with 1/2/2” boom</td>
<td>8.7</td>
<td>8 14 6</td>
</tr>
<tr>
<td></td>
<td>4/8Y</td>
<td>8 Element folded dipole yagi with 1/2/2” boom</td>
<td>10.0</td>
<td>12 13 0</td>
</tr>
<tr>
<td></td>
<td>4/10Y</td>
<td>10 Element folded dipole yagi with 1/2/2” boom</td>
<td>11.2</td>
<td>17 8 0</td>
</tr>
<tr>
<td></td>
<td>2/14P</td>
<td>Coaxial harness to match and phase two 4m. aerials</td>
<td>1 13 0</td>
<td></td>
</tr>
<tr>
<td>2 Metre</td>
<td>2/4Y</td>
<td>4 Element folded dipole yagi with 1” dia. boom</td>
<td>7.0</td>
<td>1 18 0</td>
</tr>
<tr>
<td></td>
<td>2/6Y</td>
<td>6 Element folded dipole yagi with 1” dia. boom</td>
<td>8.7</td>
<td>2 8 6</td>
</tr>
<tr>
<td></td>
<td>2/8Y</td>
<td>8 Element folded dipole yagi with 1” dia. boom</td>
<td>10.0</td>
<td>3 0 6</td>
</tr>
<tr>
<td></td>
<td>2/10Y</td>
<td>10 Element “Long Yagi” with 1/2” boom and braces</td>
<td>13.2</td>
<td>7 2 0</td>
</tr>
<tr>
<td></td>
<td>2/14P</td>
<td>14 Element “Parabeam” with 1/2” boom and braces</td>
<td>15.5</td>
<td>11 11 0</td>
</tr>
<tr>
<td></td>
<td>2/8</td>
<td>Double 4 slot fed yagis with 1” dia. booms</td>
<td>10.0</td>
<td>3 17 0</td>
</tr>
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<td></td>
<td>2/12</td>
<td>Double 6 slot fed yagis with 1” dia. booms</td>
<td>11.7</td>
<td>5 4 6</td>
</tr>
<tr>
<td></td>
<td>2/16</td>
<td>Double 8 slot fed yagis with 1” dia. booms</td>
<td>12.6</td>
<td>6 12 0</td>
</tr>
<tr>
<td></td>
<td>2/HO</td>
<td>“Halo” mobile aerial, head only</td>
<td>1 16 6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2/4M</td>
<td>“Halo” mobile aerial with 1” dia. mast</td>
<td>1 16 6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PM2</td>
<td>Coaxial harness to match and phase two 2M aerials</td>
<td>1 1 6</td>
<td></td>
</tr>
<tr>
<td>70 Cm.</td>
<td>70/16</td>
<td>Double 8 slot fed yagis with 2” dia. booms</td>
<td>12.6</td>
<td>3 18 6</td>
</tr>
<tr>
<td></td>
<td>70/14Y</td>
<td>14 Element folded yagi, multi reflector</td>
<td>16.0</td>
<td>5 2 6</td>
</tr>
<tr>
<td></td>
<td>70/18P</td>
<td>18 Element Parabeam yagi with 1/2” boom</td>
<td>17.0</td>
<td>5 3 6</td>
</tr>
<tr>
<td></td>
<td>PM/70</td>
<td>Coaxial harness to match and phase two 70 cm. aerials</td>
<td>16 6</td>
<td></td>
</tr>
</tbody>
</table>

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- 9528 Automatic Ten-n-a liner complete | 19 19 0
- 9519 Compass Ten-n-a liner complete | 14 14 0
- 9523 Rotator alignment bearing-up to 1/2” masts | 3 17 6
- 9525 Ball bearing guy ring-up to 1/2” masts | 2 7 6

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Exhibition  
As remarked before in this space, the annual Amateur Radio show—to take place next week, called the International Radio Engineering & Communications Exhibition, at the Royal Horticultural New Hall, Greycoat Street, Westminster, London, S.W.1, October 2-5 inclusive—is not only an important event for those who want to see the latest in amateur band equipment and accessories. It is also a great convention occasion, in the sense that many people go to the Amateur Radio Exhibition to meet their friends, and to see and be seen. This year will be no exception.

We shall be at our usual corner Stand—manned throughout the period of the Exhibition by members of our own organisation—and we also look forward to seeing our friends of many years, and to meeting new ones.

* * * *

Difficulties  
Because of the severe flooding in the area to the south of London about the middle of September—which caused considerable mail delays (coinciding with the advent of the new “first class post”!), also dislocation of the telephone service and general chaos—this issue of SHORT WAVE Magazine was produced under considerable difficulties, particularly for our printers, as the work schedule was disrupted for several days.

Though at the moment of writing it is not anticipated that publication will be unduly delayed, we hope that if it is readers will understand, and accept it as due to circumstances beyond our control.
ECONOMICAL FIVE-BAND LINEAR AMPLIFIER

USING TV-TYPE VALVES—LOW OPERATING VOLTAGE—MAXIMUM INPUT CAPABILITY 500 WATTS

P. FRIEND (G3SQR)

THE use of TV output valves in high-power linear amplifiers is now well established, the main advantage being a reduction in cost due to their being normal consumer-type valves working at lower voltages. This particular design was evolved after a near-fatal encounter with the 2.5 kV HT supply for an 813 linear amplifier!

A passive-grid input system in a linear amplifier has two further advantages. First, it is generally unnecessary to neutralise the amplifier, provided good isolation between input and output circuits is maintained, so the circuit is more easily set up.

Secondly, the input impedance of the amplifier will be suitable for direct connection to the SSB exciter. The latter will be running near its design conditions, and it will be unnecessary to have a tuned L or π-network at the amplifier input.

Safety aside, the main advantage of using low voltage valves is that capacitors are smaller and cheaper. In the PSU here, smoothing capacity is provided by relatively cheap TV electrolytic components. In the output network, standard broadcast capacitors can be used in place of special wide-spaced "transmitting variables," and all decoupling condensers for the anode and screen grid circuits are more readily available.

The Circuit

The amplifier to be described uses four PL500 valves in parallel, operating in Class-AB1. (These are interchangeable with the more modern PL504.) The anode supply gives 700 volts at 750 mA, for a maximum input of 525 watts. A π-network couples the amplifier to a 75-ohm transmission line, although the reactance values are a little unusual, because of the low anode impedance of the four paralleled valves. It is in designing the π-network that the chief drawback to arrangements of this type
In the economy four-band station receiver, the high output capacity of the valves necessitates having an undesirably high tank circuit on the high frequency bands. This causes high circulating RF currents, and a consequent loss of efficiency.

Switching of the amplifier circuits is performed by RLA/4, a four-pole change-over relay with a 12 volt coil, made by Radiospares. Two sets of contacts are wired in parallel to handle the output switching, the remaining sets controlling the input and the fixed bias on the PL500's. When the relay is energised, the input socket is connected to the grids of the amplifier valves, and the output socket transfers power from the tank circuit to the aerial. Also the standing bias on the valve grids is reduced from -140 volts to the operating bias, which is such that the zero-signal anode current is 100 mA (about -65v). In the un-energised state the relay connects the input terminal directly to the aerial, allowing the station receiver to be connected to the aerial in the stand-by condition, so that the exciter can be run "barefoot." The connections to the relay coil are based on these requirements.

The amplifier passive grid network R10 consists of nine 1-2K 2-watt resistors in parallel, giving an effective 133 ohms, 18 watts. The voltage developed across these by the exciter is capacitively coupled to the PL500 grids, via 10-ohm grid "stoppers." (Stopping resistors were found to be unnecessary in the screen-grid circuit, although they may be needed in other cases.) The PL500 has two screens-grid connections on the base, and both are earthed through a 0-01 µF capacitor. The screen supply yields 350 volts.

Anti-parasitic chokes, consisting of four turns of 18g. tinned copper wire on a 47-ohm 1-watt resistor, are connected directly to each of the four anode top-caps, and the RF choke is mounted vertically, at the centre of the valves. This choke, RFC1, is rather unconventional—it is in fact a 100-ohm 30-watt wirewound resistor (Radiospares), which performs admirably in spite of some loss of HT voltage across it. The anode coupling and decoupling capacitors are all "large brown moulded

Table of Values

<table>
<thead>
<tr>
<th>C1, C2, C3, C4, C5, C6, C7, C8</th>
<th>R2, R3</th>
<th>R4, R5 - 10 ohms</th>
<th>R6 = 27,000 ohms</th>
<th>R7 = 15,000 ohms</th>
<th>R8 = 2,000 ohms, var.</th>
<th>R9 = 3,300 ohms</th>
<th>R10 = 133 ohms, 18w, see text</th>
</tr>
</thead>
<tbody>
<tr>
<td>C10, C11</td>
<td>C12, C13</td>
<td>0.005 µF</td>
<td>C14 = 0.001 µF, var. see text</td>
<td>C15 = 0.002 µF, var. see text</td>
<td>M1 = 1 amp meter</td>
<td>RFC1 = see text</td>
<td>RFC2 = RF choke, 2 mH</td>
</tr>
<tr>
<td>R1 = 10,000 ohms, wire-wound</td>
<td>V1, V2, V3, V4 - PL500, or PL504</td>
<td>1-w.</td>
<td>100,000 ohms</td>
<td>20-w.</td>
<td>5-ohms, 1-w.</td>
<td>270 ohms</td>
<td>220 ohms</td>
</tr>
<tr>
<td>Fig. 2. The Power Supply section</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C1 = 400 µF, 450v.</td>
<td>C2 = 100 µF, 450v.</td>
<td>C3, C4, C5, C6</td>
<td>C7 = 164 µF, 450v.</td>
<td>C8 = 100 µF, 25v.</td>
<td>F = Fuse, 3 amp.</td>
<td>R1, R2, R3, R4, R5, R6, R7 = 100,000 ohms, 1-w.</td>
<td>R8 = 20-w.</td>
</tr>
</tbody>
</table>

The highly conventional coupling and output capacitors are 0.01 µF, but for the Economical Four-Band Amplifier, a good end result is achieved with 0.02 µF.
On its heater, the PL500 takes 27 volts at 300 mA. The four are wired in series and connected across the transformer secondary through a BY-100 rectifier and a 220-ohm, 20-watt resistor (a "mains dropper" salvaged from an old TV set). The diode serves to halve the r.m.s. mains voltage, effectively reducing it to 125 volts, thereby giving a simple and reasonably efficient heater supply.

**Conclusions**

No special precautions need be observed in constructing the amplifier, except to ensure that the cans of the electrolytic smoothing capacitors are isolated from the chassis where necessary, and that the input and output circuits of the amplifier are isolated from one another.

Earthing of the RF circuits should be carried out with the usual care: heavy conductor should be used, with a single earth point for the valve cathodes and the tank circuit capacitors.

No laboratory tests have been conducted on this linear amplifier, so it is not possible to make claims in respect of intermodulation distortion or power output. However, on-the-air tests have produced favourable reports on speech quality, and the SWR bridge in the aerial feeder is showing an encouraging increase in power output over the Sommerkamp FL-200 transmitter (rated at 240 watts p.e.p. input).

**AMATEUR RADIO EXHIBITION**

This year's Radio Engineering & Communications Exhibition—the Amateur Radio Show—is to be found at the Royal Horticultural Society's New Hall, Greycoat Street, Westminster, London, S.W.1. To get there by Tube, take a ticket either to Victoria (Underground) or St. James' (District), and then walk towards the Army & Navy Stores in Victoria Street. The New Horticultural Hall is in the immediate neighbourhood—look for Artillery Place, leading into Greycoat Street, walk to the end towards Victoria Square, and you will be there. Any bus for Victoria Station or along Victoria Street (ask to be put down at "the Army & Navy") will likewise take you within walking distance. Our street-level front office at 55 Victoria Street is within a few hundred yards of the Army & Navy Stores and whoever you may find on duty there during normal office hours will be glad to direct you. And, of course, any taxi-driver can take you straight to "The New Horticultural Hall, S.W.1"—don't ask just for the Amateur Radio Exhibition, because in fact exhibitions of all sorts are held at the Horticultural Halls, all through the year. The taxi-men know where the Hall is, even if they don't know what is going to be happening there during October 2-5, when we hope to be welcoming you on the SHORT WAVE MAGAZINE stand—we are the only remaining firm, paying for our Stand at the full commercial rate, which has supported this Exhibition without a break ever since it started, more than 20 years ago.
TRANSISTOR TRANSCEIVER FOR TWO-METRE PORTABLE

USING ISOLATED SUPER-REGENERATIVE DETECTOR

G. B. PACKER (GW3UUS)

This unit was built to see just what could be done with low power on the two-metre band into simple antennae. Straightforward circuitry is used, obtained from several sources—notably the "Miniwatt" which appears in the 1968 A.R.R.L. Radio Amateur's Handbook.—See p.476.

On "receive" a grounded base RF pre-amp Tr4 feeds a superregenerative detector, Tr5. This pre-amp serves both to isolate the detector from changes of aerial load and to stop any re-radiation. The output from the detector is then passed into a cheap Japanese AF board which produces more than sufficient audio.

For "transmit" a 48 mc crystal oscillator is tripled to 144 mc and then amplified before being fed to the aerial. Link coupling is used throughout. Modulation is achieved by another AF board, matched to the PA by a miniature output transformer.

The Receiver

RF Pre-amp: This is identical to the "Miniwatt" circuit. Several transistors were substituted, an unmarked surplus silicon performing the best. A 2N706 should do. Various values of damping resistor were tried, 27K giving the best bandwidth consistent with useful gain.

Detector. The circuit used has been going the rounds in the Bristol Channel area, on all frequencies from 70 to 432 mc. For its simplicity it is remarkably sensitive. Without the pre-amp stations 60 miles away have been heard, using just a ½-wave whip from a local hill top. Care must be taken with the output as any loading will degrade the performance, hence the 330K resistor R8.
The Transmitter

Crystal oscillator, *Tr1*. To get sufficient drive, always a problem with transistor transmitters, a Squier oscillator is used. The OC170 seemed the easiest to start under load.

*Tripler, Tr2*. The output from the crystal oscillator is tripled to 144 mc by a 2N706A. This can get rather warm so a small heat sink of some kind would be an advantage. The one used gives more than adequate cooling and consists of a square centimetre of 28g. copper fitted to *Tr2* as a clip.

*Power amplifier, Tr3*. For the PA an equivalent to the P346A is used. This is in a TO5 can and is obtainable from various advertisers for around 3s. 6d. Although it did warm up slightly, the increase in temperature was insufficient to warrant using a heat sink.

Construction

People have different ideas on layout so that the illustrations are given only as a guide. Many might prefer to build the unit like a conventional walkie-talkie with internal microphone. Attention needs to be given to leads marked with an asterisk (*). They should be as short as possible, at least less than 1cm.

---

Left, GW3UUS, Newport, Mon., with his two-metre transceiver, as described in the article. For a size comparison, GW3UUS mentions that he is 6ft. 4in. tall.
Table of Values

<table>
<thead>
<tr>
<th>Component</th>
<th>Value</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>100 µF</td>
<td></td>
</tr>
<tr>
<td>C2</td>
<td>0.001 µF, disc</td>
<td>50K, linear</td>
</tr>
<tr>
<td>C3</td>
<td>5 µF</td>
<td>H1, H2: RF choices, 80F, 40G. on 1-meg.</td>
</tr>
<tr>
<td>C4</td>
<td>10 µF</td>
<td></td>
</tr>
<tr>
<td>C5</td>
<td>6.8 µF</td>
<td></td>
</tr>
<tr>
<td>C6</td>
<td>0.1 µF</td>
<td></td>
</tr>
<tr>
<td>C7</td>
<td>500 µF</td>
<td></td>
</tr>
<tr>
<td>C8, C9</td>
<td>100 µF</td>
<td></td>
</tr>
<tr>
<td>C10</td>
<td>0.001 µF</td>
<td></td>
</tr>
<tr>
<td>VC1</td>
<td>10 µF, l.m.p.</td>
<td>X1: Xtal, 48 mc</td>
</tr>
<tr>
<td>VC2</td>
<td>10 µF, l.m.p.</td>
<td>Tr1: OC170</td>
</tr>
<tr>
<td>VC3</td>
<td>10 µF, l.m.p.</td>
<td>Tr2: 2N706A</td>
</tr>
<tr>
<td>VC4</td>
<td>3-30 µF, bee-hive</td>
<td>Tr3: 2N446A, or equiv.</td>
</tr>
<tr>
<td>R1</td>
<td>15,000 ohms</td>
<td></td>
</tr>
<tr>
<td>R2</td>
<td>1,200 ohms</td>
<td></td>
</tr>
<tr>
<td>R3</td>
<td>4,700 ohms</td>
<td>L1: 0.18g., c-t</td>
</tr>
<tr>
<td>R4</td>
<td>2,700 ohms</td>
<td>L2: 22g., over centre</td>
</tr>
<tr>
<td>R5</td>
<td>22,000 ohms</td>
<td></td>
</tr>
<tr>
<td>R6</td>
<td>1,800 ohms</td>
<td>L3, L5: 4.18g.</td>
</tr>
<tr>
<td>R7</td>
<td>330,000 ohms</td>
<td>L4, L6: 11.22g.</td>
</tr>
<tr>
<td>R8</td>
<td>18,000 ohms</td>
<td>L7, L8: experiment</td>
</tr>
</tbody>
</table>

Notes: All coils self-supporting. 1-cm. diameter, enamelled wire. AF boards purchased as made-up units.

Adjustment

First the receiver. With a modulated signal generator set on 145 mc, switch on the power and set VR1 to a point just before the superregen. hiss stops; this is the setting for maximum detector sensitivity. Squeeze in or out the tuning coil, L8, to put the test signal half way across the tuning range of VC5. The Rx should now cover approximately 130 to 150 mc. With a trimming tool adjust L7 to give the greatest gain, checking that VR1 is still at its optimum point. This is best done by using an on-the-air signal.

Next the transmitter. Put S2 to “Tx” after placing a 100 mA meter in the supply line. By tuning VC1 a peak will be observed on this meter; tune for maximum. Now tune VC2 for a dip in current. Similarly adjust VC3. The final setting up is best done with the aerial connected and using a VHF wavemeter. The wavemeter is a sure check that the transceiver is in fact operating on 144 and

Inside layout view of the Transceiver designed by GW3UUS.
NEW PREFIX LISTS

On pp.509-514 of this issue appears our latest revision of the Country/Prefix/Zone lists, alphabetically both ways, together with the International Numerical Prefix List—which shows all those new and unexpected figure-letter combinations, often causing a perfectly legit DX-pedition station to be castigated as a pirate, at first hearing.

In case anyone should imagine that these listings—which have involved many hours of research and compilation—are merely a reprint of what we published two years ago, let it be said that in fact they incorporate about 170 additions and amendments! (It is not till you start on a job like this that you realise what is involved!) The result is the latest, most accurate and fullest Prefix List yet published. If you are at all interested in DX, you cannot be without these new lists. For those wanting desk copies, the content of pp.509-514 is available in a separate binding, at 9d. post free. (Ask for “New Prefix Lists.”) A copy is being included free of charge, with all orders for our DX Zone Map, price 14s. 9d., which includes postage and delivery in a postal tube to avoid damage in transit. Orders, not 96 mc. It is only too easy to double instead of triple. VC4 was found to be almost full in for maximum RF but it depends on the antenna used. Input power will be around 200 mW.

Operation

This little unit is useful for cross-town “nattering” but from hills it has exceeded all expectations. The greatest distance so far achieved is 56 miles, location being Machen Mountain, 10 miles from Newport, Mon. The antenna in use was a 4-element beam 6 feet off the ground, a report of 5-6 being received. With just a ¼-wave whip 5-9 reports over 15 miles are usual, even over quite rough terrain.

with remittance, to: Publications Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1—despatch is by return.

ARTICLE COMPETITION

Further to the Editorial announcement in the September issue of SHORT WAVE MAGAZINE, as the result of enquiries and suggestions it has been decided to add the following categories:

- Aerials, HF and VHF;
- Mobile, HF or VHF;
- Static Station layout and control;
- Constructional methods and techniques;
- Log-Keeping systems and records.

Any entries offered under these additional headings will be considered for the 25-guinea immediate awards. What we do not want are heavy theoretical articles, with ponderous mathematical proofs, to arrive at some fact or theory already covered in the handbooks and manuals. Original mathematical work, having a direct bearing on Amateur Radio problems or design, will, however, be given consideration.

All Writer Competition entries, with the category clearly indicated, should be addressed to: Editor, SHORT WAVE MAGAZINE, BUCKINGHAM. All manuscripts will be acknowledged immediately on receipt—and, if you want to feel on the safe side, use the “recorded delivery” service, which costs an extra ninepence.

DELIVERY OF MAGAZINE

If we continue to use what has now become “2nd class post,” in many cases subscriber copies may not be delivered till the Saturday. If we use “1st class,” not only does our postage bill rocket by 50%—a mere £1000+ a year!—but there is no real guarantee of “first post Friday morning” delivery, especially in more distant parts—it would be just a pious hope on the part of the Post Office. We are investigating the situation with the G.P.O. to see if there is any way in which differential delivery can be avoided. In the meantime, please don’t blame us if your copy is delayed—we are doing our best to find a solution.
CONSIDERING THE HALICRAFTERS SR-400

NOTES AND COMMENT ON AN ADVANCED TRANSCEIVER FOR THE AMATEUR BANDS

The equipment discussed here is the Hallicrafters SR-400 transceiver, with its associated PSU, the HA-20 DX Adaptor and the various ancillary bits and pieces that go to make up the full rig.

A first impression of the transceiver itself is one of finish a cut above the average, which might be expected in a Tx/Rx which is rather above the usual run in price. A second one is of rather more facilities for CW operation than one expects in a transceiver.

A total of 19 valves, a voltage regulator, and 27 assorted diodes are contained in the main unit; a further nine diodes are used in the power supply, to give outputs of 280 volts at 100 mA, 750 volts at 500 mA, and an adjustable negative bias supply. In addition, the heaters soak up 5 amps at 12.6 volts. As far as the “DX Adaptor” is concerned, it consists of a VFO and cathode follower, a voltage regulator, and the meter part of a VSWR indicator, the reflectometer section being in a small box with coax connectors; this is intended to be coupled into the transmission line between the SR-400 and the ATU, or aerial; the DX Adaptor is self-powered. All three units—Transceiver, DX Adaptor and Power Supply—are styled to match. There is also a DC PSU available to drive the transceiver under /M conditions.

Probably the main attractions of the SR-400 are, on the one hand, the increased DC input to the PA of 400 watts SSB (about twice the normal run) and on the other the extra selectivity available when receiving CW. If the DX Adaptor is used there is, in addition to the Rx Incremental Tuning giving a shift of a few kc on the receiver around the transmitting frequency, the following facilities: Normal operation of the transceiver with the HA-20 “Off” or at “Standby”; full control of the transceiver by the HA-20 VFO in both modes; split frequency working when the HA-20 controls on “transmit,” with the transceiver VFO accepting the “receive” frequency. The function switch also provides for monitoring of two frequencies simultaneously on the receiver (within the same band, of course) but in this position (with both the transceiver VFO and its companion in the Adaptor in use for “receiving” tuning) the “transmit” position is disabled. Under these conditions, setting the two controls too close will result in them beating in the receiver—but this is a small price to pay for being able to listen to both sides of a pile-up at once, as normal working is resumed at the flip of a switch. The specification has clearly been devised with practical operating in mind, and by an operator of high calibre at that!

The Technical Specification, which defines the limits within which operating parameters may be allowed to fall before being failed on Test, are often not so good in American equipment. Furthermore, there is a distressing tendency with some U.S. manufacturers to allow the Ad-men to rework the specification in such a way as to conceal shortcomings, to the extent of “gilding the lily.” Let it be said that the Hallicrafters SR-400 is an honourable exception. The specification is extremely good. The weaknesses are not glossed over. The SR-400 equipment meets its specification. It is an honest piece of gear.

However, your reviewer would wish equally to be honest and say that nothing is ever perfect. This transceiver has some relatively minor shortcomings. The first one concerns the use of 6HF5 valves at a total input of 400 watts to the pair, p.e.p. SSB, or 360 watts on CW. The process of tuning up has to be done quickly and strictly in accordance with the method specified, or the valves could be ruined—indeed, the envelope may be “sucked in” by melting of the glass! This applies to any transmitter using the 6HF5 at this level of input, and it is essential that the makers’ tune-up instructions be followed to the letter and in the spirit. The second criticism is that the use of concentric panel controls calls for care, and one feels that the styling has resulted in less than ideal knob styles being used, although it is also fair to say that this sort of difficulty lessens with familiarity. Thirdly, the famous Hallicrafters symbol, which appears on the front of each unit, is not awfully pleasing to the eye: it looks lopsided and garish. But it is meant to look the way it does—and there are always other possible opinions on the design of a panel motif.

(over)
General Arrangement

Turning to the circuitry, the block diagram of the SR-400 is shown in Fig. 1, and is fairly conventional. Refinements that will be noted are the presence of amplified AGC, a noise blanker rather than a simple limiter—which derives its voltage from the area before the main selectivity circuits, to give optimum performance—and the presence of amplified automatic level control of the PA drive, which virtually removes the chance of serious overdriving and the resultant splatter. The metering is of interest; in the first position the meter measures the RF voltage at the output terminals of the transmitter on “send,” and acts as an S-meter on “receive.” A second position looks at the AALC voltage on “transmit” and is S-meter again on “receive,” while the third position provides metering of the PA current.

The widespread use of diodes both as switches and as variable capacitors is noticeable in this transceiver, for example in Fig. 2, where the rather neat arrangement around the six-pole filter FL1, which is used to generate the Sideband signal, is sketched out. The diode D4 is earthed at the function switch as shown in the “Tune” and “CW Transmit” positions. D4 conducts and in so doing connects the resistors R1 and R2 in parallel; the resulting change in the voltage at the junction of R2 and R3 is enough to cause D1 to conduct and short out FL1, thus letting the carrier through without the attenuation which would normally result by the carrier frequency being on the side of the FL1 response. When the gear switches over to “receive,” the voltage on the transfer line makes D3 conduct, thus biasing D1 to cutoff, and making FL1 operative again. Definitely cunning!

Transmitting Upper or Lower Sideband is done by setting S2 to the other two positions where D4 is not grounded, and so D1 cannot short out the FL1; there are of course provisions elsewhere to make the other switchery deal with the carrier.
TABLE 1

SR-400 Transceiver. Valve Line-up

<table>
<thead>
<tr>
<th>Valve Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>V1-12DKS</td>
<td>Receiver RF Amplifier</td>
</tr>
<tr>
<td>V2-7059</td>
<td>Receiver 1st mixer-Transmitter 1st Mixer</td>
</tr>
<tr>
<td>V3-7059</td>
<td>AALC Amplifier—IF Amplifier</td>
</tr>
<tr>
<td>V4-12AT7</td>
<td>2nd Receiver Mixer-VFO Amplifier</td>
</tr>
<tr>
<td>V5-7059</td>
<td>Noise Amplifier-Pulse Amplifier</td>
</tr>
<tr>
<td>V6-6GX6</td>
<td>1st 1650 kc Amplifier/Noise Blanker</td>
</tr>
<tr>
<td>V7-7059</td>
<td>2nd 1650 kc Amplifier-Sidetone Amplifier</td>
</tr>
<tr>
<td>V8-7059</td>
<td>AGC Amplifier-Meter Amplifier</td>
</tr>
<tr>
<td>V9-12AT7</td>
<td>Product Detector—1st AF Amplifier</td>
</tr>
<tr>
<td>V10-OA2</td>
<td>Voltage Regulator</td>
</tr>
<tr>
<td>V11-6AW8A</td>
<td>2nd Transmitter Mixer</td>
</tr>
<tr>
<td>V12-7056</td>
<td>Crystal Heterodyne Oscillator</td>
</tr>
<tr>
<td>V13-12BA6</td>
<td>VFO</td>
</tr>
<tr>
<td>V14-12AT7</td>
<td>Carrier Oscillator—3rd Mic. Amplifier</td>
</tr>
<tr>
<td>V15-6AQ5A</td>
<td>Audio Output</td>
</tr>
<tr>
<td>V16-61IF5</td>
<td>PA Valves</td>
</tr>
<tr>
<td>V17-61IF5</td>
<td></td>
</tr>
<tr>
<td>V18-12BY7A</td>
<td>Transmitter Driver</td>
</tr>
<tr>
<td>V19-12AT7</td>
<td>1st and 2nd Mic. Amplifiers</td>
</tr>
<tr>
<td>V20-12AT7</td>
<td>Vox Amplifier-Relay Amplifier</td>
</tr>
</tbody>
</table>

frequency, VFO, and so on, as necessary to complete the operation. The sharp CW position is obtained by means of S1. Closing the latter gives SSB reception, since the voltages around D2 are such that the latter conducts, and shorts out X1, the single crystal filter. Opening the switch lifts R4 from earth, so that the diode ceases to conduct, and X1 acts as a single crystal filter ahead of the main filter FL1, to give a sharp nose; the excellent skirt selectivity of course comes from FL1. The notch-filter comprises X2 and the varicap diode D5, this being capacity controlled by varying the voltage on it by potentiometer RV1, this “rubberising” X2 so that the series resonance is shifted as desired across the passband. To get it out of the way when transmitting, a contact of the Vox relay opens, and so lifts the voltage at the slider of RV1, the crystal then being taken right out of the passband.

As a matter of interest, all of the semiconductor diode tribe display the effect of variable capacitance to a greater or lesser extent, although the behaviour of any normal diode is a matter of “suck it and see.” Nonetheless, the use of a varicap to enable trimming of a VFO against a calibrator pip without shifting the dial about is possibly of interest,

Table of Values

<table>
<thead>
<tr>
<th>Component</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>0.02 µF</td>
</tr>
<tr>
<td>C2</td>
<td>470 µµF</td>
</tr>
<tr>
<td>C3</td>
<td>47 µµF</td>
</tr>
<tr>
<td>C4, C5, C6, C7</td>
<td></td>
</tr>
<tr>
<td>C8, C9, C10</td>
<td>0.1 µF</td>
</tr>
<tr>
<td>C11</td>
<td>29 µµF</td>
</tr>
<tr>
<td>C12</td>
<td>10 µµF</td>
</tr>
<tr>
<td>R1, R2</td>
<td>4,700 ohms</td>
</tr>
<tr>
<td>R3, R6, R7, R8</td>
<td>100,000 ohms</td>
</tr>
<tr>
<td>R4, R10</td>
<td>2,700 ohms</td>
</tr>
<tr>
<td>R5</td>
<td>10,000 ohms</td>
</tr>
<tr>
<td>R9</td>
<td>220 ohms</td>
</tr>
<tr>
<td>RV1</td>
<td>50,000 ohms, variable</td>
</tr>
<tr>
<td>FL1</td>
<td>6-pole Lattice Crystal Filter</td>
</tr>
<tr>
<td>X1</td>
<td>1651.2 kc crystal</td>
</tr>
<tr>
<td>X2</td>
<td>1651.7 kc crystal</td>
</tr>
<tr>
<td>D1</td>
<td>1N299</td>
</tr>
<tr>
<td>D2, D3</td>
<td></td>
</tr>
<tr>
<td>D4</td>
<td>1N456</td>
</tr>
<tr>
<td>D5</td>
<td>1N3182 Varicap Diode</td>
</tr>
<tr>
<td>RFC1</td>
<td>0.7 mH</td>
</tr>
<tr>
<td>RFC2</td>
<td>1 mH</td>
</tr>
<tr>
<td>S1</td>
<td>Function Switch</td>
</tr>
<tr>
<td>S2</td>
<td>Sharp/Normal</td>
</tr>
<tr>
<td>RL1</td>
<td>Contact of Vox Relay</td>
</tr>
</tbody>
</table>

Fig. 2. Crystal filters and rejection notch tuning, SR-400.
and the VFO part of the HA-20 is shown at Fig. 3. In the SR-400 it is essentially similar.

Performance on the Air

This is often said to be vastly different from the mere checking of the specification figures in the Lab, and it is probably true to say that it is difficult for most of us to translate specification into operational potential directly.

On the receiver side, the usefulness of the notch and sharp selectivity has already been noted; the latter was also found of assistance in winking out the weak SSB stations too. Most impressive indeed was the stability in the first few moments of operation after switch-on, when one is quite prepared for a rapid run up and down the band for several kilocycles before settling. This receiver just squats at whatever the dial happens to say, and the drift in the first five minutes is no more than a hundred cycles; with a valve receiver this is indeed impressive. The noise blanker is a godsend in a noisy location, although one should use it with care to avoid it blanking on the odd bits of splash that clutter our bands—it merely means using the control gently. AGC action is very good indeed on “receive” both CW and SSB, although this reviewer would admit to a preference for a slightly faster attack.

Having once used a receiver such as this, with dial calibration at every kilocycle, one is spoiled for anything less, particularly when it is allied to the order of stability this one possesses.

Similarly with the transmitter; the tune-up procedure is somewhat alien to most people reared on the old “dip and draw” method, but it is extremely effective and should (reasonably) prevent the PA valves from destruction. Speech quality is reasonable, bearing in mind that the better the filter the worse the speech quality, due to the dynamic and static characteristics being so different; but no matter how hard one drives them the PA valves do not seem to flat-top severely, thanks to the ALC, and so adjacent stations are not worried by your presence. On the output power question, the

Table of Values

<table>
<thead>
<tr>
<th>Component Code</th>
<th>Value</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>47 µF</td>
<td>N30</td>
</tr>
<tr>
<td>C2, C3</td>
<td>39 µF</td>
<td>N30</td>
</tr>
<tr>
<td>C4</td>
<td>0.8-18 µF, trim.</td>
<td></td>
</tr>
<tr>
<td>C5</td>
<td>Two-gang, tuning</td>
<td></td>
</tr>
<tr>
<td>C6</td>
<td>300 µF</td>
<td></td>
</tr>
<tr>
<td>C7</td>
<td>47 µF, NPO</td>
<td></td>
</tr>
<tr>
<td>C8</td>
<td>47 µF</td>
<td>NPO</td>
</tr>
<tr>
<td>C9</td>
<td>82 µF</td>
<td>NPO</td>
</tr>
<tr>
<td>C10, C11</td>
<td>0.001 µF</td>
<td>Variable-VFO trimming</td>
</tr>
<tr>
<td>C12</td>
<td>27 µF</td>
<td></td>
</tr>
<tr>
<td>FT1</td>
<td>Varicap</td>
<td></td>
</tr>
<tr>
<td>FT2</td>
<td>Diode</td>
<td></td>
</tr>
<tr>
<td>FT3</td>
<td>Varicap</td>
<td></td>
</tr>
<tr>
<td>FT4</td>
<td>0.001 µF, “feed-through”</td>
<td></td>
</tr>
<tr>
<td>R1</td>
<td>47,000 ohms</td>
<td></td>
</tr>
<tr>
<td>R2</td>
<td>10,000 ohms</td>
<td></td>
</tr>
<tr>
<td>R3</td>
<td>4,700 ohms</td>
<td></td>
</tr>
<tr>
<td>R4</td>
<td>470,000 ohms</td>
<td></td>
</tr>
<tr>
<td>R5</td>
<td>180,000 ohms</td>
<td></td>
</tr>
<tr>
<td>R6</td>
<td>2,700 ohms</td>
<td></td>
</tr>
<tr>
<td>VR1</td>
<td>25,000 ohms, variable-VFO trimming</td>
<td></td>
</tr>
<tr>
<td>V1</td>
<td>12BA6</td>
<td></td>
</tr>
<tr>
<td>D1</td>
<td>1N3182</td>
<td></td>
</tr>
<tr>
<td>D2</td>
<td>1N295</td>
<td></td>
</tr>
</tbody>
</table>
makers say 200 watts for 400w.p.e.p. input, and slightly less on 21 and 28 mc—but the loss on these two bands is very slight, at least on the specimen tested, and a very beefy signal can be put out on any of the bands.

**TVI Aspect**

This will interest many people. Here it should be realised that our Ch.1 is lower in frequency than any of the American TV channels, and so most of the American equipments will tend to produce TVI on this channel. The SR-400 is no exception to this rule, and there is no doubt that while the ALC is very good at removing splatter on our bands, the moment the PA runs into grid current, as indicated by the ALC metering, things start to happen to the picture. If a dummy load only is tried, the effect almost disappears, indicating that in a fringe-area location considerable care is required if problems with TVI are to be kept under control. Similarly, it was found that even at reduced input slight troubles arose with key-clicks on the TV Rx. What all this boils down to is that the transmitter is clean in itself, but in a fringe area (low TV signal) would need extreme care if TVI is not to be a problem. The results were obtained with a KW low-pass filter in the ATU feeder, and a KW high-pass filter in the TV set lead, which are normally enough to ensure no trouble with British commercial equipment provided the PA is not overdriven.

However, all these comments must be taken in conjunction with a fringe-area Channel 1 BBC TV signal, a poor TV aerial, and the transmitting aerial centred a few feet above the TV one. In areas of higher field strength and higher frequency channels with better aerial separation, the difficulty should not be too great.

There is no doubt about the fact that this rig seemed better able to make them come back, and to hold them once hooked, than many others, both on CW and SSB; and it is fair comment that one or two new ones were added to the score which the equipment normally in use would have probably missed.

Summing up, we may say that here is a rig that would grace any shack, that performs extremely well indeed both as receiver and transmitter, and which must come pretty close to the ideal of most “advanced amateurs,” who have the urge to work both CW and phone, in the minimum space, and without the addition of an outboard linear amplifier.
THE MOBILE SCENE

SEVERAL SUCCESSFUL EVENTS REPORTED — INCREASED ATTENDANCES IN GENERALLY GOOD WEATHER — PICTURES AND COMMENT

HAVING now passed through the Mobile Rally Season, it is evident that for most of them a pattern generally acceptable to visitors has been evolved—efficient talk-in operating and control, the minimum of regimentation on arrival, not too many competitions on the ground, some side-shows for the youngsters, a really attractive raffle, adequate refreshment facilities on site, consideration for the distaff side and—in particular—plenty of time (and space) for strolling round to see and be seen. Quite a commitment for any Rally organising committee, but certainly achieved by many of them.

For in reality the U.K. Mobile Rally, in the radio amateur context, has now become what is essentially a social occasion—which is as it should be.

One of the biggest and best-organised events in the Rally Calendar took place on August 18—the annual gathering of /M’s arranged by the Derby & District Amateur Radio Society, and the eleventh in their series. Once again, they had glorious Wx, attracting an attendance of about four thousand, with more than 850 vehicles in the parking spaces by mid-afternoon. The local Mobile Police co-operated with a live road-safety demonstration—it is a good thing to have the Police in as guests on these Rally occasions, as they are always pleased to have the opportunity of making unofficial contact with the public—and, as usual, the junk sale and prize draw attracted enormous support. Of the 300 or so licensed amateurs actually signing in, there were DX representatives from ZL, VE, 7Q, 5A, MP4 and OK. The trade stands are reported to have done good business, the visitors departed happy, and the organisers—with G3FGY in charge of events as chairman and master of ceremonies—felt that once again “Derby” had been a success.

Also on Sunday, August 18, the Torbay group staged their fourth Mobile Rally, at Dartmouth, Devon. In the same perfect weather—dry, warm and sunny—they logged an attendance of about 200 people, in 85 conveyances of various kinds, a third...
The Top Band talk-in station, which had many contacts, for the Preston Mobile on September 1, with G2AXH operating.

Outside the main marquee for the Swindon Rally. All the stands and inside events were under this spacious cover. The attendance was estimated at about 500 people.

The pleasant surroundings for the Swindon Mobile Rally at Lydiard Park, on August 25, are well suggested by this view. Of the 185 cars checked in, about 70 were fitted /M.
of them being fitted /M. Talk-in was given on 160m., 80m. and two metres, and winners of the longest-distance contacts with control on these bands were, respectively, G3PU/M (Weymouth); G3GMN/M (Gloucester); and G3PWJ/M from Warwickshire, on two metres. The best mobile installations were adjudged to be those shown by G8ADP/M (Teignmouth) and G3PWW/M (Godalming).

The Swindon & District Amateur Radio Club put on their Mobile Rally, for the third occasion, at Lydiard Park, on August 25—again, in blessed weather, attracting some 500 people in 185 cars, about 70 of which were equipped for mobile; as usual, the great majority were on Top Band. Prize winners for the DX contacts with control were: G2AMX/M (160m.); G3FHL/M (4 metres); and G3TOQ/M (two metres). The best home-built installation was judged to be that shown by G2BSR/M, and the prize for the best commercial rig went to G300D/M. In addition to the main raffle, with a prize for practically everyone (!), they ran a special draw strictly for the feminine interest, the gifts being guaranteed to have no appeal whatever to the OM side. (Well, there's another idea for next year's Rally organisers!) Refreshments were arranged by a local catering concern, to relieve the always-willing wives and girl friends of this particular chore.

Bromsgrove & District Amateur Radio Club had a bad day, weather-wise, for their event at Piper's Hill Common. Nevertheless, 31 mobiles clocked in and between the showers people got around. The draw produced a prize for everybody. Locals G2CLN (the Club chairman), G3NOY and G3WUG coped with the talk-in and other arrangements.

The very first Mobile Rally to be held in the North-West—laid on by the Preston Amateur Radio Society, on September 1 at the famous North End's ground—proved to be a popular rendezvous. They attracted an attendance of about 500, with the Football Club's car park as the rallying point—so there was plenty of space. The indoor accommodation was close adjacent, with much to interest visitors. As has been the experience with all Rallies this season, it was the 160-metre talk-in station that
General view of the array of cars arriving for the Derby Mobile Rally, during the afternoon of August 18. A large proportion were fitted for mobile.

The talk-in station for the Derby Mobile Rally, signing G2DJ/A for 2m./4m., was manned by G8BAV (at the controls) assisted by G8BGX—but as usual most of the /M traffic was on Top Band.

(Above) A delicate proceeding, watched by eagle eyes—conducting the prize draw at the Swindon Mobile Rally. Individuals are not identified but obviously they are aware that they are under close scrutiny!

At left, the party, left to right, are G4JW, ZL2BDA/G3PHO, MP4TBO (and xyl), G2CVV, hon. secretary of the Derby group organising the Rally.
handled the bulk of the J/M traffic, being kept busy till late in the afternoon. Basil O'Brien, G2AMV, well known in the North-West, was in the chair for the opening and subsequent proceedings. The Preston group, being well satisfied by the response to the first Rally event they have tried, intend to make it a regular feature of the Mobile Calendar—well done, boys!

On September 2—"August Bank Holiday"—the riverside of the Nene at Peterborough was adorned by those who turned up for the Mobile Rally arranged by the local Club, of which G3KPO is one of the prime movers. On this occasion, they had a bigger turnout than ever before. The theme was "Fifty Years of Wireless—1918-1968." Early valve sets with horn speakers could be heard actually working, also crystal receivers with headphones—"you scratch for the sensitive spot on the crystal and then, there it is, loud and clear!" They even had a slide-tuner and coherer detector of the pre-Kaiser's War days on view—and that goes back more than 50 years. We congratulate the Peterborough group on their enterprise.

And that's it for this time, and almost for this year, for unless something of exceptional interest comes in on the last of the Rallies, there will be no more "Mobile Scene" reporting till the season starts again in 1969.

We give a lot of space, considerable effort and some expense to the presentation of this feature which, over the years, has made its own contribution to the development of the mobile interest in the U.K. Only now remains for us to say that for the 1969 Rally Season, following dates are already booked: April 20, Midlands Rally at Drayton Park; August 17, Derby Mobile Rally. So, in your own plans for next year, don't tread on these toes, because to ensure success for your event, you need a clear date or, at the least, the widest possible separation geographically.

SCOUT JAMBOREE ON-THE-AIR — OCTOBER 19-20

The time is fast approaching when local plans should be completed for participation in this event—see p.424, September issue. We have since been informed that for this year the international control station will be 4U1ITU, Geneva, working all bands over the period 0001z October 19 till 2359z October 20. The frequency schedule for 4U1ITU will be as follows:

**CW**: 3515, 7015, 14070, 21070 and 28070 kc.

For **SSB Phone** working, the frequencies will be: 3730, 7070, 14185/14290, 21290 and 28700 kc.

Bands to be used by 4U1ITU will depend on conditions, and frequencies given should be taken as "on or near." In addition, the following Special Scout Stations will be on the air: AP2NMK, DU1BSP, GB3BPH (London), GB3BSI (Brownsea Island, where it all started), K2BFW (HQ. station of the Boy Scouts of America), XE1ASM and ZS6JAM. Many of the stations taking part will be offering a special QSL card to commemorate contacts made. Immediately following the event—which is strictly a QSO Party and not a contest—we would be very glad to have reports (with, where possible, photographs) of U.K. stations participating in the Jamboree. The sort of information we want is brief notes on results achieved, DX or otherwise, mentioning in particular the local Scout group concerned. It is the intention to incorporate these reports into a feature article to appear in our December issue. The U.K. Organiser for the Scout Jamboree-on-The-Air is L. R. Mitchell, G3BHK, QTHR.
COMMUNICATION and DX NEWS

E. P. Essery, G3KFE

Possibly the major event of the month under review is the occupation of Czechoslovakia by the Russian troops, and the brave behaviour of the OK stations under the conditions they had to face. Leaving out of account operators signing with such calls as “OK1-PRAGUE,” OK550S, and suchlike, it is evident that the Freedom stations which so suddenly appeared most probably were set up and operated by amateurs, to a large degree—who else would have the expertise to get such stations on the air in so short a time?—and that therefore these chaps, who almost certainly were previously regarded as “politically reliable” have sacrificed their calls, at the very least, and possibly much else as well.

They deserve a salute.

On a lower note, we have it that the W9WNV/ARRL half-million dollar lawsuit has been withdrawn—just as we expected, and as implied on p.289 of our July issue. What has not so far been said by anyone, anywhere, is that these extraordinary and extremely expensive DX-peditions, undertaken by Don Miller, W9WNV, over the last few years, could really only have been financially possible if they had been sponsored by some official U.S. body—let us imagine, the C.I.A. (Central Intelligence Agency, an organ of the U.S. Govt.). Whether this is the truth, or even if it will ever come out as such, time alone will tell. But the fact remains that Dr. Don Miller, W9WNV—who is a qualified physician, by the way—is a determined and highly efficient DX operator, of an unusual kind. As such, he has given great pleasure to numbers of DX-conscious operators throughout the world. . . . Let any dogs, now sleeping, lie . . . (Our guess is that the ARRL has been taught a sharp lesson.—Editor.)

Around The Bands

The expected upsurge in conditions duly seems to have come to pass, with even Ten suffering more from lack of activity than lack of openings, and Top Band static levels declining from the ear-splitting summer level in the general direction of the tolerable and even on occasion quite quiet. On other occasions, one has to admit, a quick spin over the spectrum would lead one to the view that a well-filled bookshelf was preferable to operating!

Forty

Here let G3NMI open the account; Hal has been investigating the way in which the rest of the world lives by trying 40 metres. A very successful working, we might add, with 8P6BH, VP2KF, FY7YK and 9Y4KR as the prizes, but W8MMC, W4DLN, ZS1JA, VK2AVA, CN8AW, TA2BK, PY’S, LU2DGO, LX1SL, VP8JB, VP8JG, VP8H2Z, V8RJ, VP8IJ, TF3EA, 9M2PO, 9M2DO, 3V8AB and OX3DX raised as well. All these in the period between 2200 and midnight, which lends weight to the view that this band is nothing like as useless as it is often painted.

The note from G3PQF (Farnborough) mentions no actual contacts, but indicates a continued interest in 7 mc, and cards in from G3SVK from Alderney and Sark.

Surprise, surprise! G8HX (Mansfield) has spent some time on Top Band, for the first time in fifteen years, thanks to the acquisition of a K.W. Vanguard. Frank has

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**SIX-BAND DX TABLE**

**(All-Time Post War)**

<table>
<thead>
<tr>
<th>Station</th>
<th>Countries</th>
<th>28 mc</th>
<th>21 mc</th>
<th>14 mc</th>
<th>7 mc</th>
<th>3.5 mc</th>
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<td>188</td>
<td>231</td>
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<td>307</td>
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<td>—</td>
<td>43</td>
<td>28</td>
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<td>11</td>
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</tbody>
</table>

Note: Placings this month are based on the “28 mc” Column.
been on both Forty and Twenty, with the Top Band aerial hooked to the Vanguard, and seems to have enjoyed it.

SSB contacts on Forty for G2HKU (Sheppey) have been all rather hard going, thanks to the variety of horrible noises that infest the band; but PY4ND, CT2AP, EI9Q, 3V8AB, OX3DX, CN8AW, and 3A2MJC all succumbed. Ted reckons that one of the best ways to help clear the band is to tune up on a BC station—albeit one can hardly curse Radio Peking, when the BBC is also pumping out RF quite fractionally about 10 kc HF of our part of the band but within the allocation for the rest of the world.

Someone else also suggested that it would not be a bad idea to write to these intruders suggesting that one likes to listen to their signals but it is not possible due to the interference from amateur stations—if enough people did this perhaps they would go away!

G3TLX (Edgware) put up a Lazy-H for Twenty, and found that it loaded up and went like a bomb on all HF bands, with a couple of S-points improvement in reports, and as a bonus worked quite well on Forty; indeed the first QSO on this band with it was 6W8XX. Others contacted were 3V8AAX, K4PHY/YV5, CX3BH, HK3EV, 5N2AAX, W2E, CM2DC, G6ZY/CN8/M, ZD9E, MP4BGU, PY's and VK's, all on CW.

The CW mode was also favoured, as always, by G2DC (Ringwood), who worked PY1SJ, VK2BRK, VK2BFB, VK2YN, VK3KS, VK3XB, all W call areas, VE1-4, ZL1AH and ZL3JC. Jack takes issue with the columns last time about the use of Phone at the CW end of the band; his niggle is not the odd chap who is just inside the CW allocation, but rather with the Sunday-morning tribe who go right past the phone limit and well down to the LF end. While one can forgive a chap who accidentally slips the odd kilocycle over the border, to use phone, and in particular AM phone right, at the CW end of any band, whatever the conditions, is liddery of the first order.

**Top Band**

Why have so many amateurs given up operation on the HF bands in favour of Top Band or VHF? Indeed, who are so many completely inactive? The writer has a strong feeling that the main cause is TVI—nor because it is impossible to cure it, or at least make a transmitter that will pass the GPO, but rather that having done so, the problem of TVI generated by the TV set itself rears its head; and rather than risk neighbour problems, and all the ill-will that can be brought down on the head of the XYL, most operators prefer to keep to Top Band or VHF during the goggle-hours with the occasional foray on other bands out of TV time.

While the old problem of TV receivers with IF's in an amateur band is now almost dead, there is still the practice of using low-pass sections at the front-end of TV sets which allow the transmitter fundamental to cross-modulate or drive the TV Rx into grid current, and also the universal use of AC/DC techniques with the consequent lack of effective grounding of the TV feeders at lower frequency.

Turning to the hard news, there is so much of it this time that a certain amount of compression becomes necessary.

First, the W1BB news, and details of the 160-metre Transatlantic Tests for the coming winter: The dates are December 1, 15, 29; January 2, and February 2 and 16. The usual "First-Timer's" tests are slated for December 15 and February 2 for the European stations. Timing 0500 to 0730z, and frequencies as follows: East Coast W's, 1800 to 1820 kc; West Coast W's, 1975 to 2000 kc; Europeans use 1825-1830 kc and 1851-1861 kc only. Call "CQ DX Test" on alternate five-minute periods, W's leading off with the first period (clocks accurately set, please). Keep strictly to the periods, unless actually in contact. Those who have already got over should stay off during the First-Timer sessions, to give the newcomers a chance. However, if something rare and interesting comes up which is really wanted during one of these sessions, then the proper ploy is to work him, make it as snappy as possible, and get off the frequency. Siew also mentions that W4BFD is once again thinking in terms of DX-peditioning and will be carrying Top Band gear when he does: DL9KRA also has plans to reactivate some of the rare ones he has previously visited and possibly to add more to the list. W0VXO is also mentioned by W1BB as intending to base himself in the Caribbean and activate some of the surrounding parts—and G3NOF (Yorkville) adds a bit of later news that Herb is in fact already signing W0VXO/KV4 most days on 1820 kc at 0200. He can be contacted through Box 310, Christiansted, St. Croix, U.S. Virgin Is., for sked-making purposes.

A very nice first letter from GM5AHS (Brecbin) who has been told that Kincaidshire, where his base is located, is a rare one, and proposes to do something about filling the gap. For the moment, Steve is CC, with crystals at 1804, 1851 and 1902 kc; however, as he somewhat ruefully remarks, Stonehaven Radio is only fifteen miles away rather than the 1851 kc rock! As to the cards, Steve would prefer direct, as the bureaux seem to be a little slower on the G cards than the overseas ones—and he is himself chasing counties. The
address for cards is P.O. Box 574, RAF Edzell, Nr. Brechin, Angus.

The trick of getting the mobile whip to load on Top Band has been performed by G3AAQ/M, by way of an extra base loading coil to resonate the HF band whip; in terms of results, he worked G3VNW in Leeds from Rugby on it in daylight, and also managed GC3TN/P in Guernsey in daylight. A couple of days in Scotland gave QSO’s with Cheltenham and Nottingham from Ayrshire, and a couple of Kent QSO’s from Kirkcudbright. As Jake says, at least this proves the gear works!

Phil, G3XAP (Stowmarket) has a real prize of an aerial for Top Band on the stocks, which should put him into the running for VK/ZL contacts, leave alone mere GDX working. This monster of a radiator is planned to go up around the November period, so keep an ear open for G3XAP at 59. As one of the diminishing breed of newcomers who have served a good apprenticeship at the SWL game, as a study of back numbers of “SWL” would reveal, G3XAP will be equipped not only with a big signal but the operating skill to go with it. The results should be interesting.

A highly delighted G3UAN (Kenton) writes in to mention his operating gains, also that he has brought home the bacon in his exams, and will be coming on from Sussex University, where he goes in the autumn to start a degree course in Electronics. He also aims to take his diploma on the piano at Christmas — which should be good for the keying reflexes! During the holidays, Robert spent most of his time on the HF bands, but did manage GW3YF/P and GC3LDH/P.

All hot under the collar is G3SIL (Stammore) who reacted quite strongly to the August Editorial, and that piece on page 410 of the September issue about the EU Band Plan. G3SIL reckons that as far as he is concerned, the phone end goes right down to 1850 kc, and the suggestion that the dividing line is at 1900 kc is just an example of our “outrageous anti-Phone bias!”

Really, there is not much argument that the proposition always was for the band to be evenly divided, and over the years it is the phone people who have gradually encroached until the recognised SSB spot is as low as 1875 kc. But this has happened mainly because of the tolerance of the CW men—and no-one who is on 160m. at all regularly would describe G3KFE as other than a Phone operator, at least as far as Top Band is concerned, and G6FO himself probably uses as much Phone as CW on the band.

A keen type is G3VWC (Bishops Stortford) who has been out of our piece for some while due to studies and things. However, Andrew has contrived to find a holiday job which enables him to get in some operating at work as well as coming on from home with a new rig which has full CW break-in. This one gave him contacts with G3LOV, G3LJDH/P, G3SVK/A in Rutland, GM3BGW for Fife, GM5PM (Clackmannan) and G3WJS for Dorset, just before the latter moved to Halstead.

And talking about G3WJS, his is the next letter in the pile. John is cross with your conductor, because G3KFE, in a net with G3PBC and G3UOE, reported the G3WJS signal as being uncopiable—at all of twenty miles!—before being called away to the telephone; but that’s not all, because when we got back into the net, in hopes of being able to wink G3WJS out, lo! there he was, gone. However, the G3WJS aerial system seems to be doing odd things like this in the fashion typical of a good DX aerial, for it gave contacts with GM3VLU/P, GM3VNO/P (both Sutherland), GM5PM/P in Clacks., GM3VAR for Berwick; GM3EJ/P, Kinross; GM3TSL/P in Kirkcudbright and Peebles; GW3XGP/A, Merioneth; and GW3UID/P in Brecon and Montgomeryshire, all on AM.

G3WSS (Holywood, Co. Down) found things highly interesting, thanks to all the DX-peditions, which raised the score quite a bit. However, Cyril was a little niggled at falling to connect with at least two of them because a high static level which made them almost uncopiable—that is annoying, to hear others calling them but not to be able to copy. G3WSS still needs contacts with the following English counties: Dorset, Hereford, Oxford, Westmorland, and Cumberland—volunteers step forward, please!

One up for G2NJ—or rather 98, with the last one to be booked in as GC3SVK on Jersey, with the Sark contact also aiding. So Nick has now made the 160-metre Top Spot on Phone, as well as on CW—a feat on which he is to be congratulated. Quite a record!

G3WPO (Burgess Hill, Sussex) mentions only one QSO, with K1BPX, at 0412z; Tony worked him in spite of a fairly high static level, and is waiting the card to prove the contact good.

It is surprising how different people’s views can be of the same band, over the period. G8HX claims it has been the worst he has ever known for activity, with no AT signals audible night after night, and yet a QSO on September 2
being QRM'ed by no less than three other stations. On the other hand, young Robert, G3WUD (Bramhall, Cheshire) who was not even born when G8HX deserted the HF bands, reflects what is probably nearer the majority view when he says he thinks it must have been the best summer ever from the GDX expedition point of view, with G3SVK especially to be thanked for the number of rare spots he has activated with such a good signal.

G3WUD, like G3XGD (Sheffield) and G3XAP is also an ex-SWL correspondent who made his mark in the HPX Table, in our "SWL" feature. G3XGD seems set fair to knock a dent in the Top Band Tables, and uses mainly CW even though he has now got the modulator into a fully functional state. Incidentally, Glyn lashed out on an electronic bug at the Derby Rally, and nearly went dotty trying to learn the knack of driving it, before he used it in earnest on the bands, to get up to 53/23. However, G3XGD will shortly have his activity limited by his move to the University of Kent, and the need for a certain amount of nose-to-grindstone stuff.

G2HKU (Sheppey) makes a valid point when he comments that some of the GM expeditions got rather too close to the beacons for the comfort of the Southern stations; they were probably inaudible up there but certainly were a nuisance to Ted. Nevertheless, he worked GM5PM/P Clackmannan; GM3LHY, GM3VIO/P, Sutherland; GC3TN/P Jersey; PA0PN; GW3UID/P in Brecon, Radnor and Montgomery; GM3XEJ/P Kinross; GM3TLS/P Peebles; and G3SVK in the Scillies, all on SSB, with CW giving contacts with G3ALT, GC3LDH/Jersey, GM3VGU/P (Peebles and Nairn), GW3VPL, GM3OXX, and GM3LHV.

Over at Farnborough, G3PQF missed out on a contact with your scribe, who went QRT and so did not hear his call—thus making at least three times on both sides when we have failed to connect. Table total shows a rise for Dave of 13, from 60 to 75 on SSB, with an aerial which to read the description is the weidrile to end 'em all—but, what is which matters, the darn thing works!

G2DC reckons there should soon be a strong signal on Top Band, as he overheard a rather brash young G3-plus-three enquiring at the junk stalls for an 813 base to partner the bottle he already had, as an anti-fish-tone specific! Perhaps one should explain to the ladie that the object of a VFO is to get away from the things rather than to batter a way through—but those types never learn!

As for G3VLX (Sidcup) Deryck worked five new ones, in GM3VAR (Renfrewshire), GM3BOC/A on Islay for Argyll, GW3UID/P for Brecon, GM3XEJ/P for Angus, and GM3TLS/P Peebles. However, he only goes up by four. Reason? Accidentally counted Fife in a few months ago!

5Z4LE helps the countries score of G3VMW (Wakefield), who now has an inverted Vee with the apex up at 75 feet in the air, to put him quite definitely into the big league. The pole is also used to hold up the vertical part of a full-sized ground-plane system on Eighty, as well.

Anyone wanting Kinross should look out for GM8HP and GM3NVU, who are going there on Saturday night October 12/13 and will have one station on SSB and one for CW. It had been hoped to write in a little earlier, but the permission to use the selected site was not obtained until just before the deadline for this issue.

GM3UVL (Glasgow) is as chatty as ever in his letter, which puts up his score to 98/96; of the two missing ones, one is Sark, which he will probably have received by the time this is out, and t'other is (still) Leicester. Bill has a rather neat way of monitoring his cathode-keyed PA, by using three silicon diodes in series with the key; the voltage drop across these is used to power a one-transistor audio oscillator mounted right on to the key.

Events on Eighty

There are in fact very few reports of serious business on the band—as usual—but there are undoubtedly a few stations who give it attention and gain the benefit of their activities.

G3TLX managed some new countries during the WAE exercise, by way of EP2, ET3, and ZD8, as well as working stations in W, PY and 4X4. Heard was a ZC4MO with a positively enormous signal on 3505 kc, who said he was running 1 kW to a Quad (!)—but Ron is firmly convinced this one is not the real goods.

Over at G2DC the description of the band was rather to the point—"Punk!"—but it still yielded contacts with W1 to 4, VO1, U66AM, and 4Z4AG.

Looking at the HF Bands

Starting at the highest frequency, there seems to be some feeling that although Ten was apparently dead, a CQ call would often deliver the goods. G2DC several times found DX stations banging out repeated calls and finding no takers. Worked were CR6GO, CR7IZ, CX4JK, LU1DEN, Z51 to 6, ZE and 6W8XX.

G5QA (Exeter) writes in to remind us all he is still around and still as capable as ever of working the stuff; Herb comments on this "dead band through lack of activity" phenomenon, and mentions as an example calling CQ at 1800z on the evening of September 3, on an apparently deserted band, and between then and 2000 hooking ZD8, VP8, LU, and XW in return to his calls; responses have in fact been obtained from the band as late as midnight.

Another one who has been keeping an eye on 10 metres is G3PQF, who wrote in on August 31, when the band was open to W, ZS and the first-hop EU stuff—all quite mouthwatering for Dave, but sadly TV was on so G3PQF off. However, plans are afoot to take a day off when the band is showing signs of life, and do something about it.
G3XAP has AM and CW at his command, and used both on 28 mc, with CX1GY and EA8DM on phone and UF6DM plus CR6GO on the key; but Phil seems to have been unlucky in the times he has been able to get on, as he castigates all the HF bands as “lousy over the whole month.”

Ten as far as G3NOF was concerned definitely showed signs, and was improving rapidly during the whole period, albeit conditions were far from stable. SSB contacts were made with KV4AD, OA4ED, VP8JC, W5VAA, W5YV, W1, W2, W4, ZD8s, 4A1WS and 5Z4AA, although ZD7DI and ZD9BE got away.

G3XGT writes in from St. Annes-on-Sea to let us know how he has progressed from the first few halting steps he described some months ago. A Mosley RV4 vertical with the correct collection of radials was duly erected and driven by a Sommerkamp outfit complete with the linear. However, there are other hazards to the operation, with a deep-freeze as a back rest and the left elbow resting on the washing-machine; the whole box-of-tricks has to be covered when not actually in use. As Jeff remarks, when he has finished the shack-building exercise, the sheer luxury of being able to sit in it is bound to stimulate him into raising some rare DX! Up to now, Ten has not particularly good, and the first DX contact of note was only a day of so before he wrote in, when 9J2BC came back with 58, and VE3BPX/W4, who was G2AZL some twenty years ago and would like contacts with the West Yorkshire area.

Fifteen Metres

Here we can kick off with G3NOF, who found the early-morning long path to Asia and Australia pretty useless apart from a few JA's around 0730, but the short path has opened up quite frequently at various times from 0730 to 1900, with VK and JA workable almost every day between 1200 and 1300z. There have been some good openings to North and South America until the small hours. It all added up to SSB contacts with JA's, KA2LS, KA2PX, KA2VT, KG6AFP, KR8EA, MP4TFC, VK1 and 2, W's including W4RTG/7 (Idaho) and W7MWR (Utah), ZS's, 9M2BO and 9M2NF. Escapers were KX6JG and 9N1MM. G3XGT used mainly SSB, and in this manner connected with MP4BEU, 9H1M, ZD8s, 9M2AH, K7Q/AAM (when the latter was 23000ft. above Albany), VP8KD, and K9NEB. As far as the CW side of things were concerned we look at G3XAP, who managed to work all W call areas other than W7, MP4BGX, VE's, VP7NO, JA1XUY, ET3USA, 9H1BA and 4X4SK, with 50 watts to a dipole.

An interesting point from G2DC who understands that during the recent CR9 DX-pedition operation, the two stations worked no less than 2000 JA's! Jack himself hooked such interesting stuff as CR7IZ, CX3BH, EP2BO, EL2Y, HL9KQ, JA's, KX6ER, PZ1AH, PY1-8, TAOA, UD6AM, VQ8CC, VE's, VE9MD (VO1AW off FP8, where the VO gang are setting up a station), VP8JX, VU20LK, VK's, WX8BP, assorted W's, YV1OB, ZD5V, 6W8XX and 9Y4LA.

“A very good month” was the opinion of G3NMH in the 21 mc context, and he backs it up with some pretty solid statistics, in the way of HM4EW, HM1DX, loads of JA's, HV3SJ, VP2AW, MP4BGX, MP4MBB, VP8JP, MP4TCF, VK9WD, LX1CO, VP8KD, XW8BJ and XE3DA. Hal's trip to Iceland, where he was able to get on at TF3EA, gave him a lot of pleasure, as well as being satisfying for the U.K. stations he was able to work.

CW/DX is a forte with G3TLX, even though he doesn’t profess to be an LF-band artist some times; the 15-metre log shows, for the period we are looking at, 9G11HM, TA's, 5A1QW, VQ8CC, VP8JH, ZS6UT/MM, G6ZY/CN8/M, HL9VS, TI2PZ, ZB2BO, EP2BO, KV4CI, CR6's and 7's, 9J2DS, OA4ED, ET3USA, CJ8M1, 5GNX/MM near CR6, SM5WY/OY, UA0's and assorted W/VE and JA stations.

G3AAQ/M has been rather in the wars, starting with the flooding at Rugby, when he came back to his car in the morning to find 15 inches of water in it; then a change of car which meant refitting every item of gear and going through that awful business of suppression—and now he is in the process of moving home from Kidderminster to Rugby. However, contacts were made with W's, ET3USA, JA0BUA, VQ8CC, EL2Y, ZE3JJ, CR7IZ, 9J2BE, EL2NX, 9M2US (worked from G, GM, and GW on three contacts), and VP8JH.
Using the home station and Joystick VE5GG, Z44DW, FG7XC were also worked.

Fifteen, as far as G3UAN is concerned, is strictly out of bounds when the Idiot's Lantern is glowing, but after TV-time Robert worked all W call areas, JA's and FG7. G3VWC, as already remarked, has been working in a job where there is a rig on which he can play at all sorts of odd times, and by this means a JA contact was snatched at an hour when normally most of us are just thinking of going home to lunch—or something!

Only a couple of contacts are considered worthy of a mention by G2HKU, in the shape of TA1SK/2, and UA9WL. TA1 appears to be the European Turkey prefix, and contacts were much in demand during the WAE affair. (TA1 counts for WAE certificate purposes.)

G3DO reckons he did not do much of interest, as he spent time chasing W Counties, but on SSB Doug raised 5W1AS for a new one on 15m., and K7DXP/KH6 as a matter of interest.

An SB-101 and a ground-plane is the formula used at G3VMK; and it produced CR6, CX2X, lots of JA's, KX6GD, various rarer varieties of UA9 and O, VQ8CC, all W call areas and 9U5DL.

Contests

The VK/ZL/Oceania DX Contest comes off over the weekends October 5/6, 1000 to 1000 GMT for the Phone leg, and October 12/13 for the CW section at the same times. The exchange is RS(T) plus a three-digit number starting anywhere between 001 and 100 for the first QSO and then continuing serially; scoring two points per VK/ZL contact and one for other Oceania contacts. Logs are to show date, time in GMT, call of station worked, band, serial number sent and received, and points claimed. Underline each new VK/ZL call area worked. A separate log is required for each band, and a summary sheet carrying call-sign, name and address, QSO points for each band, and VK/ZL call areas worked on each band. The all-band score will be the total QSO points times the sum of the VK/ZL call areas worked on all bands. A single-band entry will be total QSO points times number of VK/ZL call areas on that band. Entries to NZART, Box 489, Wellington, New Zealand. There is an SWL section to this contest which will be combined Phone and CW, so that a station may be claimed once on CW and once on Phone on each band. Logs scoring summary sheet, and so on in a form similar to the transmitters, and address for logs similarly. All entries are to arrive before January 21, 1969.

The CQ World-Wide DX Contest, Phone end, will be over the 48 hours October 26-27, and the CW event on November 23-24. All bands, Top to Ten, and the usual single-operator single and multi-band categories, plus multi-operator all-band single and multi-transmitter. Swap RS(T) plus Zone Number, e.g., 58914 for U.K. stations. QSO points: Three for a station in a different continent, one for a station in a different country in one's own continent. Contacts with own country permitted for multiplier but score no QSO points. Multiplier is the sum of the Zones and countries worked. Full rules and a sample of the summary sheet required appear in CQ Magazine for September 1968. Logs to be post-marked not later than December 1 for the first leg and January 14 for the second, addressed to CQ Contest Committee, 14 Vanderventer Avenue, Port Washington, L.I., NY, 11050, U.S.A.

Old Faithful—Twenty Metres

This one has really improved, and is overflowing with signals of all sorts, funny noises, DX, QRM, commercial RTTY and intruders. As far as G3KFE was concerned at least once the band seemed to perk up on no end when the dummy replaced the aerial load! It seems that a red lamp will have to be arranged to light up whenever the dummy is connected—it happens far too often.

G2DC worked H18RY, HP1BR, HK4ALE, OA4ED, VP2AZ, VP9BY, VK1SG (who said he is often on in the mornings from 0700 to 0900 our time looking for G stations and rarely finding them), 7Q7AM, 8P6AE and 9Y4LA.

That Vanguard at G8HIX has been, as already remarked, hooked to the Top Band wire for use on the HF Bands. Frank's first outing on Twenty for years gave him the pleasure of contacts on CW with W, VE, JA, VK, ZL and so on, for proof that the maestro has not lost the touch.

All in all, a pretty busy month for G3WJS at Halstead, doing such things as digging earths, hanging up the aerials and so on, but the main problem was the mending of the big transmitter, which had to be deferred to last in the programme, so that only four days were available for it to be used; these yielded W's, PY, YV40Y, OY6FRA, DL7NP/0H0 and DL7NS/0H0.

That daily sked which G5QA runs with ZL2OU on Twenty has lasted now for thirty-two years and well over 7000 contacts— which makes the start well before a lot of our DX hounds were even born, let alone licensed! And we might add that G5QA, apart from being a very distinguished OT who has always put back into the hobby far more then ever he could take out, is also an extremely able operator and knows all that is involved in the processes of DX working, on phone and CW.

Possibly the most noticeable thing about the conditions as far as G3NOF was concerned, in the 20m.
context, was the noticeable lack of the Pacific stations in the early mornings. Don wondered for a time whether it was a case of coming on too late, but the presence of VR6TC at 9 at 0700z rather points to lack of activity as the cause. Contacts made included DU1HR, FP0DM, FP9MD, HM1BK, KH6BVS, KH6BK, KL7BIL, KL7EBK, KS6G, KV4CF, MP4BGU, OA4AAK, SV0WN, VK's, VP8FL, VP8KD, WB4IRT/AM near Cret, W0VXO/KV4, ZE1AB, ZL's, ZS's, 3V8AA, 4X4's, 8P6CC, 9G1BF, 9G1GD, 9K2CC, 9M2PO, 9M2TC, 9V1NV and 9X5AA. Don missed out on KC4USV, VK9XI, VR6TC and V56DR.

Among the souvenirs of his first few weeks of operation, G3XGT mentions F9UC/FC, PX1JII, M1B, and some 4X4's. That 50 watts and dipole which G3XAP runs is not so often heard on Twenty, which band Phil dislikes because it is such a ratrace—fair enough comment, of course, but it is the band on which the greater part of our DX communication is, was, and will be for the foreseeable future, carried, so we are to some extent at least, stuck with the situation. Thus, as Phil spent little time on the band he came out with little, apart from all W call areas less 5, 6, and 7, plus some PY's.

Another sked with ZL is the one between G2HKU and ZL2KP, which has now been resumed but is definitely hard going. Other SSB contacts were ZL3SE, ZLXBP, ZL3QO, VK3AII, VK3XN, and VP5CB, for whom the cards should go to the home call K3WU.

A little CW operation by G3XVC resulted in contacts with 3V8AA, F2WS/FC, ZB2AG, and TA25C. The same mode was used by G3WCI (Watford) to raise FG7XG, HLKQ, HM1AP, JA's, KH6, K7, KP4, KS6CX, KV4CI, LU, PY, TA, UD6, UF6, UG6, UH6CS, UI8KA, UA0, UM8, UL7, VE, many VK's, all W call areas, YV, many ZL's, 3V8AA, 9A1, 9J2 and 9V19S.

Let the CW chaps round off the story, in the person of G3TLX, who offers VP8JX, and VP8JH, EA9EQ, JW2AP, 3V8AA, PJ2VD, KV4CT, YV5CRR, JA's, VK's, and ZL's. If you hear, or work, G3BID /LX/M any time during October 13-20, it will be our old friend G3BID on his travels again. He expects also to be signing PA9BID and ON8ID at other times up to October 25.

And that is about it, save possibly to remark on a recent visitor at G3IDG (Basingstoke) who is active on the air with a G3 W- call. On being shown the shack he enquired what sort of a receiver this was as he had not seen one before. An amateur who has never seen an HRO must be nigh on unique! See you all next time, with news and views and what-have-you, the deadline being October 7, addressed to CDXN, SHORT WAVE MAGAZINE, BUCKINGHAM. Till then, 73, and thanks for all the mail for this issue.

Editorial Note: Closing dates for CDXN in the next few issues will be November 11, December 7 and January 13, 1969. It is essential to meet these dates to ensure coverage in the feature.

SOME ZL FACTS AND FIGURES

As usual, the June issue of Break-In, published by the New Zealand Association of Radio Transmitters, is their Call Book number, with general information on ZL licensing and NZART services. The ZL's are divided into four radio districts, prefixed ZL1, ZL2, ZL3, ZL4, with ZL5 (Antarctica) and ZK1 (Cook Islands). The licensed amateur population of each district is approximately as follows: ZL1, 1520 AT-stations; ZL2, 1360; ZL3, 680; and ZL4, 340—a total of 3900 AT-stations in New Zealand, with another 15 or so licensed in ZL5 and ZK1.

The ZL's have a form of limited-facility licence, whereby those who have not passed a 15 w.p.m. Morse test or have had less than a year's experience on 80m. (with 50 contacts logged) are restricted to certain frequency areas in the LF and VHF bands. The next stage is what is known as the High-Frequency Permit, for unrestricted operation on all regular amateur bands. The ZL frequency allocations show some differences from ours (they are in Region III of the I.T.U.), the chief of these being that their Top Band area is 1875-1900 kc, and on 80m. their allowance is the full 3500-3900 kc, which is 100 kc more than we have and in line with the U.S. allocation—and they also have a very useful band at 51-53 mc (six metres), which has positive DX potential under the right conditions. They have a band at 26-96-27-32 mc, though no reports ever come out as to operation or results on this special allocation. The ZL's have no 4-metre (70 mc) band, but for two metres their allowance is 144-148 mc. Except for some minor variations at UHF, in all other respects the ZL band allocations are on the international basis—which makes them the same as ours.

OBITUARY

We very much regret to have to record the passing of the following radio amateurs:

—G2BSA, Douglas Clague, of Looe, Cornwall, president of the Radio Amateur Invalid & Bedfast Club, in which he took a great personal interest. He was a well known Cornish amateur who had been licensed for more than 30 years.

—G2CZM, Arthur Pruden, of Chesham, Bucks., at the early age of 47. His special interests were /P and /M on the LF bands, though latterly he also operated HF/SSB and on VHF.

—GW3GO, Sidney Waters, of Porthcawl, South Wales, at the age of 64. In the 1930's he started a successful radio-relay business in the Kenfig Hill district, from which he retired in 1964. He was licensed in 1936, and was well known on the South Wales air.

Our sympathies are offered to the family, relatives and friends of G2BSA, G2CZM and GW3GO.
BY and large, not a bad month for DX. The good conditions over August 9–10 were followed by the doldrums until the 18th, when propagation to the South revived, many French stations coming through in the early evening at good strength. Some PA0’s were also audible, but at poor QRM. Pressures during the week rose unsteadily from 1010 to 1020 mB and remained in that region until the 24th, when an increase to 1030 mB was observed, persisting until the 27th. From then on, there was a steady decline down to 1000 mB which did not augur too well for the VHF field day but, fortunately, there was a rise to nearly 1030 mB again just before the weekend of September 6–7 and good tropospheric conditions lasted throughout the contest. There was little evidence of any extended tropo, although some contacts were made at over the 800 km mark at widely separated time intervals. Some auroral activity was reported from Holland, and PA0HVA made two contacts with SM under Ar conditions but no G operator appears to have been able to take advantage of it.

The East/West path was good over August 21–22 with G3GZG (Redruth) and G8BCE (Yeovil) at well over the S9 mark for hours on end. The 23rd saw more good Continental DX with PA0 and DJ/DL at very good strength. The French and German beacons were both at RST 549 and GB3CCTC and GB3GW at RST 549 over this period.

The DX axis shifted to the North by August 25, with G8BMP (Canock) and G4JJ/A and G8AUE in Derbyshire being among the best signals. By midnight on that day, beacons GB3GM and GB3ANG were both coming through, the latter at RST 599+, and GMSYK/A was worked from Herne Bay on AM at RS-59. No other GM’s were heard, and indeed nothing further North than Lancashire. It is still puzzling why so often one hears reports of the reception of the Dundee beacon and yet there appears to be no other Scottish activity on the two-metre band.

Only average conditions prevailed until September 7, when once again PA0’s were very good in the mid-morning. From then on, VHF NFD was under way, and conditions during that event are elaborated below.

VHF NFD

It is too early to do more than give a few preliminary impressions of VHF National Field Day (also the Region I IARU event) but by next month some detailed information should be available and a better assessment can then be made of the situation generally. However, one aspect of universal interest is that propagation conditions on both Two and 70 cm were reasonable, if not outstanding. There did not appear to be any opening to Scandinavia but long-distance contacts into the South of France were made, and PA0 and DJ/DL signals were at very good strength for most of the time. Pressure had built up very slowly during the days preceding the contest, and by the Saturday morning was beginning to drop from the 1028 mB registering in the South, as weak low pressure areas came in from the West. The drop was not significant though, and both weather and propagation remained good over the weekend.

It must have been with a sigh of relief that many /P operators were able to fold their tents on Sunday evening without having been rained out and their antennae brought down, as had happened in many cases during the 1965 and 1967 events. Clear skies the previous night and mist and fog patches early on the Saturday morning gave positive indications that conditions would probably be good. With the necessary temperature and humidity parameters present, and from the comments being made on the band on the Saturday afternoon before starting time, operators seemed to be in high spirits.

The start of the Contest preceded by one hour the opening of the IARU Region I event, and it was only by then that activity built up to a really high level. The impression is that there were many more stations on than in previous years, a very welcome sign after the flagging interest for contests shown by the analyses of other such events during the early part of the year. Whether it just happened that way, or whether previous offenders had taken to heart comments made in this column, it is pleasing to record that there appeared to be very little out-of-zone working on phone at the LF end of the band, although two transmitters were logged and deliberately not worked. One had incredibly badly over-modulated signals, the spread of the order of 50 kc on either side of the carrier for a 45 dB overnoise signal, and speech was unintelligible at times. Several DC to DC transistorised power supplies appeared also to be giving trouble, although filtering at the multi-vib frequency should be a simpler matter than at 50 cycles.

Welcome was the appearance of SSB signals on two metres from /P locations. GW3BA/P from Montgomery, and GW3OH/C from Radnor, were both putting out unexceptionable signals, and the idea of coming up on the SSB international calling channel every hour on the hour for ten minutes or so seemed to work out very well, since both these stations were giving serial numbers over the 200 mark towards the end, and both were heard working British and Continental stations using this mode at these times. The initiative shown by G3BA in pioneering this practice certainly paid dividends in both an increase in the number of contacts.
and the time saved by concentrating SSB operation into shorter, productive periods. It appears though, that it will be necessary to make rather more explicit the power limitations specified for this Contest where the same linear amplifier is being used for SSB, CW and AM! The time-honoured “25 watts maximum DC input to any stage” is no longer capable of unambiguous interpretation.

Operating procedures and manners were generally of a high standard, but a great deal of time is still being wasted by the exchange of unnecessary pleasantries, not in the main by participants themselves, but by others who had to be asked for the required information instead of proffering it immediately and who, in some cases, then went into lengthy descriptions of the rig, the prevailing weather, comments on conditions and the fact that they had only come on to give the others a few points. All very interesting outside a Contest! Old hands at the contest game were using abbreviated procedure and break-in operation to advantage, others were going through the whole rigmarole of full call-signs on each over, and the whole nauseating of “standing by for” and “returning to,” etc. Although the rules for both VHF NFD and the Region 1 contests did not require the exchange of both QRA and QTH, many operators were still giving both. This was not the case in so far as Continental contacts were concerned, the language difficulty being one factor and the widespread adoption of the QRA Locator another. This latter is still the speediest way of exchanging location information with the required accuracy and, unless the rules specify the scoring to be done on the basis of points per kilometre, does make the compilation and checking of logs very much easier. Gabbled call-signs without the use of phonetics were also a time-waster — one never heard the leading scorers doing that!

CW operation was apparently not very popular, understandably so in view of the time that it can take to complete a contact in this mode, but some worth-while DX contacts were possible, notably with HB9AGG/P, who was also active on SSB but difficult to work through the wall of PA0/DJ phone; F0KP/P on the Swiss border, whose AM and SSB was only RS 55 in the South on the Saturday morning, was also available.

It was interesting to note that several of the leading stations were not using VFO control, though they were probably equipped with it, and this raises the question whether a VFO is an advantage in this type of contest. The answer is probably yes-and-no. Yes, if there is much SSB and CW operation contemplated, and No if transmission is to be on AM only. Even this broad division needs some modification, in that the position will change depending on the QTH and whether likely contacts already know the usual operating frequency. Taking G2JF as an example, his signal is so good over most of Europe, and he is so active on the two-metre band, that most operators know where to look for him. Jim’s operating technique has been suitably modified to suit this fact and he rarely calls a station, but calls CO and waits for the answers. His VFO was not used at all during the contest, yet he knocked up 340 contacts. This is a unique situation however, and for we lesser mortals with lower output and poorer sites, there may be occasions when a shift in frequency is not only desirable but necessary to avoid local QRM. In a contest of this length there will rarely be any need to QSY up and down and band to catch a station announcing “low to high” and vice versa.

While on the subject of VFO control, it does seem that VFO’s are getting unnecessarily complicated in the search for ultimate stability. Surely, all that is required is that one builds a reasonably stable VFO at low frequency, mixes it with the axial oscillator to come out on Two and that is it. The requirement need be no more than that the VFO remains within say, two kc during any normal-length AM QSO. It must of course be capable of being keyed without chirp, and the requirements for SSB are very much more stringent.

Getting back to the Contest, it is too early to get much detailed comment from competitors, but the following snippets may be of interest: F9NJ made it with GM, twice, PAOHVA had 20 SM contacts, of which two were by Aurora late on the Saturday night/Sunday morning. (Did any one else notice any Auroral activity?) Operating SSB only, he made nearly 50,000 points from 206 contacts, an average of 255 km per contact. F9FT booked in 183 contacts including 52 PA0, 43 DJ/DL, 58 F, one LX, three GW and three HB9, for an average of 287 km per QSO. GW3BA/P made 224 contacts, G3VER 140, GW3OHC/P 235 and GW3NUE/P over 230, ON4KJ/A finished with 281. G2JF recorded 340 different stations worked, including 68 PA0, 34 DJ/DL, 20 ON4, 102 F, 104 G and 12 GW, his entry being for the IARU Region 1 Contest only. Total points were 90,057 and average distance per QSO 263 km, his best DX being F9NL at 880 km and F9BP/P at the same range. An interesting contact was with F1CV/P who was only 40 km from the Italian border.

By and large, then, an enjoyable contest with conditions and weather to suit.

VHFCC Awards

The Certificates for the VHFCC Award will shortly be available, and applicants will be asked to produce the necessary QSL cards for verification purposes. Claims are acknowledged from G8AWO and G8AAZ; the latter has already submitted a claim for 70 cm and is the first operator to have entered for both bands.

News Items

An encouraging story of some nice DX worked by a newcomer to the VHF/UHF bands: GB8GQ (Rickmansworth) runs nine watts input to a QV03-10, plate-and-screen modulated with 6L6’s in Class-A1, to an 8-ele Yagi at 41 feet, but he got a very nice RS-59 report from F9NL in the Pyrénées on August 19. In response to a request for the French station to listen on 432 mc, back came a note: 55 on that band. (Unfortunately, F9NL is not at the moment equipped to transmit on 70 cm.)

The GB8GQ equipment on 432 mc is a QV06-40A tripler running about 15 watts input and, according to Keith (who may be a little modest in his assessment of his ability to
construct an efficient output stage) gives an output of about one watt. The aerial for 432 mc is a ten-element Skybeam at 45 feet. This 70-centimetre result was followed up within the next two days by contacts with F1YS in "C24R", and F1EJ/P in Portarlitby, both QSO’s being the result of a Q0 call. Mid-morning on August 22 also produced a second QSO with F1YS and a call from F1AB/P on the Franco-Spanish border, when 5 & 9 reports were exchanged. The 432 mc path to F9NL was even better on this day, signals being some 6 db up.

The 2m. converter at G8BGQ uses a 6J6 cascade front end, 6J6 mixer and an AR88 as IF/AF strip. The 28 cm converter is a BF180/2N3819 combination. A TIS-88 model is under construction and eventually the Tx should run 120 watts of NBFM on Two and, with a QV06-40A final, considerably more than one watt of RF out on 432 mc. So here is some very useful DX on very simple gear, and while not a record distance, is very satisfying—congratulations!

Herb Bartlett, G5QA (Exeter), well remembered for his work on five metres before the War, is still active, on the 144, 432 and 1296 mc bands. He puts in a strong plea for greater activity in the two upper VHF bands, warning that we may well be on the way to losing even more of our space if we do not justify it by greater use. He advocates the establishment of more regular skeds on 432 and 1296 mc as being one way of achieving this. He used to run a regular, thrice-weekly, sked with GW3ATM and G5AIL. This yielded some very interesting results for the participants and as well as being valuable to non-participants as an indication of prevailing conditions.

More news of 432 and 144 mc activity in Scotland. GM3ULP (Motherwell) is on phone and CW on two metres and, as GM6ADR/T, is very keen to make skeds on the higher band with other amateurs within the possible service area. His equipment on Two takes 12 watts to a TW-2 with an 8-ele beam at 40 feet and a JXK converter. On 70 cm, the transmitter runs five watts peak-modulation, modulation being via a home-brew modulator and pattern generator. The surrounding terrain is such that only operators in Lanarkshire should apply for skeds! Daily schedules are run on Two in the Glasgow area. GM3ULP is OTHR.

Micky Morrisey, GM5YK (Cruden Bay, Aberdeen), also comes in with news from the North. Apart from his own two-metre activity, the Buckie group are well equipped for this band and operate during contests with the call GM3WML/P or GM8AZS/P. Others to be heard regularly on Two are GM3UAG, GM3JFG, GM2DRD, GM3OEJ, GM3BNH, GM8AGK and GM8BQY. G8ANQ (Whitby, Yorks.) is a consistently good signal into Cruden Bay, a distance of some 200 miles, and seldom are conditions so poor that a QSO cannot be made, so there is hope for the Southerners yet. Be it noted though, that apart from 30 miles or so, this is an all-over-sea path. One of the keenest and most active stations on Two in the area is GM3GUN (Friockheim, Angus) who, with no site advantage at all, put up a very fine performance on the band.

The GM5YK/G3DAH contact of August 25/26 took place at 0020z and bears out the contention that much good VHF/DX is available in the wee small hours if one has the patience to sit up for it and can find an obligingly late bird at the far end. On that particular night conditions to the North of England had been good, many contacts being made with stations over the 200-mile mark, but towards midnight activity (and the upper atmosphere) cooled off. The Dundee beacon was RST 599 and Thurso RST 559, which looked encouraging—but not a GM to be heard although G8BY (Southport) was worked at 5 & 9 both ways shortly after midnight. Then out of the blue came the call from GM5YK and an RS-59 contact resulted, only some weak fading being experienced throughout.

That upper-air cooling is an important factor in long-distance communication at these frequencies and has been mentioned in this column before in relation to early-morning skeds; obviously the cooling in the late evening has a similar effect. It is noticeable also that propagation seems to peak appreciably just after rain. Bearing in mind the importance of temperature and pressure gradients, and the fact that the greatest temperature changes take place near ground level, this is understandable.

The Gatow Radio and Electronics Club is now active on two metres and on the look-out for U.K. stations. Callsign is DL5XP and equipment is available for SSB, AM and CW. This is an interesting one because DL5XP is the only Allied station active from West Berlin on Two. Address for skeds is: The Station Manager, DL5YZ, R.A.F. Gatow, B.F.P.O., 45.

G2AIW (Twickenham) is putting out a very good signal with his one watt of NBFM. He now has an 8/8 at 40 feet and was able to raise PA0JEM, to bring his countries worked up to four and the counties to 29.

** ** **

TF3EA (Reykavik, Iceland) is now licensed for 70-25 mc with an input of 25 watts. He is busy collecting gear together and hopes to be active in the near future. This is a very interesting path over a similar distance to Manchester-Gibraltar, but propagation would be via Auroral Es. Optimum period for U.K./Iceland contacts on Four is about 2000-0200z with the peak during June and July, but the fall-off would be much more gradual than over the G/ZB2 path. There may, therefore, be some openings even this month. For reference purposes, it may be noted that the number of hours of openings over a similar path (Fargo in North Dakota to Churchill in Manitoba) averages 219 per year. This Iceland/U.K. opportunity is a definite starter and will be worked with patience and given the same amount of interest and attention as the ZB2 project has aroused. G3JVL has supplied a precision oscillator for the TF3 end, and liaison for skeds is on 14:260 mc, with G3GVM the controller at the U.K. end. Once TF3EA is active, it should be possible to get some Meteor Scatter contacts at this range.

G3MCS (Aylesbury, Bucks) has found himself a new site for 13-centimetre operation at Inkpen Beacon, 11 km south-west of Newbury, at "ZL53d," and was on from there during VHF NFD,
during which he made two contacts—one of these, with G2RD/P at Brighton, looks like a record at 110 km. The other with G3TUX/P at Brill was at 50 kilometres. Receive-frequency on this band is 2304 mc, xtal controlled and the Tx feeds a 2 ft. diameter solid dish with waveguide excitation.

A good and unusual signal on two-metre SSB is now being radiated by G3KMU (Beeston, Notts). He was heard from Daventry while on his way home from a Mobile Rally, at 5 & 7 signal, and was worked from Banbury at about the same strength.

G3VFC (Rainham, Kent) and G8AYC (Gillingham) are both pressing on with video equipment. G3VFC already has a picture going out with 40 watts peak-white, under call G6ADK/T, to an 18-ae Para-beam and G3AYC has a transmitter under construction with a pair of 4X150's. Skeds and reports will be welcomed.

G8ARC, the Addiscombe Radio Club, mounted an expedition to Rutland over August 25/26 and gave away two-metre stations their first contact with that rare country. The gear consisted of a "Hamobile" with an SEO receiver to a 6/6 antenna and their signal in the South was well over the S9 mark for most of the time they were there.

Many must by now have heard the excellent NBFM transmission from G8AMD (Sutton Coldfield) and have wondered what system was in use. The answer is that Hayden has modified his KW-2000 by inserting carrier at the appropriate level and applying good-quality audio from a high-Fi modulator to the varicap diode in the IRT circuit, all very simple, and, as measurements showed that the capacity swing of the diode was linear over 4,000 cycles, very effective. Incidentally, G8AMD is keeping a very close watch with a recording barograph and a pen recorder on the differences in the received strength of the Wrtham Beacon under varying met. conditions and is fast becoming able to predict good propagation periods.

While few amateurs will possess such elaborate equipment, much can be done to good effect with the aid of an ordinary barometer and the weather charts in the daily newspapers.

G3PMX (Chelmsford) should now be heard more regularly on the two-metre band as he has finally got his DXCC and WAS on the HF bands and so can now devote more time to VHF operation! However, he does not feel that the present QTH is good enough for serious VHF/UHF work, and a change is in view. There are now eighteen stations active on VHF in the Chelmsford area.

G8AZU (Sunbury-on-Thames), running 700 milliwatts to a 346A, has now made 118 contacts on Two with his flea-power rig. Beam is an 8-ae Yagi at a site only 20 feet a.s.l. G8ATK (Yateley) is the first G8/3 claimant for the VHFCC Award on two metres. He has now worked 225 stations on two metres and is shortly moving to a better QTH in Farnham, Surrey, from whence he hopes to get some really good DX.

Always with an eye open for a possible Aurora, the high level of solar noise during August 17-18 was followed very carefully. Peaks were 20 dB over noise, dropping to 10 dB over during the next three days—but there was no evidence of any auroral effect on two or four metres. There was an Auroral opening to the North on August 31, when G83GM (Thurso) was heard at 57A by G3WBQ and G3TCT. This beacon was recorded at G3DAH at RST-559, and G83AN was RST-599 just after midnight on August 25, but this was straightforward tropospheric propagation. Can anyone add anything about Ar activity around that time?

There have been some more ZB2VHF openings during the month. On August 11, signals were peaking S9 between 0640 and 0656z and were again audible between 0829 and 0833 and 1759-1802z the same day. On the morning of August 12, signals from Gibraltar were again heard by G3JLV and G3PLX, and on August 29 by G3GVM, G3JHM, G3UFS and G3DEL, when the QRK was up to S8. There was also a Es opening to the East and North on August 31, with no less
than ten BC stations audible. There was no sign of any amateur activity although GB3GM was taped at G3WBQ and G3TCT at 55A. On September 2, ZB2VHF was there again at RST-599+ between 0838 and 0900z. On September 8 at 1645, GB3GM was heard on the South Coast via Aurora at 55/7A.

For those who use a KW-2000 to produce the sideband for a two-metre transverter, G3BA offers a useful tip. If transceiver and transverter are in close proximity, there is a strong probability that there will be some feedback through the audio circuits in the KW, annoyingly audible as chatter in the loudspeaker. A simple cure is to lift the earthed end of the 100 µF by-pass capacitor in the microphone input circuit and connect it directly to the cathode pin of the first audio stage—straight across the valveholder, in fact. This will remove the chatter entirely.

G3LLE (Sheffield), a very well known signal in the South, and obviously also in the North, has a heavy constructional programme in hand which will still further enhance his operations on the VHF bands. He is rebuilding the 70 cm rig, developing a transverter for Four, and planning a mainly-transistor SSB transmitter for Two. With G3JON and G3NEO, Keith is among the most active of the Sheffield stations and has been the source of many a 70 cm. "first" for Southerners.

G6FO (Maiden Moreton, Bucks) and G3DHAH (Herne Bay) were surprised to find, during recent crossband contacts on 80/2 metres, that signals on the higher frequency were superior to those on Eighty by a factor of about three to one, although pressures and temperatures were low at the time. This seemed odd over a 100-mile path, and further QSO's were planned to see if this is regularly the case over their distance. Information on regular skeds of this type over comparative distances would be interesting.

G8BPJ/MM (Westgate, Kent) has been off on his travels again in the yacht Witchcraft—this time up to Pin Mill outside Ipswich—and has been having some good DX using a TW Communicator with a halo on the mizen. The story of his recent trip to Holland is being published separately.

We are not the only sufferers from the misuse of the CW portion of the two-metre band by AM stations. During recent good openings, DX working in the Amsterdam area was badly affected by a /M touring the streets using this mode at the LF end—and by other stations using long-playing records as a means of checking their modulation! Disc or tape recordings for modulation checking purposes is permitted by the terms of the Dutch licence, but is, of course, strictly taboo here—and this must be construed also to mean that having the TV and/or radio on in the next room while the mike is open is also out!

For the EME and MS devotees, a useful sked is run every Wednesday evening on 14:20 mc between F9FT, SV1AB and OK2WCG, who discuss conditions and progress. Interested stations are invited to join the party. In addition, there is a daily sked at 1630z on 144-1 mc between these stations, during which one transmits while the others follow at five-minute intervals. SV1AB begins, followed by OK2WCG while F9FT calls, followed by OK2WCG and so on until 1700z.

Another useful check on propagation is provided by the regular news broadcast from LX1SIT, using SSB on 144-152 mc. Time is 1915 MET every Tuesday evening.

The G3WUWP operation went off very well, with good signals recorded in the south-east from their locations in Radnor, Brecon, Montgomery, Merioneth and Carmarthen. Operators, apart from G3WUWP himself, were G3UID, G3XIQ and G3XCK. Gear on two metres consisted of a modified Pye Vanguard with a QVW03-20A in the final running 25 watts, and a transitor modulator and inverter. A Command Rx gave an IF at 4-6 mc. Antenna was an eight-element beam at 20 feet. A Honda E-300 generator ran the lights and charged the batteries. The expedition reports that time-keeping on sked was excellent, and QSO's were as follows: Brecon, 51; Radnor, 71; Montgomery, 57; Merioneth, 2 (both GW); Cardigan, 10; and Carmarthen, 25. QSL's are being sent via bureau.

G3TLB (Tunbridge Wells) has been having some good contacts with his small transmitter running 5 milliwatts to an AF114, and would welcome reception reports. He has a high power rig under construction which will run 100 watts or so with a KT88 modulator—quite a different thing!

It is regretted that an error crept in with the information about the 23-centimetre activity at GAUE last month. The transistor converter is based on a design by G3HBW and not as stated.

Just as this was going to press, an interesting report came in from EA4AO, regarding the EA4IZ operation from Asturias, near Gijon, about 200 km west of Santander (from where EA1CB and EA1CP are working). Between them, these EA's have heard many more U.K. stations on two metres than they have been able to QSO—EA4AO says that openings between northern Spain and England are much more frequent than might be supposed, especially across the sea path to south-west England. Among G's mentioned, heard or worked were G3COJ, G3GJ and G3ADT. The EA's, who have QSO'd many F's, are able to work CW, AM or SSB—whereas it is reported that some of the French stations are using simplified transistor receivers so primitive that they can copy neither SSB nor CW!

EA4AO (Madrid) is himself on MS sked with SV1AB—they heard one another over their 2,250 km path on August 13 (Perseids shower) between 0415 and 0435z but no actual QSO resulted.

And finally, it seems that the ARTOB balloon, on which we stopped in this space last time, was never lofted after all. Reasons not known at moment of writing, but no doubt it was weather.

The Knokke group held their fourth international convention over the weekend of Sept. 14-15 and it was again a great success. Among the 350 radio amateurs and their guests who attended were 42 PA0's, 11 F's, ten DJ/DL's, six W's, and one each from SP, I and YU. The U.K. was represented by the following: G3MP, G3KZI, G2DHV, G3PAL, G3NBP, G5DO, G3NMR, G3KDL, G2GM and G3DHA (representing SHORT WAVE MAGAZINE).

Attractions included a formal dinner on the Friday evening, technical lectures on the Saturday,
followed by a dance in the "Weinstube," and on Sunday 15th a two-metre fox hunt (or VHF/DF event) took place, with a wide range of prizes.

Plans are already in hand for a repeat in September next year, and further information will be given in the Magazine in due course. We hope to report this year's event in greater detail in a later issue.

**Deadline**

For the November issue, we need your reports, claims and comments by Saturday, October 5, latest. Address is "VHF Bands," Short Wave Magazine, Bucking-

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**MAGAZINE CLUB CONTEST**

The 23rd annual Top Band Inter-Culb Contest, MCC, takes place this year during the weekend November 9/10. Rules appear on pp. 505, 506 of this issue. As in previous years, we hope that many single-operator non-Club stations will be on to give the vital one-point QSO's that, eventually, help to sort out the leading Club stations. Their check logs, with comments on the Contest, will also be appreciated and credited.

**NEW M.O.S. TRANSISTOR TO GIVE MORE POWER**

Investigation by Associated Semiconductors, Ltd., of Wembley (a joint Mullard/G.E.C. concern responsible for the development and manufacture of Mullard semiconductors) has resulted in the appearance of a high-power m.o.s. transistor for broadband HF transmitters operating in the range 2-30 mc. It has a peak envelope power output of 30w. at an efficiency of 50%, and is the latest advance in solid-state devices for linear amplifiers in SSB transmitters. Work so far suggests that the m.o.s. transistor is particularly suited to single sideband amplifiers. Its output current is proportional to the square of the input voltage and, consequently, the level of odd-order intermodulation products is low. In contrast to the bipolar transistor, an m.o.s. device is thermally stable and requires no complex bias circuit to prevent thermal runaway. The m.o.s. transistor has the advantage of a higher input impedance than a bipolar device and also requires an exceedingly low gate or drive current. By means of a special construction, feedback capacitance is minimised and stable performance can be maintained over a wide frequency range. The ultimate objective is a transistor capable of more than 100 watts p.e.p. for use in an untuned broadband amplifier giving output over the communication frequencies 2-30 mc.

**MODIFICATIONS TO THE MARK 1 RADIO-TELESCOPE AT JODRELL BANK**

The Science Research Council announces a grant of £400,000 to Manchester University to meet the cost of repairs and engineering modifications to the University's Mark I radio-telescope at Jodrell Bank, Cheshire. This work will extend the useful life of the Telescope and will enable the present research programmes to be continued and expanded.

The Mark I 250ft. steerable radio-telescope came into operation in the autumn of 1957, and has worked almost continuously since that time. There have been no major breakdowns. However, in recent years the dangers of fatigue failure and of serious wear of the azimuth turntable have become greater. In the autumn of 1967 fatigue cracks appeared in the cones carrying the 800-ton bowl to the trunnions on the tower structures, and remedial action is urgently needed.

The Mark I is still the largest fully steerable radio-telescope in use in the world, and is likely to remain so for some years. During the ten years since its commissioning it has been used individually and in association with other radio telescopes at Jodrell Bank and R.R.E., Malvern, in a number of research projects, which have helped to clarify understanding of the early history and evolution of the Universe, of the stars, galaxies and planetary system. A small proportion of time has also been given over to the tracking of Russian and American space probes. Recent developments in radio astronomy have shown the importance of further investigations in the present wavelength range of the Mark I, that is 21 cm and above. However, it is expected that the proposed repairs and modifications will also result in a significant improvement in the performance of the telescope at shorter wavelengths, yielding full theoretical efficiency in the 18-21 cm range and efficient operation at still lower wavelengths in the central portion of the bowl.

**EASY BAND CHANGING**

A new multi-antenna switch which enables up to three separate aerial systems to be connected in turn to a transmitter or receiver is manufactured and marketed by K.W. Electronics of Dartford. Suitable for Amateur Radio purposes, marine applications and for use with radio-telephone equipment, the unit comprises a single-pole three-position heavy duty rotary switch with ceramic insulation. Rated 1 kW p.e.p., the K.W. Antenna Switch makes for a neat installation, enabling loose feeders to be permanently connected and allowing quick and easy band changes. Price for this switch is 60s., direct from K.W. Electronics, 1 Heath Street, Dartford, Kent.

**ANNUAL SPILSBY JUNK SALE**

Not really a junk sale, but an opportunity to acquire (or get rid of) good gear at fair prices, this annual event will be held on Friday, October 18, 7.00 p.m., at the Bull Hotel, Halton Road, Spilsby, Lincs. For details and further information, contact L. J. Coupland, G2BQC, 117 Burgh Road, Skegness, Lincs.
THE MONTH WITH THE CLUBS

By "Club Secretary"

(Deadline for November Issue: October 4)

(please address all reports for this feature to "Club Secretary," Editorial Dept., Short Wave Magazine, Buckingham.)

Once again we are back to the time when the rules for MCC grace this feature—see pp.505-507. In essentials they are the same as ever—after 23 years we seem to have struck on a formula which gives all areas of the country a (reasonably) equal opportunity of scooping the pool. Since we know that many Club groups use MCC as a forcing-ground for good CW contest operators, the form of the exchange—RST plus a code group—is intended to make operators proficient in reading and logging such combinations while keeping the length of the exchange the same for all groups. There are a few clubs where the code commences with a number—who all have numbers at the beginning of their name, as the list shows.

We have made no provision for multi-station entries in this first list, so if you want to enter a "B" station write in, pronto, for a code. Likewise, if your group seriously intends to enter but is not included in the list, let us know right away. If necessary, an additional List of Identifications will appear in the November issue, for which we should have entries right away.

Burslem (now the North Staffs Amateur Radio Society), last year's winners, have signified their intention of defending their title.

The Current News

Now, to the reports, and in this context it is a sobering thought that 231 different Club groups have been reported in this feature over the thirty months or so that your conductor has been compiling it. Knowing there are quite a few who never write in, makes one wonder just how many radio groups there are in the U.K.?

Straight through the clip this month, and first to Cray Valley, who have the first Thursday in the month at Eltham Congregational Church Hall, 1 Court Road, Eltham, and the third Thursday for a mixer session at All Saints Church Hall, Beretsa Road, New Eltham; this means the October dates would be 3rd and 17th.

The same dates are down for Stevenage, oddly enough, namely October 3 and 17: the former will see them all looking at Laser Beams, and on the latter date they have the Heathkit demonstration. Both meetings are at the Hawker Siddeley Dynamics canteen, in Gunnels Wood Road, which is in the Stevenage industrial area.

Bristol University next, who write to advise us that they are on show, and looking for recruits at the "Freshers Squash" during Presco week; the future programme will be decided after they have seen how many new faces there are, and on their enthusiasm!

A similar sort of recruiting drive is to take place at Nottingham University, where the gang have a stall going during "Week One"—the week prior to the start of term—when the hon. sec., Kate Fletcher, will be charming them into membership. Their 9 cm. transceiver project is progressing well and two equipments are now ready to go; in addition a change of shack has enabled them to get the HF band beam up higher, with the expectation of working more DX.

Expansion at Southdown is such that it has been found necessary to appoint a press secretary to handle the publicity side and deal with the many enquiries. Their stand at the Eastbourne Flower Show gained them good publicity when they worked an OK station and got some early information on the invasion of Czechoslovakia, which put them in the headlines of the local papers. Later they worked ZC4MO—and as they were doing so, in walked G2AON, who is related to ZC4MO!

The October meeting of the Torbay crowd will be at Hq., rear 94 Belgrave Road, when they will hear Sir Douglas Hall lecture on Transistor Regenerative Receivers. For details, date and time, etc., contact the hon. sec.—see Panel, p.504.

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Abergavenny and Border Counties Horse Show was enlivened on August 10 by an exhibition station signing GB3ABS, run by the Blackwood group, which not only gave them a lot of fun, but also gave many members of the public a first insight into what Amateur Radio is all about. Their stand included a static display, and several 28.5 mc walkie-talkie sets came in handy for recalling operators from round the Show to do their stint on the air. A huge selection of QSL cards was on display, loaned by G6BK, with some from the GW6GW collection—GW6GW is the Club call but was originally held by one of their early members who was well known as a very fine CW operator.

On to Hereford, where they are still arguing it out with the local council over the proposal to move to a new Hq. Meeting date for October is the 4th, and as far as is known at the time of writing, will take place at Trinity Hall, Whitecross Road, although it would be as well to make a check with the hon. sec.

YMCA Blackburn is the venue for the East Lancs. shindig on October 3, and on October 19-20 they have a station operating at Bowlee Scout Camp for the eleventh
The Haverfordwest group went into camp on August 1, under their new call GW3XOT/P. Good DX, including OX and VK2, was worked using a Swan-500 into a 20m. ground-plane. In the picture are SWL's James, Thomas and Atkins, G3JZT (visiting), with GW3VIEW and GW4UBV. Away in West Wales, Haverfordwest Amateur Radio Society is a small club, but they are on the right lines.

Jamboree; this event has always been a great satisfaction in previous years, thanks to the keeness and cooperation of the Scouts.

Last time round, we mentioned a proposed Junk Sale by the Halifax crew; however, this was put back in the programme due to the number of members away on holiday. They get together each Friday evening at the Sun Inn, Rastrick, and in addition there are visits and so on being organised for the winter months. For the details contact the hon. sec. at the address in the Panel.

Every Friday is also the programme for the Aberdeen lads, who assemble at 6 Blenheim Lane, Aberdeen at 7.30. October 4 is down for a Junk Sale, while on the 11th there will be a discussion, by a panel, of members’ problems. GM3AEL talks about Space Flight Communications on October 18, and the month is rounded off by a Film Show on October 25.

Crawley have an Informal down for October 9, details of which may be obtained by ringing G3FRV at the address in the Panel. As for the main meeting, on October 23, this will be a talk and film show of his recent trip to the States by Arthur Milan, G2MI.

Hon. Secretaries to take note! G3MDW points out that he has now got the second W1BB tape lecture available and is accepting bookings—running time is 1 hour 43 minutes and there are 82 slides. General distribution will commence from November 1, so the Northern Heights chaps have their preview on October 30. October 5 sees them in the Big City for the Amateur Radio Show, and on the 9th there is a joint meeting with Spen Valley and Bradford lads. For October 19-20 they will put on at least one, and possibly two, Jamboree stations—the certain one is for 3rd Keighley Scouts. October 23 is down for another talk by Mr. Craven.

Over the Summer Bank Holiday, the Silverthorn chaps had their own field day, working LF, HF and VHF bands; four of the ten operators were GB’s resulting from the last R.A.E. and so could be introduced to operating techniques by the others.

After all these years, Stude are still in business, and still at the Church House, High Street, Erdington. October 5 is a double midnight D/F event, while October 11 is set aside for a Junk Sale at Hq. Sunday, October 13 is another D/F event, and on the 25th, member D. Grant will talk about House Wiring and the IEE Regulations.

Mansfield are a bit low on numbers at the moment, a phase which most groups go through at some time or other, but they are still quite definitely alive and kicking strongly. First Friday in each month at the New Inn, Westgate, Mansfield, is the form, and new faces will be welcome.

To avoid any clash with the Amateur Radio Exhibition, Reigate are moving their date from the usual first Wednesday to the second Wednesday in October, which places it on the 9th, at the George and Dragon, Cromwell Road, Redhill. G3RIN will talk about Transistor Transmitters.

That Leicester exhibition station at the City of Leicester Show was eventful as well as being good publicity. One of the Transceivers in use chose this public occasion to start making “smoke signals”—and the Quad fell down. The Quad was mended, but the bowling green on which it fell was a different matter!

Now to Wirral, safely in to their new Hq., which is at the former Civil Defence Headquarters, Upton Road, Bidston, Birkenhead. Here they are in session on the first and third Wednesday in each month. October 2 sees the election of a new committee at the all-important AGM, who will have as their first task settling the programme for the following year.

There are four items on the October list for Coventry, starting with a Film Show on the 4th; on the 11th they have a Night-on-the-Air with the group’s transceiver, and over the period 18/21st they are to participate in the Scout Jamboree-on-the-air. To round things off
nicely, member G8APB will reminisce on his recent trip to Canada, the date for this one being October 25.

* * *

Sunday evenings at Porchtree Community Centre is the form at Fareham. There is a possibility that they will come up to the Exhibition on an organised trip, while on the 6th they play hosts to all the other groups using the Centre—a fine idea, this, which cannot but be of use to all the groups involved—and on the 13th they have a “How” talk for the newcomers; this one is on GDO’s and will be given by the hon. secretary.

On October 20 the G6CJ tape lecture on Aerials will be heard, and finally, on October 27 the lads have what is down as “Club Night—anything can happen!”

Sutton Coldfield gather in the Sutton Coldfield Town F.C. Clubhouse, Coles Lane, on the second and fourth Monday in each month. The programme seems to be fully arranged right through to March 1969. October 14 is set apart for a Demonstration of Closed Circuit TV, by the Radio Rentals group, while the 28th is given over to nattering and dealing with the Club projects.

Now the summer season is pretty well over, “back to normal” is the motto for the Fulford lads, although this time we have no firm details of what is laid on. However, the hon. sec. would be delighted to pass on the details to any prospective member or visitor—see Panel.

Manchester University have a slight problem. They possess a KW-2000A, a lattice tower on which to hang the aerial, and a new shack—but the shack lacks a mains supply! No doubt this will have been resolved by the time we are in print, if G8AZP has anything to do with it. It is interesting to note that this group are able to admit a limited number of members from outside the University.

Names and Addresses of Club Secretaries reporting in this issue:

**ABERDEEN:** J. McCall, G3HGA, 1 Pinewood Place, Aberdeen (23886), AB1 9LT.


**BISHOPS STORTFORD:** A. Stanley, G3WUR, 43 Havers Lane, Bishops Stortford, Herts.

**BLAKESLEY:** J. Hopkins, G3XNI, 21 Gladstone Street, Crosskeys, Nr. Newport, Mon. NP1 7PA.

**BRISTOL (University):** N. Catwhorne, G3TXF, Wills Hall, Tyndale Road, Bristol, 9.

**BRITISH RAILWAYS:** H. A. J. Gray, Eleven, Swanot Drive, East Dereham, Norfolk.

**BRITISH TELEVISION CLUB:** P. H. Hopkins, G3JIK, 103 Clifton Road, Greenmount, Nr. Bury.

**CAMBRIDGE (University):** M. G. Pritchard, G3VNY, K2 St. Mary’s Court, Caius College, Cambridge.

**CHEHURST:** K. Arnold, 21 Montrose Road, Cheston, Herts.

**CORNISH:** W. J. Gilbert, 7 Pollard Road, Penryn, Cornwall.

**COVENTRY:** C. Jaynes, 20 Belgrave Road, Wyken, Coventry CV2 5AY.

**CRAWLEY:** R. G. B. Vaughan, G3FIR, Tralee, 5 Filbert Crescent, Gosport, Green, Crawley (23355), Sussex.

**CRAY VALLEY:** D. Buckland, G3VLY, 234 Halfway Street, Sidcup, Kent. (01–830 6545).


**DUNSTABLE DOWNS:** G. N. Bath, G3DNM, 9 Chalton Heights, Luton, Beds.

**EAST LANCs.** J. Simpson, G4JS, 1 March Terrace, Darwen, Lancs.

**EAST WORCS.** T. S. H. Westbury, 49 The Slough, Crabbis Close, Redditch, Worcs.

**ECHEFORD:** M. Cliff, G3UNY, 45 Fordbridge Road, Ashford (59286), Beds.


**FULFORD:** G. W. Sidwell, G3XJJ, 5 Heslington Court, Fulford Park, York.

**GUILDFORD:** A. Wilkes, G3SLH, Schelchillam, Hookley, Leedse, Godalming, Surrey.

**HALIFAX:** D. D. Parkinson, 16 Bentley Avenue, Lightcliffe, Halifax.

**HEREFORD:** R. Edwards, G3JRJ, 5 Powys Walk, Hereford.

**HONG KONG:** H. A. Muswett, V36AD, P.O. Box 341, Hong Kong.

**LEICESTER:** N. Tomlinson, G8BOA, 33 Merton Avenue, Leicest.

**LINCOLN:** W. Felton, 4 Eastfield Close, Welton, Lincoln.

**MAIDENHEAD:** E. C. Palmer, G3FVC, 37 Reading Road, Maidenhead (20479), Berks.

**MANCHESTER (University):** R. R. Turmer, G3UJH, Amature Radio Society, University.

**MANSFIELD:** F. N. F. Bewley, G3HFX, 116 Westfield Lane, Mansfield (22298), Notts.

**MEDLEN:** D. W. Lilley, G3FDF, 89 Sandy Lane, Melton Mowbray (3579), Leics.

**MID-CHEPHSEY:** D. Bendelow, 191 St. Johns Gardens, Over, Winsford, Cheshire.

**MIDLAND:** C. J. Haycock, G3JDI, 29A Wellington Road, Handsworth, Birmingham, 20.

**MID-SUSSEX:** E. J. Letts, G3RJX, 87 Meadow Lane, Burgess Hill, Sussex.

**MID-WARWICKSHIRE:** J. F. Coggs, Market Corner, Coventry Road, Baginton, Warwickshire. (Toll Bar 3685).

**NASHVILLE:** F. J. D. Hills, G3BEB, 1 Osiele Close, Tetsbury, Glos.

**NORFOLK:** M. J. Cooke, 76 Falcon Road West, St.oweston, Norwich (60909).

**NORTHERN HEIGHTS:** A. Robinson, G3MDW, Candy Cabin, Ogden, Halifax (43359), Yorkshire.

**NOTTINGHAM (UNIVERSITY):** Miss K. Fletcher, Radio Society, The Union, Nottingham University, University Park, Nottingham NG7-2RD.

**PETERBOROUGH:** D. Byrne, G3KPO, Jersey House, Eye (251), Peterborough.

**PURLY:** J. A. Frost, G3FIO, 52 Gomville Road, Thornton Heath, Surrey, CR4 6DR.

**RADIO SOCIETY OF EAST AFRICA:** P. O. Box 5681, Nairobi, Kenya.

**RAI.B.C.:** Mrs. Frances Woolley, G3LWY, 311 Wigan Lane, Wigan, Lancs.

**READING:** M. F. Taylor, G3LFM, 58 Nightingale Road, Woking, Reading.

**REIGATE:** P. Thom, G3NKS, Bankside, 58 Garlands Road, Redhill, Surrey.

**ROYAL NAVY:** R. W. Metcalfe, G3THF, H.M.S. Mercury, Leydene, Petersfield, Hants.

**RUGBY:** J. T. Cranton, G3KL, 103 Clifton Road, Rugby.

**SALOP:** W. Lindsay Smith, G3WNI, 21 Kingswood Crescent, Copthorne, Shirley, Southampton.

**SHEFFORD:** M. B. Goodwin, G3WKR, 16 Roe Close, Stotfold, Hitchin, Herts.

**SILVERTHORN:** G. E. Fenner, G3VMO, 80 Larkhall Crescent, Clifton, E4. (01–359 6613).

**SLADE:** J. H. Daley, 244 Yardley Fields Road, Yardley, Birmingham, 33. (021–793 7363).

**SOLIHULL:** J. Lester, G4VUV, 173 Damson Lane, Solihull, Warwickshire. (0121–705 3000).

**SOUTHDOWNS:** E. T. Maskal, F3UG, 9 Tugwell Road, Hamshill Park, Eastbourne (54260), Sussex.

**STEVENAG:** D. R. French, G3TJK, 98 Austen Paths, Stevenage.

**SURREY:** R. Morrison, G3GKA, 33 Selton Road, Croydon, Surrey CR4 7HS. (01–654 3682).

**SUTTON COLDFIELD:** A. W. Ferneyhrough, G3AVH, 114 Pendred Road, Kingstanding, Birmingham, 23C.

**SWINDON:** E. J. Andrews, G3JAP, 56 Windsor Road, Swindon (21402), Wilts.

**TORBAY:** J. T. Hind, G5VNG, 46 Thorley Road, Torquay, Devon.

**VERULAM:** J. Thomas, G3RXA, 9 Highland Drive, Hemel Hempstead.

**WILLOW:** A. W. Shepherd, G3NGF, 52 Thanet Street, Clay Cross (2766), Chesterfield, Derbyshire.

**WIRRAL:** J. J. M. Philpott, G3LPO, 16 Colliergreen Green, Little Sutton, Wirral, Cheshire.

**YORK:** J. A. Rainbow, G8BOK, 14 Temple Road, Bishopthorpe, York, YO2 1QN.
As has been remarked before, Stevenage and Shefford have always had ties, and one appears in the current Shefford programme, when they go to Stevenage to see the Heathkit demonstration. October 10 is devoted to the alignment of Superhet receivers, by G3ROL, and for the first meeting of the month, on October 3, they will entertain a visiting group of Sandy Scouts, with a series of lectures on various topics. Later in the month, we note October 24 for a discussion on Radio Control of Models, by J. Brunt, and on the 31st, G3VMI talks about Amateur Radio Gadgets.

Nailsworth took the trouble to write in for their MCC ident, as soon as we mentioned the subject in this piece—thanks—and if you are in the area, they are always on the look-out for new members and visitors. To get the up-to-date gen. on their programme contact the hon. sec.—see Panel.

Mid-Warwickshire have clubrooms at 28 Hamilton Terrace, Leamington Spa, and the programme of talks for October rather suggests enthusiasm for constructional work among the membership here. October 7 is devoted to a tape lecture, and on the 14th Dennis Dumbleton, G3HCM, will discuss the Design and Construction of Simple Transmitters. For the 21st, the topic is "Layout and Construction," and then on the 28th, Mr. A. J. Woodhouse of Vero Electronics will come along and discuss ways and means of using Vero board in our field. Incidentally, the facilities available at Hq. include a library, museum, workshops, test gear and of course the Club station G3UDN.

It looks like the second Thursday for the meeting of the East Worcestershire group, and the venue is the Old People’s Home, Park Road, Redditch; however, there is a slight element of doubt in the writer’s mind, and so we have to refer you to the hon. sec.—see Panel.

Every Thursday at the Old Post Office Hotel in Milk Street, is the normal form for Shrewsbury and their meeting at Hq. on October 10 takes the form of the AGM. In addition there is a trip to the Show down for October 5, and on October 21 they go to the Beacon Hotel, Shrewsbury for the annual dinner and social evening.

* * *

October 15 is the date to book if you want to join Acton, Brentford and Chiswick; on that evening they will forager at 66 High Road, Chiswick, to hear G3CCD demonstrate and discuss his Transistorised SSB Transmitter.

October 17 at St. John Ambulance Hall, Asfordby, gives date and venue for the Melton Mowbray crowd, but as the September one was the AGM, we are not able to give firm details of the programme. However, the hon. sec. would be pleased to satisfy your curiosity—see Panel for his address.

British Railways A.R.S. caters for the radio amateurs in the service of British Railways and associated organisations. They put out a Newsletter, of which the August one to hand is quite the best for some time.

Lucky your scribe has a good memory, and a well-indexed filing system. The Mid-Cheshire group hon. sec. waxed so enthusiastic about the group and all its activities that he completely forgot to mention who he was writing about! They have close links with the I.C.L. (Winsford)
THE MCC ZONES

Although, under the rules, all Club contacts count for the same score of three points, and there is thus no need to know the Zone in which the station worked is located, it is necessary for each Club to know the Zone in which it is itself located, for the purpose of applying the multiplier to its own final score of Club contacts. The Zones are as follows:

GM Zone: All Scottish counties.
Northern Zone: Northumberland, Durham, Cumberland,
Westmorland, Lancashire, and Yorkshire.
Midland Zone: Cheshire, Derby, Shropshire, Stafford, Hereford,
Worcester, Warwick, Nottingham, Lincoln, Leicester, Rutland, Northampton,
Bedford, Huntingdon, Cambridge, Norfolk, Suffolk.
Southern Zone: Somerset, Dorset, Gloucester, Wilts., Berks.,
South-Western Zone: Cornwall and Devon.

IDENTIFICATION CODES FOR CLUBS IN "MCC"

GW Zone: All Welsh counties.
GI/GD Zone: All GI counties and the Isle of Man.
GC Zone: Channel Islands.

Scoring

The score for Club contacts only will be arrived at by counting three points per contact (irrespective of Zone) and then applying to the total the following multiplier:

GM Zone: 2.0
Northern Zone: 1.25
Midland and GW Zones: 1.1
South-Western Zone: 1.5
GI/GD Zone: 1.6
GC Zone: 1.3
Southern Zone: 1.0

A01 Aberdeen
A02 Acton, Brentford & Chiswick
A03 Addiscombe
A04 A.E.R.E. (Harwell)
A05 Ainsdale
A06 Ampfield Contest
A07 Aardeer, (L.C.I.)
A08 Ashton-under-Lyne
A09 Albrighton
B01 Baden-Powell House
B02 Ballymena
B03 Bangor, Co. Down
B04 University College
B05 Barry College of Further Education
B06 Basildon
B07 Basingstoke
B08 Bedford
B09 Bishop's Stortford
B10 Blackpool & Fylde
B11 Bradford
B12 Brighton College of Technology
B13 Brighton (Technical College)
B14 Bristol
B15 Bristol (RGGB)
B16 Bristol (University)
B17 Bromsgrove
B18 Burnham-on-Sea
B19 Bury St Edmunds
B20 Bury St. Edmunds
B21 Belfast YMCA
B22 Brunel University
C01 Cambridge
C02 Cardiff
C03 Chelmsford
C04 Cheltenham
C05 Cheltenham (RGGB)
C06 Chepstow, Mon.
C07 Chesham
C08 Cheshunt
C09 Chester
C10 Chiltern
C11 Chippenham
C12 City University
C13 Cleveland
C14 Clifton
C15 Colchester
C16 Conway Valley
C17 Cornish
C18 Coventry
C19 Crawley
C20 Cray Valley
C21 Crystal Palace
C22 Culcheth
C23 Cumberland
D01 Derby
D02 Dorking
D03 Dudley
D04 Dunstable Downs
D05 Durham City
D06 Dover, Deal & District
E01 Ealing
E02 East Kent
E03 East Lancs.
E04 East Worcs.
E05 Echelford
E06 Edgware
E07 Exeter
E08 East Chesh
E09 East Barnet
E10 Enfield College of Technology
F01 Farnham
F02 Farnborough
F03 Fawley
F04 Flint
F05 Fulford
F06 Fylde
F07 Forest Glades
G01 Glasgow
G02 Glenrothes
G03 Gosport
G04 Government Communications
G05 Grafton
G06 Greenford
G07 Greenock
G08 Grimsby
G09 Guernsey
G10 Guildford
H01 Halifax
H02 Harlow
H03 Harrow
H04 Haverfordwest
H05 Havering
H06 Hemel Hempstead
H07 Henley-in-Arden
H08 Hereford
H09 Heriot-Watt University
H10 High Wycombe
H11 Hillingdon
H12 Hull
H13 Isle of Man
H14 Isle of Wight
K01 Keele (University)
K02 Kings Norton
L01 Leeds
L02 Leicester
L03 Leyton and Walthamstow
L04 Lichfield
L05 Lincoln
L06 Lindholm RAF
L07 Liverpool
L08 Liverpool (University)
L09 Lothians
L10 Loughton
L11 Luton
L12 Leyland Hundred
M01 Macclesfield
M02 Magnus Grammar School
M03 Maidhead
M04 Maidstone YMCA
M05 Manchester (University)
M06 Mansfield
M07 Medway
M08 Melton Mowbray
M09 Mid-Cheshire
M10 Mid-Herts
M11 Midland
M12 Mid-Sussex
M13 Mid-Warwickshire
M14 Moray Firth
N01 Nailsworth
N02 Newark
N03 Newcastle-on-Tyne (University)
N04 Newham
N05 Norfolk
N06 Northampton
N07 Northern Highlands
N08 Northern Poly
N09 North Kent
N10 North Liverpool
N11 North Staffs.
N12 Nottingham
N13 Nottingham (University)
N14 Nuneaton
N15 Norwood Tech.
N16 North Staffs. (Burslem)
M04 Maidstone YMCA
M05 Manchester (University)
M06 Mansfield
M07 Medway
M08 Melton Mowbray
M09 Mid-Cheshire
M10 Mid-Herts
M11 Midland
M12 Mid-Sussex
M13 Mid-Warwickshire
M14 Moray Firth
N01 Nailsworth
N02 Newark
N03 Newcastle-on-Tyne (University)
N04 Newham
N05 Norfolk
N06 Northampton
N07 Northern Highlands
N08 Northern Poly
N09 North Kent
N10 North Liverpool
N11 North Staffs.
N12 Nottingham
N13 Nottingham (University)
N14 Nuneaton
N15 Norwood Tech.
N16 North Staffs. (Burslem)

(NOTE: This list includes all Clubs entering MCC at any time in the last three years. Other Clubs desiring to enter this year's event should write in, immediately, for identification codes, enclosing a stamped addressed envelope. Letters should be addressed "MCC," SHORT WAVE MAGAZINE, BUCKINGHAM.)

EXAMPLES FOR OPERATING

Coventry works Derby, sends 59P1C8; Derby replies 569DOI,
Or Racial works Paddington, receiving 589P01 and sending 589R01

EXAMPLES FOR SCORING

Cornish (C17) in South-Western Zone makes 75 Club contacts
and ten single-point (non-Club) QSOs. The score for Club contacts
is 75 x 3 (225) and the multiplier allowed is 1.5, bringing this up to
337. Total score is thus 337 plus 10 equals 347.

Gloucester University (G01) in GM Zone, makes 45 Club contacts
and ten single-pointers. The score for Club contacts is 45 x 3 (135)
and subject to a multiplier of 2, bringing it up to 270. Total score of
270 plus 10 equals 280.
club, and wonder if there are any other radio amateur groups within the I.C.L. group of companies, who would care to get in touch with them? They meet at Oak House Farm, Beech Drive, Winsford, on each Wednesday evening.

The hon. secretary of Purley, writing about the programme for October, remarks that there is a Junk Sale on October 18, for which they will "definitely need the large Hall." Whether to house the Junk or the buyers is not specific—but there will be plenty of both, as this is a strong and active crowd. October 4 is an Informal, in the small hall. Both rooms are at the Railwayman's Hall, Whytelefe Road, Purley.

Down in the West Country are Cornish, who have a main meeting at the SWEB Clubroom, Pool, Camborne. October 5 is the date for this, when a short film of Club activities will be shown, followed by a talk on Goonhilly, the G.P.O. space station. On October 10 there is a lecture on Aerials by J-Beams Engineering Ltd., which will be at the Savoia Hotel, Newquay. In addition there are the usual SSB and VHF group meetings. There seems to be a slight problem as to the venue for the latter two, and all we can safely say is that they will be in the Truro area.

The Royal Navy have own group, R.N.A.R.S., and keep in touch by way of a newsletter, plus several activities, contests, and so on. An ex-R.N. type will find it worth while to become a member.

A new group was formed recently at Solihull. The initial meeting was attended by thirty members, and they are now arranging regular sessions on the third Thursday in each month; this means the October date will be the 17th, and it is hoped that on this evening there will be a Junk Sale. All other details may be obtained from the hon. secretary, address as in the Panel, p.504.

Three meetings are on the list for Swindon, at Penhill Junior School. October 9 is an Informal, and on the 18th there is the matter of the Club dinner. October 23 should be interesting, as they have a talk on the use of Silicon Integrated Circuits in SSB Equipment.

The interests of those who licensed for amateur television (A/TV) are catered for by the British Amateur Television Club, who put out their admirable CQ-TV journal, which is jam-packed with useful information. Anyone interested in the A/TV side would find a good reason for joining.

At Maidenhead there will be a lecture given on October 7, by GroOoD, on the subject of the radio amateur participation in the East African Safari Rally. Tuesday, October 15 is the informal, and over the weekend of October 19-20 the lads will be operating a Jamboree station—anyone welcome to come along and look at this one, GB3MAI at the Braywick Road Sports Centre—and of course visitors are always welcome at the normal meetings. G3FVC, who appears each month in the Address Panel, would be pleased to pass on details.

Lincoln Short Wave Club are going great guns—every Tuesday at No. 2 Guardroom, Sobron Barracks, at the end of Breedon Drive.

Bishops Stortford get together at the British Legion Club, Windhill, each month on the third Monday, and are at the moment going through a series of three lectures on Receivers. Visitors always welcome, of course.

Next move is to Ashford, where the local group uses the earlier form of the name as Echelford—and although

**SPECIAL NOTICE TO SECRETARIES!**

Closing date for the November issue is October 4, and for December's "Month with The Clubs" it will be November 8. No regular Club reports will appear in our issue for January 1969 because, as usual, the "Clubs" space will be given over to the write-up and discussion on MCC, the Magazine Top Band Club Contest (taking place over the weekend November 9/10, full details are in this issue). After December's "Short Wave Magazine," the next regular Club reports will be in our February issue, for which the closing date is Friday, January 10, 1969. Honorary secretaries (and those reporting for Clubs) are asked to note these dates carefully, because they ensure continuity in the Club reporting.
the name is old they are as lively as crickets and as "with it" as 1969. There is always something of interest in the programme, and this is reflected in the size of the membership lists, both licensed and otherwise.

Over at Guildford they put out a fine news-sheet which they call the Natter. This time there is a list of the future dates right through to April next year, which looks pretty fair. They, like so many other groups, will be organising a trip up to Town for the Show on October 5; and on the 11th and 25th October there in for a Natter Nite.

* * *

Up at Cambridge University there is a club; the Club call is G6UW, which has been in the Call Books for a very long time. This year they restart things again, and to attract new members they have a stand at the Societies' Show, at the Corn Exchange, October 8-9; the first meeting of the new session will be at the Psychology Department Lecture Room, 8.15 p.m. on October 15.

That Dunstable Downs crowd is booming, and they have now gone into business with a Newsletter, on which they are really to be congratulated, both as to contents and the presentation. For details, contact the hon. sec. at the address in the Panel.

The Radio Society of East Africa Newsletter indicates that the chaps in 5Z4 are fully aware of the need to be known in the right way by the right people in the right places! It also shows that, just as in U.K. most of the work is done by a tiny minority of the members.

In Hong Kong, the pattern is slightly different, the emphasis being on the "local club" aspect of things. They have a Club call, VS6AJ, and a Sunday-morning local net, together with a weekly social meet at the China Fleet Club.

Back home again, to Crystal Palace, where G3FZL sends out the news-sheet each month. From the latter, we gather that on October 19, G3JIR will reminisce about the Early Days. 8 p.m. at the Emmanuel Church Hall, Barry Road, London, S.E.22.

The Midland lads have a room at the Midland Institute where they get together on the third Tuesday in each month—and if you live in the Birmingham area you should not need telling where the Midland Institute is! for the few who don't, try looking for it in Margaret Street.

Verulam have G3SBA lined up for the October meeting, which as usual will be at the Cavalier Hall St. Albans, on the third Wednesday. Additionally, there is an informal, details of which can be obtained from the hon. secretary. Incidentally, G3SBA will deal, with assistance from his KW-2000A and a scope, with "P.E.P. and All That"—and one would think that the measurement of peak envelope power should appear more often on Club programmes, because there are not many stations using SSB who know just how they can measure their peak power in accordance with the rules.

At the time of writing we do not know exactly what the Surrey gang will be doing in October; whatever it is, it will be happening on October 17 at the Blue Anchor in South Croydon, and the lads will always be pleased to see new faces.

R.A.I.B.C., as we have remarked before in this piece, looks after the interests, and organises help as may be needed, for the invalid and blind members of our fraternity. Their newsletter Radical is certainly looked forward to each month by your conductor, who invariably finds a chuckle in it. The gang have their nets on Eighty—3-7 mc to be a bit more precise—at 1000z on Tuesdays, 1400z Wednesdays, plus, of course the Cheshire Homes net "same time and place" each Thursday.

At Rugby, the clubroom has now been redecorated, and the next step is the erection of aerials for all bands 160 to 2 metres. They have Tuesdays and Thursdays as the regular evenings, with R.A.E. instruction planned for Wednesdays. The new Hq. on which all the effort has been expended is at 10 Drury Lane, and they would be delighted to share the fruits of their labours with visitors and new members!

The first Friday in each month sees the Peterborough group having their lectures and demonstrations at the local Tech. College, but on the other Fridays in the calendar, they can be found "at home" in their hideaway, the Old Windmill on the London Road.

Reading missed the boat, almost, with their list for this month; they have a change of venue to report, to the Victory, The Meadow, Tilehurst, where they will be foragathering on October 8 and 22nd.

A busy month is in prospect for the Norfolk types, who have Hq. at the Brickmakers' Arms, Sprowston Road, Norwich; October 7 sees a lecture and discussion on Linear Amplifiers, the 14th is an informal evening, the 21st a Quiz, and on the 28th G8AUN will give a talk on Industrial Electronics. The first session in November is to be a Junk Sale—which is sure to be popular!

* * *

Finally, we are asked to make it clear that WAMRAC welcomes members of any religious persuasion. This international radio amateur Club—which was founded by the Rev. Arthur Shepherd, G3NGF, who devotes a great deal of effort to making it a worth-while force in the radio amateur context—is not confined to Methodists. At least 20 per cent of WAMRAC members belong to other Churches.

Deadline

Which clears the clip for this time; your next reports should deal with the goings-on for November, and be composed in time for them to arrive with us by first post Friday, October 4, addressed to "Club Secretary," SHORT WAVE MAGAZINE, BUCKINGHAM. To do most good, make sure you include the address of your Hq., and check the name, address, and telephone number of your honorary secretary.

73, and hope to see you at the Show.

Reports too late for coverage in this feature—were also received from the following Clubs: Civil Service, YeoVil, Scarborough, Saltash, Lothians, Southgate, South Manchester and Pudsey.—Editor.
### LIST OF COUNTRIES BY PREFIXES, ALSO SHOWING ZONES

(Corrected to September 1968)

#### CURRENT PREFIXES ONLY

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<tr>
<th>Prefix</th>
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(Note: This list of countries is solely for checking the location of Amateur Radio stations. It is not a gazetteer and not a claims check. Prefixes marked with an asterisk are unofficial.)

The Zone areas, given in ( ) after each country or prefix, can be located exactly from our “DX Zone Map.” Another useful guide is the “Amateur Radio Map of the World” (Mercator projection).

Alphabetical List of Countries overleaf.
## ALPHABETICAL LIST OF COUNTRIES, ALSO SHOWING ZONES

(Current Prefixes — Corrected to September 1968)

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SIMPLIFYING SOME CALCULATIONS

THE EASY APPROACH

E. JOHNSON (G2HR)

WHY do the pundits blind us with science when so often a simple answer is all we require? The writer frequently hears alarm expressed on the bands where, for example, a standing-wave ratio of 1:1 cannot be achieved.

Admittedly a high SWR can cause dielectric breakdown and ohmic loss at the respective voltage and current loops but this apart, we are more concerned with radiating the maximum power generated by the final stage, and ultimately what it means to the signal at the other end.

**SWR Meters**

A common form of SWR meter has an arbitrary scale, and from the forward and backward readings one calculates the standing-wave ratio and the reflection coefficient, $K$. The two basic formulae are as follows:

(a) $SWR = \frac{I_r + I_f}{I_r - I_f}$

(b) $K = \frac{SWR - 1}{SWR + 1}$

where $I_r = \text{forward current}$, $I_f = \text{backward current}$, $K = \text{reflection coefficient}$.

It is customary to install the SWR meter between the $pi$-section output and the ATU. If a low-pass filter is used to combat TVI, then it is important to aim for a low SWR ratio, as with the usual 80-ohm load into which most transmitters are designed to work, the filter must "see" this value on the input and output sides in order to achieve the attenuation curve for which it is designed.

**Formula Simplification**

What we also want to know, however, is what our true power output is, and what it means to the signal at the other end if the SWR is not 1:1.

In formula (b) above, SWR may be replaced by the right-hand side of formula (a). This will give us the complex fraction:

\[
K = \frac{I_r - I_f}{I_r + I_f} - \frac{1}{I_r + I_f} + 1
\]

This simplifies to

\[
K = \frac{I_r}{I_f}
\]

This, however, indicates reflected voltage or current. As we are interested in power, the final formula becomes

\[
K^2 = \left(\frac{I_r}{I_f}\right)^2
\]

As we have the power output of your final, and you have the true power delivered to the ATU. As this is what we really want to know, is this not simpler than working out your SWR first, unless you really are interested in this? The dB loss can then easily be calculated by evaluating 10 log. of the ratio of power output, and power actually delivered to the ATU. The latter is, of course, power output minus the reflected component. It is doubtful whether an untrained ear can detect much under a 2 dB loss, anyway, so don't lose too much sleep if you cannot achieve that sacred 1:1 ratio.

As an example, an SWR of 4:1 means a reflected power coefficient of 0.26. In other words, 100 watts output will deliver 64 watts to the load. This is a loss of less than 2 dB.

**MORE COURSES FOR THE R.A.E.**

Further to the listings on pp.442-443 of the September issue of SHORT WAVE MAGAZINE, we have since been notified of the following:

**Brighton :** At the Technical College, two evenings a week. Apply immediately, Richmond Terrace, Room G.9, or ring Brighton 66544 for appointment.

**Glasgow :** At Allan Glen’s School, Cathedral Street, on Mondays and Thursdays, 7.30-9.30 p.m. This course has already started, under the direction of GMAAX, and the inclusive fees is 20s.

**Grantham :** At the College of Further Education. Course has already started, Monday evenings 6.45 to 8.45 p.m., with E. J. Pestell, G3BPP, as tutor.

**London (Islington) :** At the De Beavoir GLC Evening Institute, Tottenham Road, Balls Pond Road, N.1, on Mondays, Wednesdays and Fridays, 7.30-9.30 p.m., as booster for the R.A.E. Course, under the direction of F. J. Barnes, G3AGP.

**Mexborough :** At Schofield Technical College, Park Road, on Wednesdays 6.30-9.30 p.m., with G3UQA on the air. Apply immediately, at the College.

**Womborne (Staffs) :** At the Evening Institute, Ounslow School, Wednesday evenings, 7.0-9.0 p.m., with R. W. Tomkys, G3NOW, as instructor.

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G3XJM, G. Sawdy, 7 Beech Grove, Guildford, Surrey.

G3XNX, D. C. Chivers, Seascape, Parkham Road, Brixham, S. Devon. (Tel. Brixham 4504.)


G3XPI, B. Hallows, 3 Southdown Close, Rochdale, Lancs.

G3XPR, I. M. Bassett-Smith, 185 London Road, Cheltenham, Glos. (Tel. Cheltenham 23667.)

G3XQT, F. G. Holt, 77 Kent Road, Woods Estate, Wednesbury, Staffs. (Tel. 01-460 7774.)


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Small Advertisements, Readers—continued

WANTED: Communications receiver about size of BC-347, or smaller; frequency range must include 150 kc to 4·0 mc (Northern Ireland).—Box No. 4685, Short Wave Magazine, Ltd., 55 Victoria Street, London, S. W. I.

WANTED: An 813 valve; 813 base and heater transformer; pair CV-187 rectifiers. Also 200 mm² variable capacitor, rated 5 kV.—Vickery, 2 School Cottage, Cadeleigh, Tiverton, Devon.

Sell Eddyson 840C, or EXCHANGE EB-35 with correct adjustment. Offers?—Dr. Dunn, Leavedens Hospital, Abbots Langley, Herts. (Tel. Garston 72125 or 72222.)

For Sale: Lafayette communications receiver KT-320, with manual, price £28. Also ex-WD beam rotator, with remote indicator, £10 or near offer.—Grove, 14 Sterling Avenue, Edgware, Middlesex. (Tel. 01-928 8434.)

Offering: A superb R.216 receiver, covering 19 to 165 mc, in brand new condition, with matching PSU and complete with all connecting cables. Sensible offer, only, please, and best secures. Carriage extra.—Hayward, Sunnyfields, Lighthouse Road, St. Margaret's Bay, Nr. Dover, Kent.

Bargain! A K.W. Viceroy Mk. II, complete with extra half-lattice filter and K.W. PSU, no modifications and in really mint condition. Offer. Gift at £75.—Dedman, G2NH, 75 Woodlands Avenue, New Malden, Surrey. (Tel. 01-942 7246.)

For Sale: American Heath SB-300E receiver, filters for AM/CW/SSB, condition as new, will deliver or you collect—Ring Mitchell, G2AMG, Great Chartwell 276 (Shropshire), for price.

Sale: CR-100 receiver, in good working order, £15 or near offer. Also quantity components and copies Short Wave Magazine for free.—Roswell, 21 St. Peter's Road, Harborne, Birmingham 17. (Tel. 021-427 2320.)

For Sale: Eddyson EB-35 receiver, in as new condition, price £45.—Saxby, Studio 59, 59 Shaftesbury Avenue, London, W.1. (Ring 01-487 3141, day, or 01-723 6455, evenings.)

Sale: Compact VHF Rx, tunable over 60 to 180 mc, with unique signal on-off indication, complete with internal mains PSU and speaker, bargain at only £25. Signal generator/wattmeter, tunable 140 to 260 mc, complete with xtal, connecting leads and instruction manual, £18. Marconi valve voltmeter, with probe, circuit and internal mains PSU, measures AC/DC volts in five ranges 0-300v, usable up to 200 mc, £20. Brand new VHF signal generator, tunable 160 to 255 mc, with xtal, output meter, all leads and aerial, £10. Carriage extra. Please include s.a.e. with enquiries.—Hayward, Sunnyfields, Lighthouse Road, St. Margaret's Bay, Nr. Dover, Kent.

For Disposal: Equipment of the late G2ZCM, Chesham, Bucks. Transmitters, receivers, converters and antenna systems covering 160 metres to 70 centimetres. Includes fixed-station and portable gear, also test equipment and components. Many items brand new and in makers' cartons. Everything on offer. Send s.a.e. for detailed list.—Rickett, G3P5Y, 29 North Road, Berkhamsted (5622), Herts.

Selling: Healthkit RA-1 amateur band receiver, £67. Codar PS500 Preselector, price £32 10s., buyer responsible for transport.—Poulter, G3WIHK, 270 Arvon Road, Morden, Surrey.

Wanted: Hallcrafters SX-42 in good condition; and SX-28, could be incomplete or not working. Also Hallcrafters Mark II U.S. Army Signal Corps receiver Type R.274/FRR in any condition. Will collect. Ring or write.—West, 64B Beach Road, Newton, Porchawl (2276), Glan., South Wales.

Sale: Codar RA2, 12V, P.S.U. £8. Shure 22 microphone, £3. Hansen 75-6W SWR bridge, 40s. All items as new.—Hamer, 7 Arundel Road, Cheylesmore, Coventry, Warks.
SMALL ADVERTISEMENTS, READERS—continued


WANTED: Withers solid-state VFO for two meters, in good condition. Selling: Minicollor MR-37 receiver, in good order, with manuals, price £15, details on request.—Stevenson, 19 Johnstone Road, Newent, Glo.

FOR SALE: K.W. Vespa Mk. II, in as-new condition, price £110 or near offer.—Wilson, 24 Gospot Road, Fareham (0010), Har.

STATION OF THE Late G5C7T, East Grinstead: Includes Heathkit DX-100U with T/R switch; CR-100 receiver; home-built Z-match; BC-221, re-calibrated; 4/4 beam for two metres; Eddystone bug key; RSGB and ARRL (1967) "Handbooks". Offers and enquiries with s.a.e., buyers to collect.—Lord, G3NSK, QTH, or ring East Grinstead 25149.

FOR SALE: Bush TV-56 Rx for TV/DX, perfect and unconverted, with circuit, £10. Marconi Type TF-463B Wave_meter, coverage 20 to 300 mc, perfect condition, £10. Valve voltmeter Type TF-4228, £5. Panoramic receiver Type IF-69A/AL12, 30 mc, £15. Two transistor Miniature AS.SU stabilized P6S, 300V., with handbook, £7 each. WANTED: Cradle-type valveholders for EC53 valve.—Hardman, 24 Mill Drive, Henfield, Sussex. (Tel. Henfield 2609, after 6.0 p.m.)

SALE: Marconi R.1475 receiver, coverage 2-0 to 20 mc, ideal for beginner in good working order, including speaker, headphones and all connecting leads, price £15, including carriage. (Surrey.)—Box No. 4686, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

OFFERING about £15 for a CR-100 receiver in good condition. Preferably in London area, as buyer would collect.—Ring Hopkins, 01-907 4676.

SELLING: R.1475 receiver, needs some attention, £5. BC-906 waveform, coverage 145 to 230 mc, £20. Two 2N3632 transistors, unused, each capable 14w. on two metres, with data, the pair £9.10.46W. AM 108 mobile rig, partly modified for two metres, with circuit, £10. Two-metre TX, QQV03, PA, less modulator and PSU, well built in 5in. by 5in. by 5in. cabinet, with meter. £10. BC-825A, with QQV03-20A, QQV06-40 valves, 50s. Ten-element aerial for 70 centimetres, 30s.—Whitlock, 43 Ebbes Road, Portsmouth, Hants.

SALE: Eddystone EA-12 receiver, very little used and as new. Price £15, would prefer buyer to inspect and collect.—Rowell, G5RL, 14 Market Hill, St. Ives (3183), Huntingdonshire.

OFFERING: R.C.A. AR88 receiver, in excellent condition, will deliver 50 miles.—Lord, GSBN, M0ir, Burton-on-Trent, Staffs. (Tel. Swallcliffe 7597.)


SALE: Precision Wave meter W.1101A, complete with crystal and calibration charts, 200 kc to 20 mc. £10. Brand new Marconi VHF slg. gen. Type 6, £10. Monostable pulse generator Type 51 with PSU, £10. Audio amplifier with PSU, £4. Marconi RP/AF signal generator with PSU, £10. PSU Type 234, £5. VHF Rx R.1933A, tunable 60-80 mc, FM/AM, brand new, £10. VHF front end, tunable 180 to 250 mc. £5. Carrier, extra, S.A.E. with inquiries.—Hayward, Sunrifyelds, Lighthouse Road, St. Margaret's Bay, Nr. Dover, Kent.

SALE: Pair of bases for 4CX250B, 50s. each. Pair 4CX250B valve used but OK, 50s. each. New p.i.f.e. bases for QQV08-40, etc., 5s. each.—Box No. 4672, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

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SMALL ADVERTISEMENTS, READERS—continued


WANTED: For Cash Purchase, KW-2000A in mint condition, with its mains PSU. Also wanting to buy a good hi-fi stereo preamp/amplifier. Have for SALE a near-perfect BC-221 at £17 10s., and an Osram FM tuner, 60s.—Dale, G3SPF, QTHR Orpington. (Tel. Farnborough 54512.)

For Immediate Disposal, all items in condition and appearance absolutely as new: Sommerkamp FL-200B, £125. Sommerkamp FL-1006, £25. SWR bridge with remote indicator, £4. Quality American mechanical bug key, £4. Foster Hi-Z dynamic microphone, with heavy telescopic desk stand, £7. Acos xtal microphone, with desk stand, 40s. Heathkit valve voltmeter V-7AU, factory wired, £10. Heathkit signal generator RF-1U, £10. Heathkit GD-1U, factory wired, £12. Large and excellent collection of hand tools, small electronic equipment, large and small variable condensers, inductors, roller-coaster, etc. All items, purchasers to collect or arrange transport.—J. Arthur, 11 Strand, Barnstable, North Devon. (Tel. Barnstable 3026/7, or 9271 3026.)

WANTED: Twenty-metre bandspread coil pack for HRO.—Bryan, 6 Leighton Road, Manchester, 16.

WANTED: Eddystone 888A receiver.—North, GH10, Grafton Manor, Grafton Lane, Bromsgrove (2151). Worcs.

MUST Clear: AC128's, 6d.; BY-100's, 2s. 6d. Diodes at 2d., 3d. and 4d. Selection of semiconductors, 2s.; all guaranteed working. For all these, and more, send s.a.e. for price list.—Knights, 34 Greenways, Stopsley, Luton, Beds.

WANTED: For Sale: National HRO, nine GC coil packs, with hefty PSU, speaker and repainted hammer-finish, price £20. Also Lorenz LO-15 page-printer, recently overhauled, in excellent condition and with some spares, £25. Wavemeter W.1191A, in orginal transit case, in good condition, with correct charts and spare valves, £3. RTTY Terminal Unit, Audio ATM AP/FAE, in good condition, £17. All this equipment with circuits and information, £65 for The Lot. Demonstrations a pleasure. Buyer inspects and collects. And I WANT, with no mods., a Hallicrafters SX-28, SX-32 Skyrider or similar, up to £25 suggested. (On holiday till Oct. 13.)—Wickstead, 11 Norman Road, Ilford, Essex. (Tel. 01-478 5067.)

SALE: Correspondence Course for the R.A.E., with questions and answers, also beginner's Morse and test records, price £7.—Huslam, 49 Tyzaek Road, Woodseats, Sheffield S8-OGL, Yorkshire.

WANTED: Small Oscilloscope, and Z-match unit.

For SALE: A mint R.C.A. AR88D with speaker, headphones and manual, price £10; would assist with delivery. BC-432—six-volt, unpowereed, 60s. Mains Class-D Wavemeter, 60s. Buyers to collect.—Muller, G3VYP, 423 Chester Road, Castle Bromwich, Birmingham 36. (Tel. 021-747 2358.)


SMALL ADVERTISEMENTS, READERS—continued
**November Issue Appears Friday, October 25**

Single-copy orders should reach us by Wednesday, 23rd. If you want "1st class" posting, please include 3d. extra (total 4s. 3d.). We will despatch on Thursday, 24th, but we are in the hands of G.P.O. as regards delivery.—Circulation Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

**Selling:** Trio 9R-59 Rx, little used, with stereo headphones; de-Luxe Jioslick with Type 3A ATU, with 100ft. feeder; also variable-voltage rotary transistor, rated 0-260v. AC at 2-5A. Price £35.—Tarver, 26 Brewer Road, Bulkingon, Nuneaton, Warwickshire.


**Sale:** Heathkit DX-40U, one year old, £20. R.209 Rx, coverage 1-10 mc, 6v. version, £29. Phillips tubes, twin model, EL3522, with microphone and taps, £15.—Loughton, G5PZV, QTHR.

**Selling:** Complete outfit. Trio 9R-59 communications receiver, Codar PR-30x preselector, Joystick aerial and Joymatch, with headphones, etc., superb performance on all bands. Outstanding value at £27, or near offer.—Kyle, 59 Bathurst Walk, Iver, Bucks. (Tel. Iver 963, evenings; Stanfines 55281, office hours.)

**Sale:** K.W. Vanguard, Mk. I, at £25. Also home-built converter, QP-160 front-end and Eddystone dial, with built-in PSU, £13.—Baker, GSPZ, QTHR (Yorkshire).

**Selling:** KW-600 Linear Amplifier, as new, £25. OSS-88U 3in. Oscilloscope, in mint condition very compact and with carrying case, £20. Multimetre, brand new, 59s.—Barry, 15 Fairlawn Court, Acton Lane, London, W.4.

**Selling:** Tele-Seventy Transceiver for 80/1000m., incorporates RF-FC-2/IF receiver, PSU and semiconductor push-pull modulator, in metal case, £10. National NCX-3 transceiver, with maker's AC/PSU, capable 200v. p.e.p. SSB, 200v. CW and 100v. AM, price £10.—Buckingham, Gilroy, London, Heath, Upton-on-Severn (2244), Worcs.

**For Sale:** Sommerkamp FL-200B transmitter, in very good condition, £105 or near offer. (Yorkshire.)—Box No. 4702, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.


**Wanted:** Receivers Edystone 830/7, EA-12, 940, Hallcrafters SX-100/2, or similar, for cash.—Davidson, Westhill Road, Ryde, Isle of Wight.

**For Sale:** George VFO Model 104/4, less dial, £5. HRO coil packs, 10 to 160 metres 40s. Plus postage.—Gosling, G3FYV, 79 Toothill Road, Loughborough (3938), Leics.

** Bargain:** Brand new B.40A receiver, purchased recently from well-known dealer at cost of £35, with new instruction manual, at £22 or near offer.—Davidson, 19 Cavendish Avenue, London, N.3. (Tel. 01-346 4353.)

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FOR SALE: BC-221, FB condition, in steel crackle cabinet, with correct charts and stabilised PSU, £18. Woden U63 mod. transformer, 30s.; DTM-I driver xformer, 7s. 6d. Also 19 Set Mk. III, unmodified, 40s.—Crook, GJ3JM, 59 Tonge Park Avenue, Bolton, Lancs.

SALE: Eddystone EB-36 receiver, nine months old, still under maker's guarantee and almost unused. Can be seen and tested in London. Price £38, or near offer.—Box No. 4700, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

M Certification: SALES: P.F., £30; VHF Xtal Monitor Type 4, 10s.; VHF Aerial System Type 3, 5s.; VHF Aerial systems Types 2A and 10, 5s.; R.208, 20s.; UHF Test Set Type 20, 10s.; R.3096, R.3102A, R.26 (UHF), Indicators Type 20 and 48A, Amplifiers 20 and 10s. T.3065A/B, 30s.; Crystal Calibrator Type 18, 20s.; American Loran Indicators and Receiver (complete manual), 40s.; VHF R.1392A rx/rack/control gear, 30s.; Rebecca Test Set Type 31, 30s.; Marconi Valve Voltmeter TF-428B/1, 20s.; Canadian W. S. No. 58, 25s.; Waveform Generator Type 51, 30s.; Oscilloscope Test Set Type 74, including Rx's R.3097R, R.3090, R.40, Calibrator Type 120, 30s. Circuits only for following: R.3097, R.3098, Type 1951 (set, 48A), Indicator Type 40, Control Unit 381, 20s.; Control Unit 704, 20s. Signal Generator Type 6, 20s.; UHF Special Rx, Mk. II, 5s.; Type 31 (BC-1000), 5s.; R.220, 20s.; Test Set 31, 10s., All enquiries s.a.e.—Hayward, Sunnyfields, Lighthouse Road, St. Margaret's Bay, Nr. Dover, Kent.

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WANTED: T.W. two-metre converter, TF 28 to 30 mc, and self-powered model preferred; also a Hammarlund S.200 speaker.—Tomes, 15 Balham Park Road, London, S.W.12.

FOR SALE: Valves, new and boxed, 4400A, £10; 4CX250F, £5; 4-250, £5; 4-125, £3; 813 (unboxed), 20s. Type SB.640 V/F, offers? WANTED: SB.200, in any condition.—Pilkington, 1 Regents Lane, Bexley (2778), Lancs.

SELLING: Eddystone EA-12 receiver, at £110 or near offer.—Wooloff, 7 St. Mary's Avenue, Humberstone, Leicester.

WANTED: KW-77 or Eddytone 888A receiver, also K.W.Z., Z-match. Would consider KW-2000. Regret no transport available.—Prype, 36 Hart Road, Byfleet, Surrey.

SIDEBAND Equipment For Sale: K.W. Viceroy Mk. II, coverage 10 to 80m., with Mos, p.44 and home-built PSU, all in very good condition and giving a big signal, price £20, delivered free. Also a immaculate HA-350, which covers 10-160m. with variable selectivity, an excellent CW/S.S.B receiver, at £55.—Horsfield, GMSVUU, 12 Laburnum Grove, Lenzie, Dunbartonshire, Scotland. (Tel. Glasgow K 3398).

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