

The SHORT WAVE Magazine

VOL. XIX

NOVEMBER, 1961

NUMBER 9

a new concept from hallicrafters

a complete AM/CW station . . .

IN KIT FORM

OR

FULLY WIRED AND TESTED



HT 40 TRANSMITTER

This handsome transmitter gives excellent CW and AM performance with easy tuning and neat styling.

Price : HT 40 KIT, £43 Fully Wired and Tested, £52

FEATURES

D.C. output 75 watts T.V.I. filtered. Fully band-switched covering the 80, 40, 20, 15 and 10 metre amateur bands.

VALVE LINE UP

6DQ5, PA ; 6CX8 crystal Osc. and driver ; 12AX7 speech amp., 6DE7 modulator ; silicon H.T. rectifiers.

CONTROLS

Function switch (A.C. off, tune, standby, AM., CW) ; band selector ; drive control plate tuning ; plate loading crystal V.F.O. switch ; grid/plate current metre ; pilot lamp.



SX 140 RECEIVER

This receiver has been designed as a matching unit to the HT 40 transmitter and covers the amateur bands from 80-10 metres and also the American 6 metre band.

Price : SX 140 KIT, £50 Fully Wired & Tested, £56.10.0

FEATURES

High sensitivity ; sharp selectivity ; complete with R.F. stage, S-meter, aerial trimmer and crystal calibrator ; tuning ratio 25 : 1.

VALVE LINE UP

6AZ8 tuned R.F. amp. and crystal calibrator ; 6U8 oscillator and mixer ; 6PA6 I.F. amp. and B.F.O. ; 6T8A 2nd detector, A.V.C., A.N.L., and 1st audio ; 6AW8A audio power amp. and S-meter amp. ; silicon H.T. rectifiers.

CONTROLS

Tuning ; aerial trimmer ; cal. reset ; function ; band selector ; cal. on/off ; R.F. gain ; A.N.L. on/off ; selectivity/B.F.O. ; audio gain ; S-meter adjust ; phone jack.

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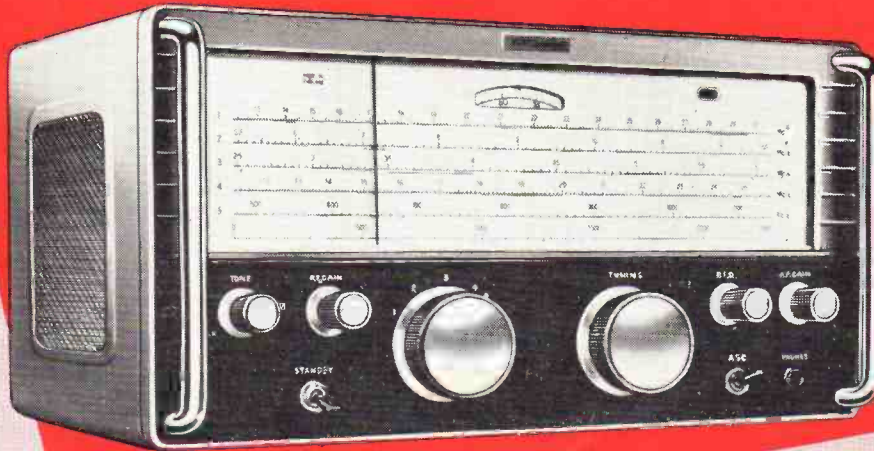
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to

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- ★ **IMPROVED ELECTRICAL PERFORMANCE**
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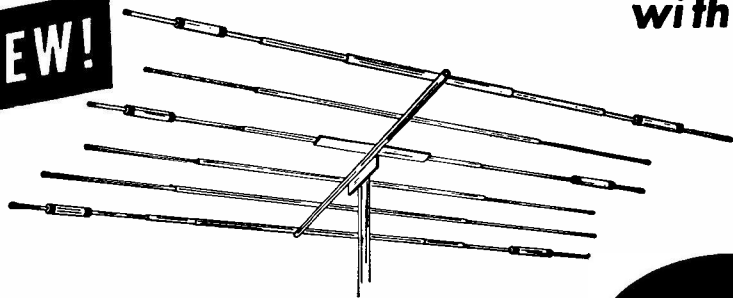
ILLUSTRATED BROCHURE GIVES SPECIFICATION AND FULL DETAILS

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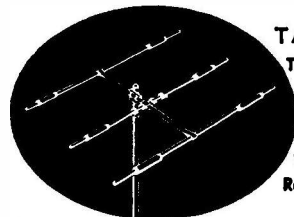
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with MOSLEY AERIALS

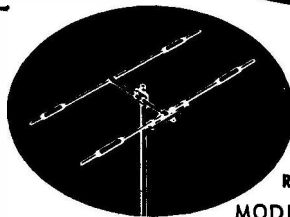
NEW!



The Three Band Beam that will give your signal that DX punch . . . for 10, 15 and 20 metres. Maximum legal amateur power. Low SWR with high gain and front-to-back ratio. Fully rust and corrosion proof.
MODEL TA-36



TA-33 Jr.
 Three-element rotary beam aerial.
 10-15-20M.
 Rated to 300W.

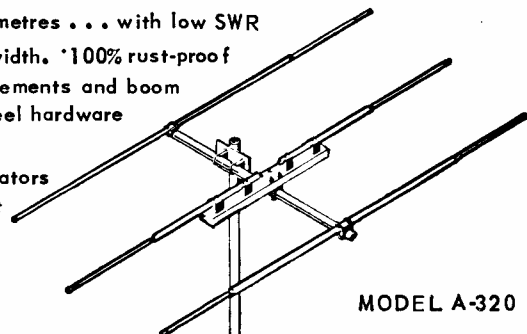


Two-element rotary beam aerial.
 10-15-20M.
 Rated to 300W.

MODEL TA-32 Jr.

COMMAND YOUR BAND with a MOSLEY POWERMASTER AERIAL

For 10, 15 or 20 metres . . . with low SWR over entire bandwidth. 100% rust-proof . . . aluminium elements and boom . . . stainless steel hardware . . . high impact polystyrene insulators . . . all the finest . . . all built to last!



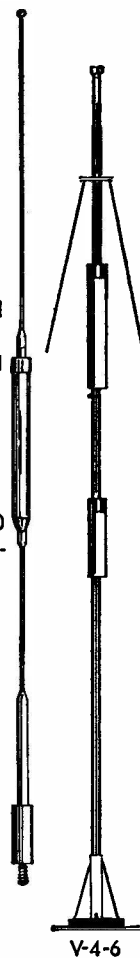
MODEL A-320

3 Band Mobile Whip Aerial for 10, 15 and 20 metre bands. Use with standard base loading coils for 40 and 80 metre operation.

MODEL MA-3

Vertical Aerial, 10 thru 40 no bandswitching is necessary.

MODEL V-4-6



V-4-6

new! 7-Band SWL/DX Dipole Kit for 11-13-16-19-25-31-49 meters

Here's a low cost 7-band receiving dipole aerial kit that will pick up those hard-to-get DX stations. Everything included . . . just attach the wires and you're on the air! Weatherproof traps enclosed in Poly-Chem for stable all-weather performance.
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Complete with

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- Insulators
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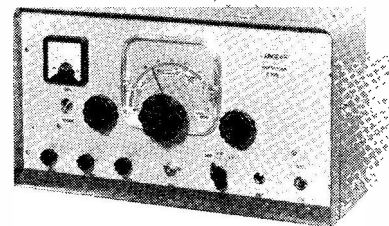
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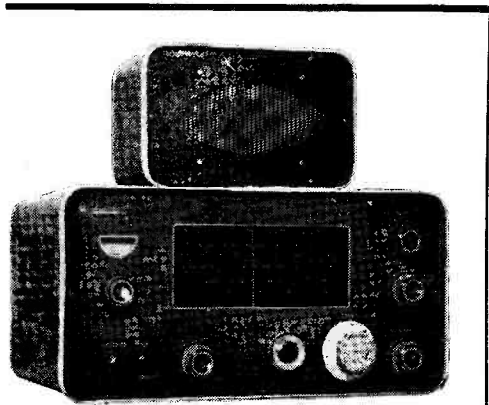
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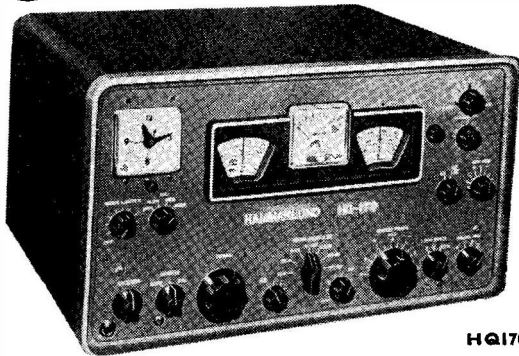
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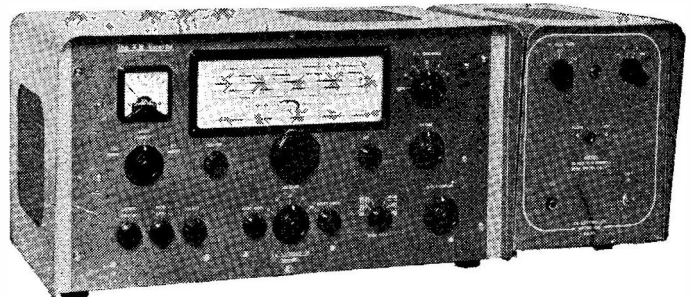
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Managing Editor: AUSTIN FORSYTH, O.B.E. (G6FO)

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FOR THE RADIO AMATEUR AND AMATEUR RADIO

The SHORT-WAVE Magazine

E D I T O R I A L

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Whether you come to buy, to inspect, to discuss, to criticize or to argue — or simply to see, and be seen — this year's radio amateur Show will be just as interesting and exciting as those of previous years.

For those who journey up to Town from distant parts, we will repeat what we have said in previous years: Saturday is the busy day; Thursday is a quiet day; if you can get to the Show after lunch-time on any of the days Wednesday to Friday, you are fairly sure of being able to move around in reasonable comfort.

But whenever you come, you are assured of a welcome and of much to see representing what is the latest and best in the way of equipment for the modern AT station, and its operator.

*Austin Fobler
G6FO.*

WORLD-WIDE COMMUNICATION

Multi-band Aerial Tuner

DESIGN, CONSTRUCTION
AND OPERATION

F. G. Rayer, Assoc. Brit. I.R.E., (G3OGR)

This article will be of particular interest to those starting up on the air, and wanting a good basic design covering aerial system and tuner unit. There is nothing new in the arrangement, but the treatment is practical and straightforward.—Editor.

PROBABLY the simplest form of multi-band transmitting aerial is an end-fed wire which is a half-wave on the lowest frequency band used, as it will be two or more half-waves long on the higher frequency, harmonically related bands. It is thus an easy means of working on several bands.

Many transmitters have a *pi*-output circuit, and difficulties can arise when trying to operate an end-fed aerial directly from this. On some bands the aerial may present so high an impedance that the transmitter cannot be loaded. Or the *pi* loading condenser may need to be at so low a capacity that flash-over develops. In these circumstances, the circuit has poor harmonic suppression and this, coupled with the harmonic radiating tendencies of the aerial, may cause trouble. These difficulties can be overcome by using a tuner between transmitter and aerial. Many circuits for this purpose exist, and the one used for the tuner described here is shown in Fig. 1.

The 3-turn loop, or link, is connected back to the transmitter. This gives a low impedance

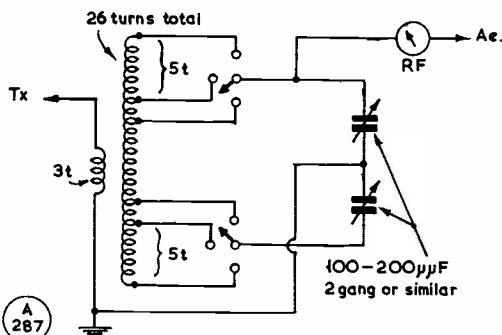


Fig. 1. Circuit of the aerial tuner described by G3OGR.

load on the PA stage. The larger coil winding is tapped so that it can be tuned to resonance on the required bands. An Eddystone frequentite former (type 1090) 2½ in. in diameter, and taking 26 turns at eight turns per inch, was used for 3.5-3.8 mc and higher frequency bands. The wire can be 20g. or similar. Tinned-copper wire is easiest to tap.

The 2-gang condenser and switch were surplus from a T.1154. There is, of course, no need to use these particular components. Coils of other dimensions may be employed, the number of turns being adjusted to secure resonance, as necessary. A single condenser is also satisfactory, the centre of the coil then

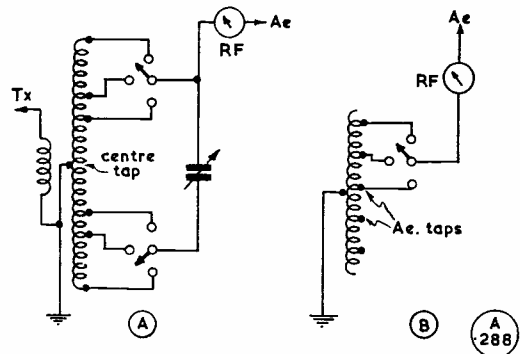


Fig. 2. Circuit of the tuner using a single-section condenser.

being earthed, as in Fig. 2A. In this case, an insulated extension shaft must be fitted to the condenser, which should have a plate spacing similar to that of the PA anode tuning condenser.

With the aerial and transmitter used at G3OGR, it was found that correct loading was possible with the aerial fed as shown in Fig. 1, and also as in Fig. 2A. In some cases, it may be found preferable to tap the aerial towards the centre of the coil, for each band, as in Fig. 2B. This can be done by making use of a third wafer on the switch.

Tuner Construction

The tuner was built in a cabinet 12 in. x 8 in. x 7 in. merely because this was available and matched other equipment. The parts mentioned can actually be accommodated in a smaller box, 9½ in. x 6½ in. x 4 in. deep. The coil should be at least 1½ in. clear of a metal chassis, panel, or case.

The physical layout of Fig. 3 allows for reasonably short leads between condenser,

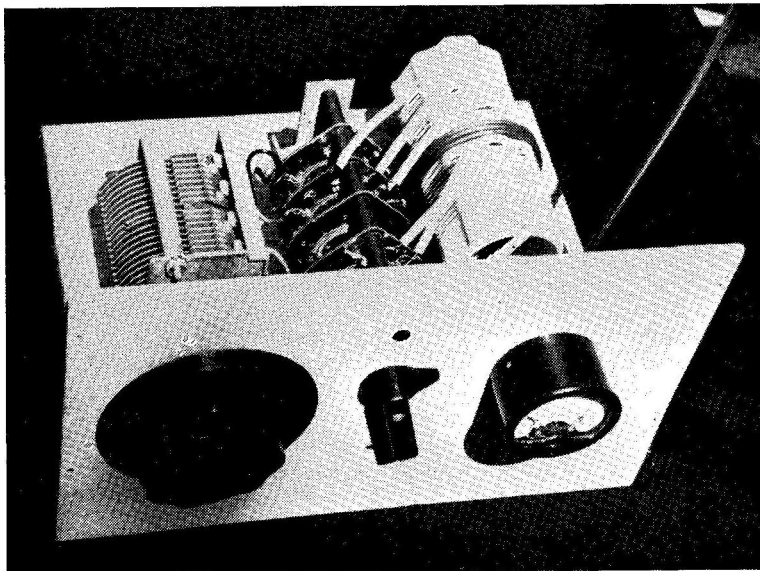
switch, and coil. With the coil specified, the full 26 turns are used for 3.5 mc and the tapings for 7 mc are 5 turns in from each end, as in Fig. 1. The remaining switch position gave satisfactory operation on both 14 mc and 21 mc. Permanent tapings should be soldered on only after testing with the actual aerial to be used.

The loop is of well-insulated wire tightly wound over the centre of the coil, and 3 turns were found to be satisfactory. With some transmitters, this number may need changing.

The RF meter can be used to check operation. The current obtained will depend on the transmitter power and aerial impedance and will vary from band to band. An 0.5 amp meter will do, but a 300 mA instrument with a direct shunt was found satisfactory for all bands. An exact reading of current is not required, as the meter is simply to show that the transmitter is giving its accustomed output.

Tx/Rx Switching

If, as is most satisfactory, the receiver is to be fed directly from the transmitting aerial,



Construction of the aerial tuning unit discussed in the article. The tapped coil at right can be arranged to cover all bands 10-80 metres by switch selection — see circuit diagrams — the condenser being connected either parallel or split stator. The meter is a moving-coil RF instrument directly in series with the aerial; it is used only to obtain a maximum or reference reading for each band.

this can be arranged as in Fig. 4A. With some receivers, an improvement in signal strength is obtained if the tuner remains in circuit, as in Fig. 4B. If local noise is troublesome, "B" may be much preferable to "A." With a particular receiver at G3OGR, best results of all were obtained by wiring one dipole input terminal to earth, and taking the other to the tuner as in Fig. 4B. This gave a reduction in noise, but an increase in signal strength of two S-points, on some bands.

Complete System

A brief description of the complete system may be helpful in some cases, so this is shown in Fig. 5. The aerial length cannot be an exact multiple on all frequencies, but about 137 ft. over-all is often used for the 3.5 mc, 7 mc, and 14 mc bands. For these bands and 28 mc as well, 138 ft. is near usual length. The bend also influences the length. However, it was found possible to obtain satisfactory results with various aerials. These were 130 ft., 136 ft., 146 ft., 136 ft. with about 8 ft. in the down-lead wound as a spiral, and similar wires. The aerial does need to be near a half-wave, or multiple of half-waves, on the required bands, or tuning difficulties may arise.

Resonance can be checked by connecting the receiver as in Fig. 4B. With the receiver and

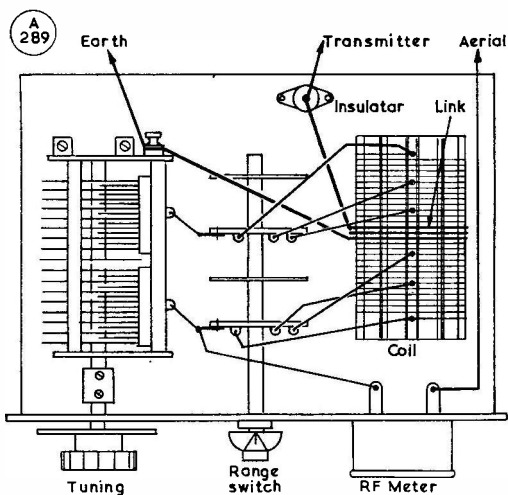


Fig. 3. General layout plan for the Multi-Band Aerial Tuning Unit, designed to keep all leads short.

tuner switched to the same band, the condenser on the tuner should give a definite peak in sensitivity, as shown by the receiver tuning meter. (If the receiver has no meter, tune for maximum signal strength, with the AVC off if necessary.) Resonance on the 3.5 mc band should be obtained with all the coil described, and the second switch position should allow tuning on 7 mc. Tappings for the higher frequency bands will depend more upon the aerial and its natural frequency, and are best found by trial.

Referring to Fig. 5, C1 is the usual PA tuning condenser, which is always adjusted for minimum anode current. A gang condenser is frequently used in the C2 and C3 positions, and will need to be opened somewhat, especially on the higher frequency bands. When the tuner is used with both receiver and transmitter, the tuner setting for transmitting may not be exactly the same as that giving maximum receiver signal strength, due to coupled-in reactances.

The strength of harmonics which may cause interference will be much reduced. If a harmonic trap is used, this can be inserted in the short length of co-axial cable fitted between transmitter and tuner. For maximum harmonic suppression, C2 and C3 should be adjusted to give an output impedance suitable for the trap (say 75 ohms).

Switching to the receiver may be by either of the methods in Fig. 4. A relay is often used, though some transmitters have spare switch contacts for such "Send/Receive" switching.

As such an aerial system may well be the first used at a newly-licensed station, a few

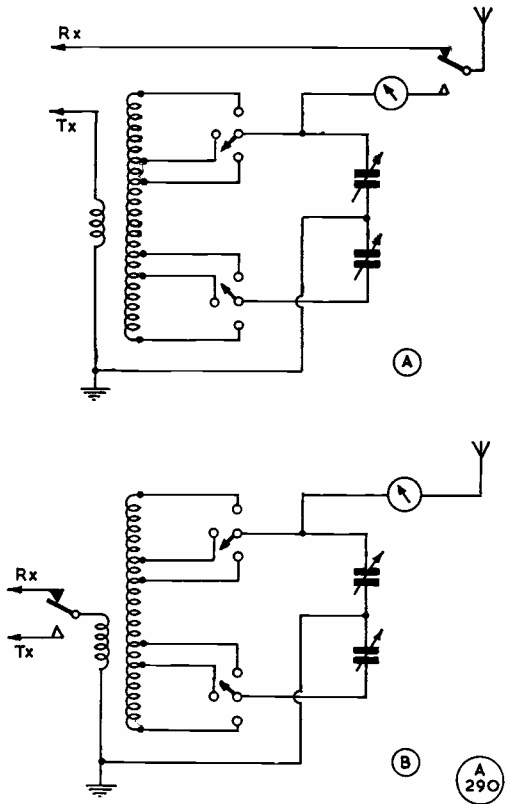


Fig. 4. Arrangements for receive/transmit switching when using the ATU.

extra points might be mentioned. If satisfactory loading seems impossible, experimentally clip the aerial down the coil, as at Fig. 2B.

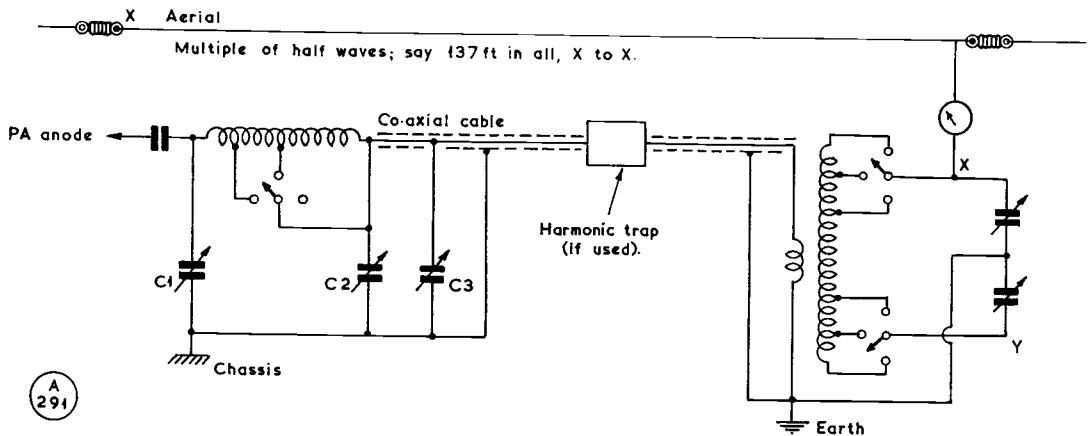


Fig. 5. A practical circuit layout from PA stage into aerial through the aerial tuning unit discussed in the text. An arrangement of this sort, particularly if a low-pass filter is used between PA and Tuner, will minimise harmonic radiation — probably to the extent that with low power, little or no TVI should be encountered, though this is of course dependent upon a number of other factors. For an aerial system having a balanced feed-line, connection should be made at points X-Y.

Avoid shorting adjoining turns, and solder the tappings on, when the best positions are found. (Switch off the transmitter before handling clips or leads.)

The unit is satisfactory for parallel-tuning Zepp feeders. In this case, connect the second feeder to "Y" in Fig. 5.

TVI should be checked for, and is most likely when working on the higher frequency bands. It is less likely with the tuner added,

than without it. The harmonic trap is a further preventive. The transmitter should generally be well screened, and all power-leads should be by-passed. An artificial load, suitable for phone (but not CW) can be an ordinary household lamp connected from X to Y, Fig. 5.

When an aerial is a full-wave or longer, it may be termed a "long wire." The directive pattern changes, giving directive lobes with lower angle radiation.

CERAMIC TRANSFILTERS IN TRANSISTOR CIRCUITS

NEW RESONANT DEVICE

THE circuits shown here incorporate an interesting new ceramic device developed by the Brush Crystal Co., Ltd. Briefly, a transfilter is an electro-mechanical circuit element based on the piezo-electric effect—as such, it can be used to replace the conventional IF transformer or any series-resonant circuit, with improved selectivity, simplified circuit technique (particularly in transistorised receivers) and long-life reliability. The frequency stability of a 465 kc transfilter is said to be within 0.2% for ten years.

Transfilters can be produced with impedance matching characteristics—see TF in Fig. 1, for an IF stage coupling—to form a four-terminal network with high-impedance input and low-impedance output. The Brush TO-01 transfilter has a nominal input impedance of 2000 ohms and output of 300 ohms, the insertion loss being 2 dB. The TO-02, of different characteristics and designed to be anti-resonant, shows an input

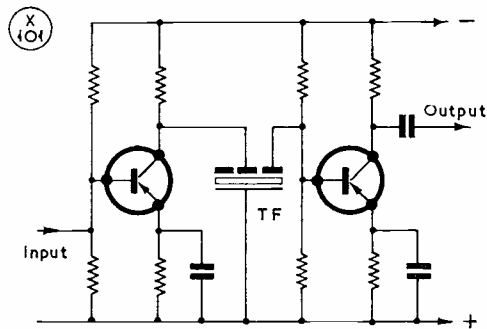


Fig. 1. Application of the transfilter, TF in the circuit, for IF stage coupling.

Table of Values

Fig. 2. Circuit of IF amplifier using Transfilters

C1 = 50 μ F	R12 = 50,000-ohm potentiometer
C2 = .05 μ F	TF1, TF3 = Transfilter Type TO-01A, 455 kc (see text)
C3 = .01 μ F	TF2 = Transfilter Type TF-01A, 455 kc (see text)
C4 = .001 μ F	TR1 = OC410
R1 = 2,200 ohms	TR2 = OC400
R2 = 2,700 ohms	TR3 = 2N35 (or equiv.)
R3 = 390 ohms	W = 1N60 (or equiv.)
R4, R7 = 33,000 ohms	RFC = 1.5 mH
R5 = 4,700 ohms	T = O/p xformer.
R6 = 680 ohms	
R8 = 5,600 ohms	
R9 = 1,000 ohms	
R10 = 180 ohms	
R11 = 22,000 ohms	

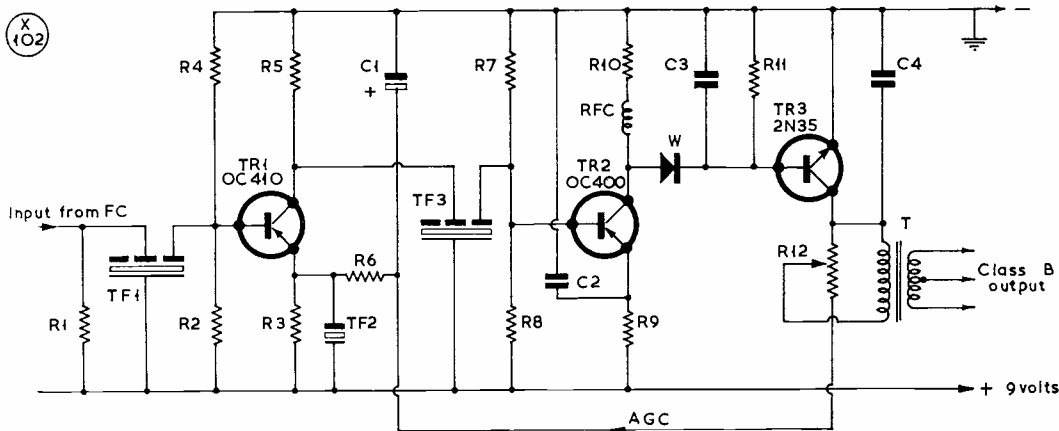


Fig. 2. Circuit complete for a transistored IF amplifier using Brush transfilters at TF1, TF2 and TF3. The characteristics of ceramic transfilters are such as to make them particularly suitable for transistor circuits. Being electro-mechanical, they are very stable, against both time (within 0.2% for ten years) and temperature ($\pm 0.1\%$ from -20°C to $+60^{\circ}\text{C}$).

impedance of 3900-15000 ohms, and output of 680-3000 ohms, with an insertion loss of 3 dB.

Application

In Fig. 2 is shown a practical circuit design, with all values, for a transistorised IF amplifier using transfilters throughout, including the type TF-01A (at TF2 in the circuit) to replace the emitter by-pass capacity for TR1, the first IF amplifier.

Transfilters are manufactured in the ranges: Type TO-01A, 455 kc; TO-01B, 465 kc; TO-01C, 500 kc, all ± 2 kc, and are designed for resonant frequencies. The Type TO-02A is anti-resonant at 457 kc; TO-02B at 465 kc; and TO-02C at 500 kc, all ± 1 kc. Similarly, the TF types 01A, 01B, 01C are for 455, 465 and 500 kc, respectively, ± 2 kc.

The price? For small quantities, from 4s. 6d. to 5s. 6d. each for the types mentioned here!

MAGAZINE CLUB CONTEST

The sixteenth annual Magazine Club Contest (MCC) takes place over the week-ends November 11-12 and 18-19. This is strictly a Top Band affair, and the rules in full were given on pp.438-439 of the October issue of SHORT WAVE MAGAZINE. Though the main object of the Contest is for Club groups to work one another (the scoring system being loaded accordingly), Clubs can made single-point once-only QSO's with non-Club stations. It has always been found in the past that these single-point contacts have a significant effect on the final placings. Therefore, all U.K. operators interested in CW working on 160 metres are invited to have a look at the rules and, if they feel like joining in as non-contestants to give the Clubs a point, they will be very welcome. We shall also be glad to have check logs from those who care to monitor the Contest.

"RTTY TOPICS" — SLIGHT SLIP

In this feature in the October issue, G3CQE wishes to apologise for saying, on p.410, "G8AX" when in fact he meant G8RY (Leicester)—and we hope that no harm has been done by the unintentional error.

R.S.E.A. QSL BUREAU

According to the September issue of *QTC*, journal of the Radio Society of East Africa, it has been decided that, in future, the R.S.E.A. bureau will handle cards for members only. This drastic action has had to be taken because it was found that much of the bureau through-put was in respect of large packets of cards for locals who, not being members of R.S.E.A., were getting free QSL service. Repeated attempts to regularise what for the R.S.E.A. was a most unsatisfactory position having failed, the president (VQ4KPB) has decided that in future VQ3/VQ4/VQ5 non-members of R.S.E.A. must make their own arrangements about QSL'ing. In taking this action, R.S.E.A. has adopted the same line as the South African Radio League, which likewise will not handle cards for non-members. It is not quite clear what happens to cards inwards for VQ3/VQ4/

VQ5/ZS stations affected by these decisions—but, presumably, if the cards are not claimed with sufficient postage cover, they are simply ditched. Like everything else these days, QSL bureaux cost money to run (even if the work is done *gratis*) and it is obviously intolerable that the resources of small-membership organisations should be strained by having to provide unremunerated services.

ARTICLES FOR PUBLICATION

We are always glad to see, for possible publication in SHORT WAVE MAGAZINE, articles of Amateur Radio interest, and those used are paid for at good rates. Information for the general guidance of potential contributors is given at the foot of the Contents page in every issue of the *Magazine*. A more detailed summary of requirements was given in the article "Writing for the Magazine" in our May, 1959, issue.

WALTER KROHN, M.C.S.P. (G6KJ)

It is with the deepest regret that we have to announce the death—after a long and trying illness borne with exemplary patience and cheerful fortitude—of Walter Krohn, G6KJ, 20 Church Street, Buckingham, at the age of 62 years. He passed over on October 20, 1961.

Blind almost from birth, he was nevertheless able to overcome this severe disability—to the extent of qualifying in physio-therapy and becoming a teacher of the subject, of which he was subsequently a very successful practitioner; founding and managing an electrical and hardware business; and becoming a member of Buckingham Town Council, on which he served for more than ten years.

He was a kind and patient man with a highly-developed intellect and, in spite of being cut off all his life from the printed word, yet managed to keep himself abreast of the times. He was licensed as a radio amateur as long ago as 1923, and was thus not only a senior member of the U.K. transmitting fraternity, but also the *doyen* of the 40 or so blind amateurs in this country, and the inspiration of many another similarly handicapped. He always maintained that the blind could perfectly well help themselves if allowed to do so, and the record of his own life proves the truth of this.

His last transmission was made on Top Band on July 3, 1960—but right up to the time of his death he was looking forward to being able to re-join the regular local Sunday-morning net.

He leaves a widow and a grown-up son and daughter, who will have the sympathy of all who knew G6KJ, either personally or over the air.

A.J.F.

Receiver Design for Amateur Band D/F

PRACTICAL
CONSIDERATIONS AND
OPERATING

G. Nicholson (G3HKC)

In the October issue, an introductory article discussed the general principles of direction-finding on the 160-metre amateur band. Here our contributor, well known in the arena of competitive D/F activity in the Midlands, deals with the design, construction and handling of a portable D/F receiver for Top Band. There is considerable scope for original design in this field of Amateur Radio activity, and much interest and amusement to be derived from competitive D/F operating, which can be made very much a matter of team work.—Editor.

THERE are a number of Clubs who regularly organise Direction-Finding contests on 160 metres, and also many amateurs who have an occasional need to trace various forms of interference. For the newcomer to the subject there is very little generally available literature, particularly when the desired equipment requires to be compact and portable; and this article is intended to help those interested in this branch of Amateur Radio.

It is only in the RF circuits that a D/F receiver varies from standard designs—it must be capable of giving accurate directional bearings, accept an extremely wide range of signal strength variations, and also have an excellent signal-to-noise ratio. It is well known that both frame and ferrite-rod aerials have directional properties, and this effect is used as the basis of direction finding.

Unfortunately, the greatest change in signal strength occurs around the signal *null* points of the aerial—hence the requirement for a really good signal-to-noise ratio in the receiver.

A simple directional aerial gives two distinct *minima*, displaced from each other by 180°—see Fig. 1A—and the ambiguity can only be resolved by taking cross bearings, unless a more complex aerial system is used. If the output from a vertical (or open) aerial is fed

into a loop, and the amplitude and phase of the two signals adjusted correctly, the resultant combined response is that of a cardioid, giving an indication of the actual transmitter bearing. This is shown in Fig. 1, at A, B, and C, where the vertical aerial input voltage is equal to that of the loop at maximum pick-up; the signs show signal polarity at a given instant. It will also be seen that the minimum point of the cardioid is displaced by 90° from that of the simple loop. Normally, null indications are taken using only the loop aerial, the loop then being rotated through 90° (for maximum signal pick-up) and the vertical aerial input added to give the cardioid response for “sensing” transmitter direction. It is possible to check minimum “sensing” pick-up either by turning the receiver through 180° (transposing the polarity of the loop aerial and therefore reversing the cardioid pattern) or by electrically reversing the loop aerial by means of a switch.

Receiver Front End

Although both TRF and superheterodyne circuits have been used for D/F receivers, the superhet has the better overall performance, and the majority of recent receivers are of this type. A typical circuit for the RF stages of a D/F receiver is given in Fig. 2.

V1, the “sense” (vertical aerial) amplifier, is an aperiodic RF stage with gain controlled by variation of the screen voltage. The untuned grid circuit is used because this method of aerial coupling cannot alter the phase of the signal input. It is a very satisfactory arrangement in practice and, although somewhat noisy, gives excellent results under all conditions of operation. A tuned grid circuit, although giving greater gain and decreased noise, alters the phase of the vertical aerial input, and has to be correctly adjusted on change of operating frequency. The value of the grid resistor R1 is not critical; it should not be so low as to cause loss of signal pick-up, but a very high value could cause grid blocking when the receiver is used close to a transmitter. The grid is earthed *via* S1 when the stage is not in use, to prevent any signal passing through the grid-to-anode capacity of V1. The sense gain-control VR1 requires little or no adjustment once set up, due to the switch S3 being effective as a gain control for the combined input to V2. The value of C3 should be as small as possible, to prevent changes in the output capacity of V1 from affecting the tuning of L2.

The loop L2 may be either a frame or a

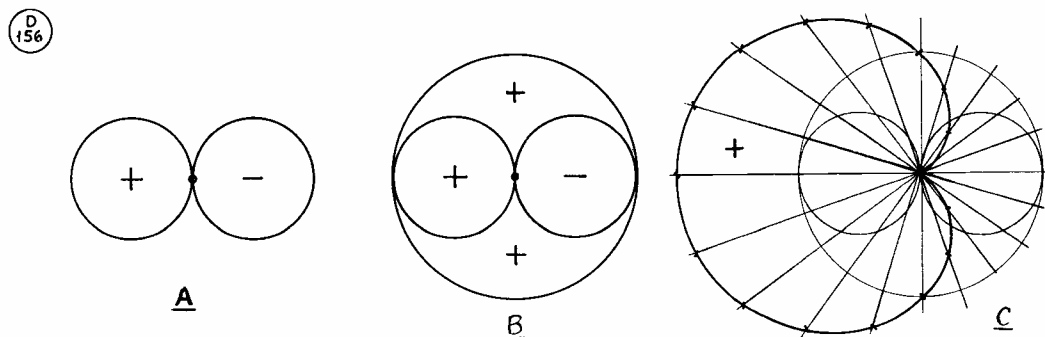


Fig. 1. At A is shown the polar diagram of a plain loop aerial. When the polar diagram of an open aerial is superimposed upon that of a loop aerial, the resultant in terms of instantaneous polarities is as at B. At C is the polar diagram obtained from B, showing the cardioid response; in effect this gives both heading and sense.

ferrite rod aerial; both are equally popular and capable of giving excellent results. The balancing condensers C4 and C5 ensure that the loop tuning is not altered when S2 (the loop phase-reverse switch) is operated. With the switch set to C4 (C5 short-circuited) a signal is peaked up with C10, the aerial tuning capacity. S2 is then thrown and C5 adjusted for maximum signal; C10 is set to cover the receiver tuning range by means of the preset capacitor C7. It is essential that all tuning and wiring capacities in the loop circuit be kept to the lowest practicable figure, since a high LC ratio is necessary for the best signal pick-up.

The loop aerial damping switch S3 is the only RF gain control, and is entirely satisfactory as such. Very little degradation of bearing accuracy can be noticed with the 1000-ohm resistor R4 switched into circuit, which is necessary at approximately half-a-mile from a transmitter. The 22-ohm resistor R3 is required when within 100 yards or so of a transmitter, and no blocking is likely to be experienced even with the receiver underneath a transmitting aerial. This method of gain variation is preferable to screen or grid-bias control due to the difficulty of avoiding grid blocking with such circuits. C6 should be of very low capacity, to reduce detuning of the loop circuit when an external car aerial is used with the receiver whilst mobile and listening for the start of the next transmission.

General Design

The design of the RF and mixer stages follows normal practice. There is no necessity to use a high LC ratio in the mixer grid circuit, since sufficient gain can be easily obtained in the following stages. There is actually a slight advantage in employing low LC circuits for

mixer and oscillator tuning, since the lower impedances give greater stability. "Trawler band" coils using a twin-gang 50 $\mu\mu\text{F}$ tuning condenser and the appropriate fixed parallel padders give adequate performance. In the circuit of Fig 2, Osmor QHF4 and QO4 coils are used, but Denco Range 3 or Weyrad Type H, Range 4 coils would be equally suitable for the L1, T1 and L3 positions. The fixed capacity across the coils will need to be about 150-200 $\mu\mu\text{F}$, depending on stray capacities and the final setting of the tuning cores.

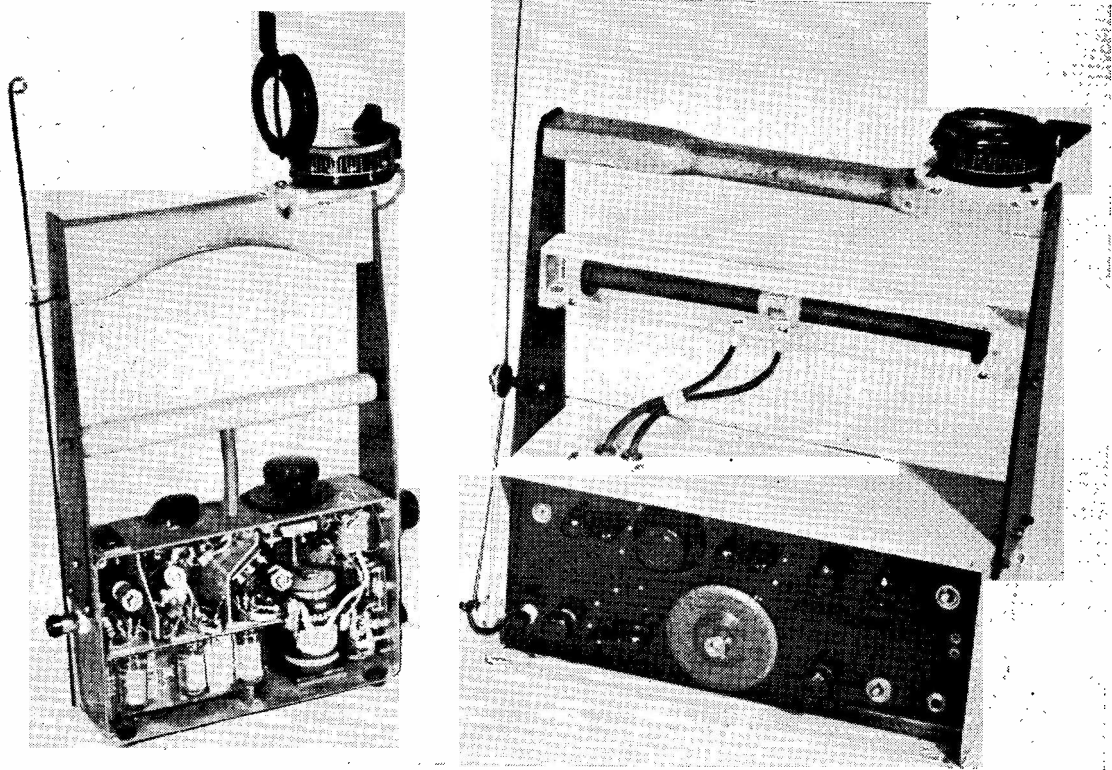
As regards the IF to use, the majority of commercial coils available are designed for a 465 kc IF channel. The author's original receiver used the Repanco XT6 and XT7 series of transistor IFT's. These are no longer a current type and normal grounded-emitter IFT's as made by Repanco, Weyrad or Denco are capable of improved performance with the transistors now available.

In the particular circuit shown, a DK92 (1AC6) mixer V3 was chosen due to the good conversion conductance and noise characteristics. The oscillator grid current to the mixer should be checked (500 microamp. meter

Table of Values

Fig. 2. RF section of 160m. D/F Receiver

C1, C13 = .01 μF	R4 = 1,000 ohms, de-
C2 = 0.1 μF	sensitising
C3, C6 = 2 $\mu\mu\text{F}$ (twisted leads)	R5, R9 = 27,000 ohms
C4 = 3 $\mu\mu\text{F}$	R6 = 180,000 ohms
C5 = 5 $\mu\mu\text{F}$ trimmer	R7 = 33,000 ohms
C7 = 9 $\mu\mu\text{F}$, trimmer	RFC = 2.5 mH
C8, C9 = .04 μF	T1 = IF xformer (see text)
C10 = 20 $\mu\mu\text{F}$, trimmer	L1 = To tune 160m. (see text)
C11 = 82 $\mu\mu\text{F}$	L2 = Loop Ae. (see text)
C12 = 50 + 50 $\mu\mu\text{F}$, tuning gang	L3 = Osc. coils (see text)
R1 = 82,000 ohms	S1 = SP, 2-way
R2 = 47,000 ohms	S2 = DP, 2-way
R3 = 22 ohms, de-	S3 = SP, 3-way
sensitising (see text)	



Examples of practical direction-finding receivers for the 160-metre band. Both have sense aeri- als — see text and Fig. 2 — and bearings are taken by edge-reading prismatic compasses, of the type damped in an alcohol bath. The receiver on the right has a ferrite-rod aerial. They are light and easily handled, and give a direct (map true North) bearing by off-setting the compass by the magnetic deviation, which is about 8° at the present time.

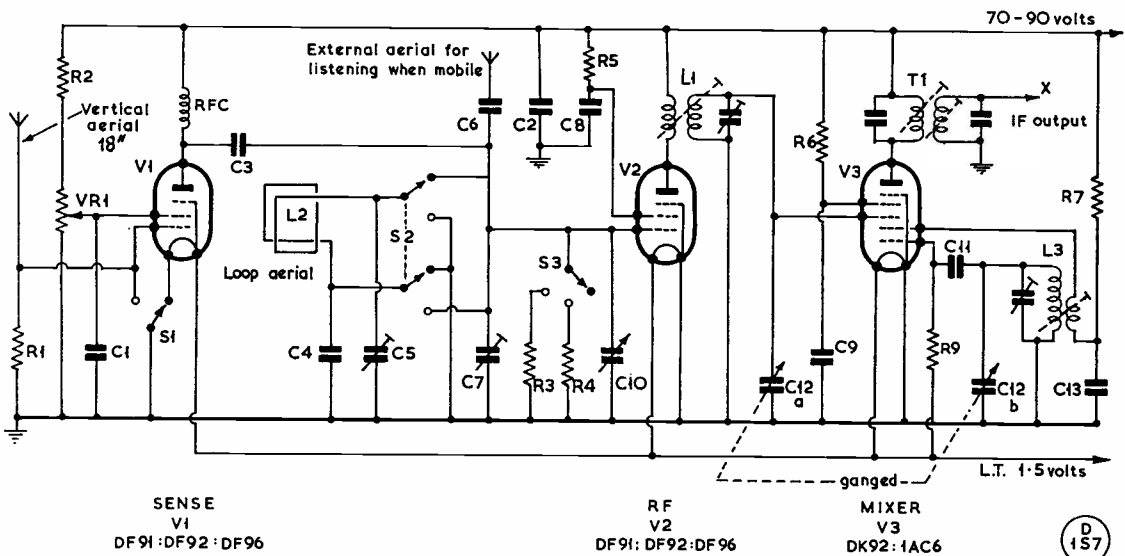


Fig. 2. The front end for a practical amateur D/F receiver designed to operate on the 160-metre band. Battery valves are used for convenience and portability though, as the author suggests, a similar sort of circuit could be developed using transistors. The loop is home-constructed (see text) and for L1, T1 and L3 miniature commercial coils are used, with the IF channel on one of the standard frequencies. This RF unit feeds into a transistorised IF/AF amplifier — see Fig. 3.

between the earthy end of R9 and the heater line) to ensure that the stage is working within optimum limits—between 110 and 160 microamps. for a DK92. With values of grid current below 90 microamps. the equivalent noise resistance of the mixer increases very sharply.

The following IF and AF stages are standard circuitry, and in the author's case are transistorised. The use of a BFO is essential for null determination at low signal levels, since receiver noise tends to swamp the characteristic signal hiss when operating near the loop null points. If no RF gain control is used, it is necessary to have full control of IF amplification, and this may take the form of negative bias on valve stages. In the case of transistor IF amplifiers, a convenient method of control is to vary the negative supply voltage to the transistors, as shown in Fig. 3—possibly inelegant, but giving very smooth gain control. It is not practicable to use AGC on this type of receiver, since this would tend to equalise signal changes and therefore give poorer null discrimination.

Aerial Considerations

Ferrite aerials have only been used for D/F during recent years, and appear to give slightly greater signal pick-up than frame aerials. Since the pick-up varies more or less proportionately with the volume of the ferrite it is desirable that the rod should be at least 6 ins. x 0.3 ins., for which approximately 40-50 turns of wire would be required, spaced in the centre of the rod. One of the largest ferrite rods available (Mullard Ferroxcube grade B2 type FX1267-9.5 ins. x 0.594 ins.) works very well with 27 turns of 9/45g. Litz. Bunched conductor or Litz. wire gives noticeably increased signal pick-up, on close-spaced coils, when compared with single conductor enamelled wire. A rod aerial should be at least 3 ins. from the top of the metal casing of the receiver, to minimise damping, and the output should be fed *via* low-capacity screened cable, to obviate vertical pick-up on these leads.

In the case of frame aerials, an unscreened loop gives the highest signal pick-up, but "cleaner" null indication is generally given by a *screened* frame. This form of aerial may be from 8 ins. to 12 ins. square, the 12-inch size requiring about 9 or 10 turns of wire, preferably Litz. For a screened frame, where the tuned winding has a higher capacity to earth, the number of turns would need to be reduced slightly. Screening must not be continued fully round the length of the coil, since

this would cause extreme damping of the circuit (owing to the screening acting as a shorted turn). A gap of 0.1 inch is sufficient to avoid this effect. The length of the vertical (sensing) aerial is not critical, since the output of the appropriate RF stage is controlled, and about 18 ins. of stout copper wire is sufficient for normal use.

Transistorising

A number of fully transistorised receivers are in various stages of design, and it is obvious that these will allow smaller, lighter and more economical receivers to be constructed. Suitable transistors are now available (OC169, OC170, XA131, AF115) and recently published circuits using these types of alloy-diffused transistors (Refs. 1 and 2) can easily be modified for D/F working. Another extremely interesting development in transistor components is the range of piezo-electric ceramic IF filters now available, and preliminary work using these devices shows great promise.

Power requirements for a receiver of the type described here are 45 to 90 volts at 3 to 5 mA, and 1.4 volts at approximately 100 mA, for the valve stages; and -4.5 to -9.0 volts at 7 to 10 mA for the five transistor amplifiers—an excellent example of the reduced battery requirements of transistor receivers!

D/F Operation

Although there are a number of methods of translating a signal minimum into an angular bearing, the simplest is to mount a compass on to a receiver. This can be seen in the photograph, which shows receivers belonging to G3HHD, and to the author. Compasses should be mounted away from magnetic materials, including ferrite, and should be on a preset rotary fitting in order to facilitate setting up the receiver. The use of magnetic components should be avoided as far as possible during construction.

Ordnance Survey 7th Series (1 inch-to-1 mile) are the most suitable, generally available, maps for direction finding, and the information at the bottom of these maps gives the angular variation between magnetic and true North. In general, map North can be regarded as being equivalent to true North, and the compass can be offset to the loop aerial to compensate for the magnetic variation—this cuts out the need to subtract 8° from the compass bearing before transferring it to the map.

A ferrite rod aerial gives minimum signal

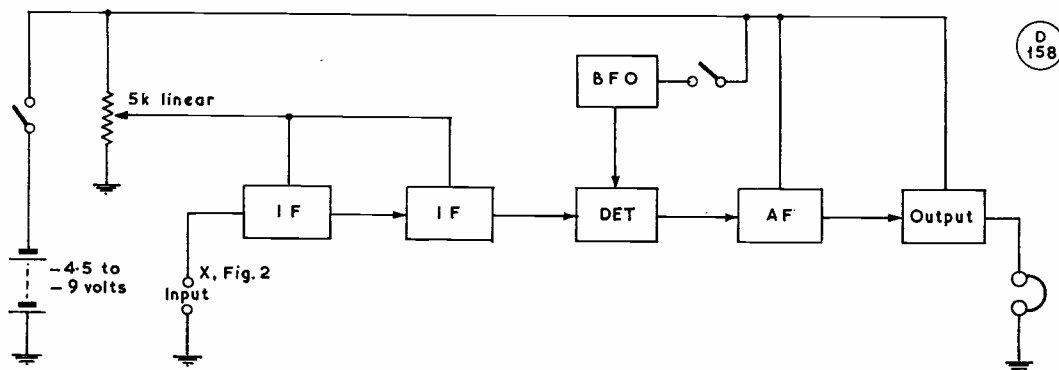


Fig. 3. Block diagram of the IF/AF amplifier used by G3HKC with his D/F receiver, the RF section of which is shown in Fig. 2. For portability and power economy transistors are used throughout this part of the receiver, some points on which are discussed in the text.

pick-up when the rod is in line with the direction of the transmitter, and a frame gives minimum output with the frame broadside on to the transmitter. In both cases a rotary-scale type compass mounted directly on to the receiver (and offset approximately 8°) will give direct angular readings with respect to North, which may be transferred on to the map by means of a protractor and straight edge, since a line drawn from the point of origin of a bearing along the bearing angle will theoretically pass through the transmitter location. Compasses should preferably be alcohol filled, due to a tendency towards extended oscillation in the undamped types. The use of crystal headphones is advisable when taking bearings, since magnetic headphones can affect the compass.

The field operation of a receiver varies widely with the individual user, but it is bad practice to choose a route to a transmitter which is more or less along the line of the plotted bearing. (This can lead to the cry "He's only a little further on" being repeated over and over again.) The simplest approach is to take a map route approximately 30° to the plotted bearing, in order to get a reasonable "fix" on the transmitter, and then to take a further one or two cross-bearings when within a mile of the junction of the first two bearings. With good equipment and sufficient practice in using it, average bearing accuracies of 2° to 3° may be expected. Water channels, railway lines, overhead cables, wire fences, conduits underneath roads, and close proximity to large metal objects may all affect bearing accuracy, whilst the overhead grid system can cause errors of considerable magnitude. The actual site of the transmitter will obviously vary considerably, and no set rules can be

given for the easiest method of location. Once within 50 yards or so of a hidden transmitter—indicated by the need to put high damping on the loop aerial—bearing nulls tend to become distorted, and in some circumstances it is better to turn the receiver to maximum signal pick-up and approach the transmitter by checking on the signal increase as the distance decreases. This method is useful when a transmitter is situated below grid overheads, which can so distort the radiation pattern as to produce incorrect phase relationships between the two receiver aeriels and therefore cause wrong sensing.

Contest Procedure

A typical D/F contest consists of a fairly well-hidden transmitter operating for 2-5 minutes every quarter-hour, and situated between 5 and 15 miles from a given starting point. Competitors are given the frequency, callsign and times of the first few transmissions, and leave the starting point after the end of the first transmission. It is an excellent test of equipment, operator, and navigator—and also a very good excuse to take the yl, or the xyl, out into the country!

Of necessity, this article has only dealt briefly with the various aspects of direction finding, but it is hoped that sufficient information has been given to enable readers to make a start in this interesting branch of Amateur Radio.

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- (1) B. J. Curl—
Mullard Technical Communications,
No. 50, August 1961, pp.366 - 376.
- (2) J. C. Beckley—
Mullard Technical Communications,
No. 50, August 1961, pp.377 - 381.

DX COMMENTARY

L. H. THOMAS, M.B.E. (G6QB)

AFTER ten days' separation from the rig (in a horizontal position) it was very pleasant to return and to find that the bands were in good shape, although it was also discovered that they had been rather better during the period of absence! One or two "good ones" were missed as a result thereof, but our faithful 'chasers have sent in all the information, as usual, and it is unlikely that anything has slipped through the net.

The subjects coming up for discussion seem to cover a wider field each month, and things have now reached such a pitch that even in the course of a single letter there are remarks which really ought to be classified under about ten different headings. This is all to the good, and makes for a feature of broader interest. It will be found, therefore, that headings tend to become more numerous, and paragraphs shorter, as the months pass by. Your conductor will, as ever, do his best to separate things out—even if new and better filter circuits are needed!

Conditions having been just about "good" for the whole month on all bands, and "excellent" for a few odd days on most of them, no more comment is needed in the way of a preamble, and our numerous correspondents can speak for themselves. The main point of interest is that although the LF bands are improving very rapidly, the HF bands are by no means falling off, even *Ten* having staged some nice East-West openings recently. It



G3OPY

CALLS HEARD, WORKED and QSL'd

looks like being a very interesting winter—so make the most of it.

Worldwide DX News

The Madagascar situation has been a bit foggy, but now seems clarified: the new 5R8 prefix applies to the Republic (Great Island, St.-Marie, Nossi-Be and Nossi-Lava Islands); FH8 is the prefix for the Comoros; and FB8 remains for the Glorieuses, Tromelin, Islets of the Mozambique Channel and the French Austral and Antarctic lands (*e.g.* FB8XX, 8YY, 8ZZ). Crozet is also stated to be FB8, but FZ8PF has been worked by many W's, giving QTH as "Corzet Island." Status therefore unknown as yet, but see later remarks.

AM and CW operation is promised from New Hebrides by YJIRD, the only permanent resident, who is rebuilding . . . ZK1AK made his last QSO from

Aitutaki in September and has now returned to ZL, where he is ZL1AT . . . The very popular XT2A (Upper Volta) was supposed to leave on October 15, so those pile-ups around the LF end of Twenty have now faded. QSL's to him should go *via* REF.

An extended tour of the Caribbean Islands with an SSB transmitter is promised by HB9TL, and if things go off as planned (including the finances) this project will cover FY7, FG7, FM7, VP3, all the VP2's, VP4, PJ2 and VP1. Time of stay in each place, one to three weeks, according to how business looks!

TA2AR claims to be the only legit. station in Turkey, but hopes that many more will soon be active . . . VKØVK, ØTC, ØRT, ØWE, ØWB, ØEH and ØJB all operate the same station at Wilkes Base, Antarctica! KC4AAC is only 300 yards away from them

. . . VK9AM is still active from Nauru Island, CW and SSB . . . ZL5AI is at Scott Base, Antarctica, operating 2200 - midnight GMT.

HS5OSQ has been handing out numerous contacts from Thailand, and says he may possibly be on from Laos during the CQ World-wide Contest . . . There is a possibility of operation from Upper Volta by 9G1DP/TF8, late December (but we don't like that suffix—what about Iceland?) . . . Talking of suffixes, what on earth is UC2KAD/SD? Things are getting so that one needs a baby computer to keep up with all the changes, official and otherwise.

FW8AS was due to be on from Wallis Island, mid-October, but no reports at the time of writing . . . Plans are in hand for another FP8 expedition, some time after Christmas. Top Band will be included.

Peter Hobbs of G3LET has answered "one of those advertisements," concerning the Falkland Islands, and is off to Base H in the South Orkneys for two years. He hopes to be active by early December, CW and SSB on all bands; his VP8 call and QSL details will follow in due course. Having been a 7 mc enthusiast for so long, we have no doubt he will be pretty active on that band.

VR1M (G3JFF) opened up and kept on for ten days, working 397 stations in 37 countries, but few Europeans and only about six G's. Activity was curtailed by poor conditions and Tx troubles, but was successful — especially for the W6's!

DX News from Readers

G3NOF (Yeovil): K5OSQ, now on 14 mc SSB as HS5OSQ, hopes to operate XW8AS (same mode) at week-ends from the end of October, but during the week he will still be HS5OSQ . . . The HB9TL SSB transmitter has been sent to PJ2AA for the West Indies tour (see earlier note); QSL's for this effort to G8KS (QTHR).

GW3AHN (Cardiff): The Cayman Islands expedition went off well, first as VP5BL/5 and then as VP5BH . . . FP8BV also provided good CW and SSB signals on 14 and 21 mc . . . Kamaran Islands

expedition, with the multiple call-signs, doing an excellent job.

G3NWT (Sandiacre): VK9NW active from Port Moresby at what he calls a "shocking QTH," but consistently working G's . . . ZS6BCZ in Queen Maud Land putting in a good signal on 14 mc with four 813's and a rhombic! He says the OR4 expedition left there last February.

VO1FB (St. Johns): Worked SM5ZS/ZC6, in Gaza, 21 mc AM. He asked that his QTH be passed along: W/O Bob Engren, SM5ZS/ZC6, Swede Bn., UNEF, Base PO, Beirut, Lebanon; he is about 35 miles from VE3BQL/SU, and has, of course, also been signing SM5ZS/4U—but he looks like a genuine ZC6, which is now a real rarity.

G2DC (Ringwood): The Kamaran Islands affair broke unexpectedly, due to the R.A.F. types going there instead of to FL8; they signed G3GPE/VS9K, G3NAC/VS9K, G3GJQ/VS9K, G3OLV/VS9K, VS9KAC, VS9KGA and VS9KPH! A wonderful show, and G2DC adds: "Knowing those islands in the Red Sea, they must have been working under very trying climatic conditions." FB8XX says that the "FZ8PF" previously mentioned is a phoney; but there may be genuine operation from Crozet Island by FB8WW later on . . . The HK boys are planning another expedition to Aves Island, probably January 5-15 . . . W2BIB had to postpone his operation as HV1CN and SMOM/1, but hopes to do it early in November.

G3FPP (London, E.10): Returned from 3A2BT on September 18, having made 255 QSO's in 67 countries and completed his DXCC from there. Some nice new DX was worked—21 and 14 mc phone and CW; 7 and 3.5 mc CW. Aerials were three parallel dipoles cut for 28, 14 and 7 mc, with common feeder, and a "really long wire" about which we would sooner not talk! QSL's on a one-for-one basis, but *not* for SWL's unless they state who was being worked . . . too many suspect reports have been received.

ON4QX (Antwerp): The Luxembourg expedition (LX3QX/3DX) went off well, although the con-

ditions were very poor for the three days and nights they were on the air. Twelve operators, 805 contacts, 62 countries. QSL's were printed for 2000 QSO's, so the team were somewhat disappointed—but ON4QX says: "If the boys prefer another country in Europe, we will go . . . 3A2CZ, or San Marino, it all depends what the boys want, perhaps May 1962."

VO1FB again: He ran a "very impromptu" expedition to FP8 from September 9 to 14, with no advance notice. Worked 812

P & Z TABLE

STATION	PREFIXES WORKED	ZONES WORKED
<i>CW Only</i>		
G2DC	463	40
G13NPP	456	40
G3ABG	435	40
G3WP	388	36
G3HZL	379	40
G2BLA	330	39
GW3CBY	289	24
G3JWZ	271	38
G3IDG	248	28
G3LZF	238	34
G2BP	237	33
ZC4CT	223	29
GW3MLU	202	31
VK6AJ	200	36
G2HLU	154	25
ZC4SG	146	27
G3OQK	145	17
<i>Phone Only</i>		
G3DO	646	40
MP4BBW	479	40
G3NWT	400	39
G3GHE	400	39
GB2SM	370	37
G3MCN	352	38
G3LKJ	347	38
G3BHJ	332	37
G3NFV	294	37
G3ABG	288	32
G3JWZ	173	36
G3HZL	140	26
GW3MLU	138	26
G2BLA	115 ₂	21
G2FQW	99	6
G3WP	80	25

14 mc DX WORKED

SSB

G3NOF: EA6AZ, FP8BV, HB1MQ/FL, HK2YO, HV1CN, KA2MA, KG6AJB, 6NAA, KL7's, PZ1AX, 1BF, TF2WFX, 2WGB, VK's, VS9APH, 9KAC, 9KGA, 9KPH, ZB1A, ZD6HK, 6PR, ZE6JA, ZL's, ZS7P, 4X4IX, 5N2AMS.

GW3AHN: HB1MQ/FL, KC4USV, KC6CG, KW6CGA, VK's, VP5BL/5, VS9KPH, ZD6PR, ZL's.

GM3JDR: CR9AH, CX3BH, 8BM, DU7IM, 7SV, HE9LAA, HB1MQ/FL, HK2YO, HM4AQ, KA's, KG1GD, KG6AA, KH6's, KL7's, KR6KS, KW6CGA, LX1DE, MP4QAQ, PZ1BF, 1BJ, VK's, VQ2AB, 3HH, 4RF, VS1FO, 1KF, VS6AE, VS9AAC, 9APH, VU2NR, XE1DE, XZ2AD, YV's, ZD6PR, ZS3E, ZS7P, 7S, 5N2AMS, 6W8BP.

MP4BBW: HM4AQ, 9M2DB, VR5RZ, EA6AZ, HS5OSQ, PJ2AA, VK7AI, CR9AH, OH0NC, HS1X, DU7IM, KG6AJB, VQ8BR, 9M2GA, 3V8CA, DU1VQ, 7SV, HSIK, KC4USN, KZ5TA, KC6CG, FK8AC, HE9LAA, HB1MQ/FL, KX6BU, KB6BR, TI2HP, VQ3HH.

CW

G2BLA: DU7SV, EP2AF, HZ1AB, OD5CT, UA0BP, XZ2TH.

3A2BT: JA1BWA, MP4QAQ, TU2AL, UH8BO, U18AT, VK4SD, XT2A, ZL1AH.

GW3AHN: VP5BL/5.

G2DC: VP5BL/5, VR1M, VS9KAC, FP8AS, JZ0PH, KH6EDY, KG1BB, KG6AFS, MP4MAH, TI2WA, UA1KED, VR2DK, 2BK, 2BZ, XT2A, 5U7AC, 7G1A, VQ9HB.

GM3JDR: LU2ZN, VP8FC, VS9AAC, UA1KED, XT2A, 3V8CA, 5N2LKZ, 2RDG.

G3LPS: FP8BD, EL4YL, KG1BB, HB1MQ/FL, 5N2LKZ, 2JKO, VP8FC, YV5BKA, VS9KAC, G3GPE/VS9K, ZS3EW, ZS6BCZ (Queen Maud Land).

G3ABG: 5A3TQ, 4TC, VU2MD, KL7MF, 5N2IND, 2LKZ, OY7ML, XT2A, G3GJQ/VS9K.

VQ4IE, VS9KPH, YV1EM, 9GIDP.

G3NOF: PJ2AA, W's.

CW

G2DC: G3GPE/VS9K, LU1ZL, VS9KAC, VP5BL, ZS1-7, VK1-7, ZL1-4.

3A2BT: EP2AF, VU2JA, 5R8AD, 5U7AC.

GW3AHN: CE2OF, CX6CB, EL4A, FP8BV, HC1AGI, HK3TH, JA, WG6ALD, 6ALC, KR6LY, KX6DB, LU2JV, VK9NW, VP5BH, 5BL/5, VQ8BC, VS9KAC, 9MB, XE1PJ, 9K2AD, 9Q5EI, 5PW, VK, ZL.

G2BLA: 7G1A/TZ.

G3ABG: CR7IZ, MP4QAQ, SV0WZ, 9Q5PW, XE1PJ, VQ8BC, 9Q5LY.

G3LPS: VU2XG, VP9BO, XE1PJ, VS6EC, VU2JA, 6W8BL, VP5BH, ZP5LS, G3GPE/VS9K.

21 mc DX WORKED

AM Phone

G3NOF: VP6HR, 9DL, VS9AGA, 9KGA, ZC4AM, ZL3JO, ZS, 5N2AMS, 2AMS/M, 2RJO, 9G1CC.

3A2BT: VQ2MS, VS9AGA, VS9MB, ZS1AB, 5U7AC.

G3BHH: JA2XW, 6NP, KZ5TD, OD5CU, TF3KA, VQ2MS, VS9AGA, 9APH, 9MB, 9KGA, 9KPH, VU2BK, YV1EM, 5ABF, 5AGM, 4X4FF, 5A3CAD, 5N2DMS.

G3NOT: AP2MR, CT2AK, 2AI, EA8CR, JA1FAF, 1CYV, INC, LA5HE/M/M, OD5CU, VQ2WM, VS1FE, VS9KAC, 9KPH, ZL3UY, 5N2AMS, 5R8AD.

SSB

GW3AHN: CX2CO, FP8BV, HC2ND, JA1DLN, KP4BAH, OD5CW, VK9NW, VP5BH, VQ3HH,

28 mc DX WORKED

AM Phone

G3NOT: EA8BB, G3OLV/VS9K, OD5CS, VO1BT, VS9KGA, 9KPH, VQ8AB, ZB1PN, ZP1FA, ZD6RM, ZC4AB, ZE2JA, 2KL, 4JE, 7JV, 8JA, ZS1B, 1AB, 1MW, 1CT, ZS3B, ZS6OQ, 6KO, 4X4OC, 5A2CX, 3CAD, 4TC, 5N2RJO, 2ATU.

G3BHH: CN8AC, 8MT, LU4DM, W4, W5, 5A3CAD.

G3NOF: LU4DM, VQ3PBD, 4HX, ZD6RM, ZE2JA, 5JA, 5JZ, 6JL, 6JF, ZS1AB, 6NA, 6XB, 7L, 4X4OC, 5A2CX, 3CAD, 5N2ATU, 2RSB, W1, 2, 3.

stations, 14 and 21 mc CW and phone; 627 of them with W/K stations, 41 with the U.K. Conditions were only fair, and the rig was only a DX-40U with dipoles. QSL's to VO1FB . . . but he doesn't mention his FP8 call-sign. (QTH: J. C. Craig, Site 22, Box 57, St. John's, Newfoundland.)

Top Band DX

Herald of approaching winter! The first of W1BB's bulletins has arrived, full of enthusiasm as ever, and full of hopes for a wonderful DX season. Stew says that W/VE signals have been heard over here quite a lot during the summer; also that he and many others have logged the German station (DHJ/54, etc.) on 1831 kc. W2EQS and a full crew opened the season as FP8AS and worked many W's from St. Pierre.

The Sunday mornings for the organised Trans-Atlantic Tests have been fixed as December 3 and 17, January 7 and 21, February 4 and 18; 0500-0730 GMT, as

ever, with the W/VE stations calling on the first five minutes of the hour, and thereafter at alternate periods of five minutes, and listening in the intervening periods unless they are actually working someone.

Most of the W's will, of course, be in the 1800-1825 kc section, but those in the West have to use 1975-2000 kc, usually clustering near 2000 kc. DX stations (and that includes us) should work 1820-1835 kc or at the HF end. G stations should *not* transmit between 1800 and 1820 kc—they will merely jam out the W's and will not get contacts by doing so. (It's a remarkable fact that one can listen on Top Band all the year round and hardly hear a single G station below 1825 kc . . . and then, during the tests, some Clot or other will invariably get up there and spoil things for everyone else. But the said Clot generally gets rough treatment, and the same is promised for this year!) The point for everyone to

keep in mind is that these Tests are worked *cross-frequency*. The one thing you don't do is to VFO on to the DX channel.

Activity will, of course, continue every week-end—the fact that the above dates are fixed for the “organised” tests doesn't mean that most of the same stations won't be there at intervening times. All reports of QSO's or successful listening to “DX Commentary,” please, whence they will be forwarded to W1BB for his comprehensive news service and history of the tests.

G3KOR (Liverpool) says the band has been open for DX since August, and he has heard W stations ever since. The prize goes to K3MBF, regularly peaking S6 . . . G3KOR worked him on October 10 at 0216 GMT, and G6BQ raised K2DGT around the same time. The DX is there from 0130 onwards, and G3KOR thinks it would be a good plan if the organised tests started at midnight. (*Editorial Note:* This was

tried years ago, when Top Band DX possibilities were being explored, but was not a success, as signals did not become consistent both ways until after 0400, when there was a full darkness path.)

No longer can we quote reports from "SWL Peter Day (Sheffield)" . . . he is now G3PHO. Congratulations to him, and we hope to hear of some real DX contacts this winter. Already he has heard VEIZZ (working GD3UB on October 8 at 0050).

No Change!

An innocent little query, last month, worded "Shall we start WABC again from January 1, 1962?" has brought forth howls of rage and moans of horror from so many quarters that we hasten to make it clear that it was only a rhetorical question. Obviously, no one wants to make a fresh start, and those 'chasers who are in the seventies and eighties are very keen on making the full 98 before they are too old to go on trying!

We do feel, however, that a separate and private contest for the G3P's might be amusing. After all, they have *all* started since mid-1961. For the present, they can

have their own fight on the general ladder, but if enough of them come in we might well separate them out and let them have a show of their own.

Top Band—Normal Usage

GM3OM (Larbert) joins the select band with the top score of 98/98. Actually, he worked Sark in 1954, but has never managed to get a QSL for it . . . G3APA obliged promptly with two of them! As remarked by GM3OM, it is nice to feel that some real DX is coming, now that the portable activity is more or less over.

G3AIP and G3JUJ will be coming on from Rutland on November 18, starting around 1800 and operating for twelve to fourteen hours; CW only, mostly Top Band, but possibly some time off for Twenty; Call-sign G3JUJ/P, frequency 1850-1875 kc, dependent upon QRM.

GM3COV (Thurso), now scoring 96/96, needs Jersey and Scillies, and wonders if anyone can mount an expedition to the latter? He admits to having trouble with people wanting phone reports, also those who start on CW and want to change to phone. If the initial call had been on

phone, there might not have been a QSO. Some of the so-called phone QSO's, in the past, *have* been a bit shaky!

G3NBT (Sidcup) climbs to 70/74, and wants to thank G3ISG for putting Hereford on the air . . . G3FS (Sidcup) has received cards from Roxburgh and West Lothian, so now scores 85/85 on phone. He has found that heavy static has marred the GDX conditions of late . . . G3PHO (Sheffield) received his call on September 12 and is working Top Band only, covering GDX quite well on phone and CW, although with a poor aerial; reports from London and Kent average 579, and there was a 589 from GD — nice going. G3PHO will appear on the Ladder next month.

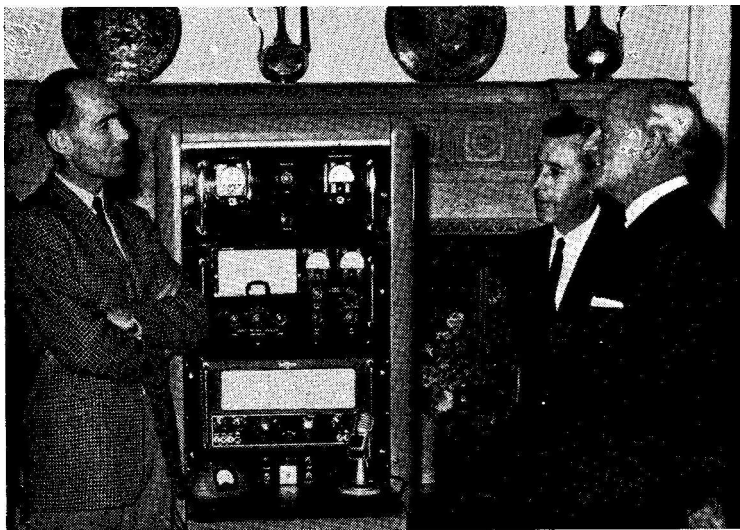
G3KOR (Liverpool) is now up to 95/98, thanks to Sark and Selkirk. If the three outstanding cards arrive (Carmarthen, Kinross and Armagh) he will be a happy man.

The HF Bands

The general opinion about DX on the three HF bands (yes, three!) has been "good, but not spectacular." Conditions have held up well, and the bands have at many times been open rather later than one would have expected. East Coast W's came through on *Ten* on quite a few occasions—sometimes even around 2100 GMT—and there were a few of those days when W4 and W5 were there in the afternoons, but nothing else. The North-South path has been open nearly all the time.

GW3AHN says he concentrated mainly on *Fifteen*, having got rather fed-up with the influx of poor-quality SSB signals on *Twenty*. New Zealand produced lots of good AM phone on *Fifteen*, at times when no SSB signals were evident; in fact, GW3AHN says: "I have noticed that AM signals are the first to appear on any band when that band is opening up, and this irrespective of conditions." Can anybody explain that one, or disprove it?

G2DC starts off with his "usual grumble" about commercial QRM on *Twenty*, still on the increase, but fortunately most of them dis-



At the presentation of the amateur-band equipment to the Cheshire Home at Staunton Harold, Leics., on October 8. Left to right: Gp.-Capt. Leonard Cheshire, VC, DSO, DFC; F. C. Ward, G2CVV, hon. secretary, Derby & District Amateur Radio Society; and Mr. J. D. Pearson, of Rolls-Royce, Ltd. The transmitter was built by G3NAJ (of the Derby group) from donated components, and the Eddystone 888A was provided by Derby & D.A.R.S. The station is operated under call sign G3OPY, held by H. Houghton, who is himself a member of the Staunton Harold Home.

appear after dark. Conditions were patchy during the VK/ZL Contest, but ZL1AH made 650 contacts and had his full quota of sleep as well; his secret—a tri-band Quad with gamma-match tuning on the radiators.

G3WP (Chelmsford) worked KW6DG for a new one, and heard K6CQV/KS6 on SSB—first signal ever logged from Samoa; and he confirms bad conditions for the VK/ZL affair. So does G2BLA (Old Welwyn), who adds: "Hearing ZL1AH on Forty was the only excitement for me."

G3NOT (Catterick) did a lot on Ten (*see* his list), and says: "Quite a good selection of DX could be worked if the Russians would leave one alone—the amount of good stuff I lost through them was fantastic."

GM3JDR (Sutherland) informs us that he has now worked 157 countries, two-way SSB on Twenty, since he started on March 7. He has added a ZL Special to his dipole, fixed in the direction of the Pacific; by flipping it over, it covers Africa and South America. It's about 35 feet high and 600 ft.

LF BANDS TABLE

(Countries Worked)

Station	7 mc	3.5 mc	1.8 mc
G3FPQ	134	85	19
G3FXB	152	78	9
G2DC	130	97	12
G3IGW	95	51	19
G2YS	93	73	20
G3HZL	81	44	8
G3JWZ	62	52	9
G4JA	57	41	9
GW3CBY	52	33	14
G3DRN	42	13	9
G2DHV	33	25	5
G2FQW	33	4	1
G3NYA	32	23	9
G3NYQ	31	19	11
G3NFV	27	13	16
G3NNO	24	23	10
G3OQK	23	5	7
G3IDG	22	16	9
G3NPB	21	8	9

This Table derives from Countries Worked. Order is based on band in first column, changed monthly.

a.s.l.—which must help.

MP4BBW (Awali) found the bands spotty, with no apparent pattern of propagation continuing from day to day. There *were* good days, but more were mediocre. Twenty closes to Europe as early as 1600 GMT, and opens a little after 0300. Long-path openings (evenings to USA, mornings to the Pacific) have been most unreliable. Present score—226 on SSB (213 confirmed), but still lacking a QSL from Zone 19!

ZS2AT (Port Elizabeth) was in London in mid-October, returning home with a "Viceroy" under his arm . . . we look forward to meeting him on the air once more.

New Sheepskin

5N2JKO asks us to give publicity to the 5N2 Award, issued for contacts with five Nigerian amateurs since January 1, 1961, using at least two bands. Check list with 5 IRC's (or 2s. 6d. P.O.) to 5N2JKO. The certificate is printed in black and green, and incorporates the new Independent Nigerian flag in full colour.

Slip-Up

We are asked to give the widest publicity to the mistake in the original printed rules for the CQ World Wide DX Contest, as published last month, on which the dates of the CW Contest were given as November 26-28. They should be November 25-27, times as stated. All those who have received the printed copies of the rules direct from CQ are also asked to note this. (The wrong dates would hardly have misled anyone, since they would have put the Contest on a Sunday and Monday . . . but it is unfortunate that they have been so widely circulated.)

Newcomers

Very pleasing to note so much activity from the newly-licensed G3P's, some of whom have written in just to tell us that they *are* active, but feel that their DX achievements as yet are hardly worth mentioning. We look forward to some keen competition among them in our Tables and Ladders, especially on Top Band. G3PEK (Stockport) started up on

Twenty and Forty only, and was really thrilled to work ZL1AH in his very early days. On Forty, with *three watts* to a 67-ft. wire, he has worked 13 countries. G3PIY (Liverpool) also got off to a flying start with 100 watts to a home-brew rig, all bands, after being an SWL for five years or so . . . watch some of these G3P chaps—they'll be soaking up the DX this winter!

(Thought for the future: When they come to issue calls in the G3Q series, we certainly hope they will dodge the Q signals . . . "G3QRM" would be a fine call to carry around for the rest of one's life!) G.P.O. to note!

The LF Bands

Forty and Eighty are gradually coming into their own as producers of DX. The more that work them, the less the QRM on the other bands, so we intend to keep plugging their virtues!

G3NOF says ZL3UD has been a good SSB signal on 3700 kc, around 0700—and, also on Eighty, the W's and VE's have been heard both nights and mornings.

G3NYQ (Ilkley), likewise on Eighty, worked W1TJV (0030) and 5A3CAD (0115); and he says that W3SQX comes in like a ton of bricks on Forty with his two-element beam. He is 599 and copies G's at 579.

G3LET (now in the Falklands) continued the good work on Forty before he left, and logged VK4EL, 5KO, 5NO, VS9AAC, ZL3GU, UA0IZ and JA's. VK5KO, he says, has kept an unbroken sked with OH7NF throughout the summer on Forty, at 2100 GMT.

SWL Neville Bethune (London, N.14) covered the LF bands again and logged ZL3FZ, ZL3QX, KV4CI and many W's (Eighty CW); VP5BL, ZL4OI and W's (Eighty SSB); and, on Forty CW, ZS1JA (1930), CO8JK (2315), VK2AZZ (0830), KG1AA, W6RW, W6HB, W6JIN, VE7BAX/W7 (all around 0630).

G2DC managed to bag three new ones on Eighty—VP5BH (Cayman), FP8AS and 5A3CAD. Others included W's (all except 6 and 7), VE1-3, VO and ZL4GA. G3ABG (Cannock) raised UO5AA, OY7ML and ZC4BP on Forty;

the latter two also on Eighty.

Miscellany

The tragic plight of the inhabitants of Tristan da Cunha is of far greater significance than the trivial fact that the island is now left without a radio station. Nevertheless, one can't help thinking that those who have never worked a ZD9 are going to be a little sorry about it! (There is spasmodic ZD9 activity from Gough Island, but it looks as though Tristan itself may well be permanently QRT from now on.)

G3LIV (Walsall) sends a brief station description—he runs a Viceroy, an AR88, an indoor dipole for 14 mc and a multi-band 136-ft. centre-fed wire. He has worked about 123 countries, the latest and best being KC6BH on SSB (14 mc, 1700). He is also mobile on Top Band and welcomes SWL reports thereon.

GW3MLU (Bangor) queries RAEM, having recently worked him on CW. He is a genuine Russian amateur, allowed to use the call-sign of the ship on which he was radio operator at the time of his exploits which brought him the title of Hero of the Soviet Union. Ernst Krenkel is the name; he is quite a celebrity—and we seem to have to say all this every eighteen months or so! For WPX purposes one can only treat his prefix as "RAEM"!

WAGM Award: There was a query recently about whether a G5 operating mobile or portable in Scotland could count as a GM5. GM3NOV (Aberdeen) writes to say that such calls are definitely accepted, whether /A, /P or /M.

GW3LQP (Pontypool) admits to having read this feature for ten years, but this is the first time he has written. He is QSL manager for VR1M (of whom news appears elsewhere), the logs have arrived, and QSL's will be despatched. Mike, G3JFF, is coping with all the VR2EA cards himself. GW3LQP is also manager for ZC3AC (now VK9VM) and ZC5AF (now in the U.K.). The latter's logs are somewhat behind, as they have lost touch, so if this is seen by Mike Fender, ex-VS1KB, ex-ZC5AF, will he please contact GW3LQP? The latter, by

the way, is himself ex-VS1JF, so any outstanding shortages in that direction can be easily remedied—Roger Brown, *QTHR*.

A multitude of short comments from G3IDG (Basingstoke) defies segregation under the normal headings. Firstly, YPNT/MM (14070 kc, 1355 GMT)—who or what? Next, OH2BAD (21 mc) sounded like a leg-pull, but OH2BAC showed up later . . . M1H made a brief appearance on 7 mc, and sounded genuine . . . When is a QSO not a QSO? What is the minimum requirement? Reports exchanged, name, QTH, or how much? (We should say an exchange of RST qualifies) . . . QSL's: G3IDG suggests a reminder that there is now no 2d. rate for cards; cards sent alone, or in unsealed envelopes, require 2½d. Incidentally, G3IDG has seven outstanding countries from which he can't extract QSL's. (But he should worry—your conductor has 30 plus!)

Variety Department

G3NWT is another great one for omnibus letters, and he excels himself this month. He suggests that the vexed question of what is or is not DX should take into account how many G's and Eu's are after the particular piece at the time. He has called every ZL he has heard on Fifteen for some time, with no luck; yet he has raised VR4, PK, VK9, FR7, FB8, often first go. Is the answer that lots of G's like to work ZL, but fewer are really DX-conscious in the conventional sense? G3NWT also points out that a ZL will often go back to "Old Joe," whose voice he recognises, rather than to a relative or complete stranger. Two truths emerge: (i) if a station knows you, or wants to, he will come back nine times out of ten; (ii) there is no relation between the proportion of replies to CQ's and the potency of the signal.

Next, the whole QSL situation. A recent note on taped reports by SWL's prompts G3NWT to reflect that the system might free the transmitting amateur from the whole bondage of the QSL system. No DX operator would object to giving, during the QSO, verbal

proof for the purpose of recording; this would take only a few seconds, with the two call-signs, report, band and date. A whole DXCC's-worth of these could be

**TOP BAND COUNTRIES
LADDER**

Station	Confirmed	Worked
<i>CW and Phone</i>		
GM3OM	98	98
G3JEQ	98	98
G2NJ	98	98
G3IGW	97	98
G6VC	96	97
GM3COV	96	96
G3KOR	95	98
G3APA	92	93
GM3AVA	91	92
G2DF	89	91
GM2HIK	88	90
G2CZU	86	89
G3NFV	82	83
G3NPB	80	82
G3LWQ	79	88
G3MXJ	78	81
G3NNO	76	88
G3OHX	71	75
G3OSE	67	77
G3NNF	64	70
GW3CBY	52	62
G3MGI	48	60
G3ISX	48	54
G3IDG	44	49
G4JA	40	53
G3PDM	3	43
<i>Phone Only</i>		
GM3AVA	89	89
GM3OM	87	89
G3FS	85	85
GM2UU	80	81
G3NPB	79	81
G3NBT	70	74
G2CZU	69	69
G3NAA	64	65
G3NNF	55	58
G3NNO	39	62
G3NFV	36	48

(Failure to report for three months entails removal from this Table. New claims can be made at any time.)

accumulated on a two-ounce tape—and it would cut out the “rigged” QSO’s and those which aren’t even R2, automatically.

He continues: “Personally, I can’t understand the stress on confirmation. If I say I have worked *x* countries, I have worked *x* countries. They are all in the log, they are all honest QSO’s, and I would no sooner claim DX I hadn’t worked than rob an offertory box. Why do I have to subscribe to a procedure involving wheedling, gentle persuasion, polite blackmail, barter and wielding half an acre of IRC’s to get credit for them, when none of these ‘skills’ has the slightest connection with Amateur Radio?” (*Editorial Note*: The unfortunate truth is that there are people who do rob offertory boxes!)

Latest Score

We are still with G3NWT, but on a very different subject. He passes on the fact that VQ2BK heard a broadcast science programme in which mention was made of the possible end of all radio communication! Briefly, the basis was that we haven’t had a Supernova explosion of a near star within our galaxy for some centuries and, by the law of averages, might be due for one. Judging by the noise from the very distant “Crab nebula”—the result of an explosion 900 years ago—the effect of a relatively close Supernova might be something like that of 1000 years’ supply of auroras all at once, plus a total blanket noise blotting out the entire spectrum and possibly lasting for centuries. Good science-fiction stuff, this . . . or is it?

Top Scorers

It is worth noting that 1961 has been a record year among the “top people” for DXCC and similar purposes, despite the fact that conditions have been looked on as generally mediocre until the last month or so. A year ago the top scorers on the DXCC Roll of Honour had only just reached the magic mark of 300 (ZL2GX and W1FH sharing that figure), with PY2CK holding top place for Phone with 297.

Now, twelve months later, we

have four of them sharing top place with 311 (W3GHD, 4DQH, 3JNN and PY2CK)—with the latter scoring the same figure of 311 on Phone . . . and those whose score is 300 don’t even appear on the Roll of Honour at all! There are at least fifty stations in the world now with scores of over 300 countries—and that means *confirmed*, for DXCC purposes. The UK’s two top scorers, G3AAM and G4CP, appear to have “retired” at 300—and who can blame them?

Happy is the G3O . . . or G3P . . . with the goal of DXCC (*one* hundred countries) still in front of him. Progress slows down on exponential lines after the first hundred or so!

Our Heading Photograph (p.468)

This time it is Harry Houghton, licensed as G3OPY, who is the operator of the amateur-band station recently installed—with much generous assistance by the Derby & District Amateur Radio Society—at the Cheshire Home at Staunton Harold, Leics. There has hardly been time yet for G3OPY to pile up a DX score, but we feel sure that, as the years pass, Harry and the others at Staunton Harold working for their tickets will make G3OPY a well-known call-sign.

Prefixes to Note

Just to help you on your way, here are a few of the Africans: FF7, *Mauritania*; FF7, *Mali*; FE8, *Cameroun*; TD8, *Dahomey*; TNB, *Congo Republic* (formerly French Congo); TL8, *Central African Republic*; TT8, *Tchad*; TU2, *Ivory Coast*; TR8, *Gabon*; TV8, *Upper Volta*; 5U7, *Niger*; 5N2, *Nigeria*; 6W8, *Senegal*; 9Q5, *Republic of the Congo*.

Late Flashes

VR1M — direct from Mike, G3JFF: They duly arrived, set everything up in a workshop adjacent to the transmitting station, and hooked on to a long wire (360 feet, between two 70-ft. masts!) From September 20, stacks of W6’s were worked (nothing else could be heard through them). But on the second day the transmitter started giving trouble through overheating and humidity, and

some time was lost. Third day, on the air again, but conditions very poor—a whole evening was spent on 21 mc with little success. Duties and a restricted boat service from the ship to the island curtailed time—but this was not meant to be a proper DX-pedition. 397 QSO’s were made, in 37 countries, with operating time averaging 4½ hours a day. They will be returning to Tarawa in March or April, and hope for better luck . . . meanwhile, look for YJ1MA in November.

Also from G3JFF: VR1A is the Government Wireless Officer for the group, and not very active; VR1B is on Twenty SSB; VR1G is going QRT in November, for two months’ U.K. leave. (And at the last minute we hear that VR2AB is on temporary assignment on Tarawa, and may show up as VR1J.)

Wallis Island: FW8AS operation still planned for November . . . VP8EG is the operator being replaced by G3LET . . . The Caribbean tour ought to be under way by now, starting at VP3YG. Frequencies 14314, 304, 294, 281 and 14247 kc . . . UAØBP/Ø and UA3AT/Ø will be on phone from Zone 19, SSB.

Top Band DX: G3PU (Weymouth) worked across the Pond on October 15. From 0601 to 0618 GMT he held a QSO with W2FYT (579/569); and from 0618 to 0628 he worked W2KQT (569/469). G3PU says: “The transmitter is the same old 8-watter (now twelve years old) and the aerial is 265 ft. long and 70 ft. high.” He has now worked 35 countries in six continents on Top Band!

Acknowledgments, as ever, to all sources of information, especially W4KVB’s *DX*, the WGDXC *Bulletins*, the NCDXC *DX-er*, the *Western Radio Amateur* and, of course, all our own correspondents, who show no signs of tiring.

The deadline for the December issue is **first post on Friday, November 10**, a rather early one forced on us by the calendar. Don’t be late, and address everything to “DX Commentary,” *Short Wave Magazine*, 55 Victoria Street, London, S.W.1. Good Hunting, enjoy your contests, and 73. BCNU!

DX-PEDITION TO THE ISLAND OF EIGG

GB3GM,

AUGUST 27 - SEPTEMBER 10

F. G. Martin (G3PDM)

FIRST thoughts about manning a DX-pedition came early this year, when it became known that the Newcastle-upon-Tyne Royal Grammar School was again arranging for a camping party to spend a fortnight on the Island of Eigg, in Scotland. The radio expedition formed part of the survey work carried out at the camp, such activities as geology, marine biology, loch-sounding and rock-climbing being undertaken by various groups. Last year SWL's Martin and Fenwick took along receiving gear, so for this year something more ambitious was planned. The radio group this time consisted of G3NOQ, G3PDM (ex-SWL Martin), and SWL's Craddock and Fenwick. In order to attract a large number of contacts, it was decided to request a special licence—the Post Office was most co-operative, as ever, and our expedition was issued with GB3GM for the fortnight.

For those not familiar with the more remote parts of Scotland, the Island of Eigg is about four miles by six, with a population of eighty. It forms part of the group Muck, Rhum, and Eigg at Lat. 56°52'N, Long. 6°15'W, and is administered by the county of Inverness-shire (for which GB3GM contacts score).

Equipment

This county has been visited by a good number of DX-peditions in the past, for the purpose of giving Top Band WABC hunters a new one. So it was felt that GB3GM would be more useful if a transmitter could be established for the HF bands, as there are many European stations working towards WBC and WPX. Fortunately, a Heathkit DX-40U transmitter was readily available from the South Shields Club. To simplify matters, it was decided to employ crystal control with this transmitter—no disadvantage, since, with the call-sign, there was no necessity to hunt for contacts! For the aerial, clearly what was needed was a multi-band device, fed by a single cable, and requiring no fiddling around to change bands. Mosley Electronics, Ltd., kindly loaned a V-4-6 vertical four-band array. Using this aerial and the CC transmitter, it was possible to change bands in under twenty seconds. With operating hours restricted as they were, this proved most convenient. The receiver was an Eddystone S.640.

Power Supply

A few of the houses on the island are provided with a form of DC supply. All the radio gear was, of course, designed for AC input only, but we were fortunate in being able to pitch our tents near the

house of the Island's doctor, who has a 1½ kW generating set. Thus one more obstacle was surmounted. To avoid inconveniencing the doctor by running his generator continuously, GB3GM was on only from about 5.0 p.m. to 11.0 p.m. each day.

Eigg was reached on August 28 and the tents were pitched. The V-4-6 was erected the following morning, and, on the Tuesday afternoon, 29th, our first CQ on 14050 kc brought an immediate reply from OH2PO, and thereafter GB3GM was in business. That night W's were worked on 20m., and PY on 15m., despite the fact that the shack was on an east-sloping hillside. These, and a UA9 on Forty, were raised without the prescribed radials for the V-4-6, which was being used with a single earth spike. Regardless of this, few reports were received worse than 579, and the Mosley V-4-6 did an admirable job.

So far, an aerial had not been put up for use with the 160m. gear. The end of about 1000 feet of 14g. was taken to the top of the hill behind the shack and, supported by a rock and four poles along its length, was placed along the ridge. As the far end was not visible from the camp, an earth-return telephone was hooked up, which proved useful for communication with aerial erectors (and sun-bathers). Incidentally, the earth resistance to the top of the ridge was measured at only 1500 ohms.

As soon as the aerial was up, a series of heavy thunder-storms started, and QRN soon made Top Band conditions unbearable. But meanwhile, on 20 metres, VP8FV, ZB1, ZC4 and TA5 were being worked, not to mention endless Europeans. When 160 metres began to quieten down a bit, a good number of stations was raised, including OK, GM portables, and G3BIK (Gosforth), the only station near home worked during the trip. The best session on 160 metres was the last night, September 7, when 579 reports came from many GDX stations, operation continuing until the early hours of the morning for a final fling.

Taken as a whole, the expedition was a great success, and valuable experience was gained for



General impression of the GB3GM location on Eigg, in the tent on high ground behind the doctor's house, from which they were able to tap an AC supply.

future such trips. As operation only covered about six hours a day, the total of 268 contacts in ten evenings is felt to be quite reasonable. Incidentally, every one of these was on CW, as the few phone CQ's produced no replies!

For the success of the trip, sincere thanks are due to the South Shields Club for the loan of the transmitter; to G3GBF for the loan of mains cable; to Mosley Electronics, Ltd., for lending us the V-4-6 aerial; and to Doctor Maclean, of Eigg, and his family, who really acted as hosts to the party, supplying not only power and refreshment, but also accommodation on the last night after the tents had been packed away.

All QSL's have been sent out, and return cards would be appreciated for the Camp Exhibition to be held at the Royal Grammar School in November, when the fruits of the expedition will be displayed.



The radio crew on GB3GM, Eigg. Left to right: SWL Craddock, G3NOQ and G3PDM, who supplied the Top Band gear. The photograph was taken by SWL Fenwick.

SWL • • • • •

OUTSTANDING DX/TV RECEPTION—DETAILS OF EQUIPMENT USED—READERS' NEWS, VIEWS AND QUERIES—SOME DX RESULTS ON TEN

AMONG the numerous ranks of short wave listeners there are a small number of "splinter groups" with particular interests of their own, and many individualists who even branch out in their very own way. Short wave listening, itself, covers a vast number of different interests; combined with tape recording it affords even more variety of opportunity for the SWL. But one of the lesser-known aspects of SWL activities is that of DX television reception—followed, as yet, by only a very select few.

One of these is Charles N. Rafarel, of Poole, who has been specialising in DX/TV for some time and has, during the past summer, brought it to a fine art and achieved some really wonderful results. In his own words, he has defected from the ranks of "honest" short-wave listeners, and has been severely bitten by the DX/TV bug.

SWL Rafarel decided that he must have some alternative to the main-stream of his favourite hobby of amateur-band DX. As his family has some connections with France, and the language difficulty therefore doesn't exist, he has been a daily listener to RTF broadcasting for a long time. Last February he made the first attempt to establish a regular link with the RTF Television Service, and succeeded, the chosen station being Caen (Band I, Channel F2), about 130 miles over the water from Poole.

Since February 16 he has never failed to receive his daily picture from Caen, despite severe interference at times from the BBC on adjacent channels. But he is definitely an "extreme fringe area" French viewer, and is even making arrangements to obtain a French

TV licence.

Technically, there were as yet few difficulties. Slight modifications to the 21-in. domestic TV line time-base gave the necessary 819 lines, but with only a two-thirds scan width. The makers of the receiver put SWL Rafarel in touch with an engineer friend of theirs whose interest was also DX/TV, and joint work between the two has solved all problems.

A 14in. set was bought and modified for 819 lines, with immediate success, and a full-width picture. Next the 14-mc SWL dipole was "sacrificed" and replaced by an aerial giving four half-waves on the F2 channel, which reduced BBC interference.

Next stage—stripping out of the sound chassis from another old TV receiver for the French sound (RTF spacing between sound and vision is 13 mc, compared with the BBC's 3.5 mc). Experiments in dodging the BBC channels eventually raised two RTF stations in Band I, and five in Band III. It was this that initiated the real urge for DX/TV reception.

Ranging Europe

One Sunday morning an "unlockable" negative-going picture was tuned in, which proved to be RAI, Italy, so it was decided to modify the 14in. set for the negative-going pictures of the CCIR (European standard). Eventually a simple change-over switch was so arranged as to invert the video diode, alter the video amplifier and cut out the noise limiter. Within minutes of completing this mod., a magnificent test-card picture was received from Madrid Navacerrada (Band I, Channel E2) at a distance of 750 miles!

Then followed new aeri—an 11-element horizontal beam for Band III and a five-element horizontal for Band I, both mounted about 37 feet high. The latter gave much-improved results on Caen and other European stations, but the trouble now was the absence of sound on the CCIR FM sound channels. Further mods.—this time to an old domestic FM receiver, equipped with a front-end cascode converter for reception of sound on Bands I and III.

Now fully-equipped, C. N. Rafarel cast his net

wide over Europe, and certainly emerged with some nice fish, as the list given on p.478 shows. Photographs of the TV screen, some of which are reproduced herewith, serve a better purpose than QSL cards! Some are naturally of poor quality, where the reception has been marginal, but others show what excellent reception has been possible at times. And, of course, something is lost in the processes of photography and reproduction here.

The *pièce de résistance* is, of course, the USSR/TV test card, believed to emanate from Minsk (1300 miles). Identification has been one of the main snags all the time, but naturally test cards are a godsend. (On a later occasion the one from Minsk was held for three hours on a Sunday morning!)

To quote SWL Rafarel once more: "In all this there has been a tremendous sense of satisfaction, and to add vision to sound contributes much to the DX hobby. There is great interest for me in *seeing* and hearing a Khrushchev speech over Budapest relay, sports programmes from Czecho-Slovakia, rowing regattas from Warsaw, and I now know what Omo and Vim adverts. look like in Italian and Spanish!"

The Technical Side

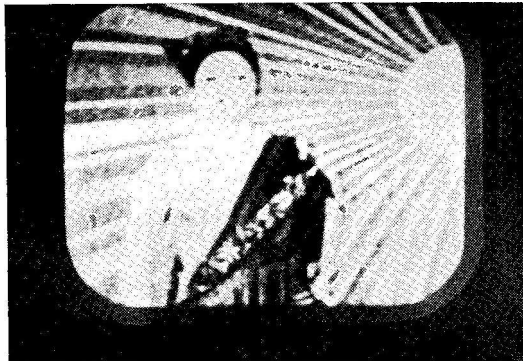
The apparatus needed for DX/TV need consist of no more than a good, sensitive TV receiver, modified as regards the time-base circuits and also to cope with negative-going pictures; a receiver for FM sound; and a suitable selection of aerials for the chosen bands. Given this modest equipment, the chief requirement thereafter is *patience*; for even in the "open season" there are many blank days for CCIR TV, and on other days, different times produce different countries—just as the normal short-wave bands give such widely-varying DX conditions.

Since the DX stations on Band I are received *via* Sporadic-E propagation, and those on Band III by tropospheric scatter, the period May-September seems to be best for DX/TV reception. Recent reports indicate that the party is now over, and there may be little doing until next summer. However, both Brest and Lille (Band III) occasionally break through, and Caen still gives the regular daily picture.

All attempts to correlate results with weather or barometric pressure have so far failed (the USSR



The well-defined picture regularly seen by SWL Rafarel (Poole, Dorset) from Caen, France, on Band I. The French TV system is on 819 lines.



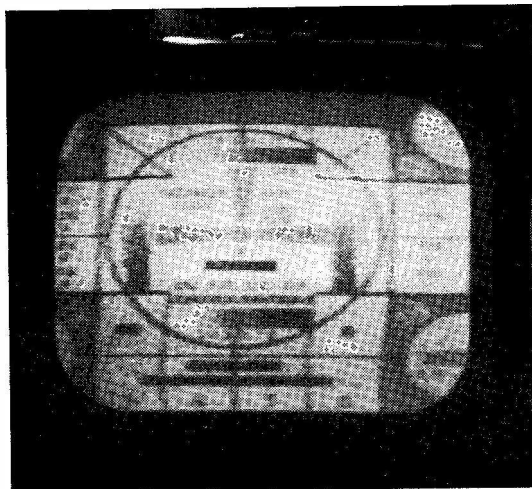
A 625-line picture from Monte Nerone TV (R.A.I., Italy) on Band I, received by SWL Rafarel at Poole, Dorset.

picture was first received during a gusty rainstorm with a falling barometer).

Last-minute news from SWL Rafarel was that he was off to Paris for the French Radio Exhibition, to see his friends at RTF and compare news, and to buy an 819-line output transformer and scanning yoke. Having installed these bits on his return, he is going to set to with aerials and get all ready for further conquests in the world of DX/TV! And, in offering our congratulations on his enterprise so far, we certainly wish him more and more success.

READERS' FORUM

In general, our SWL readers seem to be delighted at the most noticeable improvement in conditions that took place between early August and mid-September. And they have held up pretty well, too, despite ups and downs. Things are running true to form . . . the poorer the state of the sunspot cycle, the greater the contrast between summer and winter conditions. Get cracking on outdoor pursuits, such as mobileering, for next summer! (Top Band won't



Believed to be the test card of Minsk TV, U.S.S.R., received by SWL Rafarel at a distance of 1300 miles.

vary much, anyway.)

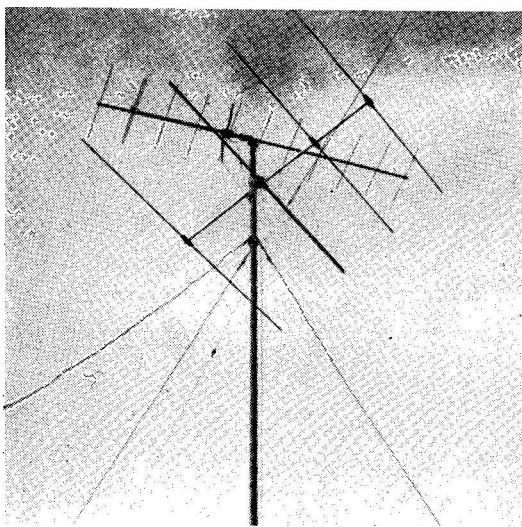
Meanwhile, we have the usual interesting assortment of queries, statements of opinion, comments on the state of the bands, and descriptions of rigs, all of which must be condensed to fit in the space available, so here we go :

Newcomers

M. McCormick (Luton) says this is the first time he has written to anyone on the subject of radio; he has been covering the amateur bands for a year, first with an R.109, now with an S-20R and "with access to" a Mohican which he helped to build up; numerous aerials have convinced him that nothing beats a long wire. He thinks that Fifteen is badly neglected, and has heard seven "uncommon" prefixes all calling CQ with no replies. Mike, who is 14 years old, concludes thus: "I sent an insulting letter to Moscow about their jammers, and back came a bulky envelope, post haste, containing several picture cards of Moscow, and a letter thanking me for my 'report' and hoping to hear from me again." Reply from Peking still awaited !

R. D. A. Ross (Taunton) is another "first-timer," started off about 18 months ago by hearing local amateurs on a BC set. He bought an R.107, and then, last April, a Minimitter converter, after which serious listening began, mostly on Ten, Fifteen and Twenty. He has a grouse (haven't we all?) about the shocking state of even our limited 100 kc on Forty—still messed up by broadcasters and commercials; and another one about the standard of operating of many SSB stations. So far he has logged about 105 prefixes, so we shall soon see his name on the list.

Two more new correspondents are *Bill and Robert Ferguson (Glasgow)*, brothers of 19 and 14 describing themselves as "two really keen SWL's at



The aerial system used by SWL C. N. Rafarel for DX/TV reception. The main array is the 11-element Yagi—see text.

the same QTH." They have a modified R.1155B with an RF-24 for Fifteen and Ten; a variety of aerials, all indoors; and their main interest is CW. Both have logged 39 Zones, but Bill is searching for Zone 29 and his young brother for Zone 19! Yes—3A2BA on Forty CW was genuine.

From Overseas

G. A. Greville writes from *Port Moresby, Papua*—a real DX SWL! He says he gets a great deal of enjoyment out of listening to England, and anywhere else, his rig consisting of an R.208 bought from a London shop and shipped out to Papua, and an SWL-7 Mosley aerial. We have been promised a photograph and look forward to seeing it.

Jan Lind (Solna, Sweden), a regular reader, is a student at the Pharmaceutical Institute, Stockholm, and does not get a lot of time for DX—nevertheless, he comes into the HPX Ladder with 260 prefixes heard; he has logged 157 countries in 37 zones, with 125C in 33Z confirmed, and has QSL cards from 622 different amateur stations, all for phone reception.

**DX/TV STATIONS RECEIVED:
FEBRUARY - JULY 1961**

SWL C. RAFAREL, POOLE, DORSET

COUNTRY	STATION	BAND	CHANNEL	SYSTEM
France	Lille	III	F8a	} Positive mod., 819 lines
	Caen	I	F2	
	Rouen	III	F10	
	Cherbourg	III	F12	
	Le Havre	III	F7	
	Bourges	III	F9	
Spain	Nantes	I	F4	}
	Madrid	I	E2	
	Zaragossa	I	E3	
Portugal	Barcelona	I	E4	}
	Coimbra	I	E3	
Italy	Monte Nerone	I	Ia	}
	Monte Penice	I	Ib	
Hungary	Budapest	I	O1	} CCIR, negative mod., 625 lines
USSR	Minsk	I	O1	
Czecho-Slovakia	Ostrava	I	O1	
	Bujedovik	I	O2	
Poland	Warsaw	I	E4	
Germany	Grünten	I	E2	
	Oldenburg			
	Frankfurt			
Denmark	Fyn	I	E3	
Sweden	S'kvde	I	E3	
Austria	St. Polten	I	E2	
Belgium	Liege	I	E3	} Positive mod., 819 lines

Queries

Every month, it seems, someone queries that UT5 prefix! It is used by certain stations in the Ukraine, but whether they have run out of UB5's or whether it is in a different category, we have not yet been able to find out. *S. L. Bleaney (Dunstable)* mentions it this time, also the prefixes UK2 and A1—neither of which we know anything about. *C. N. Davies (Bicester)* also queries the UT5, as well as IE1SMO, said to be on an island off Sicily. This latter one, operated in 1960, was genuine—but we can't remember the name of the island. (Not a country, of course, but valid for WPX or HPX.) SWL Davies joins the HPX ladder with 154 prefixes, all heard on an ordinary Philips broadcast receiver covering short waves (or at least Twenty and Forty, each taking up about a quarter-inch of scale length!) Something better for the amateur bands is hoped for in due course. Meanwhile, "pet hates" are operators who gabble their call signs, and contests which clutter up the bands, causing pile-ups and QRM.

Forty Metres

David Evans (Denton) doesn't agree with our statement that Forty is not taken seriously as a DX band. He has heard many stations calling CQ DX and getting DX replies—but mostly on CW. On phone, he says, much DX is heard but very little worked; but sometimes around 0130 GMT one can find W7's working the East Coast on phone, quite oblivious of the fact that they are getting into Europe. The band is reliable, too—more consistent than the others—as far as North America is concerned, but openings to Central America are not so numerous. Occasionally it opens to the Far East in the early evenings, but it's not worth waiting around for this to happen. Stations logged on Forty by SWL Evans include UA9KEA, VS1JG, VE3AL and W's on CW; HK3KL, 7PS, PY2ABS, 2SI, 6SN, YV1AO, 1EQ, 5ARV, 6DW and W's on Phone . . . all between 2300 and 0300.

Neville Bethune (London, N.14) also mentions Forty and has logged UJ8KAG, FP8BR, ZB2AD and TF5TP (CW, we should think, though he doesn't mention it).

DX News

J. S. Alderton (Faversham) has been running an R.107 and RF-24 since June of last year, but as he is away at school the operating time has been limited. However, he has heard such nice ones as VR6, VR4, VR1, KG4, KR6, ZD9 and a lot of the more usual stuff. He is keeping a tally of countries heard "per band," in which Twenty leads with 74, Fifteen coming next with 48. All phone only.

A. W. Nielson (Glasgow) found listening so dull during the summer that the old CR-100 got very dusty. However, a short holiday brought back the enthusiasm and sent his total HPX up to 476. He finds the morning hours interesting on Twenty. SSB—they yielded HM4AQ as well as such DX as KA, KG6, KW6, KL7, VK and ZL. On September 10, in a single

SWL • • • • •

continued

listening spell between 1430 and 1630, SWL Nielson logged all W districts as well as the two new States—KH6 and KL7 . . . all Twenty SSB, during the USA "WAS" Contest.

In contrast with this enthusiasm for Twenty, *R. J. C. Coats (Cowie)* says "Fifteen has peaked up terrifically recently, with many strong signals from Central and South America"—but he's heard nothing whatever on Ten.

Then up comes *R. M. Nixon (Liverpool)* to say that by listening on 10 metres around 1600 GMT, he has logged such interesting pieces as: CR6BY, CR6JM, CR7ES, CX4CS, OD5CS, ZE2JA, ZE2JL, ZE4JE and ZE8JA, several of these having been heard more than once. R.M.N. runs an R.208, the aerial consisting only of an 8ft. square about 12ft. high!

And also about Ten, *K. A. Reeves (Solihull)* reports ZC4PW at 5 and 9-plus on 28-48 mc at about noon on September 30, and wonders if anyone else also heard him?

The moral of all this seems to be: "Don't neglect 10 metres, whatever anyone may say about the state of the band."

P. J. Weyell (Richmond) says the best bet for finding DX on Twenty SSB is to listen to a well-known DX-chaser (such as MP4BBW) and stick on the frequency—it's surprising how much one eventually hears. Apart from this pursuit, he was glad to log VR4CB on Fifteen phone (1010 GMT).

Miscellaneous

H. Warburton (Aldershot) says "activity has been very limited, but with the completion of a new 250-ft. wire, end-fed, running North and South, I am looking forward to a good Top Band season" . . . and why not?

Robert Hunt (Sheringham) is eighteen, has been an SWL for about three years, and joins the HPX Ladder for the first time. . . *Douglas Bell (Nottingham)* says that before he had his "main receiver," which is an R.1155B, he used to hear much DX on a home-made 0-V-0 on Twenty—including all South America, West Indies, W's, VE's and the like, on AM phone. Nowadays he has an HRO.

John Ingham (Halifax) has swapped his 358X receiver for a CR.300/1, which is a good deal better. His aerial is the so-called "G5RV" arrangement—which we prefer to call a centre-fed long wire, or

Correspondence from short wave listeners is welcomed for this feature, the next appearance of which is in the January, 1962 issue. Good photographs of SWL stations can be used and are paid for on publication; prints should be accompanied by adequate descriptive notes. The closing date is November 29 and all mail should be addressed: "SWL," c/o The Editor, Short Wave Magazine, 55 Victoria Street, London, S.W.1.

just a doublet. He remarks on heavy activity on Fifteen, on which band the old receiver was just about dead, and adds that he uses a GDO as the local oscillator for a 15- and 20-metre converter using an EF80 mixer—this was when he was having trouble with the previous receiver. Now he is taking an R.A.E. course, and we wish him luck!

Explaining his HPX score increase of 9 only, A. Griffiths (Solihull) reports that "the VHF bug has bitten at this QTH"—he is getting very encouraging GDY results with a modified BC-624 (this is the Rx section of the SCR-522 equipment), preceded by an RF pre-amplifier using a 6CW4 Nuvistor; the beam is a 5-ele rotary in the loft. SWL A. Griffiths (50 Redlands Road, Solihull, Warks.) adds that he will be happy to discuss the conversion of the BC-624 with any SWL who writes him, enclosing an s.a.e.

And, just to keep the keen DX chasers up to the mark, G. P. Watts (Norwich) says that he is "still forcing on, now with 308 countries confirmed!"

Mrs. Chris Kiddell (London, S.E.6) says she would like to see Forty cleaned up; for one thing, many of the members of the R.A.I.B.C. Net have been forced up on to Eighty, and that band is rapidly becoming almost as bad as the other—it's quite an achievement to get a 100 per cent QSO. (It's a simple problem—too many stations and not enough kilocycles.) Prints sent along were, unfortunately, not sharp enough for publication—but one shows the rugger-size "Gan coconut" sent by two of the ops. on VS9MB, with whom there has been a lot of correspondence, founding a firm friendship.

Walter Gooding (South Ockendon) happened to hear one of the occasional "drug-dramas" that one reads about in the papers . . . on this occasion a G station replied to a CQ from an EA, who had an urgent message requesting a rare drug to be flown out. (It has always surprised us that these appeals find their way on to the amateur bands at all, and there are all sorts of legal difficulties involved.) However, it seems that Chelmsford Red Cross checked with the Red Cross in Spain, and all ended properly. Apart from that little episode, SWL Gooding was very bucked to hear JA2EY working ELØJ/MM, on 21 mc.

Tape Reporting

With reference to that note on p.424 of the October issue of SHORT WAVE MAGAZINE, Martin Foster (5 Goring Road, Dagenham, Essex) says that he and a small group of SWL's in EI, GW and G are already doing just that. They listen at a given time to a particular station, all pre-arranged in advance; each makes a short recording and sends it in to SWL Foster, who then puts all the recordings on to one tape, for despatch to the station concerned. He can then hear how his transmission sounded in various parts of the country at the given time.

This all strikes us as a very interesting and commendable procedure, particularly as Martin Foster says they would like to extend the scope of their activities. Accordingly, anyone interested, either

HPX LADDER

(Starting January 1, 1960)

Qualifying Score — 150

SWL	PREFIXES	SWL	PREFIXES
PHONE ONLY		PHONE ONLY	
Bob Griffiths (Ventnor)	619	D. Bell (Nottingham)	252
H. G. Shaw (Heswall)	556	H. Warburton (Aldershot)	250
A. W. Neilson (Glasgow)	476	R. Ashby (Hinckley)	221
R. J. C. Coats (Cowie)	454	R. Hunt (Sheringham)	218
D. G. Evans (Denton)	440	A. Halfacre (Norwich)	216
C. N. Rafarel (Poole)	430	D. F. Catherwood (Huyton)	201
P. J. Weyell (Richmond)	412	J. Ingham (Halifax)	188
I. K. Gurney (Chalfont St. Peter)	400	C. N. Davies (Bicester)	154
D. Edwards (Birkenhead)	395	G. Docwra (Brighton)	151
M. Phillips (Theydon Bois)	391		
B. M. Crook (Abingdon)	372	CW ONLY	
R. M. Nixon (Liverpool)	372	R. B. Headland (Liverpool)	414
G. Shucksmith (Barton-on-Humber)	326	R. Western (Torquay)	345
J. Forsyth (Alvaston)	295	M. Phillips (Theydon Bois)	344
R. Western (Torquay)	294	P. J. Weyell (Richmond)	331
A. Griffiths (Solihull)	286	H. Warburton (Aldershot)	320
J. Lind (Solna, SM)	260	D. G. Evans (Denton)	285
W. J. Atherfold (Southwick)	259	H. M. Davison (Ashtead)	251
H. M. Davison (Ashtead)	252	W. Ferguson (Glasgow)	250
		B. D. Simpson (Stockport)	240
		R. Ferguson (Glasgow)	150

(NOTE: Listing includes only those who reported for this issue or the September issue. Failure to report for two consecutive issues will mean removal from the list. Next list—January 1962, continuing as above from January 1960.)

for getting transmission reports or wishing to join on the recording side, is invited to get in touch with him at the address given.

Technical Query

P. L. Ashley (Selsdon, South Croydon, Sy.) asks us to say he would like to hear from anyone with suggestions on how to cure TVI from the oscillator of his HRO-MX receiver; he gets herring-bone on Ch.1 whenever the receiver is tuned through 9 mc, 10.2 mc, and the 21 mc band, and, most unfortunately, the patterning is strongest when tuning over the 14 mc amateur band. As it is still there with the aerials disconnected, the interference could be partly mains-borne, if not all radiated due to proximity. Anyway, possibly others have found a cure for this particular type of TVI?

And that brings us to the end of it for this time. As "SWL" is not due again until January, 1962, your conductor would like to wish all who follow this feature a very happy Christmas, and a rewarding winter season on the DX bands.

R.A.E. PAPERS — CITY & GUILDS

We are asked to remind readers that the syllabus of the Radio Amateurs Examination, Subject No. 55, costs 1s. and the question papers for the 1960/61 examinations are 2s. per set, all post free, from the Sales Section, City & Guilds of London Institute, 76 Portland Place, London, W.1. Those applying are asked to note that the Sales Section can *not* deal with queries on the Examination itself, and that "Subject No. 55" must be quoted when ordering.

*Read Short Wave Magazine
for the Latest News*

COMMERCIAL Tx For TOP BAND

THE NEW "K.W. ONE-SIXTY"

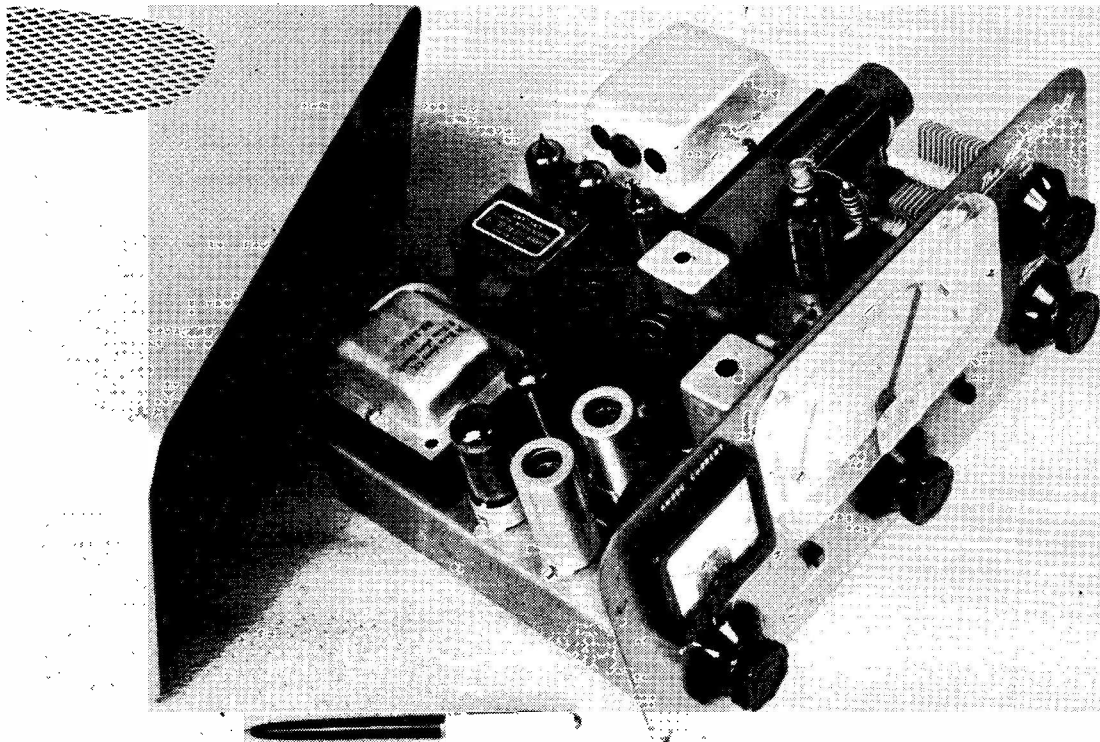
A recent product in the K.W. Electronics, Ltd., range of amateur-band equipment is the "K.W. One-Sixty"—a self-contained CW/Phone transmitter for Top Band, needing only an AC mains lead, aerial, microphone and/or key to put a 10-watt signal on the air.

It is a neat and compact piece of equipment, as can be seen from the photograph below and the illustration on the next page. Dimensions are 12 ins. wide by 6 ins. high and 10 ins. from back to front. The "K.W. One-Sixty" modulates fully at the 10w. input, the quality being rated on the air as "excellent." The CW output is T9x, with complete cut-off when the key is up.

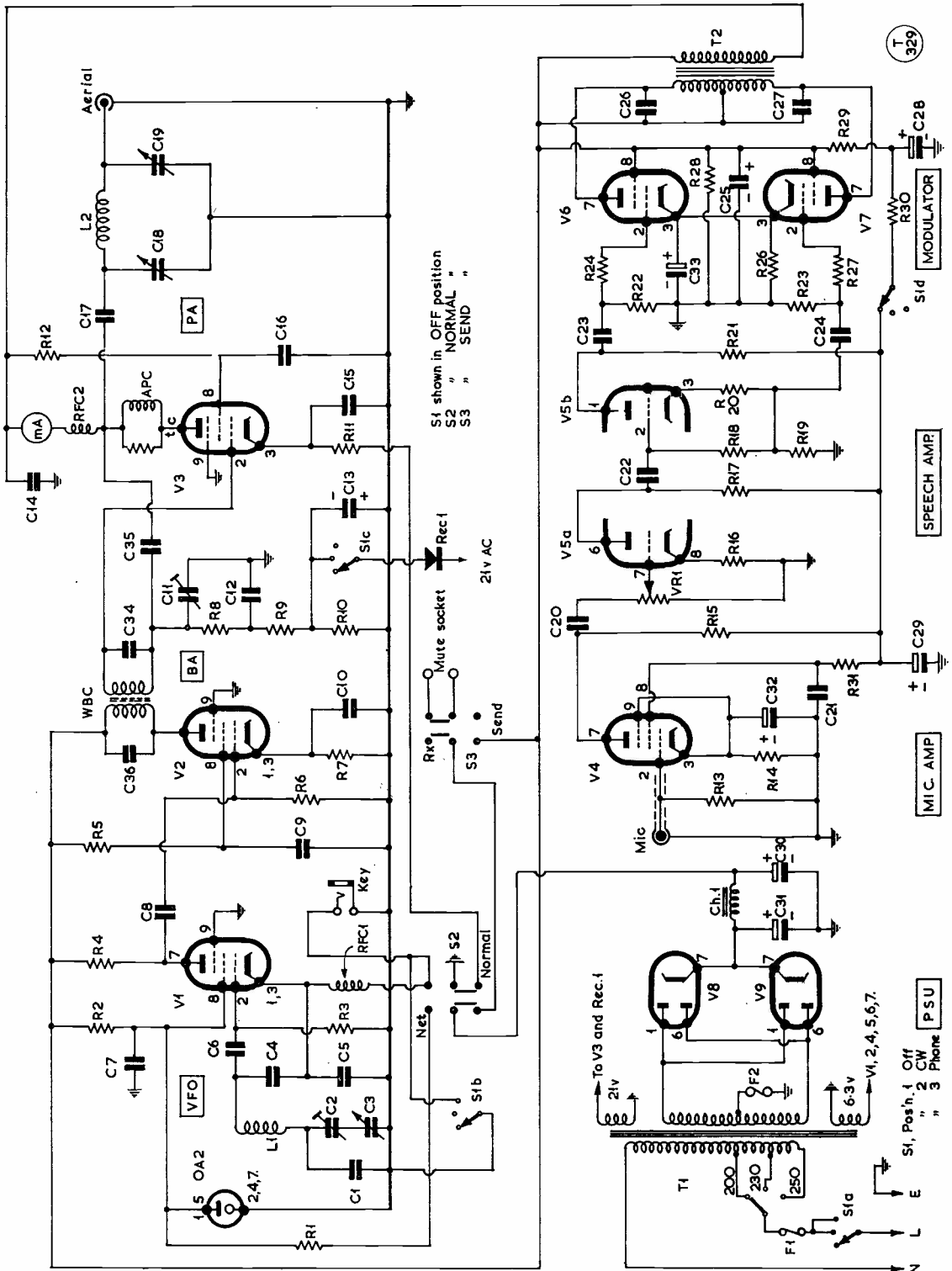
The VFO scale, about 6 ins. long, is clearly and accurately calibrated; the netting switch brings in VFO alone, which can be set spot-on the required

frequency. Using the normal *pi*-tank output arrangement, the PA can be matched into a wide range of end-on aerials—though it is, of course, better to go into the aerial through an ATU.

All external connections—mains lead, aerial, key, microphone and muting socket (operated by the send-receive switch on the front panel)—are carried on the rear chassis drop. This makes for clean and tidy installation. Controls are well set out, operation is simple, and altogether the "K.W. One-Sixty," in its smartly-styled cabinet, is a very nice piece of gear to have available for 160-metre working. The circuit of the transmitter, with all values, is given overleaf. Features to notice are that the VFO is on a stabilised line, two 6X4's are used for power supply, and the function switch cuts HT to speech amplifier stages and modulator screens when on CW. [see circuit p.482



Interior view of the new "K.W. One-Sixty" Transmitter, which is a neat and compact job, right up to the K.W. Electronics' high standard for design, finish and performance. The speech amplifier gives ample gain with any standard crystal microphone, the CW output is particularly clean, and the VFO sets accurately while being immune from PA pulling. The meter reads PA plate current, the knob beneath giving "off," and phone/CW selection. The VFO dial is 5 ins. wide, the control being the central knob along the lower panel edge. At right are the PA tune and aerial coupling controls (C18 and C19 in the circuit diagram). A slide-switch (left, S3 in the circuit) gives send-receive control, the right-hand slide-switch below the VFO dial being S2, the VFO net control.



S1 shown in OFF position
 S2 " NORMAL "
 S3 " SEND "

S1, Pos'n. 1 Off
 " 2 CW "
 " 3 Phone

T 329

SPEECH AMP

MIC. AMP

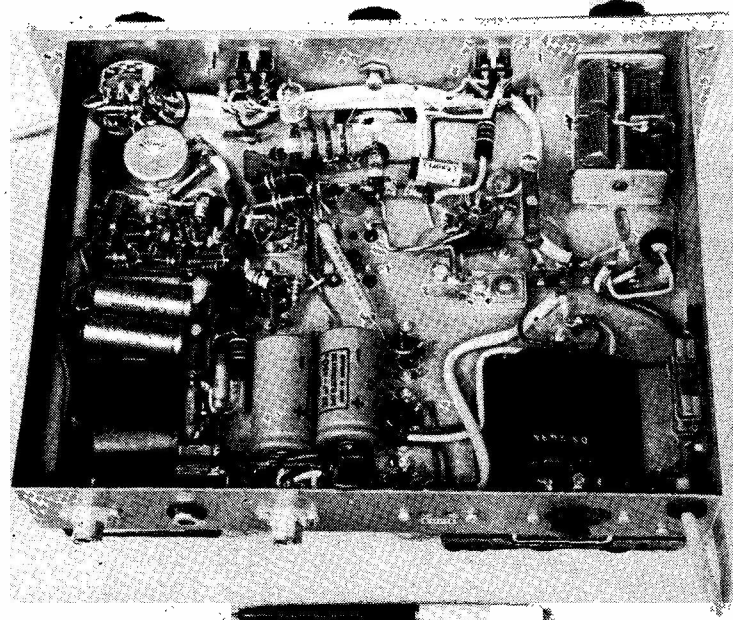
PSU

MODULATOR

Fig. 1. Circuit complete of the new "K.W. One-Sixty," a self-contained CW/Phone transmitter for Top Band. It includes all the refinements to give smooth, clean speech with full modulation; quick and accurate netting; and a sharp TX CW note, with BK and receiver muting facilities.

- APC = Anti-parasitic choke
- WBC = Wide-band coupler
- F1 = 1 amp.
- F2 = 500 mA
- V1, V2 = 6BX6
- V3 = 21A6 (PL81)
- V4 = 6BR7
- V5 = 12AX7
- V6, V7 = 6BW6
- V8, V9 = 6X4
- V10 = OA2
- R15, R17 = 470,000 ohms
- R16 = 4,700 ohms
- R20 = 2,200 ohms
- R22, R23 = 250,000 ohms
- R26 = 250 ohms
- R29 = 4,700 ohms, w/wound
- R31 = 2.2 megohms
- VR1 = 0.5 megohms pre-set gain control
- S1 = 4-pole, 3-way
- S2, S3 = 2-pole, 2-way

(NOTE: Items Rec. 1, Ch. 1, T1 and T2, WBC and LI, L2 are as fitted.)



Underneath the "K.W. One-Sixty" transmitter. The output coupling condenser (C19 in the circuit) is top right, and the pre-set audio gain control potentiometer is at upper left, mounted through the chassis, near the function switch. Along the rear chassis drop are the microphone and key inlets, the aerial socket and Rx-mute connector point.

Table of Values

The "K.W. One-Sixty" Top Band Transmitter

- R1 = 10,000 ohms, 2w.
- R2 = 47,000 ohms
- R3, R5 = 100,000 ohms
- R24, R27 = 470 ohms
- R28 = 47,000 ohms
- R6, R21 = 100,000 ohms
- R4 = 10,000 ohms
- R7, R11 = 470 ohms
- R8 = 6,800 ohms
- R9, R10 = 1,000 ohms
- R14 = 22,000 ohms
- R12, R13 = 1 megohm
- C1 = 50 μ F
- C2 = 30 μ F trimmer
- C3 = 300 μ F var.
- C4 = .001 μ F, silver
- C6 = .001 μ F
- C7 = 220 μ F
- C8 = .005 μ F
- C9 = .01 μ F
- C10, C12 = 750 μ F, trimmer
- C13, C31 = 25 μ F elect.
- C14, C16 = .0018 μ F
- C18, C19 = 500 μ F var.
- C20, C22 = 390 μ F
- C21 = 0.1 μ F
- C25, C28 = 8 μ F elect.
- C29 = 32 μ F, elect.
- C30, C31 = 40 μ F
- C34, C36 = 30 μ F
- C35 = 6,800 ohms, 5w., w/wound
- R1 = 1 megohm

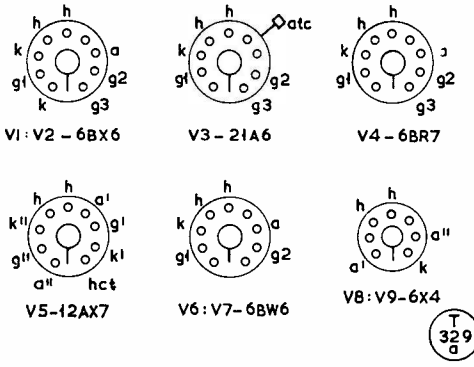


Fig. 2. Base connections of the valves used in the "K.W. One-Sixty" transmitter. Note that for V3, the PL81 in the PA is the equivalent of the 21A6 shown here.

CLEANING UP FORTY

From comments and discussion in overseas Amateur Radio publications, we are glad to see that the attack on the 40-metre BC stations is gathering momentum. Not only should the frequencies they occupy in the 7000-7100 kc band be used as much as possible, but the flow of individual letters of complaint be kept up. By this is meant that a single letter on behalf of, say, a 25-member club group is that much less effective than a letter from each of the 25 members individually. By the same token, letters from a lot of clubs and their members will do far more real good than one official complaint "through the usual channels" on behalf of U.K. amateurs as a body. This is a campaign in which quantity counts more than any other factor. The addresses to which to write are: Mr. R. Ahmed, Director-General, Radio Pakistan, 71 Garden Road, Karachi 3, Pakistan; Mr. M. M. Taifour, Controller of International Relations, U.A.R. Broadcasting Corporation of Cairo, 4 Sherifein Street, Cairo, Egypt; and Mr. Fang Chung, Director, International Liaison Dept., Broadcasting Administration, People's Republic of China, Peking.

Short Wave Magazine Circulates Throughout the World

ONCE again, much to report and discuss—with yet another very good opening for EDX working over October 12-15, when HB and LX were there for those wanting new countries on two metres! Well, perhaps it had better be said that HB1QQ, HB9BZ, HB9KM and LX1SI were there for those who could raise them! And, rarest piece of all (on October 15), OE9IM, worked by G3LTF for what is probably the first G/OE contact by tropospheric propagation. There have been previous QSO's between the U.K. and Austria on two metres—but, of course, by meteor scatter and not *via* tropo. So for OE9IM and G3LTF a new "first" is chalked up, with congratulations to them both.

And it now transpires that the G3JHM/SM6ANR contact on 70 cm., reported in our last, is a new world record, the distance being 686 miles, as near as makes no matter. This is a fine effort by them both, and likewise they go into the honour roll.

Also to be recorded is a late-night Aurora opening on October 1, which caught G3AGS (Manchester) prepared—about the only other G station on, apparently, was GB3VHF, 582 with G3AGS, who worked four GM's and G13ONF. This particular opening came at the grisly hour of 0030 BST and lasted till about 0200; hence the lack of activity!

The big opening of October 12-15—and we should be grateful for two such great opportunities within six weeks!—raised considerable activity and showed some splendid EDX results on both VHF bands. The trend of conditions favoured the southerly part of the country after the 14th—in other words, the area of good conditions started to contract towards Europe—and though the bands were wide open into Europe from the south of England on October 15, generally the reports show that the more northerly G's got their best DX up to the 14th. (It is always difficult to be quite sure about this sort of thing, as so much depends upon the volume of reports and on who is reporting.)

70-Centimetre Results

Looking at the 430 mc band for

VHF BANDS

A. J. DEVON

**Another Great Opening,
October 12-15—
HB, LX and OE Worked—
Many New DX Contacts—
70 Cm. World Record for
G3JHM/SM6ANR—**

the period October 12-15, the first report is from G3JMA (Harlow), who worked a number of GDX stations "at terrific strength" on the evening of October 14. G2CIW (Birmingham) also did well with the GDX on October 13-14, but found conditions falling off the next day. Much the same sort of report from G3NNG (Harwell), except that he, being further south than G2CIW, managed to work some GDX on the 15th.

The big 70-centimetre story is from G3LTF (Galleywood), whose log runs somewhat as follows: *October 14, DJ3ENA and SM6ANR; October 15, DL6EZA, SM6ANR and SM7AED.* This is real DX for the 430 mc band, and makes G3LTF six countries worked on 70 cm.

Most reports mention GDX only on 430 mc, and it seems that it was G3LTF who had the biggest helping of EDX on that band—Arnold, G3HBW, must be rebuilding, or something!

DX on Two Metres

The two-metre reports make very interesting reading, and your A.J.D. is obliged for so much from so many—hence, the paragraphs following pick out only the big news.

G6RH (Bexley, Kent) got some nice GDX on October 12, including EI2A (Co. Meath) and GI3FJA; on the 13th, the latter was raised again, together with two GM's and DM2ABK; on the 14th, more GI and GM, also GD3UB (who always contrives to be on when the band is open!) and DM2ADJ. On the 15th, it was GDX only, while during the opening much EDX/GDX was heard, including more GM, several GI's and LX1SI. G6RH says he could not find the HB's, though he could hear them being called and worked.

It is a pleasure to have a line again from Guy, ON4BZ (Brussels), who says: "I worked OK1EH on October 15 for my first OK contact, so I now have 18 countries worked; we were S8/9 both ways on CW"—and very nice, too. What is a pity is that he missed

TWO METRES

COUNTIES WORKED SINCE
SEPTEMBER 1, 1961

Starting Figure, 14

From Home QTH Only

Worked	Station
43	G2CIW
40	G3KPT, G3NNG
38	G3OJY
37	EI2A
34	G5DW
22	G3CO
21	GW3MFY
20	G2AXI, G3GSO
19	G3JWQ
17	G3LTF
15	G3FIJ, G3OSA, GW3ATM

This Annual Counties Worked Table opened on September 1st, 1961, and will close on August 31st, 1962. All operators who work 14 or more Counties on Two Metres are eligible for entry in the Table. QSL cards or other proofs are not required when making claims. The first claim should be a list of counties with the stations worked for them. Thereafter, counties may be claimed as they accrue. Note: While new claims can be made at any time in the period from now to end-June 1962, all operators are asked to send in amended scores as often as possible, in order to keep the Table running up-to-date. After June 30, 1962 (with two months still to run to the end of the 12-month season), only amended scores from those already standing in the Table at that date will be accepted, unless they are new claims from operators licensed w.e.f. June 1962.

GD3UB—ON4BZ has been stalking GD literally for years!

G3JMA (Harlow) reports that the evenings October 12-13 were very good to the north; as well as raising EI2A for a new county, he worked GI3FJA and three GM's, this being the first time that G3JMA had registered with GM. G2CIW (Birmingham) says that on the 12th he booked in EI2A, GC2FZC, GI5AJ and GW3MDY; on the 13th, GM2FNF for a new county (I. of Arran, Bute) and three other GM's, all on phone, also DM2ABK (Sonneberg, G.D.R.) on CW.

Needless to say, G3LTF shows a most intriguing EDX log, covering in all 17 countries heard or worked during the period October 12-15; in the "worked" category, the high-lights are HB1KI, HB1QQ, HB9BZ, HB9KM, LX1SI, OE9IM, OK1EH and a varied selection of DJ/DL/DM, also several SM's, some of these latter being worked more than once and on both bands! Anyhow, it all brings G3LTF to 18C in the Countries Table, together with a number of difficult GM counties already covered for the New Annual. No wonder G3LTF says this was the best opening yet on two metres!

G3HBW (Bushey) was on two metres for the opening, and worked four GI's, four GM's, EI2A, SM6PU, SM7AED and "various DL's, PA's, etc." In his "heard" list are GM2FHH, GM2FNF and GM3DDE, as well as numerous EU's, of whom one of the most interesting was DJ3ENA, 'way down near the HB border; he was calling GI3FJA (and if they made contact it would be an 800-mile QSO). Nearer home, an enjoyable QSO was with DL2XM, none other than our old friend, Bill James, G6XM, of Nottingham. But Arnold missed the HB's—he just wasn't on when they were there! As G3HBW says, one has to be QRT *sometimes*—and, anyway, why should he worry, with HB already in the bag.

The very next letter is from DL2XM/G6XM. He is still on an indoor 4/4, slot fed, with which he has worked 138 stations in 7 countries; Bill says his "local area" is DJ/DL and PA, with

ON4 at a pinch. During the October opening, several G's were worked, but G2DQ, G3BSU and G3HQ are down as "failed to answer"! G's he hears regularly, but cannot raise, are G2JF and G3EMU—here follow some suggestions about "finding a new sensitive spot on their crystals"! What can he mean! Future plans at DL2XM include getting a good beam outside, boosting the Tx with a 4X150A in the final, and a new converter using 6CW4's. So we shall hope to be hearing from Bill again.

Of course, Louis of G3EHY (Banwell, Somerset) was about at the right time, and for him the band opened on October 13, with GM's coming in nicely; on the 14th, he says "the DX was good from all quarters—north, south, east and west"; the HB's were heard, also many other EU's; but G3EHY rates his best QSO as being with GM2FNF, on the lonely Isle of Arran.

Writing in as "a new boy on two metres, and having an FB time." EI2A (Nauan, Co. Meath) is able to claim for the current Tables; during the October opening, EI2A worked no less than 75 stations, with F2ER of Chateauroux (at about the centre of France) as best DX. EI2A mentions the great help he has had from G3EHY and GI3ONF, with whom he keeps nightly schedules.

G3CO (Hartley, Kent) is able to make steep climbs in several of the tables, and expresses himself as very well satisfied with what he was able to work during October 13-15, even if he did miss out on the more exotic stuff like HB and LX—for him, "it was a wonderful experience to hear five different GM's in one evening, to work a couple of them, and get such astonishing reports." In two evenings, G3CO worked eight countries, and who could be dissatisfied with that?

Reporting for G3AYC (Ariel Radio Club, BBC, Langham Place)—the BBC is in on this VHF/DX stuff, too!—G3COJ says that on the evening of October 14 they worked GI, GD, GW, GM, EI and G in that order for successive QSO's, "but missed GC2FZC for the grand slam." In the way of

TWO METRES

COUNTRIES WORKED

Starting Figure, 8

- | | |
|----|---|
| 20 | G3HBW (DL, EI, F, G, GC, GD, GI, GM, GW, HB, LA, LX, OE, OH, OK, ON, OZ, PA, SM, SP) |
| 19 | G3CCH (DL, EI, F, G, GC, GD, GI, GM, GW, HB, LA, LX, OE, OH, ON, OZ, PA, SM, SP) |
| 18 | G5YV, G6NB (DL, EI, F, G, GC, GD, GI, GM, GW, HB, LA, LX, OK, ON, OZ, PA, SM, SP), G3LTF, ON4BZ |
| 16 | G3GHO, G3KEQ, G5MA, G6RH, G6XM, PA0FB |
| 15 | G2XV, G3AYC, G3FZL, G4MW, GM3EGW |
| 14 | G2FJR, G2HDZ, G3BLP, G3FAN, G3HAZ, G3IOO, G3JWQ, G3KPT, G3WS, G5BD, G6LI, G8OU, OK2VCC |
| 13 | G2HIF, G3BA, G3CO, G3DKF, G3DMU, G3DVK, G3PPT, G3NNG, G5DS, G6XX, G8VZ |
| 12 | EI2W, F8MX, G2CIW, G3EHY, G3GFD, G3GHI, G3JAM, G3WW, G5CP, G5ML, G8DR, GW2HIY |
| 11 | G2AJ, G2CZS, G3ABA, G3GSO, G3JZN, G3KUH, G3LHA, G3OBD, G4RO, G4SA, G5UD, G6XA, OK1VR |
| 10 | G2AHP, G2FQP, G2HOP, G3BDQ, G3BK, G3BNC, G3DLU, G3GSE, G3KQF, G3LAR, G3MED, G5MR, G5TN, G8IC, GC2FZC, GW3ATM, GWSMQ |
| 9 | G2DVD, G2FCL, G3FIJ, G3FUR, G3IUD, G3LTN, G4LX, G8GP, GC3EBK, GM3DIQ |
| 8 | G2DDD, G2XC, G3AEP, G3AGS, G3BOC, G3EKX, G3GBO, G3HCU, G3HWJ, G3KHA, G3MPS, G3VM, G5BM, G5BY, G8SB, GW3MFY |

EDX, and regarded as a consolation, G3AYC raised HB1KI and, on October 15, LX1SI. G3COJ also passes on the interesting news that LX1SI is on 70 cm, Tx freq. 433-146 mc.

One of the earliest of our VHF correspondents, going right back to SWL days and the VHF column in the old *Short Wave Listener*—to which, in their time, several of the well-known operators of today used to send in listener reports—was Alan Edgar, who became G3IOE (Newcastle). He is still working two metres from his gully at Gosforth; he hits it out on 145.81 mc, but finds the going hard, even when conditions are good—people just don't tune up that far. However, he is able to claim a couple of new ones for the All-Time, and mentions "scores of Continentals heard during the big openings." His

TWO METRES

ALL-TIME COUNTIES WORKED LIST

Starting Figure, 14

From Home QTH Only

Worked	Station
79	G5YV (787)
77	G6NB
76	G3CCH
75	G5MA
74	EI2W
72	G2CIW (334), G3KEQ, G6XM
71	GM3EGW (310)
70	G3HBW
68	G3BA, G3BLP (967), G3BW, G3EHY, G3GHO
66	G2OI (585), G3IUD (302), G5BD
65	G6XA (333)
63	G2FJR (542), G3FAN (1,000), G3KPT*
61	G2HIF, G3HAZ, G6RH
60	G3DMU, G3IOO, G3JWQ (548)
59	G4SA
58	G8OU
57	G3DKF, G8SB
56	G3WW (770), G5DS (654), G8VZ
55	G2HDZ (495), G5BM, GW5MQ
53	G2AJ (519), G3LHA (387), G4CI
52	G2NH, G3FZL, G6XX, GW2ADZ
51	G5ML
50	G3ABA, G3GSE (518), G3NAQ
49	G3CO (467)
48	G3AYC, G3FIH, G3LAR, G6TA (487), GW3ATM
47	G5WP
46	G3MTI (242), G4HT (476), G5BY, G6YU
45	G2AHP (647), G2DVD (362), G2XC, G3BJQ, G3GFD, G3MPS, G5JU, G6GN, GW3MFY
44	G3BK, G3DVK (282), G3LTN, G3NBQ (218), G8DA
43	G2DDD, G2FCL (322), G3BNC, G3COJ, G3DLU*, G3GSO, G3HWJ, G3KHA (262), G3KQF, G3KUH, G3NNG, G3OJY, G3WS, G4RO, G5DF
42	G2HOP, G3DO, G3IER, G6CI (220)
41	G2CZS (282), G2FQP, G3JAM (481)
40	G3CGQ, G5MR (366), G8KL

Worked	Station
39	EI2A, G2IQ, G3GBO (434), G3LTF, G3OSS, G3VM, G8IL (325), GC2FZC
38	G3APY, G3CKQ, G3HTY, G5UM (768), G8VN (190)
37	G3FNW, G2FZU (180), G3DLU, G3MAX, G8DR (482), GC3EBK (260)
36	G2DCI (155), G3CXD, G3DLU*, G3IT, G6CB (312), G8TP
35	G3FYY (235), G3HCU (224), G3IOE, G4LX, G5TN
34	G3AEP, G3HWR, G8IC, GM3DIQ
33	G2BHN (128), G3FIJ (392), G3FUR, G3HHY (125), G4JJ/A, G3OHD
32	G3HIL, G3OBB, G8QY, G8VR
31	G3HXO, G3ICO (118), G3KPT (180), G5RP
30	G2AHY, G3FRY, G3GOP (208), G3GVF (129), G3IRA, G3KEF (110), G3OBD, G5NF, GW8UH
29	G2CVV, G3AGS, G3AKU
28	G3ITF, G8DL, GM3BDA
27	G3CVO (231), G3DAH, G3ISA (160), G3JGY, G3LTF/A, G6GR, G8NM, G3GQB, GM3LDU, GW3GWA
26	G2BRR, G3CFR (125), G3MED, G3NNK, G3SM (211), G3YH, G4MR (189)
25	G3JHM, G3JMA, G3JXN (220), G5SK, G6PJ
24	G3FD, G3FEX (226), G3FXG, G3FXR
23	G2AXI, G2DHV, G3CWW (260), G3HSD (168), G5PY, G8VN (125)*
22	G2DRA, G3AGR (135), G3ASG (150), G3BPM, G5AM
21	G2AOL (110), G3BDQ, G3DVQ, G3IWI, G6XY
20	G3EYV
19	G2HDR, G3GCX, G5LQ (176)
18	G3DBP, GC2CNC
17	G3EGG, G3MHD (195)
16	G3FRE, G3MLS
15	G3IWA
14	G3CYY

Note: Figures in brackets after call are number of different stations worked on Two Metres; starting figure for this classification, 100 stations worked. QSL cards are not required to verify for entry into this Table. On working 14C or more, a list showing stations and counties should be sent, and thereafter added to as more counties accrue.

* New QTH

nearest active stations at the moment are G3ILD (Co. Durham) and G3JYP in Westmorland.

G5MA (Great Bookham, Sy.) got LX1SI on the opening, and some good GDX, as is usual for Bob; he is now at 75C in the All-Time.

Manchester VHF Convention

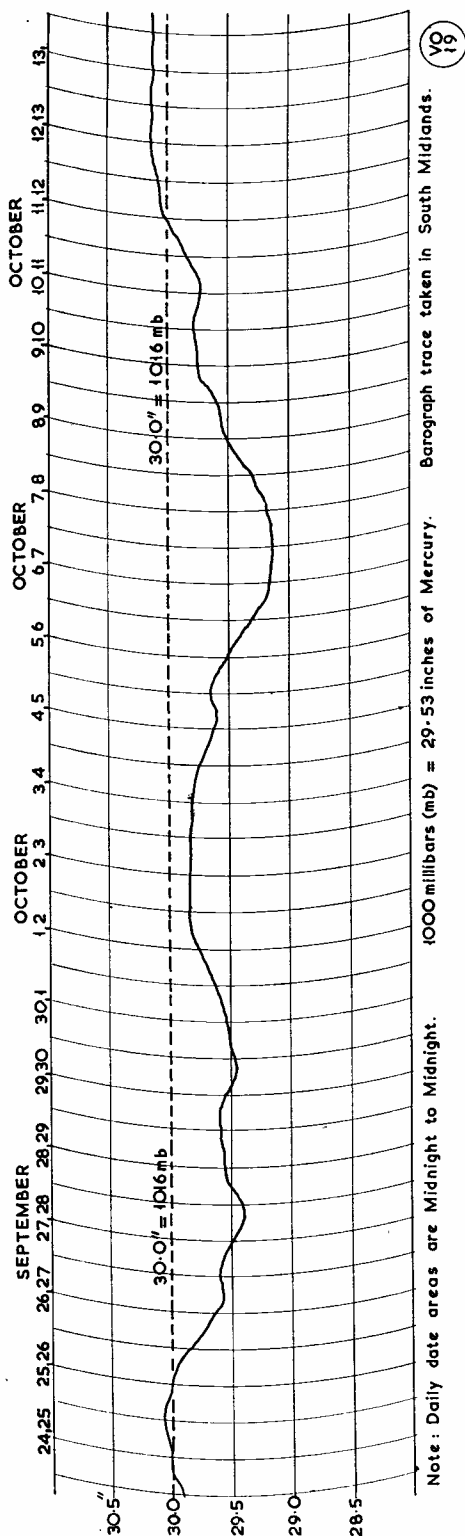
This very successful meeting took place on October 14, the dinner attendance being some 120; the speakers were G3EGK, G3HRH and EI2W, with G6FO in the chair. Excellent local arrangements had been made by the North-West VHF Group committee (G3EGK, G3AOS, G3AGS, G3MAX and G8SB). With the co-operation of G3AKX, of Jodrell Bank, two large parties were able to visit the station, and undoubtedly this was the highlight of the Convention. Though it was murky in Manchester, the Goostrey district was bathed in sunshine, and the great dish made a magnificent picture against the western sky. All who were lucky enough to be in on this trip were much impressed by what they were shown.

A small equipment exhibition was supported by several firms, and for the raffle after the Dinner, there was generous support from many manufacturers; in addition to this, a member of the N-W VHF Group who is the local R.A.C. manager made an appropriate contribution to the draw. For those who did not go to Jodrell Bank, a competent lecture on centimetric equipment and operating possibilities and results was given by G3BAK. The Grosvenor Hotel provided a good dinner, and there was ample time and space for talking round the bar when the formal proceedings had concluded.

Altogether, a very interesting and enjoyable occasion, which drew many visitors from distant parts—they did not seem to mind a bit about missing the opening!—and the North-West VHF Group is to be congratulated and thanked for laying on such a good show.

The Tabular Matter

In spite of some editorial obstruction on the grounds of



space, we are able to show the current Tables in full this time. Though you might not think it, more than 60 movements have been taken in, and we hope that all those who have made claims will find themselves where they expect to be.

The New Annual has got off to a good start, even if the amended-rules note at the foot of that table is at present taking up more space than the entries themselves! The attention of all interested is directed to this new ruling about late entries. The whole idea and intention of an annual table is that it should be progressive, and we hope, therefore, that claims will be made as they accrue—which makes it more interesting for everybody, anyway.

Those looking for the proposed new Annual Seventycem table may be disappointed. We are still very willing to run it, but as only four claims have been received, they hardly justify a start being made at this stage; with about five or six more entrants, however, we would be glad to put up the new board. Those so far claiming 70 cm. counties since September 1, 1961, are: G2FNW, 14; G3KPT, 10; G3NNG, 8; and G2CIW, 7.

As regards VHFCC, several claims are in hand for processing, and those concerned are assured that they will be cleared as soon as possible, probably in time for entry in the December issue. Your A.J.D. has been more than somewhat "under the paper" just recently; the files have to be down to chin-high at least before we can get round to VHFCC matters.

More Two-Metre News

G3PMC (Aldershot) is new on the band, running 20w. to an 832, with a 4-ele flat-top; he acknowledges the help he has had from G3OJY in getting started.

GM3EGW (Dunfermline) wrote before the October opening developed, and reports that in the previous one the GM's did not have much luck; as Fraser remarks, "it was galling to hear G3FZL and G3HBW working into SM and passing S9 reports, with nothing heard from the east in Scotland." He says there is really

**SEVENTY CENTIMETRES
ALL-TIME COUNTIES WORKED**
Starting Figure, 4

Worked	Station
37	G2XV
28	G3HBW, G6NF
27	G3JWQ, G3KEQ, G3NNG G5YY
26	GW2ADZ
25	G2CIW, G3HAZ, G3JMA
24	G3LHA
23	G3BKQ, G3KPT, G6NB
21	G3IOO
20	G3LTF
17	G3MPS
16	G2DDD, G3MED
15	G2OI, G4RO
14	G2HDZ, G3FAN, G3LQR, G5UM
13	G3BA, G6XA
12	G5BD
11	G3AYC
10	G3IRW
9	G5DS
7	G2HDY, G3JHM
6	G3KHA, G3WW, G5QA, GW3ATM
5	G3FUL, G3HWR, G3IRA, G3JUD, G3JHM, G5ML
4	G3JGY

On working four Counties or more on the 70-Centimetre band, a list showing stations and counties should be sent in for this Table, and thereafter new counties worked notified as they accrue

quite a lot of GM activity now on two metres, with 4m. also getting attention; on the next Auroral opening, GM3EGW intends to give this band a run-over, as it should be good under *Ar* conditions—how right he is. During the Auroral opening on October 1, some unintelligible *phone* efforts were heard around the band. Either people did not realise there was an *Ar* opening on, or they don't know that *phone* turns to spitch under these conditions.

G3LMG (Tavistock), and another of those out on a limb, writes that G3OJY will be heartily welcome when he gets going from Cornwall. The only VHF advan-

tage the Devon/Cornwall boys have is that they can go out to numerous tors and other high spots for /P,/M work—but that is not a very attractive prospect in the winter. G3LMG himself has gear permanently fitted in his transport, consisting of a 6BQ7-EF95 converter, tuning the IF around 4 mc on a Command Rx; the Tx takes a QQVO3-10 PA; the power supply is a rotary converter; and the aerial a halo for true /M working, or a 5-ele Yagi on a 15-ft. pole when out /P. As he is regularly active, G3LMG would appreciate “more beams being turned south-west”—and that is the old cry from those parts.

G3GSO (Derby) worked 22 stations on October 14, of which 14 were new ones (including three G5's), giving him 12C for the Annual, and one for the All-Time. But, says G3GSO, “I couldn't do anything with the exotic stuff.”

Johnnie of G3BLP (Woldingham) now records 967 different stations worked on two metres—

but, of course, he has been on since the beginning, though with some breaks. LX1SI, worked during the opening, was his first new country in ten years! The new QTH is giving quite different coverage compared with the Selsdon location—and Johnnie says he still has a 200-ft. run of coax into the beam, showing him a 6 dB loss; this must be put right.

G3OJY will be on his way to Cornwall by about now, but kept on the air right up to the deadline; so he is able to make some further claims for the Tables, and reports a very fine 50-min. QSO with GM3HLH/A on October 13, when it was solid arm-chair copy both ways all the time; and then he held GM3EGW in a similar sort of QSO for half-an-hour.

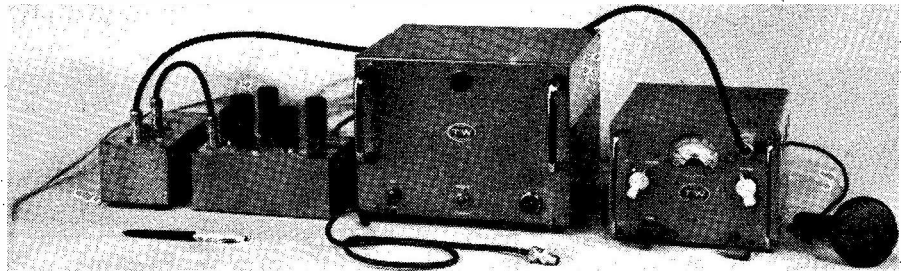
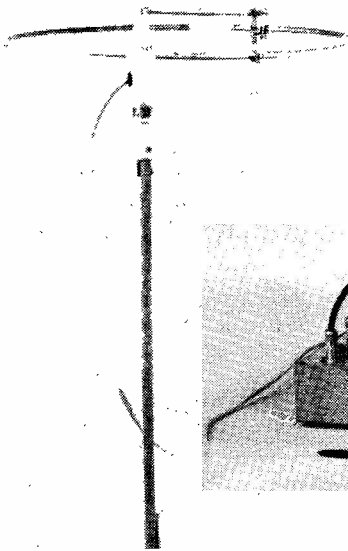
The South Birmingham R.S. chaps have been out /P from Castle Caerinion, near Welshpool, signing GW3OHM on 145.44 mc, and making numerous contacts; these sorties were over the weekends Sept. 16/17 and Sept. 30/Oct. 1; on the latter occasion, the

Ar opening was encountered, and GM3BCD was worked. Their gear is a 15w. NBFM Tx, a CC converter with A.2521 pre-amp., and a 6/6 beam.

G5ZT (Plymouth) says he has nothing to report because he is “recovering from the EI expedition and re-organising the shack.” Among those claiming for the Tables but not raising particular points are: G3LTN, G8DR, G3FIJ, G3JAM, G5DW, and G3KPT.

Dead-Line —

So we wind up on what has been yet another big month. Because the winter is now closing in on us, it does not necessarily mean that the VHF bands will go quite dead; the thing is to keep active, and watch the weather charts. Final date for the next issue is **November 15 certain**, and the QTH is: A. J. Devon, “VHF Bands,” *Short Wave Magazine*, 55 Victoria Street, London, S.W.1. 73—and keep the fire in till December 1st.



General impression of the T.W. (Withers Electronics) range of two-metre equipment showing, from left to right, the halo aerial, a neat and practical job for portable/mobile use; the Nuvistor self-powered RF pre-amplifier, incorporating the 6CW4 “wonder-button”; the crystal-controlled converter, which is quiet and sensitive and itself incorporates a 6BQ7 RF stage; the power supply box and control unit which, through a coax relay mounted on the back, gives aerial change-over as well as send-recv for Tx/Rx, all by the single switch at lower centre; and, on the right, the neat two-metre 10-watt phone/CW transmitter, for which crystal and key plug-in on the front panel, and the microphone into a coax socket on the rear chassis drop. On the Tx, there is only one tuning adjustment, that for the QQVO3-10 PA; the left hand knob reads either grid drive or plate current. To get this lot on the air as a two-metre station, all that are required is a receiver to tune the IF (any 2 mc range to choice, picked up on the coax lead in front of the PSU) and a mains lead at 230v. AC. For fixed-station work, a more “galny” beam array would obviously be desirable, while for portable/mobile working a 12v. transistor HT/control unit (not shown here) is available. The microphone in the picture is not the standard TW product, but one of A.J.D.'s own “barkers.” A later version of the transmitter is now in production, rated the same as the one shown here, but of rather more refined panel appearance.

QUICK CHANGE-OVER BY MANUAL CONTROL

SINGLE-SWITCH PHONE/CW
BREAK-IN

D. A. SHEPHERD (G3LCS)

THERE must be many AT stations at which, for some reason or other, an electronic T/R ("send/receive") system cannot be incorporated in the equipment. There must be many, many more who cannot claim to throw *one* single switch to change the whole station over. These notes are for just such as they.

The writer has used the relay-controlled T/R system described here for more than two years, with complete satisfaction. Instant break-in is achieved at the flick of a switch. Running a Geloso VFO and an 807 PA, it was impossible to use an electronic T/R switch without some alteration to the Geloso circuitry and the provision of a negative bias supply. This was overcome by the system shown in the diagrams, which can be used to break transmission *between words* on CW, AM or to join in the excellent SSB round tables.

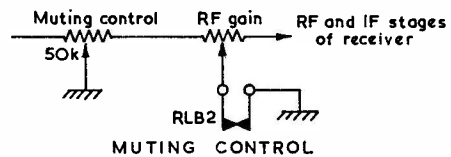
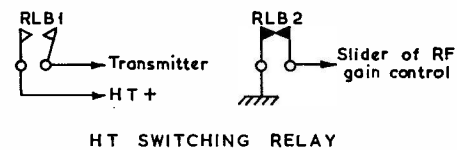
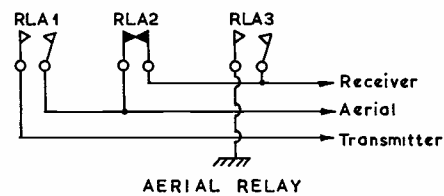
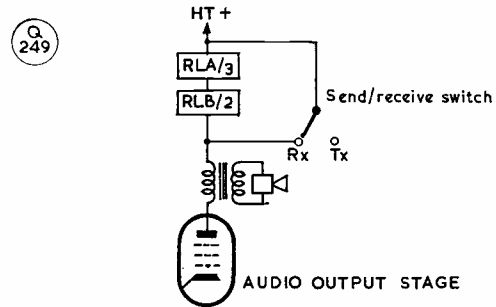
Two relays are involved, each in its own screened diecast box (Eddystone 650). In the writer's case, they are clamped inside the transmitter cabinet, on the rear wall. All connections are brought out *via* ceramic feed-through condensers, .001 μ F, or—in the case of the aerial connections—through coaxial connectors.

The whole secret of this speedy one-switch system lies in the method of energising the relays: This is done simply by wiring them in series with the HT supply to the audio output valve (an HRO is used at G3LCS, with a 6V6 in the output). A shorting switch, when closed (the "receive" position) leaves both relays by-passed and de-energised; when this switch is thrown open (the "transmit" position) the relays are energised, and their various contacts are employed to make or break the appropriate leads for the change-over functions. There is negligible power dissipation in the relays; they are "on" only during transmitting periods, the volts dropped across each being quite small. The writer uses the GPO 600 series, with a DC coil resistance of 500 ohms, which will energise with as little as 10 mA.

Relay Functions

The relay RLA connects the aerial either to the transmitter or the receiver, and shorts the Rx input to earth on "transmit." Since only 50 watts input is used at G3LCS, it was not thought necessary to use a coaxial relay. To ensure adequate contact area, the extra contacts on RLA are wired in parallel for the aerial, transmitter and receiver contacts.

The HT switching relay RLB switches HT on,



The circuit arrangements referred to in the text by G3LCS. Very fast change-over is achieved, enabling speech break-in to be worked.

and mutes the receiver. The receiver is muted by lifting the slider of the RF gain control off earth (a 50,000-ohm potentiometer is connected permanently in series with the free end). On "receive," this potentiometer is, of course, out of circuit, since the slider of the RF gain control effectively shorts it down. On "transmit," it increases the bias on the valves controlled by the RF gain and mutes the receiver. This 50K potentiometer can be set for comfortable monitoring, the receiver returning immediately to normal sensitivity on throwing the switch to "receive."

LET US SEE THEM

A large number of photographs goes into every issue of the *Magazine*, which means that we are always on the look-out for good prints of Amateur Radio interest. If you have any you think would reproduce well, we shall be glad to see them; any that can be used will be paid for on publication.

THE CERTIFICATE ISSUES

LATEST LISTINGS, AND SOME COMMENTS

SINCE the last Certificate Issue list appeared—in the May 1961 issue of *SHORT WAVE MAGAZINE*—nearly 100 new awards have been made in the *Magazine* series of DX Certificates—and this does not include the VHF Century Club certificates which have gone out in the same period.

Listed here are all *SHORT WAVE MAGAZINE* Certificate issues (except VHFCC, which are dealt with under "VHF Bands") made up to the time of writing. It will be seen that these Awards now go out to amateur stations virtually throughout the world.

In dealing with claims on such a large scale, naturally we get a good deal of interesting information as to the general pattern of DX activity, as seen from many different parts of the world. We are also more than a little frustrated by the apparent inability of a proportion of those who claim to observe the rules! This is not always their fault—we suffer by reason of the fact that there are too many self-appointed authorities attempting to interpret the conditions attaching to everyone else's DX certificates. We can concern ourselves only with our own Awards—established more than ten years ago, and of which there are eight, open to all comers and covering a wide variety of operating activities.

Not only do we receive packets of cards where none are required (this applies to overseas applicants only), but often claims come in without a check list, and frequently no return postage is enclosed. This is almost tolerable, but it may also be hard to believe that occasionally packets of cards, evidently for a claim, arrive not only without a check list, but also without a covering letter or any return address for the sender—in other words, we do not even know for certain what award is being claimed! Aberrations of this kind involve us in a good deal of detective work, and in correspondence which should be unnecessary, and is a waste of the time of everybody concerned.

At the other end of the scale, it is fair to say that many other claims are received which, being strictly in accordance with the rules and conditions, are a pleasure to process. They give the necessary information in the required form, and no time need be wasted in dealing with them. From our main cross-reference index we can pin-point immediately any doubtful call-sign and, if there is still any query, ask

SHORT WAVE MAGAZINE DX CERTIFICATES

RULES

WNACA (Worked North American Call Areas)

Twenty-two cards to be submitted, for contacts with stations in ten U.S. Districts (W1-0); nine Canadian (VE1-8 with one 8 in Yukon, one in North West Territories); Alaska (KL7), Newfoundland (VO) and Labrador (VO). Contacts may have been on any bands, phone or CW. Operators in W, VE, VO or KL7 are not eligible for this Award (286 *WNACA Certificates issued to September, 1961*).

FBA (Four Band Award)

Cards to be submitted with confirmation of contacts with 20 different countries, each country to have been worked on four different bands. Any four bands will qualify, e.g. 160-80-40-20, or 80-40-20-10, or 160-40-20-15—and so on. Entrant's own country may count as one of the 20 countries. (217 *FBA Certificates issued to September 1961*).

WFE (Worked Far East)

Eighteen cards to be submitted for 18 different countries selected from among the following: C (China), C3 (Formosa), C9 (Manchuria), CR9 (Macao), CR10 (Timor), DU (Philippines), FI (French Indo-China), HL (Korea), HS (Siam), JA/KA (Japan), KR6 (Ryukyu Is.), PK1-2-3 (Java), PK4 (Sumatra), PK5 (Dutch Borneo), PK6 (Moluccas), UA0 (USSR in Zone 19), VS1 (Singapore), VS2 (Malaya), VS4 (British North Borneo), VS5 (Brunei), VS5 (Sarawak), VS6 (Hong Kong) and XZ (Burma). All or any bands count. (57 *WFE Certificates issued to September, 1961*).

WABC (Worked All British Counties)

Sixty cards required, from sixty counties of the British Isles, all to have been worked on the 160-metre band since January 1, 1952. Counties to be as shown in any standard atlas, *not* "administrative counties" such as the three Ridings of Yorkshire, East and West Sussex, County of Bristol, and so on. Isle of Wight counts as Hampshire—not separately. Isle of Man does score separately, as do all the Channel Islands. Scilly Isles also count separately. For London the L.C.C. area scores as one County. (246 *WABC Certificates issued to September, 1961*).

WBC (Worked British Counties)

Open only to claimants *outside* the United Kingdom and Eire. Cards required from 50 different counties of the British Isles, worked on any band 3.5 to 28 mc inclusive, phone or CW. The definition of U.K. counties is the same as for the WABC Certificate above. (230 *WBC Certificates issued to September, 1961*).

PRA (Polar Regions Award)

Claimants must be able to show cards as follows: (a) Arctic—QSL's from six of the areas Alaska, Canada, Finland, Greenland, Norway, USSR *all lying north of the Arctic Circle*. Jan Mayen and Spitzbergen (incl. Bear Is. and Hopen Is.)—making eight possibilities from which the six cards can be derived. Also (b) QSL's from any six of the following eight Antarctic areas: Antarctica, Falkland Is., Heard Is., South Georgia, South Orkneys, South Sandwich Is., South Shetlands and Macquarie Is. Cards must not be dated earlier than January 1st, 1955, and contact can be on any band, CW or phone. (Award instituted September, 1957. *Twenty issued*).

MDXA (Magazine DX Award)

To qualify for this Award it is necessary to have worked 3 continents, 15 countries on 160 metres; 5 continents, 40 countries on 80 metres; 6 continents, 80 countries on 40 metres; 6 continents, 180 countries on 20 metres; and 6 continents, 90 countries on 10 metres. (Eight Awards issued).

CONDITIONS

Claimants in the U.K. are required to send all cards in support, by registered post with a check list, when making their claims. Overseas claimants (only) may send either (a) A check list, without cards, duly certified by the Hq. of their national Amateur Radio Society, or (b) An uncertified check list, from which all or any cards may be called in for scrutiny by us. In no case will any Award be issued without proofs we consider to be good and satisfactory.

Claims, enclosing return postage (five IRC's in the case of overseas claimants) for all the above-mentioned Certificates should be addressed "DX Awards," *Short Wave Magazine*, 55 Victoria Street, London, S.W.1

**Short Wave Magazine
DX CERTIFICATES**

The following have been issued since the publication of our last list, in the May, 1961 issue:

FBA

- No. 203 G6VQ (Kendal)
- 204 OH6RC (Aanekoski)
- 205 W3GHD (Havertown, Pa.)
- 206 ST2AR (Khartoum)
- 207 W9KA (Chicago)
- 208 IT1AGA (Palermo)
- 209 CT1HF (Lisbon)
- 210 OH9PF (Rovaniemi)
- 211 DJ4OP (Munich)
- 212 W8PQQ (Charleston, W.Va.)
- 213 VQ4GQ (Nairobi)
- 214 K6DDO (Hollywood, Cal.)
- 215 F9BB (Courbevoie)
- 216 OE6BN (Klagenfurt)
- 217 UA9CM (Svezdlovskia)

PRA

- No. 15 W6KG (Alameda, Calif.)
- 16 W3GHD (Havertown, Pa.)
- 17 ON4QX (Antwerp)
- 18 W8K1A (Defiance, Ohio)
- 19 W8PQQ (Charleston, W.Va.)
- 20 W6NWI (Vista, Calif.)

WABC (Top Band only)

- No. 231 G3OCA (Morden, Sy.)
- 232 G3KOE (South Harrow)
- 233 GW3GHC (Cardiff)
- 234 G3NLR (Wilmslow, Ches.)
- 235 G3NKK (Loughton, Essex)
- Phone No. 12*
- 236 G3OGY (Salford, Lanes.)
- 237 G3NPA (Banstead, Sy.)
- 238 G3NJO (Norwich)
- 239 G2IM (Edgware, Middx.)
- 240 G3DCZ (Morden, Sy.)
- 241 G3OGI (Sunderland)

- 242 G3LDA (Cheltenham)
- 243 G3NAA (Chelmsford)
- Phone No. 13*
- 244 G3KRH (London, N.W.11)
- Phone No. 14*
- 245 G3LNR (Nottingham)
- 246 G3NNF (Wantage, Berks.)

WBC (Overseas only)

- No. 202 DL4ZC (Wiesbaden)
- 203 ST2AR (Khartoum)
- 204 DL6DZ (Castrop/Rauxel)
- 205 DL1BS (Larlsruhe)
- 206 UA9CM (Svezdlovskia)
- 207 IITEC (Piacenza)
- 208 SM2ALU (Bergnaset)
- 209 HA5BU (Budapest)
- 210 UC2AA (Minsk)
- 211 W1EQ (Auburn, Maine)
- 212 DM2ATL (Dresden)
- 213 SP2AP (Znin)
- 214 K2ZRO (Endicott, N.Y.)
- 215 PX1PF/DL9PF (Munich)
- 216 K2UKQ (Franklin Park, N.J.)
- 217 KH6BPF (Kona, Hawaii)
- 218 DM3GG (Gardelegen)
- 219 W8PQQ (Charleston, W.Va.)
- 220 SM5BBC (Johanneshon)
- 221 PY7LJ (Fernando Noronha Island)
- 222 CE3DO (Santiago)
- 223 W31JA (Johnstown, Pa.)
- 224 W4GMR (Miami Springs, Fla.)
- 225 K7ABV (Billings, Mont.)
- 226 DL1IB (Ravensburg)
- 227 LZ1KNB (Sofia)
- 228 DL3RK (Kaufheusen/Bav.)
- 229 VK5RX (West Mitcham, S. Aust.)
- 230 K6DDO (Hollywood, Calif.)

WFE

- No. 49 JA2KG (Tokyo)
- 50 W3GHD (Havertown, Pa.)
- 51 W9KA (Chicago)

WNACA

- No. 267 OH5RC (Aanekoski)
- 268 DL4ZC (Wiesbaden)
- 269 VK4TY (Warwick, Q'land)
- 270 TG9AZ (Guatemala City)
- 271 OZ5KD (Aalborg)
- 272 OZ2NU (Aalborg)
- 273 UA6UI (Astrakhan)
- 274 DJ2SR (Nurnberg)
- 275 CN8DJ (Oujda)
- 276 LA5HE (Oslo)
- 277 CO7AH (Chambas)
- 278 VK5RX (West Mitcham, S. Aust.)
- 279 G2ZZ (London, E.6)
- 280 CR7BC (Lourenco Marques)
- 281 G3JEA (London, W.10)
- 282 G3LIV (Swalwell, Durham)
- 283 DJ4TZ (Landsberg/Lech.)
- 284 DL1XZ (Erlangen)
- 285 G8LC (Clacton)
- 286 SP2AP (Znin)

Details of MAGAZINE DX AWARDS and CERTIFICATES and the claims required for them appear in full on the opposite page.

Overseas claimants may send either (a) A check list, without cards, duly certified by the Hq. of their National Radio Society, or (b) An uncertified check list, from which any or all cards may be called in for scrutiny by us. U.K. claimants must send the relevant cards for each award.

All claimants must include sufficient return postage for the cards and Certificate — five IRC's in the case of overseas claims.

the claimant concerned to let us see the card. The system is such that this rarely happens—but unless the rules are adhered to when making a claim, it is impossible for us to operate the system.

To avoid sending the cards (which is what we much prefer), claimants from overseas have all sorts of ideas. For instance, when claiming his Polar Regions Award, W9GFF sent a photograph of all the cards required; several others have also done the same sort of thing to support their claims. Many overseas applicants have their check lists certified as correct by one or two officials of the local club. Others again swear an affidavit before the equivalent of what in this country is a commissioner for oaths. All who go to this sort of trouble are, of course, genuine claimants.

Regrettably, we get a certain small proportion of "ungood" claims, and the rejection of these sometimes leads to annoyance—as when a certain EU, in England on holiday, arrived to maintain that his cards had been "deliberately lost," but said he would settle for the issue of a WBC. As we had never seen his cards or his claim, he did not get his parchment. We do not in any event require cards from claimants outside the U.K., and we do not accept responsibility for unregistered claims from any quarter. In another case, a certain G thought that all he need do to get a WABC was to send in a postcard saying he had

worked the stations, so please could he have the certificate. He flatly refused to show any proofs, and was very angry that his claim was not accepted.

Some Statistics

In looking through the last thirty WBC claims ("Worked British Counties," and open only to operators outside the U.K.) the counties of Bedfordshire and Middlesex appear in practically every check list; Cambridgeshire comes about next, with G3JZK and G6BS as the most-mentioned stations in that county. The spread of activity over other counties in the WBC check lists is such that few stations are mentioned more than two or three times.

Overseas operators have, in many cases, some difficulty in finding out what counties U.K. stations represent; it is not always stated on the QSL card, and we are often asked whether G3 --- is acceptable for this or that county. The quick answer to all overseas operators who may be reading these lines is that if they have the QTH, the county can be checked from the gazetteer in the reference section of the local public library. But it would help considerably if all U.K. operators would ensure that their county appears on their QSL card, remembering that we only accept geographical counties (like Somerset, Rutland and Yorkshire) and *not* administrative districts (like the City and County of Bristol, the County Borough of

Newport, Mon., or the County of Southampton). Bristol is a good example for confusion, as geographically speaking it is partly in Gloucestershire and partly in Somerset.

Both in the U.K. and overseas, WNACA ("Worked North American Call Areas") remains one of the most popular awards—in fact, we are often asked to make it available to U.S. amateurs under the same conditions as apply for the rest of the world. But though they argue that it is just as difficult for them to make WNACA as it is for, say, G's and PY's, we feel that to extend the availability of WNACA into the States would not be justified, particularly as the Americans have so many inter-U.S. awards already.

WFE ("Worked Far East") moves comparatively slowly—only ten of these certificates have been issued this year—because since this award was first instituted, there has been less amateur activity within the defined areas; this makes WFE one of the most difficult parchments for which to qualify.

As regards the Four-Band Award (FBA), there is often some misunderstanding about the conditions. These are that 20 different countries must have been worked on each of four bands—the same 20 countries on each of the same four bands only. We get claims showing a total of 20 countries spread over four bands; 20 countries worked on five or six bands, but a different list of countries for each band; the same list of countries, but more than four bands used to work them. Actually, FBA is a good deal more difficult than it appears—it calls for a total of 80 cards, covering 20 countries, four cards from each country, one for each of the four bands selected.

Finally, those claiming our DX awards and Certificates are asked to realise that the volume of claims

is now such that we cannot undertake to process applications that are not in accordance with the rules and conditions; that in no case can we enter into correspondence about claims; and that while claims are dealt with as expeditiously as possible, they can only be processed in batches as and when time and opportunity offer. We do not make any significant charge for the issue of Certificates (which amounts to a free service, as only return postage is asked for) so that claimants will understand that we cannot allow Certificate-issuing to interfere with *Magazine* production work. And, once again, will applicants *outside* the U.K. please note that QSL cards in support are *not* required, as we accept certified claims. Cards should only be sent if specifically requested.

AMATEUR RADIO EXHIBITION

From the preliminary information as to stand space taken, it can be said that this year's Radio Hobbies Exhibition will again be an interesting and stimulating show. It is held at the Royal Horticultural Society's Old Hall, fronting Vincent Square, S.W.1, between Horseferry Road and Vauxhall Bridge Road, which runs south from Victoria Station. Another landmark is the Army & Navy Stores, in Victoria Street, the Exhibition Hall being about five minutes' walk from either the A. & N. or Victoria Station. If you can get there early enough, there is usually car parking in the side streets within walking distance—but, after last year, we don't guarantee this! As mentioned last month, the lucky-ticket prize is a Hammarlund HQ-170—but you only get your chance for this by going through the Exhibition turnstiles. Admission charge, and the dates are November 22-25, inclusive.



When the R.A.F. Amateur Radio Society makes a public appearance, it has the unstinted support of the Air Ministry—the result is a stand like this, seen at the recent National Radio Show at Earl's Court, when the R.A.F.A.R.S. had a section of the main Royal Air Force display area. The public took great interest in the amateur exhibit and the stand staff had a busy time, to the great benefit of the Service and R.A.F.A.R.S. itself. The second display panel from the left features our "DX Zone Map," flanked by QSL cards.

THE OTHER MAN'S STATION

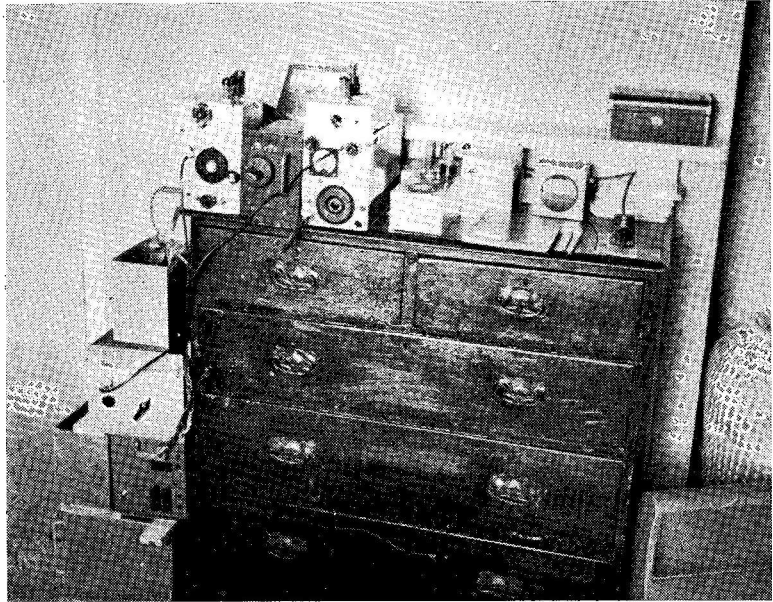
G3LYY

THE operator of the station shown this time—James Johnston, G3LYY, 87a West Street, Ryde, Isle of Wight—was licensed in 1957 as GM3LYY. His layout is essentially home-contrived, if not entirely home-constructed, in the sense that various pieces of cheaply-bought equipment have been adapted for different purposes.

His basic receiver is the BC-454B which, because it tunes only the 80-metre band, is used with a CC converter for 7 and 14 mc. The BC-454B itself is fitted with RF gain, BFO on-off, and coax sockets, and is modified to incorporate IF regeneration, pulse limiter, and stabilised power supply for oscillator and BFO. An RF-24 is also available, to tune the 10-15-20m. bands.

For the transmitter, a BC-458 unit (originally bought for 2s. 6d.) has had built into it a 40-80m. rig, using 12A6-12A6-parallel 1625's in the usual VFO, multiplier and PA arrangement; this is resonance modulated, the modulator being 12AX7-6SN7.

Power supply is from an ex-W.D. Type S.441 unit, which gives 12·6v. AC for the large number of 12v. valves used about the station, as well as 300v. at up to 300 mA, and 150v. stabilised. Another power pack supplies 550v. at 500 mA, with 250v., 150v. and 6·3v. AC also available. Ancillary equipment includes a GDO, absorption wavemeter, crystal frequency meter,



and double band-pass and low-pass filters for 20-40m.; the ATU will accommodate "random lengths of wire," and a forward-and-reflected power indicator helps to show what is happening.

G3LYY says the aerial itself "might be loosely described as a doublet." The centre is 30 ft. up, but in a tree, the ends falling away to bushes only 6 ft. high. An open-wire tuned feed line enables the system to be resonated on 80-40-20m. with surprisingly good results, especially as the power used is only 15-30 watts, depending on band and whether using CW or phone.

Back in 1957, GM3LYY actually started up on 4 metres, with a modified 440B equipment as Tx and an RF-26 to tune the band. Next he came on 20m. CW, and then on to 40 metres. Work in hand includes the renovation of a CR-100 and the completion of a transmitter for two metres, for which band he already has a converter. Readers will agree that G3LYY has contrived very well, in that he is getting good results economically by the efficient adaptation of a variety of bits-and-pieces.

GOING BACK A BIT

The September 1927 issue of the *Radio Amateur Call Book* listed a total of about 1,700 U.K. stations—under the main heading "Great Britain, EG"—as holding amateur call signs, all in the G2/G5/G6 series. This *Call Book*, of only 112 pages for the whole world, came out when we still used the continental prefix before the nationality letter, e.g. EF for France (Europe), SA for Argentine (South America), OA for Australia (Oceania), and so on. This particular issue

also had a selected list, in twelve pages, of land- and ship-station call signs.

Compare this *Call Book* of 34 years ago with the present issues! The U.S. section alone of the current (Autumn) edition makes nearly 600 pages, while the "Foreign Section" of the same edition is of some 260 pages, in which the U.K. listings run to more than 100 columns of close print, under the six G-country headings.

NEW QTH's

This space is available for the publication of the addresses of all holders of new U.K. call signs, as issued, or changes of address of transmitters already licensed. All addresses published here are reprinted in the U.K. section of the "RADIO AMATEUR CALL BOOK" in preparation. QTH's are inserted as they are received, up to the limit of the space allowance each month. Please write clearly and address on a separate slip to QTH Section.

- GM3CCT**, W. Miller, 74 Pilmuir Street, Dunfermline, Fife. (*Re-issue.*)
- GM3FRQ**, J. D. Hendry, 13 Haywood Place, Dundee, Angus. (*Re-issue.*)
- G3JCT**, B. Wormald, 23 Coda Avenue, Bishopthorpe, York. (*Re-issue.*)
- G3ONP**, D. G. Lovesey, 11 Watson Road, Oxley, Wolverhampton, Staffs.
- G3ORN**, W. Thomas, 64 Oaks Avenue, Worcester Park, Surrey.
- G3OVR**, H. Redfern, 22 Rosslyn Road, Moston, Manchester, 10.
- G3OWM**, The King's College (University of Durham) Radio Society, The Union Society, King's College, Newcastle-upon-Tyne.
- G3OZF**, D. F. Beattie, 28 Villiers Road, Woodthorpe, Nottingham.
- G3PBW**, K. B. B. Cunningham, 67 Churchill Way, Stafford, Staffs.
- G3PCN**, R. Bown, 217 Eton Road, Ilford, Essex.
- G3PDJ**, H. R. Tempest (*ex-VQ2HT*), Kirtlington Park, Oxford. (*Tel.: Bletchington 236.*)
- G3PFL**, W. J. Perkins, 51 Parkstone Avenue, Emerson Park, Hornchurch, Essex.
- G3PFM**, A. J. Baker, 13 Winifred Road, Poole, Dorset.
- GM3PFQ**, J. Balfour, 78 Rosslyn Street, Kirkcaldy, Fife.
- GM3PFU**, W. Laughlin, 36 Achamore Road, Drumchapel, Glasgow, W.5.
- GW3PFV**, K. Robbins, 1 Rhiw Parc Road, Abertillery, Mon.
- G3PGD**, G. K. S. Hendren, 13 Castlehill Park, Knock, Belfast, 4. (*Tel.: Belfast 63696.*)
- G3PGI**, W. Phillimore, 37 Perth Road, Plaistow, London, E.13.
- G3PGX**, D. E. Murgatroyd, 5 Fernbank Drive, Baildon, Shipley, Yorkshire.
- G3PGX**, D. E. Murgatroyd, Castlerock, Co. Derry. *QSL via G3PGX above.*
- GM3PGY**, A. McEwen, 2 Fitzalan Road, Renfrew. (*Tel.: Paisley 5712.*)
- G3PGZ**, F. J. Brookes, A.M.I.A.E., Suncrest, Woodside, Arley, Coventry, Warks.
- G3PHA**, J. J. Morris, 5 Glaisdale Street, Tonge Moor, Bolton, Lancs.
- GW3PHF**, R. Penn, 4 Bryn-y-Mor, Burry Port, Carmar.
- G3PHG**, A. J. Gibbs, 48 Ryelands, Gossops Green, Crawley, Sussex.
- GW3PHH**, C. M. Parry, 34 Cae'r-gwerlas, Tonyrefail, Glam.
- G3PHJ**, J. G. Johnston, 26 Green Dykes Lane, York.
- G3PHK**, R. J. Lock, 476 Becontree Avenue, Dagenham, Essex.
- G3PHM**, J. E. Macarthy, 157 Gladstone Road, Wimbledon, London, S.W.19.
- G3PHR**, J. Carter, 91 Grosvenor Avenue, Carshalton Beeches, Surrey.
- G3PHS**, K. C. Kates, 28 Parkhurst Road, Sutton, Surrey.
- G3PHU**, B. S. D. Clark, Landseer, Killowen, Newry, Co. Down.
- G3PHV**, E. Bond, 2 Infirmary Road, Chesterfield, Derbyshire.
- G3PHW**, B. J. Todd, Norbury, Icepits Close, Great Barton, Bury St. Edmunds, Suffolk.
- G3PHY**, F. H. R. Rickards, East Berks College, Boyn Hill Avenue, Maidenhead, Berks.
- G3PHZ**, J. C. Fogg, Cedar Oak, The Hill, Almondsbury, Bristol.
- G3PIM**, E. N. Allcoat, 172 Blackatree Road, Stockingford, Nuneaton, Warks.
- G3PIN**, J. Patten, 21 Mills Road, Wolverhampton, Staffs.
- GM3PIP**, P. I. Park, 50 High Street, Strichen, Aberdeenshire. (*Tel.: Strichen 224.*)
- G3PIT**, M. C. W. Sandford, 75 Fore Street, Topsham, Exeter, Devon. (*Tel.: Topsham 3422.*)
- G3PIY**, C. A. Isaacs, 55 Leafield Road, Hunts Cross, Liverpool, 24.
- G3PIK**, J. V. Mee, 207 Grimshaw Lane, Middleton Junction, Manchester, Lancs.
- G3PJO**, L. E. Brain, 7 Little Gaynes Lane, Upminster, Essex. (*Tel.: Upminster 576.*)
- G3PJW**, R. S. Unsworth, 8 Coleridge Road, Billinge and Winstanley, nr. Wigan, Lancs.
- G3PJY**, R. H. Millman, 38 Fowlmere Road, Great Barr, Birmingham, 22A. (*Tel.: CEN 2234.*)
- G3PKC**, J. M. Tinker, 19 Talbot Road, Roundhay, Leeds 8, Yorkshire.
- G3PKE**, R. E. Penn, 2 Denfield, Dorking, Surrey.

CHANGE OF ADDRESS

- G2AGD**, W. Grant, Resident Works Engineer, A.M.W.D., R.A.F. Station, Cottesmore, Oakham, Rutland.
- G3HIL**, R. Roberts, c/o 9 Kidderminster Road, Bridgnorth, Salop.
- G3DNF**, Dr. G. J. Bennett (*ex-GM3DNF/GW3DNF*), Kingcausie, West Winterslow, Wilts.
- G3JSN**, J. C. Beal, 34 Primrose Gardens, Bushey, Herts.
- GC3LFJ**, H. R. Mesny, La Trigale, St. Lawrence, Jersey.
- G3LNK**, C. J. Bourne, 36 Oldfield Street, Fenton, Stoke-on-Trent, Staffs.
- G3LSF**, E. S. Ellis, 5 Woodmoss Lane, Bescar Lane, Scarisbrick, Ormskirk, Lancs.
- G3NRW**, A. I. H. Wade, The Elms, Elms Grove, Loughborough, Leics.
- G3OMC**, A. E. Jenkinson, 10 Whitegate Drive, Clifton, Manchester, Lancs.
- G5KP**, A. T. Wallace, Warfleet House, Warfleet Creek, Dartmouth, Devon.

THE MONTH WITH THE CLUBS

By "Club Secretary"

(Deadline for December Issue: November 10)

(Address all reports for this feature to "Club Secretary")

THERE is not the slightest doubt that the coming "MCC" will be well supported; in fact we confidently expect, once again, a record number of entries. The following Clubs have all applied for identification numbers since the last issue, in which, on p.439, we published a list covering all numbers up to 93:—

94 Albright and Wilson (Birmingham)	102 Hallamshire (Sheffield)
95 Paddington	103 University of Durham
96 Dursley (Glos.)	104 Burslem
97 St. Benedicts (Ealing)	105 ATC (Staffs. Wing)
98 Burnham-on-Sea (Som.)	106 GEC Research, Wembley
99 Halifax	107 Newark
100 British Timken (Northants.)	108 Guildford
101 Rotherham	109 C. & G.R.S.

The rules were given in full on p.438 of the October issue, and it is hoped that the new scoring system will present no problems and will result in a fairer assessment of the results.

Typewritten logs are always welcomed by the judges, whether on quarto or foolscap. It would be appreciated, however, if those who send in hand-written logs would use *lined foolscap* for the purpose. The judges' task this year is obviously going to be a heavy one, and anything making for uniformity among the logs is a great help. All logs must be in by **Friday, December 1st**, certain. This gives plenty of time to write out a fair log from the contest sheets.

How many entries this year? Our bet is that there will be well over sixty, and that we might well notch up ten more than that. Get organised, and the best of luck to you all!

Burton-upon-Trent have drawn up a winter programme of monthly events, to be held in the Stapenhill Institute, with the exception of the November 8 date, which is their Annual Dinner, at the Midland Hotel. On December 13 Mr. J. Elliott will talk on Valves, and How they Work.

Clifton held their AGM in September, after which their various meetings have included a talk on Astronomy (G3JJC), one on Oscillators (G2UJ) and, scheduled for November 3, Mr. D. Bennett on his travels in Yugoslavia. On November 17 there will be a Junk Sale.

Crystal Palace report that their November 18 meeting has been changed, and the subject will now be VHF Communications in the Port of London

Authority, and also Civil Defence, covered by G3BPT and G3IIR.

Dorking are holding an informal meeting at The Wheatsheaf on November 14, and organising a visit to the Amateur Radio Exhibition on November 24. Their Christmas Dinner is booked for the Parrot Inn, Forest Green, on December 19—ladies invited, but number of visitors limited.

Harrow are running a course of lectures on elementary theory right up to R.A.E. standard; these are held fortnightly on their Practical Night, 7.30 to 8.15 p.m., before the main meeting. Slow Morse practice is given on the same nights, and G3EFX goes on the air from 8.30 to 10 p.m. On November 10 there will be a Junk Sale.

Enfield meet on November 30 to hear G3HRH talk about Aerials; on December 28 they have their AGM. **Leicester** recently held their AGM and elected G3AWM chairman, G3MCP secretary and G3DVP treasurer. Meetings are held on Mondays, 7.30 p.m. at the Hq., Old Hall Farm, Braunstone.

Newbury will meet on November 24, when the subject of the talk will be Oscillators and the speaker G2CPM. New members and visitors welcome at the Hq.—The Canteen, Elliotts of Newbury, West Street.

Northern Heights, by a recent Junk Sale, raised the sum of £13 for a communication receiver for a patient at the Cheshire Home in Cleckheaton—a very creditable effort. On October 4 G8CB gave a talk on Two Metres, and on November 29 members will be hearing about Converters for Two and Four Metres from G3OGV.

North Kent have booked a discussion on Mobile Operation for November 9; and on November 23 G3HVG (ex-VU2XG) will talk on Licensing in Other Lands; his father, G8VG, will give a talk entitled "Top Secret." Both meetings at The Congregational Hall, Clock Tower, Bexleyheath.

Peterborough started their winter season with a talk on D/F by SWL Ray Houlty; the AGM is

THE SIXTEENTH MCC

First session Saturday, 11th. Rules in full pp.438-439 October issue. Allocation of Club Identification Numbers on p.439 October. Additional entrants on this page. Call "CQ MCC." Get time-check before start of each session. Accurate log-keeping and snappy, contest-style operating will be essential. All logs must be received by December 1st certain.

booked for November 3, and the Christmas Party for December 1. **Rotherham** meet for practical work, R.A.E. and Morse instruction on November 8, and for the Presidential Lecture on November 15. Local area club secretaries wanting, or having exchange visit

Names and Addresses of Club Secretaries reporting in this issue :

ACTON, BRENTFORD & CHISWICK: W. G. Dyer, G3GEH, 188 Gunnersbury Avenue, W.3.
 A.R.M.S.: N. A. S. Fitch, G3FPK, 79 Murchison Road, London, E.10.
 A.W.R.A.R.S.: Maj. D. W. J. Haylock, G3ADZ, 3 Norris Gardens, Grange Estate, Havant, Hants.
 BLACKWOOD: P. M. Fulton, GW3MMU, 36 Sunnybank Road, Blackwood, Mon.
 BRADFORD: M. Powell, G3NNO, 28 Gledhow Avenue, Roundhay, Leeds 8.
 BRITISH TIMKEN: J. B. Johnson, G3JJW, 44 Castle Avenue, Duston, Northampton.
 BURLEEM: W. Luscott, 36 Rothsay Avenue, Sneyd Green, Hanley, Stoke-on-Trent.
 BURTON-UPON-TRENT: J. Adkin, 25 Huntingdon Road, Stapenhill, Burton-upon-Trent.
 CANNOCK CHASE: N. H. Hyde, G3PJM, 91 Pelsall Lane, Rushall, Walsall.
 CHELTENHAM: J. H. Moxey, G3MOE, 11 Westbury Road, Leckhampton, Cheltenham.
 CLIFTON: E. Godsmark, G3IWL, 211 Manwood Road, London, S.E.4.
 CORNISH: W. J. Gilbert, 7 Poltair Road, Penryn.
 CRAWLEY: R. G. B. Vaughan, G3FRV, 9 Hawkins Road, Tilgate, Crawley.
 CRYSTAL PALACE: C. M. C. Stone, G3FZL, 10 Liphook Crescent, London, S.E.23.
 DORKING: J. Greenwell, G3AEZ, Wigmore Lodge, Beare Green, Dorking.
 EAST KENT: D. J. Bradford, G3LCK, 42 Mount Road, Canterbury.
 ENFIELD: V. Croucher, G3AFY, 15 Nelson Road, London, N.15.
 GRIMSBY: P. Mason, G3NNN, 213 Cleo Road, Cleethorpes.
 HALIFAX: G. Sunter, 24 Booth Fold, Luddenden Foot, Halifax.
 HARROW: A. C. W. Biddell, G3GNM, 114 Kingshill Avenue, Kenton, Middx.
 I.H.H.C.: M. Allenden, G3LTZ, 16 Grovefields Avenue, Frimley, Aldershot.
 LEEDS UNIVERSITY UNION: P. E. Green, The University Union, University Road, Leeds 2.
 LEICESTER: P. G. Goadby, G3MCP, 535 Welford Road, Leicester.
 LIVERPOOL: H. James, G3MCN, 448 East Prescott Road, Liverpool 14.
 MIDLAND: C. J. Haycock, G3JDJ, 360 Portland Road, Birmingham 17.
 NEWBURY: G. T. Allen, G3JTK, 83 Huntshook Road, Tadley, Basingstoke.
 NORTHERN HEIGHTS: A. Robinson, G3MDW, Candy Cabin, Ogden, Halifax.
 NORTH KENT: B. J. Reynolds, G3ONR, 49 Station Road, Crayford.
 PETERBOROUGH: D. Byrne, G3KPO, Jersey House, Eye, Peterborough.
 R.A.I.B.C.: W. E. Harris, G3DPH, 4 Glanville Place, Kesgrave, Ipswich.
 READING: R. G. Nash, G3EJA, 9 Holybrook Road, Reading.
 REIGATE: F. D. Thom, G3NKT, 12 Willow Road, Redhill.
 ROTHERHAM: S. J. Scarbrough, 25 Crawshaw Avenue, Sheffield 8.
 SLADE: C. N. Smart, 110 Woolmore Road, Birmingham 23.
 SOUTH BIRMINGHAM: T. W. Legg, Flat 3, 80 Alcester Road, Birmingham 13.
 SOUTHEND: Mrs. P. M. C. Collop, 53 Beedell Avenue, Westcliff-on-Sea.
 SOUTHGATE: R. Pedder, G3NEE, 6 Greenall Close, Cheshunt, Herts.
 SOUTH HANTS: G. J. Meikle, G3NIM, 34 Victoria Road, Netley Abbey.
 SOUTH YORKS: E. Brailsford, G3PAF, 15 Ayrson Walk, Cantley 4, Doncaster.
 SURREY (CROYDON): S. A. Morley, G3FWR, 22 Old Farleigh Road, Selsdon, South Croydon.
 SUTTON & CHEAM: F. J. Harris, G2BOF, 143 Collingwood Road, Sutton.
 SUTTON COLDFIELD: L. E. R. Hall, G3IGI, 24 Calthorpe Road, Walsall.
 WIRRAL: A. Seed, G3FOO, 31 Withert Avenue, Bebington, Wirral.
 WOLVERHAMPTON: J. Rickwood, 738 Stafford Road, Fordhouses, Wolverhampton.

or lecture dates for 1962, are asked to get in touch with Rotherham's secretary (see panel).

Slade have a demonstration of Hi-Fi Stereophonic Sound on November 3 (Griffin Radio Ltd.), their AGM on the 17th, and a talk on D/F Developments on December 1. **Wolverhampton** are having a talk on Colour Television, by G3KQJ/T, on November 6, and their meeting on the 20th is still to be arranged.

Bradford will meet on November 15 at the Fire Service Dept., Nelson Street, for a talk on Modern Methods of Communication by Mr. E. M. Price, M.Sc. November 28 is the date for their Junk Sale. **Halifax** will be hearing from G3IGW "What to Find on the Amateur Bands" on November 7, and will hold a Ragchew on the 21st.

Sutton Coldfield, at their November 9 meeting, will hear about the Construction and Use of the GDO (Pat Darragh), and November 23 is the date for their fourth AGM, also judging for the G3GLQ Trophy for equipment built by members.

Dursley is a newly-formed club, about six months old and with twelve members, eight of them holding call-signs. At a recent meeting a member gave a talk on the Heathkit GDO; meetings are fortnightly, Friday evenings at the home of the secretary, G3ILO. It is hoped to increase the size of the club during the winter months.

Acton, Brentford & Chiswick meet on November 21, when Mr. Brian Lockey will talk on Modern Valve Manufacturing Technique; meeting place, as usual, the AEU Club, 66 High Road, Chiswick, W.4, and time 7.30 p.m. **Cannock Chase** were due to meet on November 2 (the day before publication) to see the film "Mirror in the Sky" and to follow it with a discussion. Note new secretary's QTH—in panel.

Cornish held their October meeting in Falmouth, when the main topic was a discussion on the station to be run for Marconi's Sixtieth Anniversary, from Poldhu (GB3MSA; see p.419, October SHORT WAVE MAGAZINE for full details). The November meeting, on the 1st, will be over by the time this note appears—it was to be devoted to radio-controlled aero-models.

British Timken now have ten licensed members, with another soon to come; at the firm's Annual Show the club operated transmitters on all bands and attracted much interest from visitors. The winter programme includes a Film Show by G3PBP on his experiences in Ghana and Sierra Leone; a social evening for YL's and XYL's, and a talk by the local GPO Radio Branch officer. Forthcoming visits

CLUB PUBLICATIONS RECEIVED

We acknowledge, with thanks, the receipt of the following Club publications: **A.R.M.S.** (*Mobile News*, September); **Grimsby** (*News Sheet*, September); **I.H.H.C.** (*Newsletter*, September); **Enfield** (*Lea Valley Reflector*, September); **Leeds University Union** (*Journal*, Autumn, 1961); **Midland** (*News Letter*, October); **North Kent** (*Newsletter*, September and October); **R.A.I.B.C.** (*Radial*, September and October); **South Birmingham** (*QSP*, September); **Southgate** (*Newsletter*, October); **Wolverhampton** (*News Letter*, October); **A.W.R.A.R.S.** (*Broadcast*, Summer and Autumn); **South Hampshire** (*QUA*, October); **Surrey** (*Monthly News*, October); **Mitcham** (*Newsletter*, October).

take in the telephone exchange, an engineering works—and the local brewery!

Blackwood operated GW3KYA /A on September 23 at the West Monmouthshire Ranger and Rover Conference, at Blackwood Secondary Modern School. The station aroused great interest among the 300 visitors to the conference; with a home-brew transmitter, an HRO and an ideal location, very good reports were received; home-built and commercial equipment was also on display.

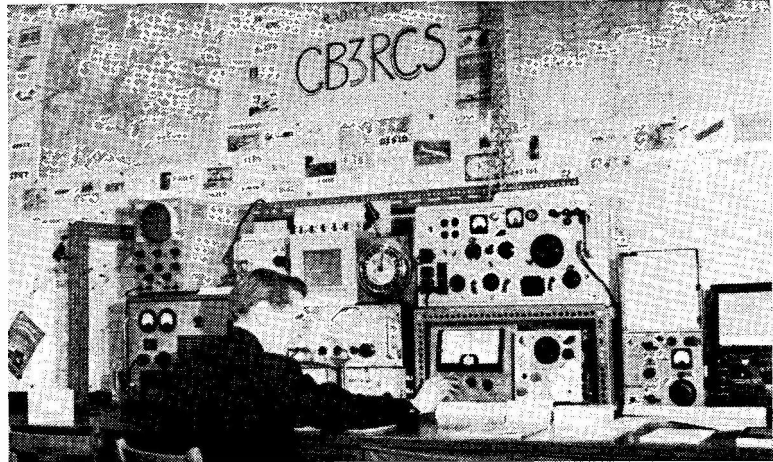
Cheltenham also staged a very successful appearance at their Hobbies Exhibition, operating CW and SSB with an HT-37 and SX-101A combination loaned for the occasion; six thousand visitors saw them during the four days of the show. They are now re-organising the clubroom, with the possibility of taking over new premises. At the AGM they elected Mr. W. Moodie chairman, G3MOE secretary and Mr. A. Ward treasurer, the committee being re-elected.

Crawley will be seeing a Film Show at their meeting on November 22. A number of films will be run, including "Nerves of the Nation," produced by the Copper Development Association. Members are engaged in a Club Project—several receivers are being built, with the idea of providing first-class equipment for Contest use.

East Kent have drawn up a full programme for the months to come, but their two November meetings (on the 7th and 14th) will be devoted only to MCC preparations. November 21 is a "pre-Exhibition meeting" and on the 28th G3LCK will talk on "My Station and Radio Activities." All meetings at the Technical College, Longport, Canterbury.

Liverpool held their AGM and elected G3LRB chairman, G3MCN secretary, and SWL R. Kenyon treasurer; G3LIU is their president. Membership is now up to 60 and the club meets every Tuesday at the Gladstone Mission Hall, Queens Drive, Liverpool 16. New calls include G3PDC, 3PFZ, 3PIC and 3PKW. The Annual Constructional Contest will be judged on November 7.

Reading are devoting their meeting on November 25 to the needs of the SWL's, all of whom are invited to a "Question-and-answer" meeting. Non-members are also welcomed, so that they can find out more about Amateur Radio. **Reigate** meet at The Tower, Redhill, on November 18, when G3NDF will be giving a Film Show; G3PIJ is their newly-licensed member. **South Yorkshire** had their Annual Dinner on October 7, concluding with the usual "swindle." For the third year a course is being held at the Doncaster Technical College, with some 12 students preparing for the R.A.E.



When the Read Grammar School, Drax, Yorks., held its commemoration day, members of the school radio society and staff interested in it laid on a demonstration amateur-band station, signing GB3RGS and operated by G3OIB, a master on the science side. Over 120 phone contacts, many to DX, were made for the 600 or so visitors, who were amazed to hear stations being worked in PY, VQ4 and SV0. The rig consisted of a Minimitter "Mercury" transmitter and an R.107 receiver with a Gelooso converter, the aerial system being a multi-band trap dipole covering 10-80m. As Read G.S. is a boarding school, Amateur Radio has proved to be an excellent hobby for the boys, who take a keen interest in the activities of G3OIB.

Surrey (Croydon) ran a very successful two-metre D/F event, and have decided to repeat it next season. At their October meeting G8KW gave a talk on the "Viceroy" transmitter; on November 14 the speaker is G3IIR and the subject RTTY. **Sutton & Cheam** meet on November 21 to hear a talk from G2FUX on "Mobiling Around."

Burslem have a date on November 15 for a lecture on Aerials and Propagation, by Peter Jones, of Aerialite Ltd.; their following meeting, on December 20, is devoted to Silvered Mica Capacitors (Hugh D. Hemmer, of Johnson Matthey & Co. Ltd.).

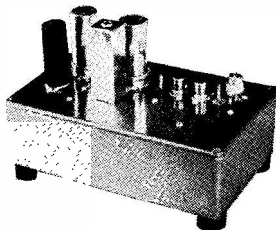
Southend took part in the town Carnival Procession with a decorated float depicting two aspects of Amateur Radio—an indoor shack and a portable outfit. Future activities include a lecture on Telephone Exchanges and a visit to the local exchange; also a visit to the local airport to see the communications system, and one to the electric signalling on the railway. The Club is holding an SWL Contest to coincide with MCC. Meetings alternate Fridays in the canteen of E. K. Cole Ltd., 8 p.m.

STRAWS IN THE WIND

In the September issue of *QTC*, published by the Radio Society of East Africa, we find a note that ten VQ3/VQ4's have left East Africa for good, and another 14 are out of the country on leave. From the same source, we see that the R.S.E.A. has a highly organised emergency communications network covering the territories of Kenya, Uganda and Tanganyika. With Kenya reported to be in a condition of bankruptcy, and the blacks clamouring for the transfer of political power, one can only hope that the Europeans in East Africa (who, unlike the Belgians in the Congo, are all our own people) will come through the turmoil safely.

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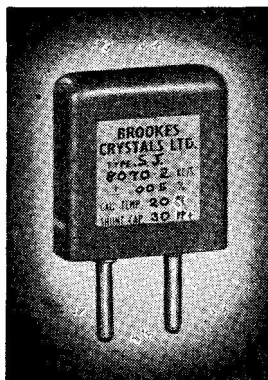
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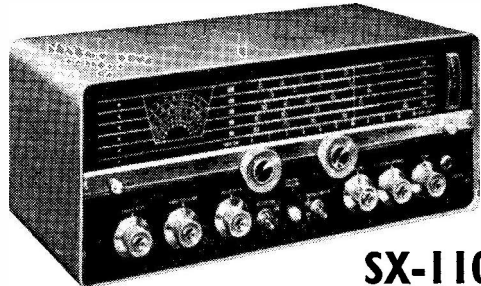
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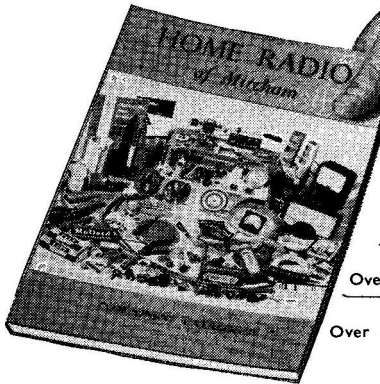
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CLEARANCE SALE: 30ft. mast, screw-in sections, with guys, canvas case, 30s. G.E.C. Miniscope, 240v. AC/12v. DC, in case, with double-beam unit, wobblator unit and service book, £10 10s. Wavemeter, Type 1617, with calibration chart, 240v. AC. 450/600 mc, 30s. Lavoie Laboratory Wavemeter 105SM, 375-725 mc, with calibration chart and service book, £5. Mains power supply, 1200v. 200 mA, 30s. 80-watt rack-mounting modulator with separate power unit, £5. **Condenser Packs:** 100 mixed new µF condensers, miniature, silver mica, ceramic, 10s. per 100. **Miniature Valve Packs** (ex-chassis): 6F1, EF80, 10F1, ECL80, UF42, PY80, 9D2, 20F2, 6F13, Z77, EB91, 20D1, 12 valves for 15s. Variac 230v.-115v. input, 0-230v. output, 8 amp., £4. Mains ¼-h.p. motor, £4. Variac 180v. output 0-180v., 7 amps., 30s. **WANTED:** Commercial electronic counter, cheap, for Hospital Experiments. — G3LMR, 112 Groby Road, Glenfield, Leics.

READERS' ADVERTISEMENTS

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READERS

SALE: Collins ART-13 Transmitter, 2-18 mc, less meters and power supplies, £8. Buyer collects.—G3KJQ, 311 Leicester Road, Markfield, Leicester.

EXCHANGE: R.1392 Rx (less oscillator deck) for 19 Set. All letters answered.—Wilson, 18 Peebles Avenue, West Hartlepool, Co. Durham.

WANTED: 2-metre Rx, with PSU, tunable ex-Government preferred.—Particulars to: BRS 23177, 89 Berridge Road, Sheerness, Kent.

36 SENDER, 7-28 mc; power pack needs attention, otherwise complete, including modulator and two matching ATU's ("Harmonic Filters"), £8. Free delivery in London.—Box No. 2523, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SPY Tx, 5½ x 4½ x 1½ ins., Type 51/1, 6½w. CW, SCC, 1 to 10 mc, AC 250v., p/pack, key, RF indicator, all built in, manual; a gem, £5 10s. Sig. gen., Homelab, 100 kc to 130 mc, £4.—E. Bond, 2 Inhrmary Road, Chesterfield, Derbyshire.

FOR SALE: Hallicrafter SX-24 Skyrider Defiant, with spare valves and manufacturer's manual; also RF-24 unit. Both in excellent condition. £12, o.n.o.?—P. Ashley, 119 Sundale Avenue, Selsdon, South Croydon, Surrey.

WANTED: Gear for school radio society—Surplus Tx's, Rx's, junk, etc.; condition fairly immaterial; expenses paid (limited funds).—GM3OLQ, Daniel Stewart's College, Queensferry Road, Edinburgh.

SHORT WAVE MAGAZINES wanted, March 1958 to March 1961, inclusive.—Box No. 2524, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

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R.1392 RECEIVER, modified to tune 90-155 mc, with manual; new condition; £5.—G3GCO, 31 The Crescent, Donnington, Wellington, Shrops.

CREED No. 3 Teleprinter, complete with G.P.O. 100-volt supply unit, in working order, £10.—G3PBP, 24 Windsor Crescent, Northampton. (Tel. 2481.)

HALLICRAFTERS "Sky Buddy" receiver, good condition, £7. Buyer collects.—G5LY, 33 Downs Road, Langley, Bucks.

WANTED: One APS/13, two BC-645 (420 mc equipment), Western Electric Converter, 100-225 mc, GDO up to 250 mc, Mosley V-4-6 vertical ant., AR88 trimming tools, CQ from 1945 to Dec. 1960. Inclusive collection arranged Warwickshire area.—Box No. 2525, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SALE: Gelson G.209, £35; Mohican, £35; Class-D wavemeter, £3 10s.; Withers 2m. converter, £8.

WANTED: 12v. mobile converter, all bands output, for car radio.—Jones, 63 Cornwall Street, Plymouth.

HRO Junior, good condition, crystal filter fitted, 7 coils, power unit, £17; or exchange for S.640 or CR-100, etc.—Tibbert, 397 Uttoxeter Road, Derby.

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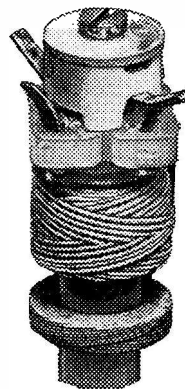
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HALLICRAFTERS SX-24 Rx, 0.55-45 mc, xtal, ANL, BFO, S-meter, bandspread 10-80m. amateur bands, manual; £20, o.n.o.? Deliver 20 miles.—Francis, 41 Warborough Avenue, Tilehurst, Reading, Berks.

RADIOVISION Commander, with manual, £35, o.n.o.? Prefer buyer inspect. — G2DCF, 40 Devon Street, Beswick, Manchester, 12.

UNIQUE OPPORTUNITY for someone to purchase an Eddystone 770R receiver, mint condition; complete coverage 19 mc to 165 mc in six bands; price £100, o.n.o.?—Full details from Box No. 2526, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

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FOR SALE: Eddystone 680X, as new, used 15 hours, £80 o.n.o.? Buyer collects (call Saturday or Sunday afternoons).—Billington, Salmons Cottage, 123 Salmons Lane, Whyteleafe, Surrey.

RME-69 Receiver, working, good condition, £15 o.n.o.? BC-312 similar, £10. Delivered West Midlands. **WANTED** for Club Station: Good components, transmitting gear, W.H.Y.? — G3OAD (QTHR.)

GELOSO G.209 double superhet Rx (with Top Band), mint condition, £45.—Challis, 43 Dorchester Close, Dartford, Kent.

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HEATHKIT Mohican, perfect, £40. — Surman, Lyncote, Coltsfoot Drive, Guildford, Surrey. (Phone 3628.)

AR88 with speaker, S-meter, manual, trimming tools, £31. Morse inked Tape Recorder SG-10 (up to 400 w.p.m.), complete with manual, £10. 20w. CW Tx, Geloso 4/101, 807 PA, with p/pack and Z-Match, £7. 50w. CW and R/T, 36 Sender 10-60 mc, air tested, £7. Band checker monitor, 25s. —(Phone Wimbledon 2132 after 7 p.m.)

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888A RECEIVER wanted. Also Multiminor.—Box No. 2530, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: CR-100, good working order, but requires attention, £14 o.n.o.? Carriage extra. **WANTED:** R.1392 and BC-624 power supplies, also back issues of *Short Wave Magazine*.—Apply Thompson, 13 Byass Avenue, Bridlington, Yorkshire.

SELLING UP: 813 with base and transformer; S 1200-volt PSU; Type 234A PSU; 38 Set; 80-ohm non-inductive resistors; 1800 ohm/v Multimeter; also chassis, valves, many components. Callers only after 7 p.m. — G3MXR, 1 Beaumont Terrace, Gosforth, Newcastle-upon-Tyne, 3.

SELL: Manuals AR88, NC-109, 303, 270, 75S1, 7s. 6d. each. Crystals 46, 47, 15s. pair; 9 mc crystal holder, three specified transformers, W2EWL special, all new, £2 10s. New 12AT7's, 3s. each. "CQ" *SSB Handbook*, 12s. 6d. Professional multi-band Z-match, metered, £4.—Box No. 2531, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SALE: 12 in. Morse LP, with instructions, £1. R.A.E. Correspondence Course, £3. **WANTED:** Circuit and/or handbook for Panda Cub Tx, and BC-348 Rx. — Jubb, 18 Morton Terrace, Gainsborough, Lincs.

51J2 COLLINS Communications Receiver, 30 bands 0.5-30 mc, in table cabinet, first-class condition, £165.—G3JNG, The Huon, Branksome Hill Road, Bournemouth.

COMMUNICATOR 2-metre Mobile Transmitter-Receiver, perfect order, complete, £50. Offers considered.—Fenton, Niarbyl, Gay Bowers, Danbury, Chelmsford. (*Danbury 518*.)

SALE: AR77E Receiver, good condition, £20. Two brand-new transformers, 600-0-600v. 200 mA, 5v. 3A, 6.3v. 3A, £3; 400-0-400v. 5v. 3A, 6.3v. 1½A, £2. One used transformer, 425-0-425v. 200 mA, £1.—Kellow, Cross, St. Dominic, Cornwall.

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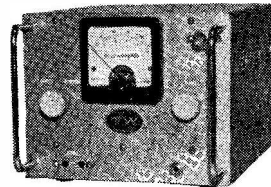
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TELEPRINTER, Creed Type 3, good condition, £7 10s. Buyer must collect.—G3NNM, 1 Belle Vue Road, Herne Bay, Kent.

SB-10 Sideband Adaptor for sale; all latest modifications and in excellent order, with manual, £25. — G3AFJ, 3 Hatherley Court Road, Cheltenham.

WANTED: Hallicrafters S27 or similar Rx in good condition, around £12. **FOR SALE**: Few 6AG7 valves, as new.—Box No. 2527, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

PANADAPTOR, Model Rcx, input 450-470 kc, 3 in. tube, excellent condition, with manual; can be seen working; £30 o.n.o.? Cowl-gill beam turning motor, with electronic brake plus direction indicator, mounting bracket, etc., £3 10s., plus carriage.—Bennett, 45 Green Lane, Purley, Surrey.

PULLIN Series 100 Multimeter, 10,000 ohms PV, brand-new, never-used bargain, £8. — Gorman, 312 Burnfield Road, Mansewood, Glasgow, S.3.

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WANTED: "Viceroy" Transmitter. **SALE**: BC-453, £4; BC-455, £1 15s.; Hallicrafters, £10; BC-457, £1 5s. Complete 150w. 5-band TT21 Transmitter and p/pack, £18. 40-80m. 50w. phone, £3 10s. Class-D Wavemeter, £3 10s. Grundig Transistor Tape Recorder, £15. Or offers?—Armstrong, 32 Hillfield Place, Parclyn, Cardigan.

AR88LF, with S-meter and manual, in good condition; will deliver up to 50 miles; £35 o.n.o.?—Nervey, 23 Lea-House Road, Oldbury, Birmingham.

WANTED: HRO Bandsread Coil for 14 mc; also set of IF's for BC-454 Rx (1415 kc).—L. Arnold, 24 Albert Road, Stechford, Birmingham, 33.

R.1155-N. Drive, PSU, o/p stage, fitted 160m.; new front panel; £8 10s. TCS 12 Rx, PSU, Q-Multiplier, £8 10s. Bendix RA-10DB PSU, £4. Share carriage.—Harwood, 14 Fairway Avenue, Tilehurst, Reading.

WANTED: BC-453 Receiver; prefer unmodified specimen, but would accept one modified to operate from 1.6 mc IF output; would collect within 50 miles Wickford.—Smith, 38 Leasway, Wickford, Essex.

MINIMITTER Amateur Bands converter for sale; IF 1.5 mc, new; £12 for quick sale; buyer collects.—Heath, 47 Tulsmere Road, London, S.E.27.

NEW VALVES (offers within 3 days): 6/ECC35, 2/6J7G, 3/6V6GT, 2/6L6GA.—Box No. 2533, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

MINIMITTER TX and ATU, £60; AR88LF, LS and manual, £30; Minimitter 8-band converter, £10; Lionel Key Type J36, 30s. All in very good condition.—Fletcher, 13 Park Avenue, Cheadle, Staffs.

SALE: American Inverter; input 110 volts DC, output 110 volts AC 60 cycles, 450w.; little used; VP7 BB/MM; bargain, £15.—G3JAX, 17 Orchard Crescent, Edgware, Middlesex.

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Precision crystals of all types in a wide variety of bases covering the complete range 50 kc/s to 18 mc/s in fundamental frequencies. All are made to extremely fine tolerances and frequency adjustment can be given up to .005%. Plated electrodes of gold, silver, or aluminium with wired in spot welded contacts are available. Quotations can be given for any type of cut, or mode of oscillation, including a complete range of filters with zero temperature co-efficient over a sensibly wide temperature range.

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No more change of doublers ! A complete new range of crystals for DIRECT output up to 74 mc/s when using only a simple RF pentode oscillator such as Z77, EF80, etc., full details of this range on request.

ATTENTION

ALL RADIO CLUB MEMBERS

In the early summer we posted leaflets to 200 Radio Clubs, offering

**ONE "OLYMPIC" TRANSMITTER
TO EACH CLUB AT COST PRICE**

in order to keep our staff fully occupied during the slack period.

We have since received numerous letters from Club Members stating that they were not informed of this very special offer, and asking if it is still open.

As our busy season has now started, we can only keep this offer open for the **FIRST TEN CLUB MEMBERS** to reply to this Notice, and the final closing date is the end of November. If YOU want a **TOP CLASS Transmitter AT COST PRICE**, do not delay. Send 3d. stamp for our special leaflet on this offer, stating name of your Radio Club. Only **One TX per Club.**

30% DISCOUNT TO CLUBS ON MASTS AND KITS

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THE TOP TEN

- EDDYSTONE RECEIVERS.** 680X, £140; 888A, £110; 840A, £55; 870A, £33 10s. and the new 840C, £58. All in Stock.
- HALLCRAFTERS.** HT37, £215; SX101A, £187; SX111, £120; SX110, £78; S38E, £28 10s.
- BIRKETT'S BETTER BEAMS,** 8 element Yagi. Wide spaced for 2 metres, 39/- with 1" to 2" adjustable bracket, 5 element, 39/6. Add on 3 element for fitting to 5 element, 19/6. All plus 3/6 carriage.
- AR88 NEWLY MADE CABINETS.** Grey oyster hammer or black crackle. With trims, 89/6 each plus 10/6 carriage. G2DAF TX fits inside O.K. G2DAF de luxe receiver cabinets. Fitted chassis, screws, hole cut out for Eddystone dial. Sprayed two colours: £6 19s. 6d., 10/6 carriage.
- EX5222 MOD. TRANSFORMERS,** 7/- plus 2/- P.P.; Driver, 6/- plus 2/- P.P. Have you got a spare?
- NEW TWO INCH ALLOY AERIAL MASTS.** Sectional with guys, thimbles, Pickets, base plate, stakes. Strong and rigid. N.B.49, £15; N.B.36, £12; N.B.24, 7 gns. carriage 10/6 each extra. Masts: 16' x 2" O/D 75/-, 14' x 2" O/D, 63/9. Masts: 2" couplers, very strong, 8/9; guy clamps, 4/9 each.
- "S" METERS SCALED 0.9 + 30 DBS. F.S.D. 1 M/A.** Square flush fitting, using $1\frac{1}{2}$ " round hole in panel. Imported type and very attractive, face is $1\frac{1}{8}$ " square. Price 35/- + 1/6 P.P. Ideal for 2DAF Rx.
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S-88



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