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The SHORT WAVE Magazine

VOL. XVIII DECEMBER, 1960 NUMBER 10

Hillcourt,
Freshwater East,
Pembroke.

Messrs. Stratton & Co.Ltd.
Alvechurch Road,
Birmingham.31.

Dear Sirs,

Eddystone "888A" Receiver
Serial No.HJ.0164

As a transmitting amateur who has been active for 40 years, and, during that time, has handled many types of receiver, may I congratulate you on your "888A" Amateur Band receiver. The general performance is most excellent and the many good features about the receiver all assist considerably towards reliable communication under often difficult conditions.

The receiver operates well in all modes and I particularly like the audio filter, the use of which makes a fantastic difference with morse signals on a crowded band.

The background noise is commendably low, whilst I consider the workmanship and finish reach a very high standard.

The receiver has been in use for several hours a day over a long period and has proved most reliable - the only fault has been the failure of a switch, which of course is liable to occur in any piece of equipment.

Yours faithfully,

G. Courtenay Price
GW2OP

This is one of many testimonials amply confirming our recommendation of the EDDYSTONE "888A." It is designed especially for amateur use, covering the six bands 1·8 Mc/s to 28 Mc/s each spread over the whole 12in. long scale; in addition, a logging scale allows reading from 2 kc/s per division on 10 metres to 250 c/s on the top band, the accuracy being ensured by an internal crystal controlled calibration oscillator. Some further features are double superhet circuit, R.F. stage, 12 valves, noise limiter, excellent S.S.B. reception, variable selectivity, aerial trimmer — and many other details directed to one aim, to meet the highly specialised needs of the Amateur Radio operator. A full specification comes to you post free on request. The cash price of the "888A" in its attractive grey hammer finish is £110.

Please write for full Technical Specification to the Manufacturers

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SHORT WAVE MAGAZINE

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Advertisement Manager: M. GREENWOOD

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AUTHORS' MSS

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The SHORT WAVE Magazine

Christmas

Once again we are happy to have the opportunity of sending our greetings for the Christmas season to all our readers, at home and in the far corners of the earth.

During this last year there has been another large increase in the number of licensed radio amateurs, not only in this country but throughout the world as well. It is a fair claim that SHORT WAVE MAGAZINE has played its full part in this expansion. In writing these lines we feel we have the solid support of many thousands of keen and discriminating readers, whose interests it is our duty and our pleasure to serve. And we hope it may truly be said that SHORT WAVE MAGAZINE continues to mirror all that is best in Amateur Radio.

For this coming Christmas Season and the New Year, our good wishes for their happiness and our thanks for their support to all who, at home and abroad, may chance upon these lines.

From the Managing Editor and Staff of

SHORT WAVE MAGAZINE

Crystal Controlled Converter for the HF Bands

TO WORK INTO THE BC-453 OR ANY RECEIVER TUNING 150-550 KC

C. D. H. LEWIS (G3NHL)

If you have a BC-453, or any similar Rx unit covering the MW-LW range, this converter design will enable you to obtain excellent results on the 7-14-21-28 mc amateur bands.—Editor.

THIS article describes a converter using two crystal-controlled frequency-changers in cascade to enable the 7, 14, 21 and 28 mc amateur bands to be tuned on a BC-453, or any other receiver covering the LW-MW broadcast bands.

The design meets the requirements at G3NHL for a receiver combining high performance with low cost. Excellent stability and reasonable selectivity are provided by the BC-453 itself; the bandspread is quite good, and can be improved by the use of a (calibrated) secondary tuning knob. The major snag is the low frequency range, 0·19-0·55 mc. This can be raised by two methods: (i) By rewinding the front end coils—because of the low IF of 85 kc, this method is only satisfactory up to one megacycle (300 m.) above which the image ratio becomes unacceptable,[1] or (ii) by the use of converters. For the 1·8, 3·5 and 7 mc bands a "standard" converter configuration will suffice.[2] Above 7 mc the image ratio deteriorates rapidly and precludes the use of simple converters, although the first 100 kc or so, *i.e.* 0·45-0·55 mc, may be used as the tunable IF for converters working up to about 15 mc. For higher frequencies a double conversion arrangement immediately becomes the solution—*see* Tabe I for the frequency relationships in this converter, and Fig. 1 for a block schematic of the general arrangement.

The choice of the first IF is not critical, and 2·7-3·05 mc was chosen by the writer merely because he had a suitable crystal (2·5 mc) for the second conversion oscillator (suggested alternatives are listed later).

Circuit

Orthodox circuitry is used throughout in the interests of simplicity. After the first conversion it is necessary to include a stage of amplification, V4, so that the extra selectivity (from L6 and L5) will attenuate the image (and any other nasty effects) associated with the second conversion. A band-pass coupler, or one tuned circuit, was found inadequate.

There seemed no point in using plug-in coils for the first conversion oscillator, so the convenience of a switch was invoked, although L1-L2 and L3-L4 are plug-in types so as to keep the circuit "Q" high in the RF and mixer stages.

The 6BZ6 has been specifically recommended[3] for RF stage service since it has the advantages both of high slope, for plenty of gain, and a semi-remote cut-off, which reduces the occurrence of cross modulation, *i.e.* it has a large signal-handling capacity; this valve was designed for TV/IF service. Unfortunately, it is not readily obtainable in this country, but a 6BA6 is a good second choice and can be used in this converter with no changes except that the cathode resistor, R2, of V1 should be changed from 180 ohms to 68 ohms.

For the first conversion a 6BE6 was chosen in preference to a pentode, as it allowed for more precise adjustment of the oscillator injection, especially necessary in a band-switched circuit. The primary of L5 seems to resonate near the 14 mc band, and some slight instability resulting round V2 (occurring only on 14 mc) was removed by a 56 ohm $\frac{1}{4}$-watt resistor, R6, connected between L4-C2 and pin 7 of the 6BE6.

Construction

The chassis used measures $7\frac{1}{2}$ins. × 6ins. × 2ins. deep. With this chassis size, there is adequate space, but the controls on the front of the chassis will need careful arrangement, otherwise the knobs will foul each other. (C3 and C4 would look more natural if mounted above chassis, but mounting underneath helps to keep them free from dust!)

The electrical layout follows circuit sequence if viewed from underneath the chassis, as this was more convenient for development work than the more conventional method.

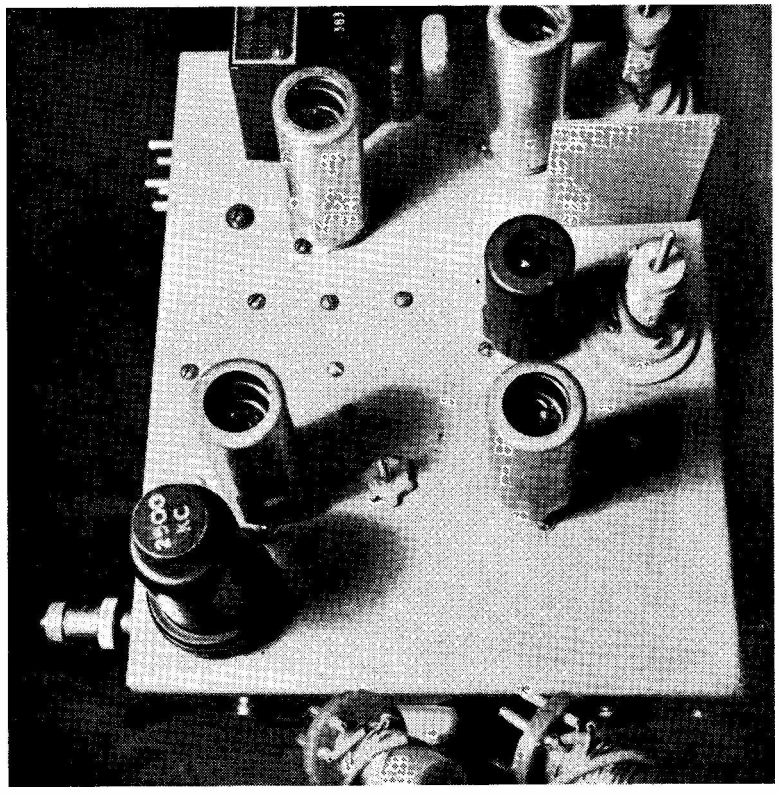
The screens are $\frac{1}{8}$in. off the chassis so that wires may pass underneath. All heaters were decoupled with ·0018 $\mu\mu$F tubular ceramic condensers (not shown in the circuit), although this may only be necessary for V3 and V5. By

using Denco coils for L5 and L6 the scope for modifications is increased (*see* later), but die-hards can try " rolling their own " if preferred. The remaining constructional details are suggested by the illustrations.

RF Coils

For economy, the 21 and 28 mc bands are tuned on one set of coils, and the 14 mc band coils " double " as 7 mc inductances when paralleled by the 100 $\mu\mu$F condensers, C5, C9; this is done by wiring an adjacent pair of the unused pins of the octal coil holders so that a shorting stub of about 16g. tinned wire (" loaded " as necessary with solder) slipped in under the plug-in coils, connects the 100 $\mu\mu$F condensers C5, C9 from earth to grid.

The coupling windings are wound on first, nearest the bottom of the coil former.[4] Wind the wire from the earthy ends of the coupling and main windings in the same direction, with the " hot " end of the coupling winding near the earthed down end of the main winding. The spacing recommended is fairly close,[5] so after dabbing the coils with poly. cement check that the turns are not shorting. (They probably will be at the first attempt !) The secret is to wind on the requisite number of turns with no spacing, as tight as possible, solder the ends, and then ease open the turns with a screwdriver; in practice there will always be sufficient slack to open up the coil to the desired spacing. The ends of the coils are soldered to the tops of the pins, and when doing this be sure to grip the pin in a pair of pliers as a heat shunt. *See* Table II for turns data.



View of the G3NHL converter above chassis. The RF stage is top right, mixer centre right, and the first IF stage lower right. The 1st conversion oscillator is top left, near crystals, and the 2nd frequency changer at bottom left. The 21-28 mc coils are shown in the foreground, and the 7-14 mc coils are plugged in.

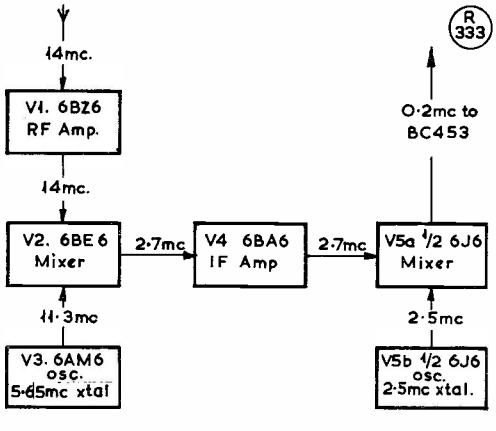
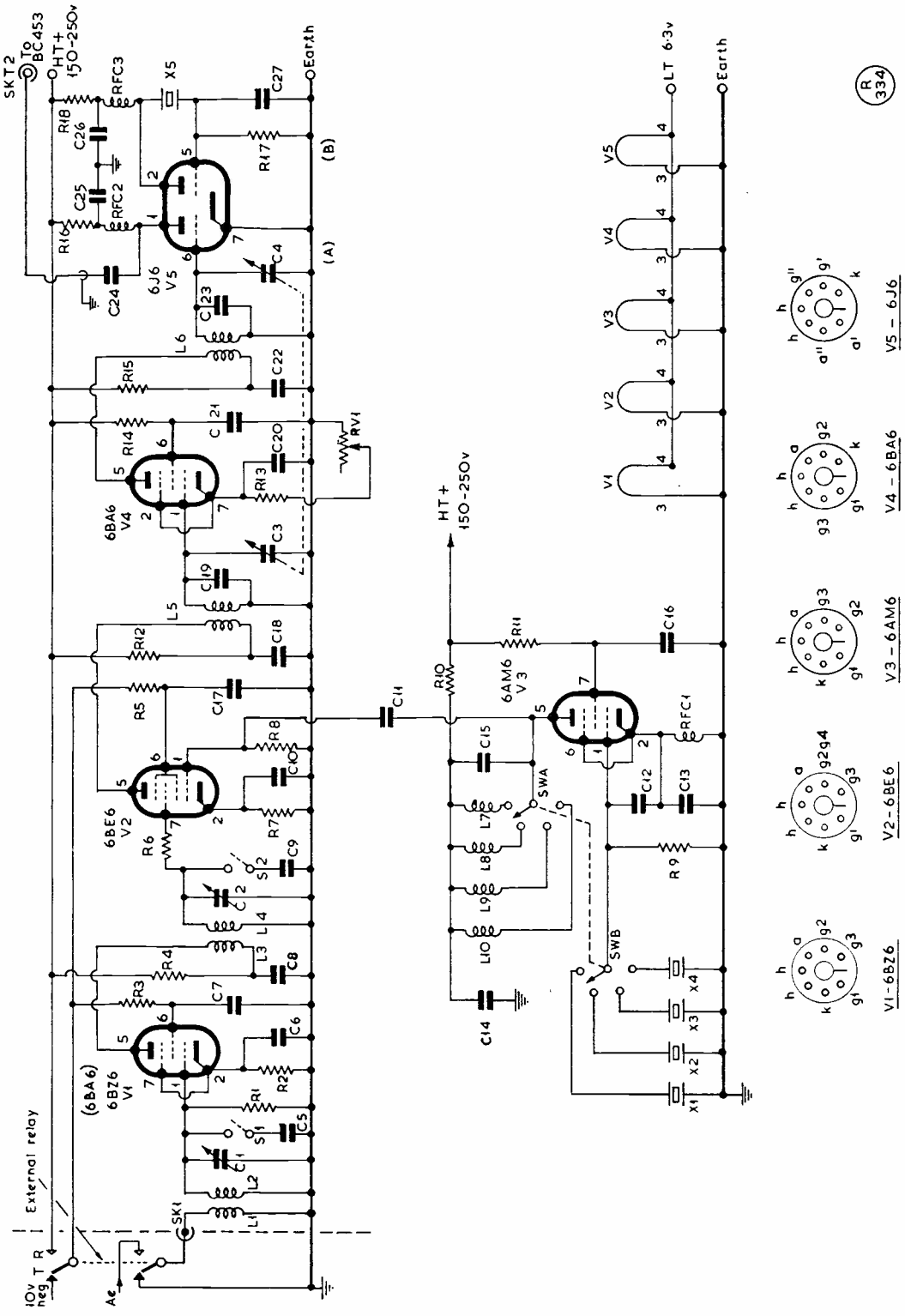


Fig. 1. Block diagram of the HF-band crystal controlled converter designed by G3NHL. To explain the conversion process (which is the same for all bands) the signal frequency is taken as 14 mc. By converting in two steps, the image ratio is kept very high.

Testing and Alignment

Check for HT to earth insulation, and that one side of the heater winding is earthed. Then switch on. Any HT between about 150 and 250 volts will do (the writer uses 215 volts). Check that V5B (oscillator section) is oscillat-


SKT2
To BC453
HT+ 150-250v
RFC3
X5
C27
Earth
R18
C26
R17
(B)
C25
RFC2
R16
6J6 V5
(A)
C4
C24
C23
L6
R15
C22
C21
R14
C20
RV1
R13
6BA6 V4
C3
C19
L5
R12
C18
R5
C17
C14
R10
R11
C16
6AM6 V3
HT+ 150-250v
R8
C10
C15
RFC1
6BE6 V2
R6
R7
C9
S2
C12
C13
SWA
L7
L8
L9
L10
R9
C2
L4
L3
C8
R4
R3
C7
C6
(6BA6)
6BZ6 V1
R2
R1
S1
C5
C1
L2
L1
SK1
External relay
10v neg
T R
Ac
SWB
C14
X4
X3
X2
X1
V1
V2
V3
V4
V5
LT 6·3v
Earth
R 334
V5 – 6J6
V4 – 6BA6
V3 – 6AM6
V2 – 6BE6
V1 – 6BZ6

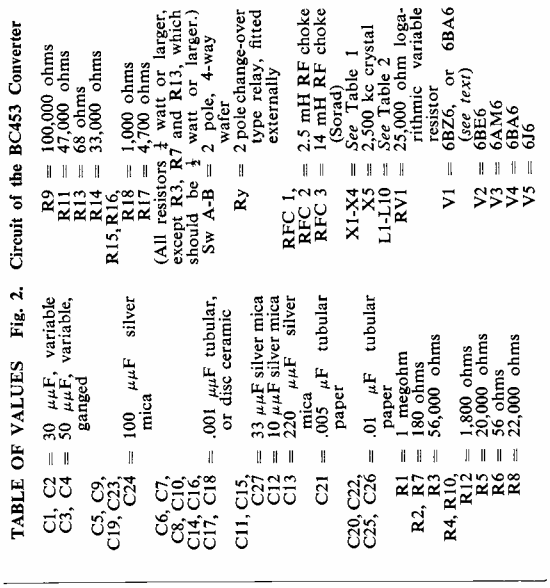


Fig. 2. Circuit complete for the CC HF-band converter. Plug-in coils are used in the first two stages. V1, V2, V3 can be regarded as an orthodox converter arrangement for feeding into an LF-coverage receiver (represented by V4, V5) except that here the conversion in V5 is crystal-controlled and tuning is done on a BC-453, which can be regarded as a tunable Q5'er.

ing by measuring the grid-to-earth voltage across the 4,700 ohm resistor R17 (about 20 volts). Tap an aerial on to pin 6 (grid) of V5A and if all is well trawler band signals will be heard on the BC-453. Then set the variable resistor RV1 at minimum resistance between the two terminals used, and check V4 by tapping the aerial on to pin 1 (grid) of the 6BA6. Adjust the cores of L5 and L6 for maximum output at mid-capacity on C3 and C4, while listening at 350 kc on the BC-453. Check that the tracking is reasonable by tuning to each end of the band. Next, connect a milliameter between the earthy end of R8 (6BE6 oscillator grid) and earth. Switch to each crystal in the oscillator (V3) and adjust the relevant coil in its anode circuit for exactly 0·5 mA on the milliameter. This should be easy to obtain even with the injection frequency three times the crystal frequency, but if any difficulty is experienced it is suggested that the effect of varying C12 and C11 be tried, and R11 could be reduced somewhat.

Muting

When transmitting, the screens of V1 and V2 are biased 10 volts negative with respect to earth, this allowing the receiver to be used as a monitor. This arrangement was found adequate with the 50-watt transmitter at G3NHL.

[over

TABLE I

Signal Frequency	1st Osc. Xtal Frequency	Injection Frequency	1st IF	BC-453 Frequency
7.0 mc 7.15	X1 4.3 mc	4.3 mc	2.7 mc 2.85 mc	0.2 mc 0.35 mc
14.0 mc 14.35	X2 5.65 mc	11.3 mc	2.7 mc 3.05 mc	0.2 mc 0.55 mc
21.1 mc 21.45	X3 9.2 mc	18.4 mc	2.7 mc 3.05 mc	0.2 mc 0.55 mc
28.2 mc 28.55	X4 8.5 mc	25.5 mc	2.7 mc 3.05 mc	0.2 mc 0.55 mc

Table 1. The frequency relationships for the converter. On all bands the crystal in the second conversion is 2.5 mc. A 6.133 mc crystal could be used instead of the 9.2 mc crystal at X3. Many other combinations are possible. See text for suggested alternatives.

TABLE II

RF and Mixer Coils

All coils wound on Denco ½ in. diameter 4-pin octal polystyrene formers

Coil	SWG (tinned copper wire)	Tuned Winding		Coupling Winding		Spacing between windings
		Turns	Length	Turns	Length	
7/14 mc RF	26	16	0.6 in.	4	0.16 in.	0.05 in.
7/14 mc Mixer	26	16	0.6 in.	5	0.16 in.	*nil*
21/28 mc RF	22	9	0.4 in.	3	(0.6 *dia. spacing*)	0.1 in.
21/28 mc Mixer	22	9	0.4 in.	4	(0.6 *dia. spacing*)	*nil*

First Oscillator Coils

All coils wound with 28 SWG enamelled (or cotton covered) wire on 0.415 in. diameter (Neosid) formers, with turns spaced or scrambled so that all coils take ¼ in. winding length.

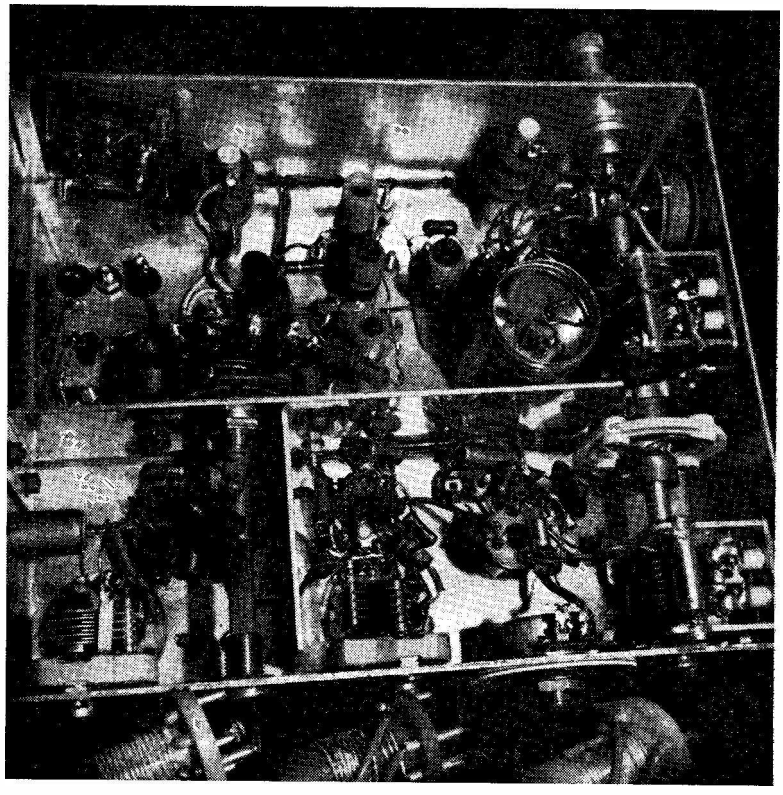
Coil	L7	L8	L9	L10
Frequency	4.3 mc	11.3 mc	18.4 mc	25.5 mc
Turns	40	17	9	6

Table 2. Coil data for the first conversion. Denco miniature dual-purpose types (Range 3, 1.67 — 5.3 mc, "Yellow") are used for L5 and L6. See text for winding tips.

Suggestions

Some comments on possible alterations to the design may be of interest, and are listed below:—

(1) Constructors starting from scratch may well prefer different crystal frequencies; for example a 3·3 mc crystal in the second conversion would give a first IF of 3·5-3·85 mc, so that 80-metre signals could be received by taking the aerial straight to pin 1 of V4. (This would, of course, mean altering the frequencies of the crystals associated with V1.) There is nothing critical about the choice of frequency for the first IF, and anywhere between about 1·5 and 4 mc would be satisfactory, provided that the chosen IF does not mean using crystals having harmonics which fall within the amateur bands (otherwise it may be difficult to receive anything on those frequencies!) Having decided on the first IF, the first conversion injection frequencies are found by subtracting the first IF channel from the frequency of the band to be covered. Note that only 350 kc of a band can be received with any one crystal in the first conversion oscillator. The ranges chosen suit G3NHL. But CW addicts, for example, may well prefer to bring down the 21 mc first conversion oscillator from 18·4 to 18·3 mc, so as to sacrifice the HF 100 kc of the band rather than the lower 100 kc. A 6·1 mc crystal would be ideal (with the same oscillator coil).



Under chassis view of the crystal-controlled converter. The RF stage is bottom left, first mixer bottom centre, with the first IF just beyond the coil at lower right. The 2nd mixer is top right and the 1st oscillator top left beyond the switch. The aerial socket is in the bottom left-hand corner, and the socket at top right takes the IF lead to the BC-453.

(2) By replacing the 2·5 mc crystal by 500 kc and with a separate multiplier between the oscillator and the mixer (switched for the 3rd, 4th, 5th, 6th, 7th, 8th, 9th and 10th harmonics) and by replacing C3 and C4 by a 300 $\mu\mu$F two-gang variable condenser, any frequency between 1·67 and 5·3 mc (the limits of L5 and L6 with a 300 $\mu\mu$F variable capacity) can be covered by the first IF. With some slight alterations to L1-L2, and L3-L4, and by increasing C1 and C2 to about 100 $\mu\mu$F, this would enable large slices of the HF spectrum to be received—with the same inherent stability as the BC-453 gives.

(3) Although the method recommended for 7 mc front end coils is entirely satisfactory (provided that you don't keep losing the stubs!) some constructors may prefer to wind larger coils to resonate with C1 and C2, or to make up a duplicate set of "14 mc" coils, but with 100 $\mu\mu$F condensers mounted on the coils, across the tuned windings.

Performance

The sensitivity seems to be very good, but no actual measurements have been made. The converter is certainly better in this respect than many "commercial set-ups" which the writer has heard. In spite of the number of stages before the "knot-hole," the big ones do not block the little ones and, for example, it is easy to copy stations with carriers separated by only about 2 kc, and with about 30-40 dB difference in signal strength, merely by tuning to the outside sidebands. This is thought to be due to the predominance of semi- and remote cut-

off valves in the design.

The image ratio is excellent, and there is no IF break-through at any detectable level. The remaining performance parameters are controlled by the BC-453 itself, as mentioned earlier.

REFERENCES

(1) Described in *QST*, Sept. 1959, together with a crystal controlled front end for the HF bands. The image ratios obtained were not really good enough.

(2) A single 6BE6 crystal controlled converter for 3·5 and 7 mc was described in *QST*, Oct. 1949.

(3) Couillard, "Factors Influencing SSB Receiver Design." *Proc. I.R.E.*, Dec. 1956, Volume 44(2).

(4) *Short Wave Magazine*, Aug. 1960.

(5) Welsby, *The Theory and Design of Inductance Coils.*

SIDEBAND FROM THE START

WHY SSB AT ALL?

By "VOX"

Though we had published occasional articles on Sideband long before that, it was not until the June 1956 issue of SHORT WAVE MAGAZINE *that "SSB Topics" was started as a regular feature—first with Ron Glaisher, G6LX, and then Jim Miller, W9NTV-DJ0BX, as its conductor. Between them, they made a very large and important contribution to the development of SSB in the amateur context. In their writings in the* MAGAZINE *during the three years to October, 1959, can be found most of the technical answers to Sideband working as we know it today. Since then, more practical articles on amateur Sideband have appeared and commercial SSB equipment for the amateur bands has become more readily available. Our present contributor—a very well-known AT station operator of many years' experience on the DX bands—takes up the subject again. He will offer a short series of practical articles designed to emphasise the importance, and the advantages, of Sideband working in the present-day amateur context.—Editor.*

EVERYONE using the amateur bands these days is conscious of an intruder breathing down his neck. Some regard it with suspicion, some with a sensation akin to fear, while some merely see in it the pattern of the future. This intruder, of course, is Sideband transmission—to some the symbol of the sect that cry "Abolish the Carrier," and to others little more than another objectionable form of QRM.

Face the facts! They are there for everyone to see and understand, and we will try to sort them out and present them in a palatable way, mostly with the newcomer in mind.

First of all, we boldly project the neck into the cruel world and state that Sideband is eventually going to sweep other methods of phone transmission off the bands—and good luck to it. Secondly, we state categorically that nothing but good can come of this eventual result, so you had all better get well-informed on Sideband matters right away. At present the ill-informed (and uninformed) are a pretty strong body, and their objections to SSB transmission are mostly based on ignorance or misunderstanding.

How AM Works

Strangely, but truly, there is nearly as much misapprehension about the way Amplitude Modulation works as there is about SSB! One still meets many people who honestly *do* think that the carrier-wave

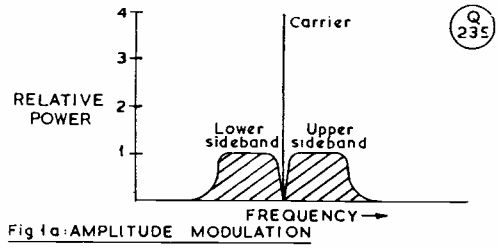


Fig 1a: AMPLITUDE MODULATION

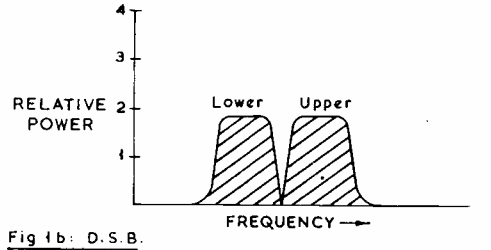


Fig 1b: D.S.B.

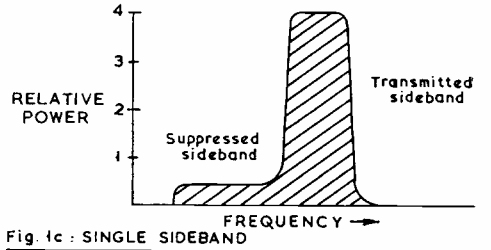


Fig. 1c: SINGLE SIDEBAND

Note: All diagrams drawn to same scale.

Comparing AM, DSB (carrier suppressed) and SSB under relative power conditions. From the transmitter end, about 6 dB more talk-power is obtained with SSB than from AM when similarly rated transmitters are used. As explained in the text, SSB has many other advantages as well.

of an AM transmission is constantly bobbing up and down in amplitude, in sympathy with the waveform of the audio supplied from the modulator. And they quote the classic " envelope " diagrams to prove their point. The fact is, of course, that if you looked at the central region of an AM transmission with a 'scope and a sufficiently selective receiver, you would soon prove to yourself that nothing of the kind is happening. The function of the audio, as applied to the PA through the modulator, is to beat with the carrier frequency and therefore to produce side frequencies (or sidebands) on either side of it.

Modulate a 150-watt carrier with 75 watts of pure tone. Put the carrier on 3800 kc and modulate it with a pure tone of 1 kc. Everything being technically perfect, the result of this would be that you are transmitting three separate signals — the original carrier, with its amplitude unchanged, on 3800 ; and smaller signals, also pure CW, on 3801 and 3799 kc. The original carrier is *not* bobbing up and down in amplitude at a frequency of 1 kc, so get rid of that misapprehension once and for all. But one of the functions of your receiver is to combine these three signals (or, at any rate, two of them) so that the beat between them produces the desired 1 kc tone in the headphones. The waveform after the detector *will* look like the classic " envelope " picture — but that is not at all what the carrier-wave itself looks like.

Having cleared this one, we can see that the only function served by the carrier-wave is to provide a signal that will beat with the " intelligence " (in this case our 1 kc tone) and make it possible for the receiver to re-create (resolve, detect or demodulate) that intelligence. The carrier-wave, therefore, does not " carry " anything ; that term is a relic from the old days when no one understood very clearly what it was all about.

Economy Measures

We are beginning to arrive at the fact that the carrier is an unnecessary encumbrance and an awful waste of power. Further proof? Read on.

Suppose, in the example we have just taken, that the only intelligence it was desired to transmit was this 1 kc note. In order to transmit it we have used a conventional AM transmitter and a conventional receiver, and there it is, reproduced just as sent. Now, any CW man could have told us that we were wasting time and power. You can transmit that vital 1 kc note merely by using an unmodulated transmitter putting out a continuous signal on 3800 kc, provided that you use a BFO at the receiving end. Set this BFO precisely 1 kc off the receiver's IF, tune in the signal accurately and there is your " intelligence." Instead of transmitting a so-called " carrier " and two sidebands, we have just transmitted a single signal (which we will no longer call a " carrier " since it manifestly has nothing to carry).

The important point to note in this little example is that the full power of the transmitter is now devoted to transmitting the actual *intelligence* to the receiver. The next step is purely one of imagination: Regard that transmission as if it were not an ordinary CW signal with the key held down, but the output of an SSB transmitter modulated by a 1 kc tone. (There is no difference, of course. The output of such a transmitter, running at 3800 kc and modulated by 1 kc, and transmitting the lower sideband only, would

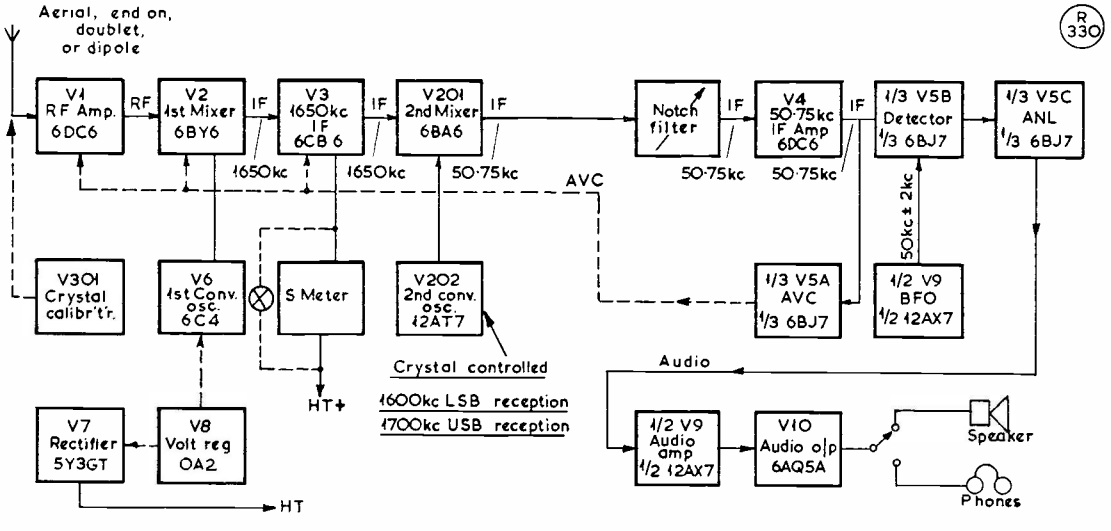
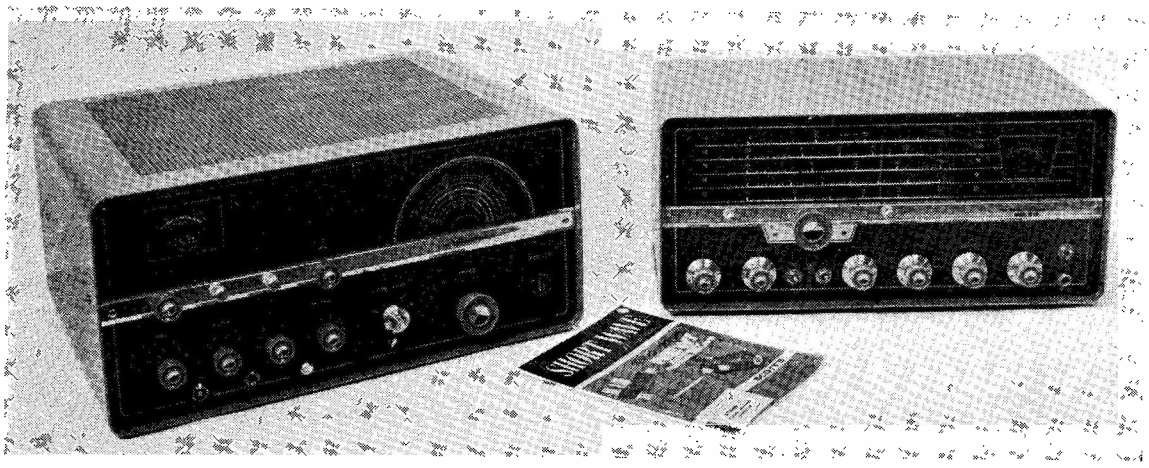


Fig. 1. Block schematic showing general arrangement of the SX-111 Receiver, which is a double-conversion superhet, with a crystal-controlled second oscillator giving a final IF of 50.75 kc. With a first IF of 1650 kc, and selectable oscillators of 1600 kc (LSB) and 1700 kc (USB), the 50.75 kc resultant is fed through a notch filter which moves the notch (maximum attenuation point) through the IF selectivity curve ; this enables maximum suppression of an interfering heterodyne to be obtained with minimum distortion of the desired signal ; the notch filter has a range of 4 kc across the IF selectivity curve. The crystal calibrator enables check points to be obtained at the band-edges and at each 100 kc mark on the tuning scale ; a small variable capacity adjusts the 1st oscillator frequency for exact scale reading. When listening to AM phone, either sideband can be selected, which considerably improves the apparent selectivity. The electrical design of the receiver, and the variables under panel control, make it particularly effective for CW working.



On the left is the Hallicrafters HT-37 SSB/CW Exciter-Transmitter, which gives a peak envelope power of up to 100w. on SSB and about the same output on CW. It can thus be used either as a self-contained transmitter or as an exciter (driver) unit for a high-power linear PA. On the right is the Hallicrafters SX-111 Receiver, which can be integrated with the HT-37 for change-over and Vox control. The SX-111 tunes the 10-80 metre amateur bands only and is designed for CW/AM/SSB reception, with sideband selection. The two units together constitute complete AT station equipment for 3.5-28 mc, working into a 50-ohm aerial line.

be identical with a CW signal on 3799 kc.)

Your receiver, by use of the BFO, converts this single sideband into an audio signal identical with the modulation being applied to the SSB transmitter. What was previously achieved by a "carrier-wave" and two sidebands has now been achieved by one single sideband, *into which all the transmitted power can be steered.*

In case there are those who still can't see that an SSB signal from a transmitter modulated by pure tone is purely and simply a CW signal, let it be pointed out that many sideband operators produce CW by keying an audio oscillator fed into their modulator, and *not* by inserting a carrier and then keying the PA or an earlier stage.

This makes it easy to take in the next step. Instead of feeding this oscillator into the modulator of the SSB transmitter, feed voice-frequencies from a microphone and speech amplifier. The sideband will now become a complex group of sidebands, their frequencies differing from that of the non-existent carrier by the instantaneous speech frequencies being transmitted. Deal with this suitably at the receiving end (by supplying a "carrier" by BFO or other means) and you will have your intelligence fully and faithfully reproduced.

In short — why use a large portion of your 150 watts in generating a "carrier-wave" that doesn't really carry anything, when the same object can be achieved at the receiver end with a very few milliwatts, or even microwatts?

If you are radiating 100 watts (which you should do with a 150-watt transmitter), which is better — to spend 66 watts on a carrier-wave and to split the remaining 34 watts between two sidebands, or to get virtually the whole 100 watts into one sideband? (The purists could pick holes in these actual figures, but this is addressed mostly to the novice and we want to keep it simple.)

Advantages

We are not going into circuitry in this first instalment. Sufficient to say that means are available whereby the carrier and one sideband are almost completely removed from the scene, and all the available power radiated in one sideband. The circuitry is not simple, but is logical, reliable and understandable by anyone who *wishes* to grasp it.

Right — you are now transmitting your intelligence with 100 watts behind it instead of 25 or less. Result, 6 dB gain at the receiving end. To this you can add roughly another 3 dB for the receiver itself, since it can be operated at half the band-width required for taking in both sidebands, as in the case of an AM signal. Advantage number one, then — 9 dB gain over an AM transmission. (This one produces interminable arguments, which we will deal with later — if we have to!)

Next, consider the modulation equipment in an AM transmitter. The anode voltage of the PA must be doubled on modulation peaks, if you are modulating it 100 per cent. All components (including, of course, the PA valve) must be chosen with this requirement in view. Modulation transformers are expensive, heavy and space-wasting. Power-packs are notorious hogs of power, transformer and rectifier efficiency being what they are.

Much of the most bulky and wasteful part of an AM transmitter can be dispensed with when we change to SSB. Modulation is carried out at a low level. Power requirements are modest, since there is no datum line on which severe peaks are superimposed (the "datum line" in this case is zero). The valves and power-pack are only being pushed during actual peaks of speech transmission. Advantage number two, then — considerable economy in valves, components and space. (For a given input the power-pack for a sideband transmitter will probably be less than half the size of that required for AM

equipment.)

No Phase Distortion

One of the irritations of AM phone working (particularly on DX) is phase distortion, or selective fading, which can render a transmission almost unintelligible under certain circumstances. These effects usually occur after dark, but can also happen over "awkward" skip distances at almost any time. They are due simply to the fact that every AM transmission consists of three separate signals — the carrier and the two groups of sidebands — all of which have to be received as sent out. If the carrier happens to arrive by more than one path (which often happens) the two received components may be shifting in relative phase and may easily cancel out at a given instant. This leaves the sidebands to fend for themselves at times, while at many other times the carrier is down in amplitude, which produces the effect of over-modulation. The nett result is severe distortion.

No such effect with our SSB transmission! At times when AM phone is almost impossible to copy at all, you will hear SSB, over a similar path, crisp and clear with even the fading hardly noticeable. Advantage number three — and a worthwhile one for phone operators busy on the DX bands.

TVI?

TVI troubles are minimised when a well-designed SSB transmitter is used — not so much because of the mode of transmission as because of the actual design of the transmitter. A hard-driven Class-C stage is the prime source of TVI owing to its inherent tendency to spit powerful harmonics in all directions. Likewise, the chain of frequency-multipliers so often used to drive it might almost be specially designed to produce harmonics — in fact, it *is*, for that's its job.

Table of Values

Fig. 2. Circuit of the Sideband Unit in the SX-111

C1	= 100 $\mu\mu$F	R4, R5, R6, R7,	
C2, C3,		R8	= 100,000 ohms
C4, C11	= .02 μF	R9	= 8,200 ohms
C5, C6	= 390 $\mu\mu$F	R10	= 5,000 ohms
C7	= 2.2 $\mu\mu$F	R11	= 1 megohm
C8, C9,		T1	= 1.6-1.7 mc xformer
C10	= .01 μF	T2, T3	= 50.75 kc IF xformer
C12	= 180 $\mu\mu$F	X1	= 1600 kc xtal
C13, C14	= .0075 μF	X2	= 1700 kc xtal
R1	= 2,200 ohms		
R2	= 120,000 ohms		
R3	= 22,000 ohms		

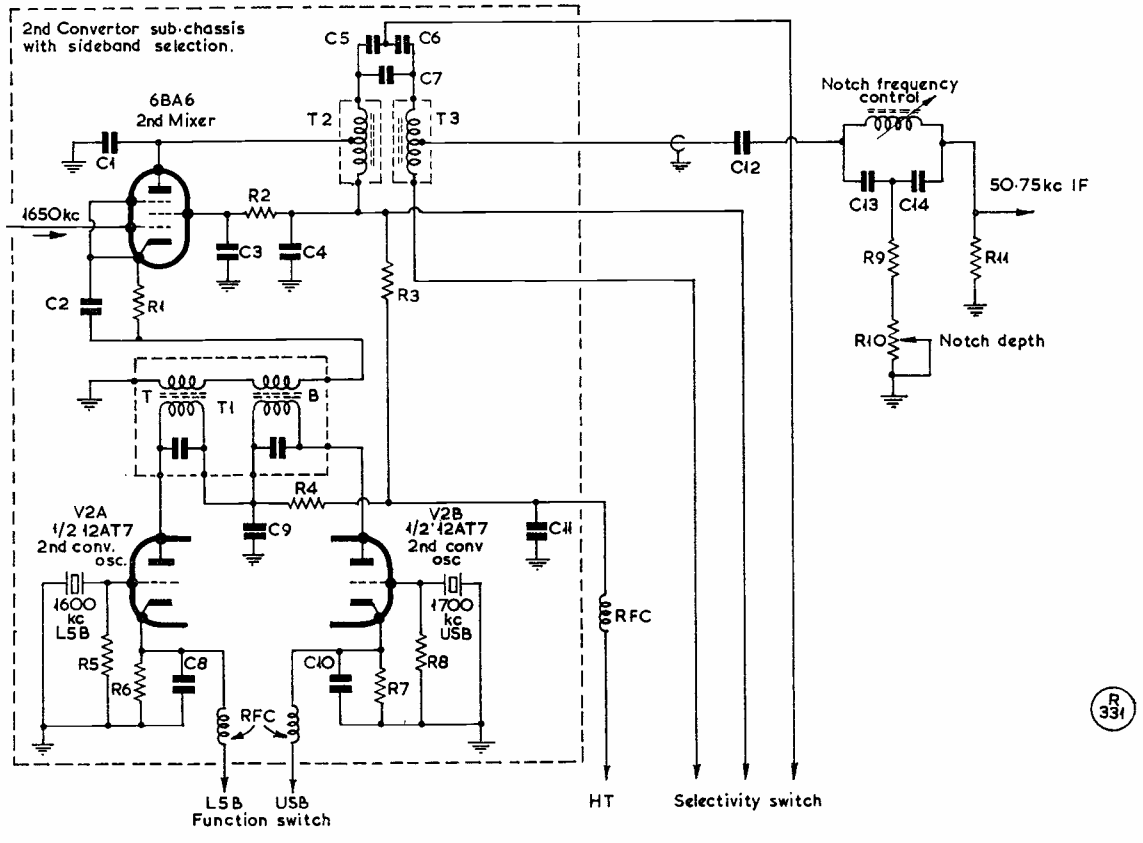
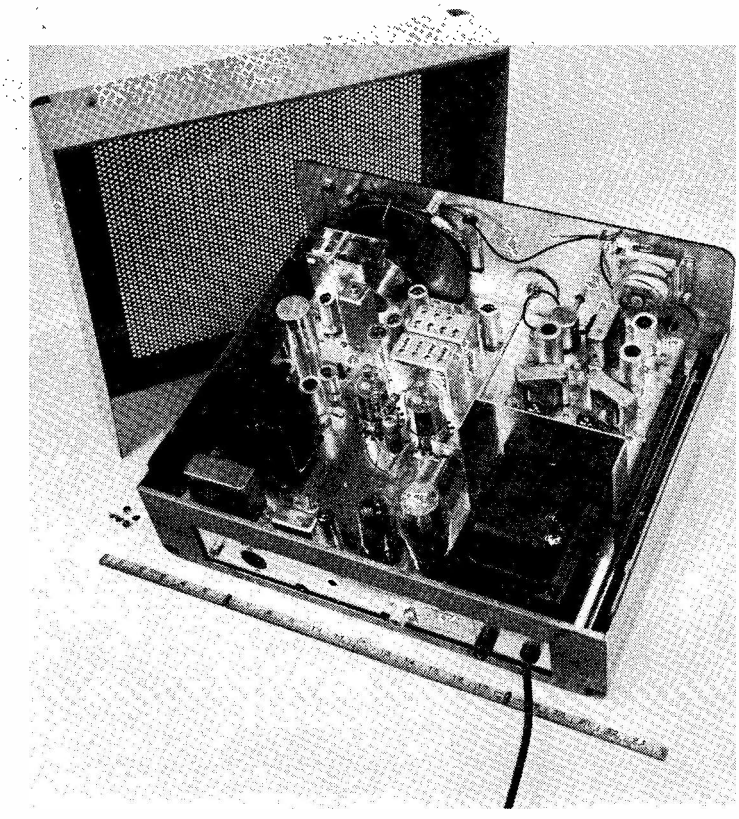


Fig. 2. Detailed circuit arrangement around the 2nd mixer and LSB/USB crystal-controlled oscillators in the Hallicrafters SX-111 — and see Fig. 1. All values are given in the table, but it should be noted that T1, T2, T3 are factory-made items. The selectivity positions are 0.5, 1, 2, 3 and 5 kc, the 2 kc or 3 kc settings being most suitable for SSB reception.

The sideband transmitter uses neither frequency-multipliers nor Class-C stages, since *linearity* is the prime requirement throughout. The VFO is made to beat with fixed-frequency oscillators in order to give the final output frequency; and the final stages are usually linear Class-B or AB2. From personal experience, the writer has found that a 150-watt sideband rig, *working on CW*, produces no interference on a TV set which is normally almost blown to bits by a well-known commercial AM transmitter with a high reputation for immunity from TVI. And this in a fringe area with a pretty weak signal on Channel 1.

Any TVI caused by a sideband rig is usually due to front-end saturation of the TV receiver, since the peak power radiated by the transmitter can be very high and *can* cause instantaneous "splashes" of great amplitude. This type of TVI can only be treated by fitting a high-pass filter to the TV set and, if necessary, screening the IF's. But it is far less difficult to deal with than the business of a harmonic on 42 mc which gets into the set along with the TV signal and cannot be separated out. Advantage number four—a reasonable chance of far less TVI trouble.



Inside the Hallicrafters HT-37 SSB/CW Transmitter, with the top cover removed. Two separate HT power supplies are incorporated, LV at 350v. and HV at 750v., with a —49v. bias rectifier for the PA, and 150v. stabilised for earlier stages. The parallel 6146's in the PA can be seen at centre, with the final tank tuning condenser just behind the HV rectifier. The tank circuit is designed for a 50-ohm output load, on all bands 10-80 metres. The transmitter inter-connects with the SX-111 to make a complete AT station assembly.

On the Bands

Now we come to the raging controversy of whether sideband signals cause less interference in the amateur bands than AM transmissions. Well, there's not the least doubt about it, really. Of course, they cause less QRM — if they are signals from well-designed and well-adjusted rigs. But *bad* SSB signals can cause just as much damage as *bad* AM signals, and it is not fair to compare a bad SSB with a good AM transmission. We have the impression that there are fewer bad SSB transmissions around than the many faulty AM efforts one hears, but never mind that one for the moment.

The main trouble, we are convinced, is lack of know-how at the receiving end. Many operators will always listen to AM phone with the front end of the receiver wide open, so as to make maximum use of the AVC, and with the selectivity control also as flat as possible, for intelligibility. Under these conditions, a sideband signal on a closely-adjacent channel may well cause "splatter" of some sort, since its high peaks will beat the receiver's AVC to it and will hit the thing at full gain. There's no carrier there to take hold of the AVC voltage!

When you hear what is apparently splatter from a nearby sideband signal, turn down the RF gain, increase the selectivity, and nine times out of ten you will find that it isn't there at all.

Incidentally, the sideband operator has to become accustomed to this technique of listening — RF gain well back, plenty of selectivity and no AVC, and, of course, the BFO *on*. Now, the interesting thing is that he will usually leave the receiver in this condition when listening to AM phone (yes — some SSB men still *do* listen to AM!), and he finds readability improved in consequence! Furthermore, the effects of phase distortion can almost be removed by this

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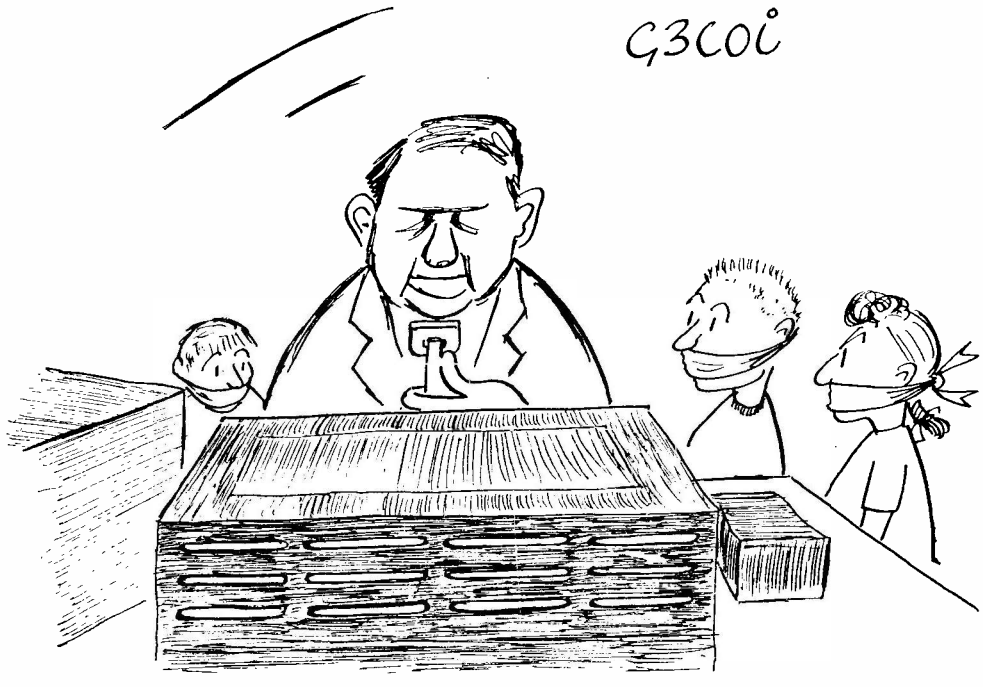
Correspondence from Sideband operators is welcomed for this feature, the next appearance of which is in the Feb., 1961, issue. The closing date is Dec. 31 and all mail should be addressed: "VOX," c/o The Editor, Short Wave Magazine, 55 Victoria Street, London, S.W.1.



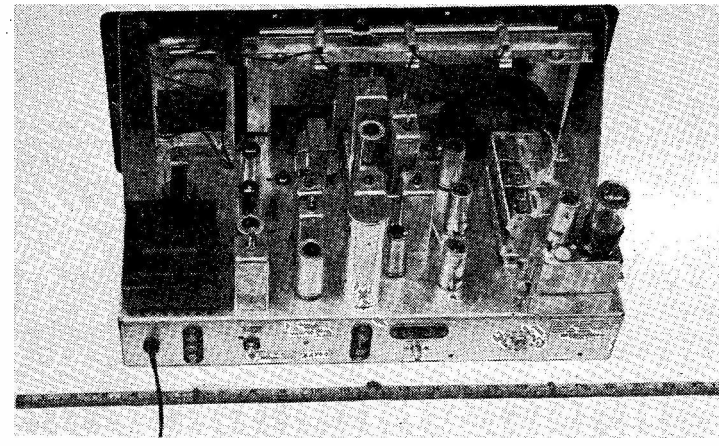
" . . . . . Yes, I've just fitted a VOX unit here . . . . . "

means — leave the BFO on, tune to zero-beat with the phone station's carrier, and listen on one sideband (which you can do on most modern receivers). If you have never tried this, a surprise awaits you.

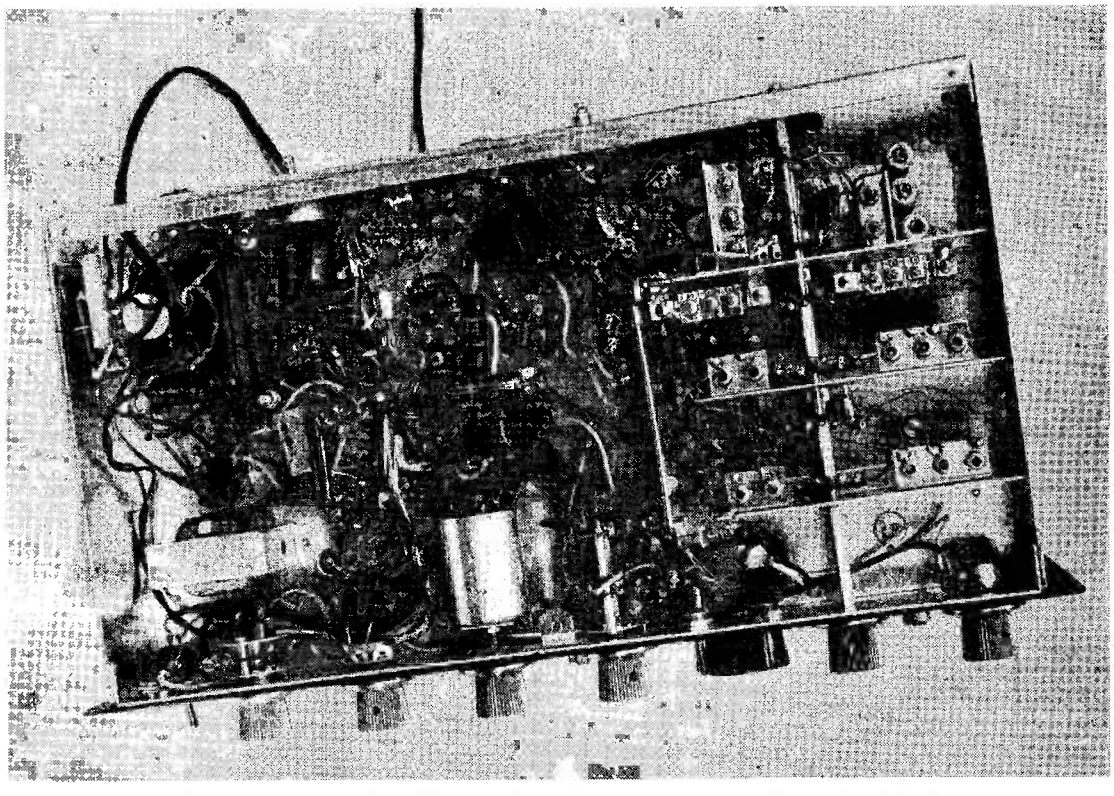
So the sideband transmission *must* cause less interference, simply because you can park ten or more of them alongside each other and there will be no whistles between the lot of them. When two AM phones overlap each other, you have to copy one of them through the steady heterodyne *and* the monkey-chatter. With sideband you have only the monkey-chatter to contend with, and it's pretty easy to sort out intelligible speech from monkey-chatter—the human ear is highly adaptable to this sort of thing.

If you still need convincing, listen to the sideband stations between 14300 and 14350 kc at a busy time of day; spend twenty minutes or half an hour with them. Then move down the band and sort out the phone in the " squeaks - and - whistles " region, and see how you like it. We will say no more — try it yourself.

New sideband operators, particularly if they have built their own gear, will sometimes start up with a bad transmission due to excessive audio, insufficient carrier suppression and also poor suppression of the



The Hallicrafters SX-111 receiver withdrawn from its cabinet, showing general layout above-chassis seen from the rear.



Under-chassis view of the SX-111. The switched coil pack is at right centre, and the tubular item on the third panel-control knob from the left is the notch filter assembly, shown in the circuit of Fig. 2.

unwanted sideband. Under these conditions, their transmission will leave something to be desired, and can cause some interference to adjacent channels. The habitual operators on the band are not slow to tell them so! On the very morning of writing this we listened to an HB9 patiently explaining to a UP2 that he must turn his audio gain down — and down — and still more down. The UP2 was left with an almost perfect transmission — and one of far greater readability than he achieved by trying to screw things up too far. This, up to now, is a splendid characteristic of the sideband fraternity — they do tend to be perfectionists and they will not tolerate nasty transmissions in their midst.

Disadvantages

We have to be fair, of course, and we are prepared to fall over backwards to find and state the disadvantages of SSB as a mode of operation. (Though they may be classified as disadvantages, there will be many who won't agree that they are anything of the sort.)

The first is the relative complexity of the gear, as far as circuitry goes. The removal of the carrier and the unwanted sideband involves very good filtering, unless you use the phasing method, which also has its difficulties.

Transmitter stability must be good — not necessarily better than that of a really *good* AM or CW transmitter, but certainly better than the average. The power supplies must be "hard" as regards regulation and stability.

At the receiving end the technique may be a little difficult at first; and if you haven't a really good receiver, then you will have to build or buy one, or carry out fairly extensive mods. on the one you've got.

In short, to be a successful sideband operator one can probably say with fairness that your standard of technical know-how has got to be somewhat higher than the average.

We quote these as disadvantages, but surely this is nonsense — aren't they really *advantages?* To have stability and good regulation forced upon you — well, you should really have had them all the time, whatever mode you have been using! At the receiving end, if it takes SSB to show you that your receiver wasn't all that hot—surely that is something to be grateful for? And to be forced to read up the subject may bring you in contact with some fundamental truths that you were not sufficiently familiar with in the first place.

And now we present a puzzle: Several DX enthusiasts have asked, from time to time, how it is that DX sideband stations seem to put in an even

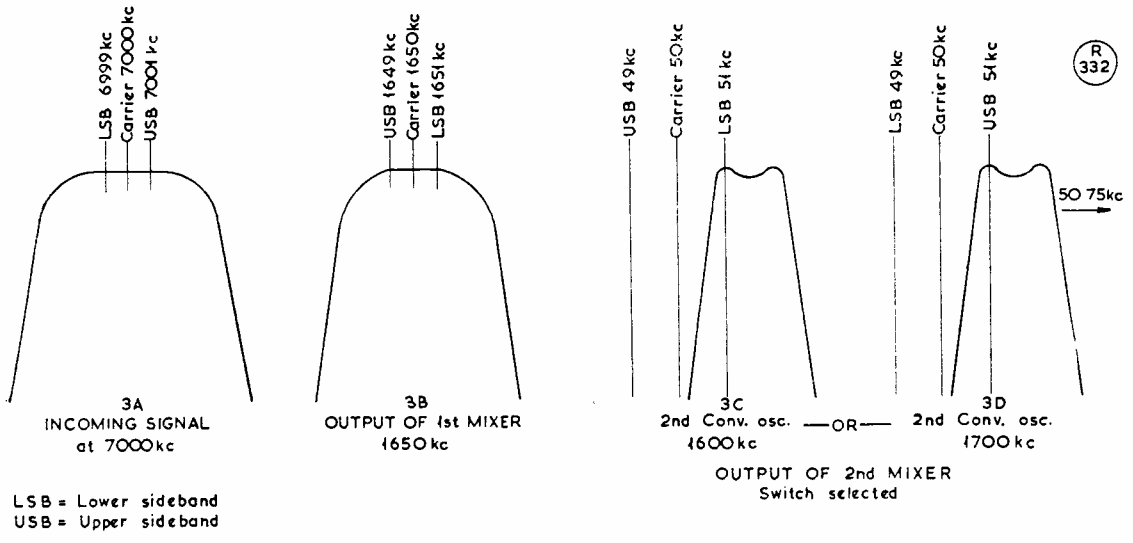


Fig. 3. Derivation of the upper (or lower) sideband in the SX-111, with a signal incoming at 7000 kc taken as the example. This diagram should be read with Figs. 1 and 2, Figs. 3C and 3D above corresponding to V2A and V2B in Fig. 2.

stronger signal than CW stations from the same part of the world, although they are certainly not using more power, and probably less. The only answer we can think of (and we hope it is the right one) is that the average sideband man will take a little more trouble over his whole station, and will probably have a properly-loaded transmitter, a properly-matched aerial system, and so on. Many of the keen CW men of many years ago can now be found on the SSB sections of the bands, and *they* are the ones whose signals are out-pointing the newer CW stations — and some of the established phone-only SSB types, too. This is not a general rule, of course, and there *are* plenty of weak sideband signals to be heard when their CW counterparts are coming in more strongly. However, it's more often the other way round.

Summary

Summing up the contents of this little lecture, then, we had better state briefly the advantages and disadvantages of an SSB conversion at your station. In its favour are the following factors:

(a) Up to 9 dB gain over AM—say two S-points—with same power,
(b) Equipment is less bulky and uses less mains power,
(c) No phase-distortion or selective fading,
(d) Less TVI trouble,
(e) Abolition of carrier-wave heterodyne interference.

Against it, if you like to consider these points as disadvantages:

(1) Increased complexity and expense of gear,
(2) Increased difficulty of operation, in the early stages,
(3) Necessity for better receivers,
(4) Rather more technical know-how necessary, or desirable.

Sort these points out for yourself and decide whether the whole business is a fad or a reality; and then, whatever your own decision, ask yourself whether you really believe that sideband is going to advance or retreat. There's not much doubt about the answer to *that* one. Sideband is a mode we are all going to have to live with, and those that get in early are going to be those who have most of the fun. Make up your mind whether your motto is going to be "Help stamp out Carriers."

(To be continued)

MORE AMATEUR EXAMINATION NEWS

It is stated by the G.P.O. that for the Radio Amateur's Examination held by them in October, 274 candidates sat, of whom 182 passed; this gives a pass-rate of 66%, which is a good deal better than that for the R.A.E. in May last, reported on pp.492-493 of the November issue of SHORT WAVE MAGAZINE. On the results of this year's two amateur examinations, the total of U.K. candidates becoming eligible for an amateur transmitting licence is 881; taking in the overseas candidates who also passed our R.A.E. makes the grand total 917—by far the highest in any year since these examinations were started.

For most of them, the next hurdle is the G.P.O. Morse Test. The Post Office announces that Tests will be held during January at Birmingham, Cambridge, Derby, Leeds and Manchester (and possibly at some other main centres if the demand warrants it). To take the Morse Test at the centre nearest to you, apply *immediately* to the Radio Services Dept. (Radio Branch), G.P.O. Headquarters, St. Martin's-le-Grand, London, E.C.1. The form you will receive should be completed and returned to them by ***December 20.***

Key-Controlled Change-Over

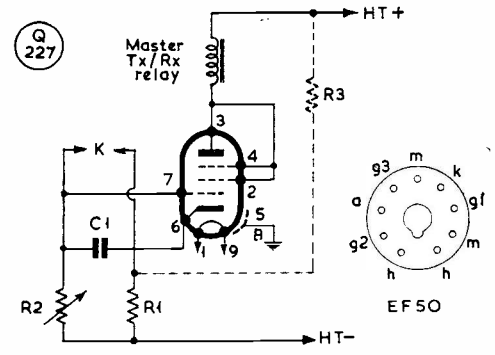
FOR SNAPPY CW OPERATING

ONE of the essentials to snappy operating is the ability to change from "transmit" to "receive," and *vice versa,* very rapidly and with a minimum of effort. In some cases as many as five or six switching operations have to be performed at each change-over, these including Tx HT supply, aerial from Tx to Rx, phones from Rx to monitor, muting receiver, and so on. Though the operator may acquire sufficient manual dexterity to perform these functions very rapidly, how much better to have everything on one switch.

It was decided that the requirement was for an electronic system which would close a master relay instantaneously when the Morse key was first operated, but only release it after a certain delay at the end of keying. It was essential that the duration of this delay should be capable of being varied by a one-knob control mounted on the key, thus catering for differing operating speeds. In a word, the relay system had to hold on during keying, releasing in a given time after key-up.

How It Works

The circuit finally adopted is shown in the diagram. It will be seen that this consists of a triode valve (or pentode strapped as a triode), having the master relay in its anode circuit and a fixed bias resistance. The contacts "K" are carried on the keying relay, or the key, and close when the key is depressed. The master relay is connected so that "receive" conditions apply when the relay is not energised. When the contacts "K" are closed by depressing the Morse key, the grid and cathode of the valve are connected together and, resulting from the zero bias on the valve, a rise of anode current occurs, thus closing the relay. The maximum value of the anode current is limited by the cathode resistance R1, which under these conditions is acting as a simple series limiting resistance. When the key is released the grid of the valve is disconnected from cathode and connected to the bottom of the bias resistance through R2, *i.e.,* negative bias is applied. The anode current does not fall



With this circuit, change-over from send to receive is controlled directly from the key, with a hold-on period which is variable by R2 — see text. Values are: C1, 0.5 μF, R1, 5,000 ohms; R2, 1 megohm; R3, see text. The valve can be an EF50.

immediately since the condenser C1 has to charge up to the value of the bias through the resistance R2—hence hold-on is obtained. If correct values are chosen for C1 and R2, the relay will not fall out during the intervals between letters and words. As previously explained, to provide for different keying speeds this delay must be variable. In the unit as tested a condenser of 0·5 μF is used with a 1 megohm variable resistance; this allows anything between instantaneous operation and about 3 seconds delay, sufficient for normal working.

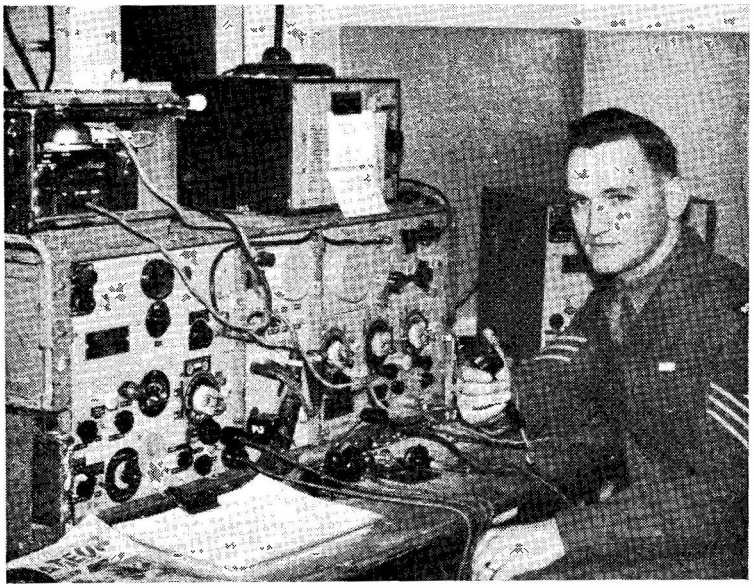
The circuit values shown are used with a relay having a resistance of 5,000 ohms, which closes at 5 milliamperes and opens at 1 milliampere. Any valve which will pass sufficient current to close the relay is satisfactory. The cathode resistance is chosen, as explained, such as to limit the anode current necessary to that required to ensure positive closing of the relay.

It may be found that with certain combinations of relays and valves, the relay does not fall out readily after the delay time has elapsed. The reason for this is that the anode current of the valve clearly cannot fall to zero, since if it did there would be no voltage drop across the bias resistance to provide bias. In such a case a resistance R3 should be connected between HT positive and cathode as shown dotted in the diagram. This should have the highest value that permits satisfactory operation; it is not critical and about 200K ohms is suitable.

The use of such a device will enhance the pleasure of CW operating, and in practice one soon learns to set the variable delay to a value most suited to the speed of transmission, with the whole station changing over on the key.

DX COMMENTARY

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



DL2BC

ONE of our regular readers recently took us to task for the opening words of this Commentary. "How is it," he wrote, "that you invariably describe conditions as being good, or interesting, or up to standard, when I have been looking on them as bad, shocking, or just plain lousy? Have you got a wonderful receiver, an incredibly good location, or what?"

Answering the last part first—No, we have *not*. The receiver at the moment is a veteran HRO, hardly modified except for the first RF stage; and the location, though admittedly nice and quiet, is down in a saucer-shaped hollow surrounded by exceedingly wet and dripping trees. The aerial farm consists of three "pieces of wire" running in different directions. (The 100-ft. tower with a full-sized six-element beam for Twenty is just a dream from which we occasionally come back to stern reality with a bump.)

The answer to the main question is that one takes conditions as being relative to the time of year, the state of the sunspot cycle, the previous month and many other variables. If you can work, or even hear a goodly assortment of DX, then you can't say that conditions are really bad. Furthermore, the receiver, location and aerial system have little to do with it, since one gets used to living with them and judges conditions by the ups and downs, not by the absolute state of the bands at any one time.

Surely someone with such a hopeless combination of gear that he rarely heard anything further than Germany would say conditions were good if he could receive a UB5? And, at the other end, anyone accustomed to working a rarish piece of Pacific DX about once a week would think the band good if he raised three VR3's in one morning? And when we speak for the combined comments of our readers and state that DX has been pretty good, we mean that at least the bands haven't been blacked out for more than a handful of days during the month, and that most of the 'chasers have been working *something* of interest.

And that's how it has been this month, once more. Something for everyone, but nothing spectacular. Anyone with the time to spare could undoubtedly have made a WAC on most days of the month, but he would have had to choose his times (and he need not have moved off 14 mc to do it). But the 290-plus types, of whom there are not many, would not have been terribly pleased, because nothing in the way of ZD5's, VS8's or 9X7's showed up to give *them* a new one—and start a new QSL headache going.

Twenty and *Fifteen* have been the happy hunting grounds, with the best all-round period falling between 1700 and 2100 on *Twenty*. Early mornings—quite interesting on occasions, but on the whole disappointing. Top Band is coming to life again for the usual medium DX and GDX. *Forty* has been all right for those who can take it, and their numbers become fewer and fewer.

And, with that brief summary, on to the DX . . .

CALLS HEARD, WORKED and QSL'd

DX Gossip

The W4BPD DX-pedition went off with a bang from the Seychelles, whence VQ9A snappily handed out a new one to many; but when they left for Agalega and Aldabra things started to go wrong. They struck rough weather,

and the rumour went round that their ship couldn't take it. Rumour also had it that everyone was mighty sick except Gus, W4BPD himself. Whatever happened, though, the VQ7 effort had to be dropped.

Another message says that DL9KRA was planning a VQ7 and FF7 expedition around mid-November . . . DL7AH and DJ2KS were proposing to operate from LX-land during the CW leg of the *CQ* DX Contest . . . DL7AH and DL9PF have a sortie to *Corsica* in mind for some time in the New Year.

Marcus Island has been in and out of the news for a long time; now it is said that five KA operators plan to work thence for about ten days early in December—CW on 14040, 21040, 28040 kc and SSB on 14305, 21405 and 28605 kc. *Christmas Island*, represented by VR3L, had a nice burst of activity during November; the operator was a W, who has now left, but the G boys are still there, it seems.

W3ZA thinks of a trip to FL8 around December 7 or thereabouts . . . MP4BDA, after showing up from lots of G stations and also from EI, should have had a burst of SSB operation from DJØ and ZB2 by the time you read this . . . AC5PN came up on 14 mc in late October, but disappeared pretty quickly.

ZD2PJB turned up on SSB, mid-November, for five days of activity (the first on that mode from ZD2); he will be absent for about two months, after which another five days' *blitz* is promised . . . ZL4JF has now left Campbell Island for good; his replacement is "not interested."

VS6BJ went QRT on October 1, and may be on by now as G3KVU. Anyone short of a VS6BJ card can get in touch with him at 40 Kenilworth Avenue, South Harrow, Middx. . . . G3MIU (Keston, Kent) was due to leave for Papua at the end of November, hoping to be on as VK9PJ during December or early January; he will be there until April and promises all-band operation, phone only, listening for G's during "U.K. daylight hours."

Laccadive Islands. — VU2NR plans a trip in January, operating CW and SSB with the call VU2NRM. 9N1GW's proposed expedition to AC4 and AC5 is said to be off . . . W1TYQ, who operated HV1CN some time back, promises a tour of the Middle East, most likely with a KWM-1.

Up in the Frozen North, both LA1LG/P and LA1NG/P are in full swing from Jan Mayen, CW and SSB. LA8YB/P is said to be there, too; Spitzbergen will be represented by LA2DR/P and Bear Island by LA1BF/P.

Sao Thomé, CR5, appears to be off the air completely now, the CR5MA expedition having moved out; rumour has it that the other CR5's on the island have been closed. Likewise XW8, *Laos*, has been shut down for political reasons.

EP5OK has been allocated to SM5OK, who will have a KWM-1 and may be on SSB only . . . VP2SL is on the same mode, but his DX-pedition to Anguilla (VPØ) has been postponed for several months . . . ZL2GX says that a friend of his will be off to the *Kermadec Islands* (wait for it!) at the end of 1961 or early 1962.

Pitcairn: VR6AC won the main prize at the ARRL Pacific Convention. It happened to be a Hallicrafters HT-137 transmitter! SSB from VR6 is now rather more than a distant possibility.

Gus, W4BPD, eventually showed up from *Zanzibar*, signing VQ1A . . . YN1TAT and others were due to operate HKØHCA, San Andres Island, around November 19-26 . . . ZL3VH likewise proposed to stir up activity from Chatham Island, November 14-25.

FIVE BAND DX TABLE

Station	Points	3.5 mc	7 mc	14 mc	21 mc	28 mc	DXCC
G3FXB	860	77	137	232	242	172	276
G2DC	859	90	124	256	220	169	280
G3FPQ	828	74	120	232	237	165	266
G5BZ	799	66	121	274	206	132	283
G3DO	703	25	51	253	193	181	282
GW3AHN	691	16	55	213	257	150	272
GI3IVJ	686	42	70	202	203	169	243
G3BHW	663	15	45	211	223	169	255
G3ABG	610	57	93	191	141	128	215
GI3NPP	579	29	64	163	193	130	221
W6AM	572	40	68	302	96	67	302
G3LET	558	41	128	197	137	55	217
G2YS	542	73	93	171	120	84	190
UR2BU	541	26	61	162	163	129	201
G6VC	502	41	62	167	140	92	197
G3IGW	493	51	83	118	123	128	176
UR2BU (Phone)	442	12	35	124	148	123	178
W6AM (Phone)	434	23	62	289	49	31	289
G3KMA	434	40	83	133	107	71	169
GM2DBX (Phone)	433	34	31	162	105	101	178
MP4BBW (Phone)	424	1	5	203	135	80	217
G3DQO	408	25	54	183	105	41	192
G3LHJ	403	19	40	117	149	78	183
G3NOF (Phone)	392	10	18	92	147	125	184
GB2SM	387	28	38	94	112	115	186
G8DI	365	39	69	111	80	66	140
G8VG	360	37	79	137	64	43	160
G3JUL	357	27	67	87	82	94	144
G2BLA	352	38	67	81	87	79	133
G3DNR	333	11	33	94	110	85	141
G3LKJ	320	8	20	50	118	124	158
G3WP	305	17	34	107	35	112	159
G3BHJ	304	8	29	47	145	75	168
G3GHE (Phone)	301	13	29	45	128	86	160
G2DHV	291	22	30	127	69	38	162
G2CWL	280	22	29	80	118	31	158
W3HQO	263	4	9	92	121	37	202
G3JVU	262	27	44	96	50	45	116
G3NWT (Phone)	250	8	12	8	137	85	164
G3NAC	248	17	39	70	85	37	117
G4JA	244	36	52	83	56	17	127
G3JFF	238	20	57	109	43	9	116
G3NFV	236	12	25	28	80	91	134
G3JJZ	197	26	43	89	30	9	110
G3LZF	182	11	20	54	48	49	118
G3IDG	179	15	20	45	52	47	82
GM3DNF	118	12	25	29	34	18	57

(Last appearance of this Table for the time being — see comments in text.)

Danny Weil, after some very concentrated operation from HC8VB, was due to open from Clipperton Island as FO8AN, mid-November onwards . . . HS1E, now back in the States, hopes to be on with higher power on his return, possibly for another four years . . . UP2CG puts a new country on SSB and is pretty active on 14 mc.

HM1AA and 1AB are brothers, both active on 21 mc phone. *HM* is the new prefix for Korean *nationals*, only U.S.A. personnel signing with the old HL9 prefix. SWL C. N. Rafarel reports HM9AA (Cheju Is.) on 21 mc phone; also FQ8HL (Tchad), FF7AG (Mauritania), FF4AA and 4AF (Ivory Coast); he says Katanga is reported to be using 7Q5 unofficially, but others mention them as 9Q7!

SSB activity now reported from VS1HS, 1JO, 1JV, 1KD, VS6AE and 9M2DB . . . GW3ITD/MM (H.M.S. *Puma*) will be leaving Cape Town for home before you read these words, arriving at Plymouth around December 19, when the /MM station will be dismantled. Meanwhile, keep a lookout on 28·4 mc.

TOP BAND COUNTIES LADDER

(Starting Jan. 1, 1952)

Station	Confirmed	Worked
G2NJ	98	98
G3JEQ	97	97
G6VC	96	96
G3APA	85	90
G3ABG	81	82
G3NFV	75	78
G3JVL	73	83
G3LHJ	71	77
G3FS (Phone)	69	72
GM2HIK	67	74
G3MXJ	67	74
G2DF	67	73
G3NTI	66	68
G3NNO	65	82
G3OCA	65	69
G3NVO	62	76
G3NBT (Phone)	61	64
G8VG	59	67
G3OAG	56	62
G3NJQ	53	54
G3NNF	52	56
G3JFF	47	59
G3NMZ (Phone)	45	55
G3LZF	34	56
G3NAA (Phone)	34	54
G3NNO (Phone)	32	52
G3NXQ	27	43
G3MXJ (Phone)	25	43
G3NOW (Phone)	23	36
G3ABG (Phone)	17	33
G3NPB (Phone)	14	35

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

Countries and Suchlike

Sundry ins-and-outs concerning the pecular *mystique* of DXCC are reported. Outs *(not* new countries) include HKØ, IC1 and Wrangel Island; Ins (new ones) are CR6CA/EAØ (Annobon); CR5CA/CR5 (Ajuda); ZD2, British Cameroons (now separate from Nigeria); and *Rockall* (!)—if and when. Others reported to be under discussion are VR1 (Funafuti); UA2KAA (Kaliningrad, formerly East Prussia); and KG6 (Rota Island, Marianas). Then, of course, there are all those FF4, FF7, FF8 and FQ8 stations, which have to be sorted out after you've worked them, for their actual calls mean little as regards what countries they may represent.

The DXCC and country-counting (not to mention "country-creating") business has become so complex and so many readers of this piece are cynical about the whole situation that we are going to switch the accent to *prefixes* and *WPX* for the next twelve months, hoping that things may straighten out a little. In bygone years we have occasionally dropped the "Five-Band DX Table" out of the picture for a while, and that is what is proposed for 1961. It has had a very good run; it is not being scrapped—just rusticated for a period to be decided.

New 1961 Ladder

In its place we will run a competitive Ladder based on *Prefixes Worked*, with *Zones Worked* in a different column. The original WPX scheme is run and was conceived by *CQ Magazine*, and verification by QSL is required by them.

Ours, therefore, will *not* be an official WPX list, and will not start from any particular date (except that on which your licence was granted, if you are a Post-War amateur!) Old Timers, please note, however, that we cannot include *pre-war* prefixes, since many of you could come out with a completely different set of them!

The form, then, is this: Three columns, for *(a)* Your call-sign, *(b)* No. of Prefixes Worked, and *(c)* No. of Zones Worked. Two complete ladders, one for CW Only, and the other for Phone Only. Starting date for the ladder, January 1961 issue, so let us have your first lists in next month's mail.

Prefixes: the rules are simple. The letters *and* the figure count, so LA1, LA2, LA3 and so on all count one point. Suffixes count as prefixes; thus VE5QG/SU counts simply as SU; W2XYZ/3 counts as W3; all /MM's count once as /MM; but /A, /P and /M suffixes have *no* significance and only the prefix counts in such cases.

Arguments about Country Status will be suspended for twelve months, after which we shall probably restore the Five-Band Table in its present form — unless some better idea emerges during 1961.

The final placings in the 1960 WPX Marathon will not, of course, be known until the February issue, since scores can be added right up to December 31 and will therefore be too late for the January ladder.

Non-Cubical Quads

Think this one over during 1961, and let us know your opinion . . . VK6AJ (Perth) draws attention to the idea, now being bandied about by some of the leading DX'chasers in the world, of dividing the Globe into "quads," each 10 deg. by 10 deg., and instituting a system based on "Worked All Quads." There would be 1296 of them, and the working of them all would be a lifetime's job. The disadvantage of most of the present competitive

yardsticks is that someone can eventually get to the top and stick there ; no one would ever do that with "WAQ," if only because many of the 10-degree squares would be in sea areas, unworkable until a /MM happened to sail through—when you were on! All you need is a Mercator map of the world and a pencil, and you can mark off all the 10-by-10 degree areas for yourself. A good atlas would settle the exact lat./long. of any particular station, and there would be no argument about country status or prefix. Opinions on this one, please. We have not yet had time to do any detailed research on it ourselves, but at first blush it looks a Good Idea.

G3MQH, Rochdale, was first licensed in May, 1958, and operates from a two-room wooden shack he built himself — one half as a workshop and the other for the station. The transmitter is a Geloso VFO into an 807 buffer driving a pair of QV06/20's in parallel, running 100w. on phone, modulation being by KT88's in Class-AB2 ; the receiver is an HRO with a Geloso converter, and the aerial a 20-metre Cubical Quad 40 ft. high, also home-built, complete with rotator and bearing indicator.

African Sort-Out

W6NTR (Van Nuys) supplies the following useful gen. on the current position in Africa. The *Congo Republic* is the home of most of the former FQ8's, most of them in Brazzaville. FQ8AG, 8AQ and 8HP are on 14 mc CW ; FQ8AJ and 8HP on 21 mc CW ; FQ8HF on 14 mc phone ; FQ8AE on 21 mc phone ; and FQ8AG on 28 mc phone. *Central African Republic*—only FQ8HT, 21 mc phone around 2000 GMT. *Republic of Chad*—FQ8HO and 8HW, both 14 mc CW.

Mali Federation has now split into *Senegal* and *French Soudan ;* no activity in the latter, but *Senegal* represented by FF8CK, 21 mc phone. Then there's *Mauritania,* with FF7AB on 21 and 28 mc phone, and FF7AG on 14 and 21 mc CW, also 21 mc phone.

So much for the French ones. *Ruanda Urundi,* formerly OQØ and now 9U5, has seen plenty of phone activity ; now 9U5MC has appeared on 14 mc CW and says he will be on regularly. And, apart from all the above, G6QB and others worked 9Q7ZZ on 21 mc CW ; he claims to be in *Katanga.*

More Strays

HC7FZ is an interesting one for WPX — he is a missionary pilot "in the jungles of Ecuador" — and is the only one of the five HC7's who works CW . . . KØSLD/KW6 and KØTFP/KW6 are due to receive a proper KW6 call and a four-el. beam, and will be firing towards Europe whenever conditions favour it. They have already worked plenty of Europeans, and will QSL *via* bureaux, or direct if s.a.e., coupons or postage are sent. (Thanks to G3GJW.)

Top Band Topics

First the real DX stuff, from W1BB. DL1FF and many other DL's will be on this winter with their special licences, between 1825 and 1835 kc. DL1FF, already famed for his big signal in the U.S.A., hopes to be using a 120-ft. vertical this winter.

Signals from the States were being heard over here in August and September by SWL N. C. Smith, G2BB and G3ERN. W's mentioned were W1AW, 1EFN, 2TR and 3RGQ. W1IGU has been experimenting with a mammoth aerial supported by kites—580 ft. per leg, fed in the centre, and the kites pulled apart by nylon threads! There was not enough wind for perfect tests, but it proved much better than the former single-wire vertical. W1IGU has visions of stronger winds, bigger kites and a doublet at a height of several hundred feet.

K1KSH reports using a wire 2200 ft. long and 55 ft. high, end fed . . . W6YC worked VE7EH . . . ZL3RB was heard in VK4 . . . ZC4AK has already fired up (quite a few G's have worked him) and will be on during the tests with a Heathkit DX-100U.

Expedition to Sark

After all the exotics, back to realities and ten watts! Main item of interest to most people will be that GC3OCA/A will be operating from *Sark,* January 1-6 ; he will only work stations who call 5 kc high or low of his frequency ; mainly CW, but phone available if required.

G3OCA has already operated as GW3OCA/P from Radnor, and thanks the stations who worked him there for their good operating; his own WABC score is now 65/69. Could he possibly manage a WABC from Sark, one wonders? It would be good going in six days. As his QTH does not appear in this month's list, here it is: Ken Frankcom, G3OCA, 216 St. Helier Avenue, Morden, Surrey.

Bradford Grammar School operated G3MHB/P from sundry rare spots, including Scotland, but they fear that a parcel of QSL's may have gone astray. A card *plus* s.a.e. will bring acknowledgment by return — address to W. D. Kaye, G3NEK, The Grammar School, Bradford, 9.

G3OAG (Prestwich) worked

quite a number of unusual ones to put his score up to 56/62. He says that CW contests too often turn into fantastic piles of QRM, and he would like a Top Band *Phone* contest for a change. At least, there wouldn't be so many stations all on the air at once—or would there?

The DX on CW

This "primitive means of communication," to quote one reader, holds its own pretty well and continues to provide the bulk of the DX worked. Keep your hand in, because there's quite a chance that communication in ten or twenty years will be by smoke signals, and you'll need to remember the Morse code.

Lots of reports, so compression is the order of the day. Pardon the *staccato* style! VU2XG (Bombay) pretty active — *see* also "Forty"; he is fourth on the WPX list. VK6AJ (Perth) is another key enthusiast—14 mc only; he has managed to raise G's at last, thanks to the recent paragraph here.

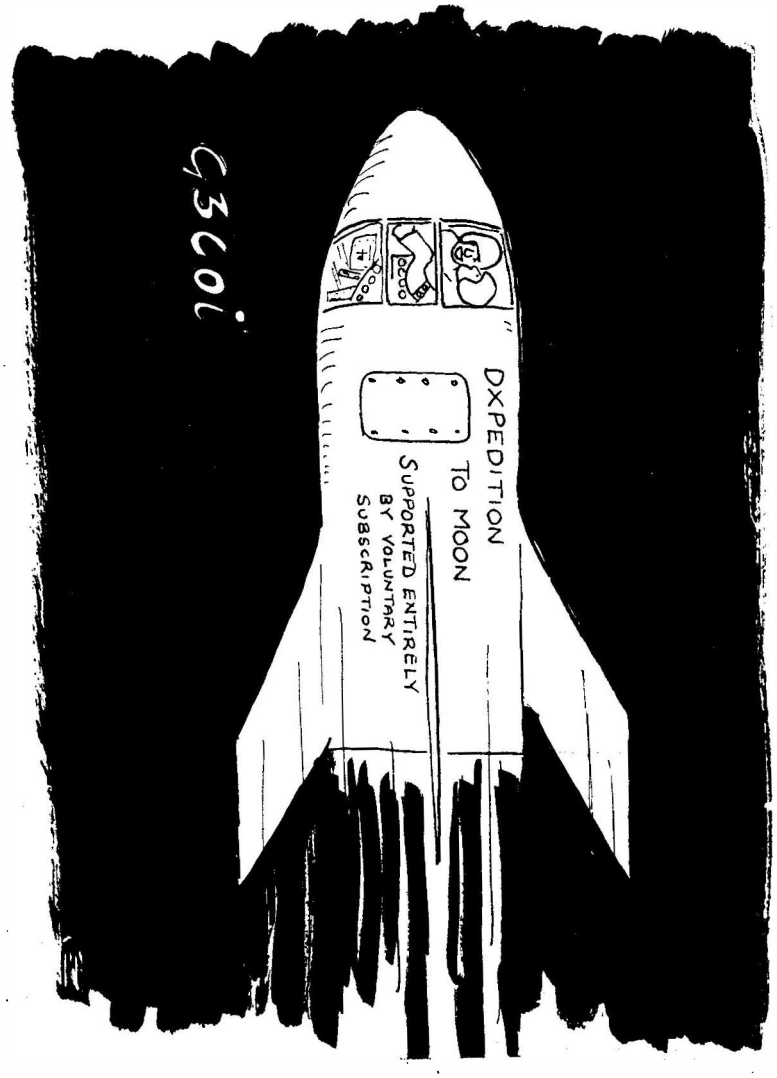
G3LPS (Blackburn) was one of them, and very glad of Zone 29; he worked a good mixed bag including VQ8BM, whom not many seem to have noticed. G2FFO (Burnley) was pleased to winkle out VQ9A among many other good ones; G3JVL (London, W.5) caught CR5MA and SM5KV/9Q5.

G5BZ is installed in a new QTH at Woldingham, Surrey, which he describes as a first-class location; he didn't realise how bad the Croydon QTH was! The Quad is only twelve feet up as yet, but he'll be going full puff shortly.

G3KMA (Hampton) sends in a CW report for *five* bands—something worthwhile on each of them —*see* also under "Miscellany." GW3AHN (Cardiff) raised some very nice CW DX on 21 mc, despite the new attraction of SSB.

DJ3VG found that conditions tailed off after October 24, but raised some good DX on 28 mc—yes, CW, too! G3NVF (Ashtead) collected KØSLD/KW6 on 21 mc. G2DC (Ringwood) covered all bands, but did very little in the LF regions; he is re-organising aerials for 7 and 3·5 mc.

GI3NPP (Dungannon) is fully operational with *two* rhombics! Best CW DX was on 14 mc, but the conditions drove him on to the LF bands.



"... Y'know, I'm beginning to wish we'd made it Monaco ..."

CW DX WORKED

28 mc Band

DJ3VG:	VQ1HT, EA9AP, ZD2ATU, 2JKO, HK7ZT, CX6CB, VQ8BC, PJ2AE, 9Q5EH, VU2XG, W7JIN (Idaho).
G3KMA:	7G1A, CX6CB, HK1HV, LU8FBH.

21 mc Band

VU2XG:	EP2AT, VK9XK, VE, W.
G6VC:	KØSLD/KW6, TI2LA.
G3DNR:	KV4AA.
G3KMA:	KØSLD/KW6, CR5AE, UAØFE (Sakhalin), UJ8KAA, VS6BJ, VS9MB, VU2XG, ZD1AW, ZD2PJB, 3V8CA, 7G1A.
GW3AHN:	AP2Q, CR5AE, FB8XX, FQ8HP, HC2IU, HC8VB, KØSLD/KW6, UAØCD, VP8FD, VQ2AB, ZD2GUP, 9Q5SF, 5LY.
G2DC:	FR7ZD, HC8VB, CR5AR, CR5AE, FB8XX, FQ8AG, 8HO, 8HW, KØSLD/KW6, TI2LA, UAØEZ, VU2XG, VP8EZ, 8CC, YN4AB, VQ8BM, ZS7R.
GI3NPP:	HC8VB.
G3NOQ:	HK7ZT, UJ8KAA, 3V8CA, 5A2CV.

14 mc Band

GI3NPP:	EQ2AT, ET2US, FQ8HP, FR7ZD, HC8VB, HP1BR,

	HZ1HZ, KM6BI, VKØJM, ØWH, VP2VH, VQ9A, 9U5MC.
G2DC:	HC8VB, FY7YI, VQ9ARS, YA1AO, ZS1RM/8, 9M2FR, 9U5MC, LA2DE/P, LA8YB/P, VR2DK, ZK1AK.
DJ3VG:	KH6COB, VS1DK, UAØKAE, FQ8HO, VU2CK, CN9CK, VK7SM, XZ2TH, 3A2AV, 7G1A.
GW3AHN:	VQ9A.
G3KMA:	ET2US, HZ1AB, UAØBN, XZ2TH, YN4AB.
G6VC:	HP1BR, HH2AR.
G3JVL:	CR5MA, SM5KV/9Q5.
G2FFO:	9U5MC, W6UNP/KH6, 4S7EC, VKØPM, ØWH, VR2DK, VQ9A, FQ8HP, LA2NG/P, VQ3HV, SM5KV/9Q5.
G3LPS:	JA6ZD, 7AD, VK6AJ, VQ8BM, CR5MA, UAØAZ, VQ9A, FQ8HP, SM5KV/9Q5, VS1KQ, 1KP, VKØPM, KH6IJ.
VK6AJ:	BV1US, 3HPT, DU1SZ, FB8XX, HS1YA, KM6BI, UI8, UJ8, UM8, VQ1SC, VQ8BC, VQ9A, ZC4AK, ZE3JO/ZD6, ZS1OU/ZS8.
VU2XG:	SM5KV/9Q5, KP4AEQ, TI2PZ, KØTFP/KW6, W6UNP/KH6, ZS1RM/ZS8, VQ9A, HS1R, AC5PN.
G3NOQ:	EA8CG, EP2AT, OD5LX, OHØ, UAØKAE, VS1KQ, SM5KV/9Q5.

The DX on AM Phone

As always—until the band eventually packs up—21 mc seems to have been the best hunting ground, and even Ten has not been neglected. They are both pretty patchy, but the fishing is good if you've got the time to do a little stalking. Just bring in the 'chasers and the mixed metaphor is complete!

G3DNR uses aerials at heights of only 12-15ft. but raises the odd DX just the same . . . G3NAC picked up quite a few in the *CQ* Contest, but lost an FB8 through the latter's bad modulation . . . GI3NPP winkled out some very nice ones on 21 and 28 mc.

G3NWT says "When many familiar prefixes have stayed with us over three decades, and the possible combinations of two letters amount to ten times as many as have ever been used, it fails to dawn on me why we must have these outlandish and repellent numeral prefixes." And he quotes a few call-signs of *broadcast* stations in 1936, such as VK2ME (Sydney), VQ7LO (Nairobi), W8XK (Pittsburgh) and CR7AA (Lourenco Marques). Ah, the good old days . . . but then we also had self-excited PA's with grid modulation!

GM3DNF (Milltimber) reports hearing lots of good stuff but not raising it, except for ZS2NS and 9Q5EH on 28 mc . . . G3DO (Sutton Coldfield) mentions FF4AB and FF7AG for two new ones—his only activity on AM . . . G3NOF (Yeovil) used about equal proportions of SSB and AM, with good lists for both . . .

AM PHONE DX WORKED

28 mc Band

G3NOF:	HI8DGC, VP9D, VQ4DT, VU2BK, ZD2JKO, ZS7L.
G3NWT:	VP6PV, VP9MM, YN1EDB.
GI3NPP:	ET2US, FF7AB, FB8CM, VP8DK, 8EE.
G3NAC:	OD5CQ, ZB2AD, 4X4FF.
G3NGZ:	LU1DAB, MP4BBA, 4BCV.
G3DNR:	VQ2PR, ZD2JKO.
G6VC:	KG4AT, UO5KAA.

21 mc Band

G3NOF:	EA6AR, FF4AF, KØSLD/KW6, KZ5BA, VP8EM, VQ2WZ, VS1GJ, VS6DJ, ZD1AW, ZD2BRG, 9G1BA.
G3NWT:	KR6KT, 6KV, KØSLD/KW6, VP2LS, LA2DE/P, VP6WR, FR7ZD, 9K2AD.
G3NFV:	CR9AN, UL7FA, CT2AK, PZ1AC.
GI3NPP:	CE9AC, FQ8HZ, KS6AK, ZD7SA, 9U5PD.
G3NAC:	VP2DA, 9G1CC, ZE6JP, 8JZ, FR7ZD, YV5AHR, VS9ADL, 9G1BA, PZ1AX.
G3NGZ:	4S7YL, MP4BBA, 4BDC, VQ2WR.
G3DNR:	LA2DE/P.

The DX on SSB

We still haven't solved the mystery of the comparative ascendancy of 14 mc over 21 mc, so far as SSB is concerned—especially as so much good AM phone DX is worked on 21 mc and so little on 14 mc. It must be just habit, custom, convention or what-have-you. However, GW3AHN and G3NOF are setting good examples in getting away from 14 mc, and look what their lists show! The SSB DX is *there* on the other bands, if you take the trouble to find it. In any case, the top 50 kc of 14 mc will soon become pretty congested, and that should drive a few away.

SSB DX WORKED

28 mc Band

G3NOF:	FS7RT, PZ1AX, VQ4RF, W4WYI/MM, ZS6OY.

21 mc Band

G3NOF:	JA1ACB, KØSLD/KW6, KA2JE, KG6AJB, KP4APW KS6AK, UL7JA, VK9NT, W6's, WØ's, ZL2AVA.
GW3AHN:	AP2Q, FR7ZD, KG6AJB, KS6AK, K6CQV/KS6, KW6DA, KØSLD/KW6, OD5CT, PY2PJ, PZ1AX, UL7JA, VK9NT, VQ4RF, YV6BR.
G2CWL:	PX1PF.

14 mc Band

G3DO:	EAØAC, DL2AZ, VE5MK/SU, ZS4LT, EP1AD, EP5X.
MP4BBW:	EQ2AT, AP2CR, VQ9TED, 9N1SM, HS1B, CR9AH, KX6BQ, VP2AB, 9M2DB, CR5MA, KW6CP, YS1RE, FB8CM, K6CQV/KS6, HC8VB, XZ2AD, VQ9A, 9Q5AG, TG9AD, VR3L, ZK1BS, FF4AK, ZS3AD.
G2CWL:	PX1PF, FB8CM.
EI5AI:	HZ1AB, MP4BBW, 4BCV, 4BDC, UA9CM, CR9AH, LA1LG/P, VQ5FS, 9K2AM/M/HB9.
GW3AHN:	AP2CR, KG1BO, KM6BO, 6BJ, KX6BQ, LA1NG/P, PZ1AX, 1BJ, SVØWV, VP2AB, VR2AP, YV5AFF, 3V8CA, 9N1SM.
G3NOF:	FF4AK, HZ1TA, KM6BO, KR6CS, HV1CN, PJ2AA, PZ1AX, 1BF, VE5MK/SU, VP2AB, YO3GK, YV5ARN/MM, ZD2PJB, ZS3AD, 6OY.

[*over*

WPX MARATHON

(*Starting January 1, 1960*)

CW Only		Phone Only	
G6VC	352	MP4BBW (*SSB*)	318
G8DI	350	G3GHE	314
G3JVL	310	GB2SM	252
VU2XG	272	G3DO (*SSB*)	246
G3LAS	249	G3LAS	219
G4JA	213	G3LHJ	177
G8VG	208	G3NFV	163
G3JUL	200	G3BHJ	152
G3LZF	178	G3MCN	145
G3LHJ	177	GM3NQB	107
G3WP	170	G8VG	103
G3DQO	157	GM2DBX	92
G3NWF	151	G6VC	77
G3JVU	151	G2DQW	74
G3DNR	128	G3DNR	55
G2BLA	120	G4JA	47
G2BP	112	G3NWF	47
G3MGL	108	G3MGL	17
G3JFF	103		
G3GMK	94		

(Stations not reporting for three consecutive months will be deleted)

Forty Metres

Our suffering 7 mc band can still only be described as potentially good for DX. In actual fact we still think that lack of activity accounts for more than conditions, or the state of the band. If the DX would come on, we would probably hear it (or even work it).

Brief summary of reports on this band: G3KMA worked UL7AA, ZC4CT, CN8ER and W's on CW; ZB2AD, UO5, UD6 and 4X4 on phone . . . G6VC raised 3V8CA and VO1DX (CW) . . . G3DNR collected UH8BI for a new one, also CT1TT, 3V8CA and RAEM . . . GI3NPP lists CN8's, CT1, FA8, UH8BI, UL7OA, ZC4's, 4X4 and 5A2CV.

G3LET (Westcliff) treats *Forty* really seriously and as a result is able to claim JA1ALU, 1LZ, 2BP, 2XW, 3BGF, 3BRF, 4YC, 6APG, 6YG (all between 1800 and 2100 GMT); also VK5LD and 5JE, VQ4HE, K4CDZ/VE8, W7QMU/VE8, and YN4AB. He says there's no lack of JA activity on 7 mc, and they are far more DX-conscious on this band than we are. JA1LZ uses a rhombic and puts in a 589 most evenings! VK's and ZS's are very scarce now.

VU2XG also found 40 metres interesting and worked quite a few G's, such as G3BST, 3CHW, 3FPQ, 3IMV, 3FXB, 3LET, 5DQ and 6ZO. Of course he finds Radio Pakistan a menace, but it goes QRT at 1900 GMT, after which 7035 kc is quite usable; VU2XG operates Fridays and Saturdays only, because these sessions mean bed at 3 a.m.!

G2FQW (Worthing) continues to cover 7 mc on low-power phone, and says that night-time propagation is worsening, the band being busiest between 1100 and 1600 GMT. When he finds an "open channel," especially at night, G2FQW says he sits over it like an Eskimo over an ice-hole—but he presses the send-receive switch instead of the trigger!

SWL Peter Day (Sheffield) logged KG4AG and FA8RJ on CW; phone brought in 4X4GB, TF5TP, VS9OC, ZC4KV and UD6KAB. TF5TP was also heard on *Eighty* phone, S9 at 2220 GMT.

Miscellany

The much-travelled G3IJU (ex-ZB1EB, VS1EB and 9M2EB) will now be active from R.A.F. Upavon, Wilts., probably on SSB; he left his Tx in VS1 and his beam in 9M2. Eric also reports that VS1KD is bound for Catterick on a course, and he, too, will probably operate SSB.

Sad little item from G2CWL (Fareham) — Bruno Pietersen, ZS4X, died of a heart attack during his long-awaited trip to Europe with his wife and two young daughters; they were expecting to come to the U.K. and meet some of the people he knew so well over the air on 21 mc phone. We offer our sympathy to his widow and family.

G2FFO tries to clarify the Central African muddle, and says that what used to be French Equatorial Africa (FQ8) is now three separate republics—Tchad, Central African Republic and Congo Republic, capitals respectively Fort Lamy, Bangui and Brazzaville. The whole thing is known as the Union of Central African Republics.

Quick Quotes

"We all have our own funny ways, and my own is a fixed idea that CW is the only possible way of life for a ham, and 14 mc the only DX band" (VK6MK) . . . "VE2BDM is at Great Whale River on Hudson Bay; being Zone 2 he may be of more interest than the usual VE2's" (G2FFO) . . . "Visited the shack of DL1YA—I have never seen such a collection of sheepskins — simply tremendous" (G3KMA) . . .

"On Hallowe'en I had one or two supernatural experiences in my shack. Twice after putting out a CQ on Fifteen I heard a weak carrier come on, burble something and then go off. The second time it said 'H'm, it's on the radio, too'" (G3NWT).

Late Flashes

MP4BDA, of the incredible collection of call-signs, added EI5AI to his collection, and at the time of writing will be DJØBF. After this he is going to be ZB2AE on SSB, but will probably have packed up by the time you read this note. All QSL's, for all calls, to his "manager" — Roger Baines, 56 Balmoral Road, Gillingham, Kent.

G3BBF, well-known at 5A2CV, returns to the U.K. shortly but the licence will be held by G3LCV, at least until next August . . . The OK DX Contest will be on December 4, 0001-1200 GMT (gen. from G3NQL) . . . New prefix for Nigeria is expected to be 9N2 (from G2DC) . . . FL8ZA (op. OD5CT) should be on between December 3 and 7 (from MP4BBW) . . . ZS4PB will operate from ZS9 around mid-December (from ZS1OU/GI3NPP) . . .

News and Views

G3OGO (Croydon) mildly disagrees with our theory that SSB will supplant AM in time. He says that there will always be newcomers, and what better for them to get on the air quickly and efficiently than a 10-watt 160-metre AM rig? He's dead right, too. He also suggests that the fair division of 7 mc would be 7000-7030, CW; 7030-7090, AM; and 7090-7100 kc, SSB. We still think it will turn out to be 7000-7100—The Lot! G3NOQ (Tynemouth) makes somewhat similar suggestions, and says that a free-for-all would be most regrettable and would benefit no one.

GM3DNF offers sundry admirable suggestions concerning the "Five-Band DX Table," but we have gone one better and suspended it for a year. G3OGO also says the country business is now so absurd that we should adopt WPX in a big way.

G3KMA was abroad during September, and had a pleasant two-hour chat with DL9PF, who operated PX1PF recently; he has been granted the call TA4PF for Turkey, but things there are a bit chaotic and it may never come off. Then, in Athens, he met SV1AM, 1AB and 1AJ—25 per cent. of the amateur population of Greece! In Crete he just missed SVØWZ.

GB2SM (Science Museum) won their class (multi-operator stations) in the 1960 ARRL Phone Contest

The point of particular interest about this photograph is that it is of ZE3JJ/ZD6 who, with ZE3JO, went on a DX-pedition into Nyasaland during September. In nine days' operating, 750 contacts were made in 50 countries, the gear consisting of a Panda Cub, Eddystone 888, and a Mosley tri-bander lent by ZD6NJ, with whom ZE3JO and ZE3JJ were staying. Contacts were mainly on CW on the 14-21 mc bands, usually 1400-2200 GMT and in the early mornings, the operating being taken in shifts. The expedition entailed a round trip of 800 miles.

with the fine score of 178,059 (973 QSO's). They ranked as the highest multi-operator station outside North America; third highest in the world; and fourth highest "all-world" score in all classes. They are, not unnaturally, elated but conclude "Don't tell us it isn't hard work!" But well worth it, judging by the result, and a fine effort, on which they will have the congratulations of all readers.

And so we come to the usual acknowledgments — to W4KVX's "*DX*," the WGDXC *Bulletins*, *The Western Radio Amateur*, The Polar Bears Radio Club's "*DX-er*," and the Northern California DX Club's publication of the same name. Thanks, also, to our readers who supply all the "meat" for this feature; and to all of them a Merry Christmas, a Happy New Year, and record DX'ing in 1961. May the bands be kind to us all!

Deadline is first post on **Friday, December 16,** and the address "DX Commentary," *Short Wave Magazine*, 55 Victoria Street, London. S.W.1. Make it a day or two earlier if you can, as we shall probably be caught up in the Christmas mail delay by then. Happy days, Good Hunting, 73 and—MX.

SUGGESTION FOR CHRISTMAS

The best Christmas presents are said to be books, and there can be no doubt for a radio amateur the best of them will be found in our Publications Dept. advertisement on p.506 of this issue. We would particularly recommend the ARRL *Radio Amateur's Handbook* or the *Radio Handbook* for anyone wanting a sound general text on the whole subject of Amateur Radio. For those with specialist interests there are manuals like the *New Sideband Handbook* and the ARRL's *Single Sideband for the Radio Amateur;* in the /M field the choice is either the *Mobile Handbook* by the "CQ" people, or the *Mobile Manual,* from the ARRL; for the aerial enthusiast several excellent books are available, such as the *Antenna Handbook, Beam Antenna Handbook, Quad Antennas* and *S9 Signals,* the latter also being a good book about aerials for the beginner. For the SWL, the choice includes *Better Short Wave Reception, How to Listen to the World* and *Short Wave Receivers.* The DX operator needs such publications as the *Ham's Interpreter,* the *DX Zone Map* and the *Radio Amateur Call Book.* All these are listed and priced on p.506 this month.

And, if we may modestly suggest it, one of the most useful presents you could give—either to yourself or to your regular DX contact—is a subscription to SHORT WAVE MAGAZINE; this costs 33s. for a year of 12 issues, post free to any part of the world.

AMENDMENTS AND CORRECTIONS

Adaptor for SSB Reception : In his article in the November issue, GM3GOC says that, in the circuit on p.459. C10 should have appeared as 47 $\mu\mu$F. and R8,R9 as 5,000 ohms; that R19 should be connected to the junction of VR1, VR2 as well as to switch position 3 on S2, as shown; that for AM phone operation S1C should be open; and that point "Z," referred to in the text, is at the earthy ends of R15 and R17, and not as shown. He also suggests that if difficulty is experienced in cancelling out the unwanted sideband, VR1 could be made 1 megohm and VR2 0.5 megohm; also that if R3 is made 1,000 ohms and variable, the reactor valve can be set up more accurately. GM3GOC adds that the receiver incorporating this Adaptor is in daily use, both commercially and on the 80-metre amateur band, with entirely satisfactory results. He will be glad to discuss with readers any points they may wish to raise on his design *(QTHR).*

In the *SWL* feature article in the November issue, on p.478, in the third paragraph under the heading "Practical Points," the fourth line down should read ". . . tune up the band from the LF to HF end, you come to . . ."

TOBAGO AND VP4WD

WITH THE DISNEY FILM UNIT

J. Lambert (G3TA/VP4WD)

WHEN the great Disney Empire decided to film "The Swiss Family Robinson" on that rather remote, sun (and sometimes rain) drenched island of Tobago in the West Indies, little did G3TA think he would become a small cog in that important wheel—the main shooting unit!

At Pinewood Studios we had all observed the amazing amount of materials and "props" being assembled and crated for shipment to Tobago *via* Trinidad. Included was a complete replica of the good ship *Swallow*—pre-fabricated, then knocked down to be packed, transported, and rebuilt on a rocky reef 200 ft. off-shore, at Tobago. This was an exacting and exhausting job, as both the construction and shooting crews discovered to their cost. They were half drowned by the sea, and half cooked by the sun ! !

By a fortunate circumstance it came about that the writer joined the main unit (about 60 strong), and we flew out *via* The Azores, Barbados and Trinidad on a charter DC6C; thence on to Tobago by Dakota. The front entrance of the Hotel Robinson Crusoe, where we stayed, faces out over the thundering rollers of the Atlantic, our incessant lullaby for the next 23 weeks. Thanks to a tip-off from the construction crew that amusements were pretty limited, the idea had been born of taking some gear out.

With no time to build, the helpful co-operation of G3YF was invoked. Thanks to him it was possible to go out with a complete B2 outfit, together with all other items needed to set up a working amateur station—as it proved, the very first such station on the Island.

The essential "ticket" came to hand eventually, granting full status, together with the requested call-sign VP4WD (Walt Disney). It should be explained that it was not the intention to run VP4WD as a DX-pedition, but rather as a relaxation from the hectic business of location film work.

Equipment

During the interim period a temporary aerial had been slung up using about 40 ft. of PVC lighting flex with the far end tied to a very unfriendly rose bush 8 ft. high, to allow a spot of listening on the bands. At that time 14 mc seemed very quiet, but 7 mc sounded fairly lively and several Europeans were heard, including a few G's.

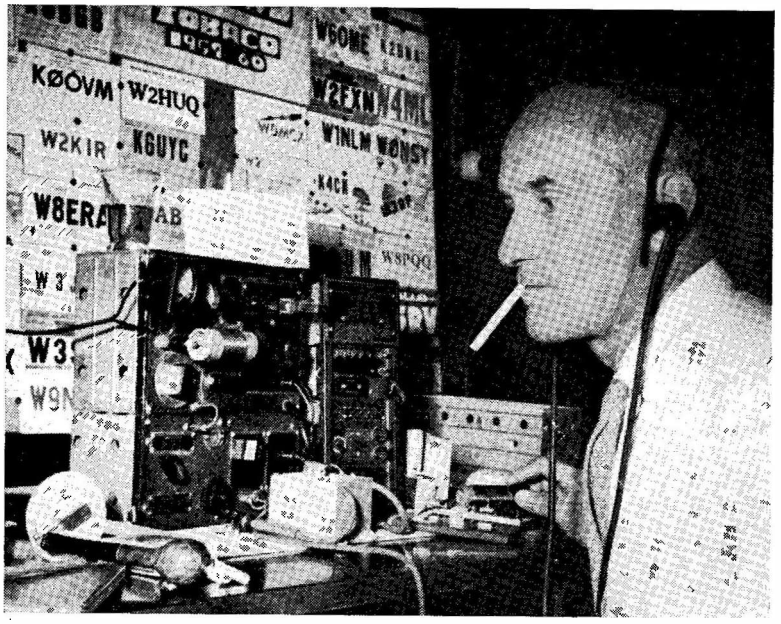
Mains supply was alleged to be 115v. 50-cycle AC but proved to be pretty indifferent stuff, ranging from 110v. to 85v. owing to the heavy demands from the hotel kitchen during the evening ! Under these conditions both reception and transmission were a little erratic, to say the least. Incoming CW warbled away like the evening song of the puff frogs.

As many readers will probably know, the B2 receiver is only a 4-valve job with BFO, and the 7 and 14 mc bands are exceedingly cramped on the dial. To enable listening on the transmitter frequency a small Pierce oscillator was connected to the Rx supply; by rapid transfer of the xtal from Tx to this oscillator, frequency could be checked quickly and accurately. This, together with the FL8 filter packed at the last moment, helped no end in the completion of numerous QSO's which were in danger of being abandoned owing to the terrific QRM.

We were kept extremely busy in the early stages of the film production, and there was very little spare time to improve the makeshift aerial. The third "CQ de VP4WD" on 7 mc raised W2KQT with a 579 report both ways. Quite a few W's were worked after this, with reports ranging from 559 to 579; then skip changed, and HA5KFB at 569 was the first QSO with Europe.

A couple of evenings later the first G was raised —G5JL of Hayes, Middlesex. It was disappointing not to be able to work G3MOT (the G3TA junior op.) nor any of the 50-odd Slough locals.

However, the B2 rig did very well with Europe, raising UA, UB, SP, DL, LZ and OH, together with



When G3TA was out in Tobago with the Disney Film Unit for the production of "Swiss Family Robinson," he was able to put the Island on the air under VP4WD, which became a much sought-after call during the six months or so the trip lasted. Using only a B2, more than 500 stations were worked on the 20-40 metre bands.

several South Americans, and a score of W's. Then a deep depression called "Edith" rampaged over the area for several days. This gave time to fell a couple of 20 ft. bamboos, and these enabled an improvised 14 mc dipole to be slung up. An immediate improvement in QRK resulted, reports averaged 579 and it became far easier to get QSO's.

By now most of the U.S. appeared to have got the "info" that VP4WD was active on 14 mc, and the pile-ups were terrific. By rapid QSY between two xtals of 14022 and 14050 kc, it was possible to keep the wolf pack at bay for short periods, but quite often it was necessary to hold off altogether to let the tumult and the shouting die.

Apologies are due to the many who called VP4WD but who couldn't be read through the racket. A selective receiver would have helped a lot, no doubt. Two sources in the States promised the loan of a communication receiver, but it never appeared. The number of contacts could easily have been doubled had it arrived.

In early December, the QTH was moved (200 yards) to Burleigh House, which belonged to the hotel, where VP4WD was in the clear, facing out over Rockley Bay, with a view away to the north-east. Here a pre-fabricated 7 and 14 mc dipole was slung between 37 ft. bamboo poles. With the aid of jumpers to span the insulators this system could be changed fairly quickly for use on 20 or 40 metres. The site and the aerial were a big improvement on the earlier efforts, and the percentage of QSO's to operating time rose rapidly as the days went by.

Best DX in the log was worked from here, two JA1's and an HZ1, and also SVØ, I1, YU, and OE from Southern Europe, not previously worked. Several ZS's were heard at good strength but could not be raised.

The W/K contingent rose to one vast scream of QRM most evenings as soon as VP4WD came on the air. The usual drill was to wait until the bedlam had subsided somewhat and then request calls from one district at a time. This seemed to work out fairly well except for the inevitable odd men out pounding away in the noisy background.

Some Statistics

Local activity in Trinidad and the various islands around appeared to be chiefly on 40-metre phone, using the LF end of the band—as the writer soon found out! Several VP4's were worked with VP4WD on CW and phone the other way, including VP4TR, a very fine CW operator. Total number of QSO's was approximately 520—350 of these with W/K; 38 States were confirmed from the 41 worked, W7 being as elusive as ever (five QSO's only).

In all, 46 countries were accounted for, including 3 dozen G's, 30 DL/DJ's and a good sprinkling from the rest of Europe, *plus* a dozen or so scattered in the South Americas, also VE1-6 districts, and old friend Ham Whyte, VE3BWY (G6WY).

There are still quite a number of cards for European contacts to come in, and the writer will be most happy to QSL any oustanding genuine VP4WD contacts, either direct or *via* Bureaux.

Trouble Starts!

On the last leg of the stay, the equipment began to give trouble. The condensers in the power pack expired one after another and many hours were spent chasing spares from various sources. No sooner was this surmounted when severe electrical interference was encountered. With the aid of a portable BC Rx the approximate direction was ascertained. Then the co-operation of the manager of the local Electricity Commission was enlisted. He, at various times, switched out of circuit the two ice-making plants in the area, two electrically-operated pumping stations, a complete sodium street lighting circuit and the Govt. stock farm, with no success! A posse of linesmen then took over and checked all pylons and transformers in the vicinity of the hotel. The culprit proved to be a step down transformer badly affected by sea-salt corrosion.

The only licensed amateur resident on Tobago is VP4TAQ. He is chief operator at the Fort Wireless Station, used for marine and aircraft traffic. Although he has been on the Island since 1952 he has never been active on the amateur bands. According to VE6BY and G6XL, who have visited the Island since the writer left it, VP4TAQ is still inactive. It's a great pity, as he is ideally situated, being on a 500 ft. hill towering above the town with a wide vista of the Atlantic on three sides.

VP4WD aroused considerable interest among members of the Unit, both Europeans and Americans, and G3TA/VP4WD is greatly indebted to many of them for the help so freely given in getting QSL's printed, filled out and posted, erecting poles and travelling around obtaining spares and so forth. Through VP4WD *via* a couple of W6's Christmas greetings were passed from the Unit to Disneyland in California. One of these W6's made a round trip of 200 miles before lunch to QSP the message of goodwill—a noble effort!

In conclusion—the writer certainly enjoyed the stay on Tobago, despite the gruelling time we had, covering the many types of terrain used for location shots. We shot on hills, in valleys, on sea-shores, river beds, mango swamps and aboard rafts and boats. Unit members and artists were pretty well done up at the end of each and every day.

Yet, after a bath and a meal nearly everyone managed to make something of the rest of the evening, which in G3TA's case meant keeping VP4WD on the air for as long as he could keep awake! The only hope now is that the film will be as good as all the effort and money spent in the making of it! The log of the lone voice of Tobago, VP4WD, will long be treasured.

STANDARD FREQUENCY TRANSMISSIONS

The Japanese, through their station JJY, Tokyo, are now providing standard frequency transmissions, of a very high order of accuracy, on 2·5, 5, 10 and 15 mc. The transmission is tone- and second-pulse modulated, and is identified by MCW and phone announcements in English and Japanese.

AMATEUR RADIO EXHIBITION

LONDON, NOVEMBER 23-26, 1960

THIS year's Radio Hobbies Exhibition—organised and managed as usual by P. A. Thorogood, G4KD—was opened by Brian Rix, who appeared in his capacity as a leading entertainer rather than as G2DQU. But, in a brief and effective speech, he reminded his audience that he, too, was a "ham"! And he has a brother who also holds an active call-sign. The opening ceremony was attended by a number of celebrities in the world of Amateur Radio, and was preceded by the customary presentations—including an inscribed vellum for Mr. Horace Freeman, who has retired from business after many years' service in the advertising field; he it was who organised the very first National Radio Exhibition, and many of the Amateur Radio exhibitions of the post-war years.

The Exhibition Committee awarded the Home Constructors' prize to G3LOK, for his heterodyne frequency meter; the Club award went to the Aquila Radio Club (G3HRO); awards were also made to G2IG for his all-transistor communications receiver, and to G3IRM for his SSB Exciter.

This year, the question of who was to be given the Manufacturers' Prize (for the best commercial amateur-band equipment in the show) was exciting a good deal of speculation. It went to **K. W. Electronics, Ltd.,** for their SSB Exciter Unit, which is incorporated *in toto* in the "K.W. Viceroy" as the Sideband driver section ahead of the RF power amplifier; the "Viceroy" itself was one of the outstanding features of the Show.

Runner-up for the manufacturers' prize was the firm of **Daystrom, Ltd.** (Heathkit), for their very interesting transistorised communications receiver, available in kit form.

Some Exhibits Noticed

With but a very short time in which to tour the Exhibition and prepare this report, it is not possible to cover all stands in every detail. Suffice it to say that, generally, the show was fully representative of current technique in Amateur Radio communication, and that most of the commercial equipment shown reached a high standard of design, finish and workmanship. There was very little that could be faulted in any way, and a good deal that was of outstanding quality.

Together with much of the apparatus and components from the current Eddystone range, the well-known retailing organisation of **Webb's Radio** were showing the G.E.C. BRT-400K, a British communications receiver of advanced design—also the National NC-303.

On the **Minimitter** stand we saw the new "Mercury 200" AM/CW Amateur-band transmitter and the Mark II version of the MR-44 receiver, which first appeared last year and won the manufacturers' award; the new MR-44 has several additional features and is claimed to give more than any other receiver in the same price range. The Minimitter amateur-band converter, pictured here, is self-contained for power, covers all amateur bands, has a fully calibrated tuning scale, an IF of 1·5 mc, and input/output impedances of 75 ohms. Being shown for the first time was the TC.1 all-transistor converter, covering the 1·8-14 mc amateur bands and giving general coverage in the range 5-16 mc as well. Designed to work with any receiver tunable to 600 kc, the TC.1 is powered by a 4½v. dry battery which should give its full shelf-life as the current drain is about 1 mA only. On the aerial side, Minimitter had the new "Birdcage" design, which looks rather like two single Quad sections at right-angles and is claimed to give high gain and directivity for a small over-hang.

Ideas about aerials lead easily on to thoughts about masts, and few visitors can fail to have been impressed by the display put on by **Sound Vision Service,** showing telescopic masts, winch-operated, and mast fittings of all kinds, including polythene-covered stranded steel guy wire, which should have almost indefinite life. In the rotary mast assemblies and beam-heads, nylon bearings are used throughout; these are impervious to weather (the more it rains the better they work) and should likewise last indefinitely. The firm undertake to supply, rig and instal masts and aerial systems, as required. It is certain that S.V.S. aerial equipment will be found at many modern amateur stations. One of the principals of the firm is F. W. Bennister, G3COX—so the "right language" is talked here, too.

On the neighbouring **Tiger Radio** stand we saw a wide range of well-designed and attractively finished transmitting equipment, including the prototypes of their new SSB driver unit and linear PA. The Tiger TR.100 AM/CW transmitter is claimed to be the most efficient of its kind, at over 70% on all bands, with 100w. RF output. A particularly interesting item on this stand was the transistorised audio amplifier unit, giving 150v. peak ouput for 6 mV input (any usual crystal microphone) from a 6·3v. AC power supply, which can be the heater line of the transmitter or modulator; the unit will drive 807's or KT88's in Class-AB1 direct, and the size is only 4 ins. by 3 ins. by 2 ins. deep. Other apparatus shown by Tiger included their well-known Aerial Couplers and SWR meters, and the TR.200 and TR.300 transmitters, rated at 200w. and 300w. RF output respectively.

A newcomer to the field of manufacturing for the Amateur Radio market is the firm of **Electroniques (Felixstowe),** who are starting off by offering a neat little Top Band transmitter, called the "Pathfinder," and very suitable for the recently-licensed amateur who wants to get on the air quickly, or for those needing a stand-by Tx for local working. Other items on this stand included a range of coil units and

coil packs, all incorporating the new "Stabqoils" manufactured by the firm; these are temperature-compenstated with built-in trimmer. For amateur coverage they do a 6-amateur-band only assembly known as the "Qoilpax," supplied complete with a suitable 3-gang tuning condenser.

In the **Heathkit** (Daystrom, Ltd.) display, the outstanding item, as already mentioned, was the "Mohican" fully-transistorised general coverage short-wave receiver; other exhibits included the new GDO assemblies, some interesting test equipment—such as a valve-voltmeter, 5-in. 'scope, a portable servicing oscilloscope, audio signal generator, bridge instruments, and the RF-1U RF Signal Generator—also the well-known and by now widely-used DX-100U and DX-40U transmitters. An additional design which attracted a good deal of attention was the Apache Tx-1 transmitter, for CW/AM/SSB working.

Withers Electronics had a nice display of their T.W. VHF equipment, including the prototype of a new PA unit to follow the T.W.2 10w. two-metre transmitter. This gear is well designed, miniaturised and attractively finished; those concerned with the firm are themselves active AT station operators, so understand the amateur requirement.

One of the largest stands in the Exhibition was taken by **K. W. Electronics,** showing a full range of K.W. equipment, from the "Vanguard" kit set of the early days (still in steady demand) up to the "Viceroy" SSB transmitter, already mentioned. All transmitter equipment was shown *ex*-cabinet (as well as in the attractively styled cabinets now being used for all apparatus manufactured by K. W. Electronics), so that visitors could see how well and how carefully the internal work is carried out on standard production items. A brand-new K.W. design released for the Show was a neat Top Band CW/Phone transmitter, completely self-contained, with ample modulating power supplied by a pair of 6BW6's in push-pull. The SSB Exciter, for which the manufacturers' award was made, is completely self-contained (inclusive power supply) and gives about 8w. p.e.p. output, sufficient to drive a linear PA consisting of (say) a pair of 6146's or TT21's. For the QRO man, a most attractive new Linear Amplifier is available; in the 813 category, it is self-contained for power, and can be driven to about 500 watts p.e.p. by the "Viceroy"; this PA is a grounded-grid job, and can also be used on AM; it has built-in HT protection. Another interesting item was the new beam-rotator mechanism, with automatic remote-control; this is in a completely weather-proofed housing and will turn any beam assembly in the amateur category.

Supporting Exhibits

In addition to the commercial stands, one part of the Exhibition hall was laid out to feature "The Ideal Amateur Radio Station." This included four booths fitted out by the firms of **Minimitter,** James Scott **(Hallicrafters), K. W. Electronics,** and Daystrom **(Heathkit).**

The Hallicrafters display consisted of an HT-37 with an SX-101A receiver and HA1 Electronic Keyer; in this latest Hallicrafters equipment, receiver and transmitter are linked for change-over control and Vox operation.

For their booth, Daystrom showed the "Mohawk" receiver (for CW/AM/SSB working) and the "Apache" Tx-1 transmitter, which gives Sideband operation as well as CW and AM phone. The coverage of these equipments, working together,

The K.W. "Viceroy" SSB/AM/CW Transmitter was adjudged one of the outstanding commercial designs seen at this year's Amateur Radio Exhibition. Conspicuously successful on the air, it can now be heard from many AT stations at home and overseas; the power pack, which makes the "Viceroy" complete, is available as a separate unit, seen on the right in the photograph. Also pictured here is R. G. Shears, B.E.M., A.Brit.I.R.E., G8KW, one of the founders of K.W. Electronics, Ltd., and now the principal of the firm. Himself an active operator, he has been responsible for the design of all items in the K.W. range of amateur-band equipment — which means that much technical know-how and manufacturing experience have gone into the production of the "Viceroy."

is 10-80 metres. The ancillary equipment for this station consisted of all necessary measuring equipment, such as GDO, test meter and 'scope (all in the standard range of kit assemblies) with the DX-40U/VF-1U combination as a lower-powered stand-by.

The Minimitter layout incorporated the Mercury 200 with the MR-44 receiver, working with a Birdcage aerial, the whole fitted up to look like a typical modern CW/AM phone station.

The K. W. Electronics suggestion in this context was a Hammarlund HQ-170 receiver flanked by a "Victor," for full-power AM phone-working, and a "Viceroy" for SSB/CW operation on all amateur bands, 10-80 metres. This apparatus was built into a console constructed from Imhof panel and cabinet items and, with the ancillaries, made altogether a very impressive display.

Other booths contained a typical field day set-up and a Club station layout, and also the Exhibition's own station GB3RS. Unfortunately, on the first day or two, at least, conditions were bad, due to a fade-out which started developing on the Wednesday, and it was very difficult to make contacts on the HF bands.

Conditions also spoilt what would have been a very interesting schedule arranged between the carrier H.M.S. *Hermes* (at Gibraltar), and GB3RS at the Exhibition. By special arrangement with the Admiralty, *Hermes* was to sign G3IPV/MM on the 10-metre band, and attempt communication with GB3RS between 1400 and 2000Z. At the moment of writing, QSO had not been effected, as the 28 mc band was quite dead.

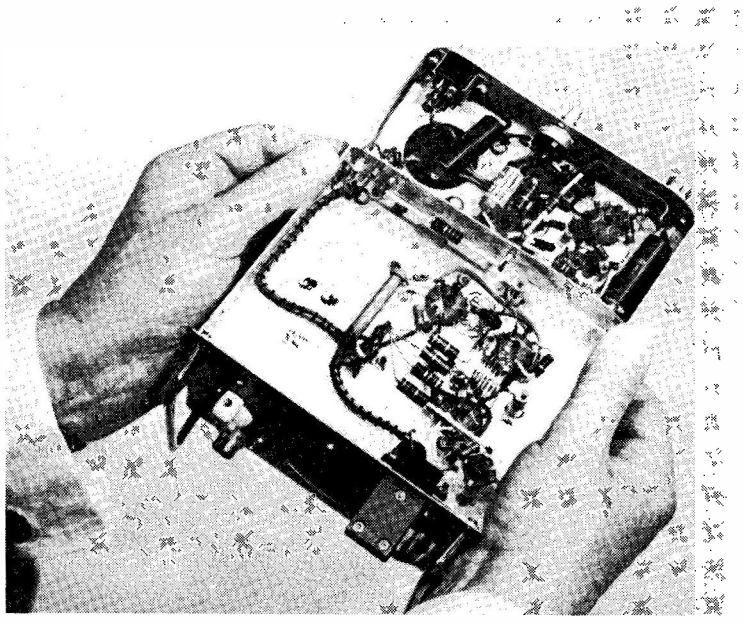
Hallicrafters Display

The stand of **James Scott** (Electronic Engineering) Ltd., of Glasgow, featured the wide range of Hallicrafters amateur-band equipment now available in this country, through them as main distributors. The receivers included the SX-101A and SX-111, as well as various transmitters, and a range of coaxial switches and coax relays made by the American firm of Dow-Key. With the British and some American equipment shown on various other stands, visitors were able to look over and compare the latest amateur-band apparatus from the States.

Test Gear

On the **Taylor** stand there was, as always a comprehensive showing of test and measuring apparatus; one of their most popular items is the Model 127A pocket-size multimeter, with a sensitivity of 20,000 o.p.v., a colour-calibrated scale $3\frac{1}{4}$ ins. in length, and incorporating 26 separate ranges. The Taylor Model 100A is the first multimeter to be made in this country with a sensitivity of 100,000 ohms per volt! Other instruments included signal generators, fault-finders, bridge meters, and the Model 191A Audio Generator.

Two new instruments exhibited on the **Avo** stand were their Valve Characteristic Meter Mk. IV, and the Transistor Analyser, a compact battery-operated instrument which will accommodate all transistors in the current production range, including the medium-power types.



A. J. Devon looks underneath the TW-2 10w. two-metre phone transmitter shown by Withers Electronics. The speech amplifier-modulator section is in the upper screened compartment.

Valves and CR tubes, semi-conductor devices and Clix components were shown by **Associated Electrical Industries.** On the large **Mullard** stand we saw their full range of transmitting types (in the amateur context) and a selection of prototype audio amplifiers built round designs produced by Mullard to make the best use of their valves and semi-conductors.

Some Specialist Exhibitors

These included the stands equipped and manned by the *Royal Naval Reserve,* covering the activities of and showing the equipment used at, the 46 R.N. Wireless Training Centres throughout the country; the *Royal Air Force,* represented by the R.A.F. Amateur Radio Society, with its own station GB3RAF; and for the *Army,* the 65th Signal Regt., T.A., and 328 W.R.A.C. Sign. Sqdn., T.A., designed to attract recruits into the Regular Army and the Terri-

torial Army, with all its interesting activities and social goings-on (for instance, next year's summer camp for the Units represented at the Exhibition will be in Western Germany and the more distant parts of the U.K.).

The *Amateur Radio Mobile Society* had a display of inexpensive mobile aerials and base-mountings made from ordinary electrical fittings—showing what can be done with a little ingenuity. They also had up their new WAC/M award and, generally speaking, showed themselves keen and well-organised for the reception of new members.

Manned by members behind well-laid-out counters, the stand of the Radio Society of Great Britain was kept busy and, as usual, there was always a group following the activities of GB3RS.

We were glad to meet at the Exhibition our contemporaries of *Wireless World*, *Electronic Technology*, *RSGB Bulletin*, and *Radio Constructor*. And as for ourselves, it was a great pleasure to meet so many readers, many for the first time, and to experience once again the great enthusiasm there is for Amateur Radio in the United Kingdom.

The Minimitter Amateur-Band Converter is by now a well-known piece of receiving equipment, in use at many AT stations. It covers 3.5-28 mc, with calibrated band-spread, and RF gain control is provided.

Some General Comments

This year's Exhibition was as interesting and as amusing, and inspired just as much enthusiasm, as ever. It was well managed and organised, and the attendance during the day or two over which this report was prepared was up to that of previous years. In the next issue we shall be able to tell you what the final attendance figures were—and who won the SX-111 prize receiver, presented by James Scott & Co., Ltd.

Events scheduled for the Saturday evening were the First Class Operators' Club dinner, and the first dinner-meeting of the British Amateur Radio Teleprinter Group.

Because this issue of SHORT WAVE MAGAZINE went to press before the Exhibition closed, we are not able to give a full report on it—but at least this account will put you generally *au fait* with what happened and what there was to see, within a very short time of its closing.

NEWS ABOUT RTTY ACTIVITY

G3CQE (Norwich) reports that RTTY (amateur teleprinter) operating is now really taking hold. Of course, most of the activity is over in the States, but the W's are being worked from this side by G3BDH, G3BXI, G3GNR, G3LET and G3CQE himself; other U.K. stations on, or about to appear, are G3BST, G3FHL, G3LEQ, G3MPF and GM8FM. The Europeans include PAØFB and several other PA's, while F2SQ and F3NB have started on the receiving side.

DX stations using radio T/P are, among others, TG9AD, ZS1FD and some VK's; ZL3HJ is on 14100 kc, and VK3KF on 21085 kc, around 1300 GMT, looking for EU's. Others in the readying stage are OD5ER and HZ1AB. Already we gather that some rather unwieldy multi-way QSO's have been going on—on one occasion, TG9AD was in a net of twelve stations, all printing to one another! G3CQE and W2RUI intend testing on 7 and 3·5 mc this winter, on week-days, to avoid the QRM. There are several U.K. radio T/P stations on two metres now—G2FGD, G3GOP, G3HKT, G3ION and G3IVP.

It is beginning to emerge that for DX in the amateur context the best approach is SSB-type transmitters with beam aerials, such as the Cubical Quad. Thus, we see that the two most modern methods of communication—Sideband for phone, and radio T/P for recorded CW—can be carried out on the same transmitter. And with reasonable receiving facilities—such as the T/P Converter described in the March-April, 1960, issues of SHORT WAVE MAGAZINE—RTTY signals can be copied at or under the noise level.

W6AEE, who produces the American *RTTY Magazine*, reports many new subscription applications, which suggests that a great increase in amateur T/P activity will be evident before very long.

VHF BANDS

A. J. DEVON

More Auroræ Openings :
October 25, November 12-13—

Watch December 3-5, 11-13—

Reports and The Tables—

FOLLOWING the great Aurora opening reported fully here last month, there could be a reasonable expectation that *Ar* conditions would recur — at any rate, a good many people thought it worth paying attention to the 27-day cycle. As it happened, the next *Ar* opening—a short one—came on the evening of October 25, with much more widespread occurrences on November 12 and 13. Obviously, these manifestations were all out of step with the reputed 27-day cycle, actually occurring at intervals of 18 days.

It can well be, of course, that *Ar* openings develop that are not noticed, or effective, as far as two-metre working is concerned. Nor does it follow that a visible Aurora will always reflect VHF signals. While this may seem to make matters even more confusing than they already are, a useful guide to the possibility of VHF *Ar* conditions developing is when the newspapers start talking about "a black-out of long-distance radio communications"; that evening, or the next, may well see the Aurora coming up. The GM's can, and do, help a great deal in this respect, as at their latitudes they can often get a visual on Auroræ never seen in the South, and it is their presence on the band that usually alerts the rest of the VHF fraternity.

Roughly, all this is what happened on October 25, when GM2FHH, GM3DIQ, GM3EGW and GM3FGJ were on for an hour or so before midnight, working a few southerly G's. Oct. 25 was a Tuesday, not propitious for a high level of activity, and not many contacts have been reported.

On November 12-13, things were different. To start with, it was a week-end; and secondly, the *Ar* opening stayed in much longer — according to G2CIW (Birmingham), during 1845-1920 and 2145-2200 on the Saturday, and at intervals he gives as 1530-1605, 2215-2235, and for about half-an-hour after midnight on Sunday, 13th. During these openings he worked four GM's and heard nine more, also GI3GXP and GI5AJ. However, no EU stations at all were coming into the Midlands.

For GW3ATM (Chepstow, Mon.) the November 13 opening was a chance to work GM3EGW —worked three years previously by *Ar* from the old QTH at Huddersfield — with two other GM's, some DX G's and GI5AJ heard. The GM contact puts GW3ATM up to 9C in Countries.

G3JAM (Woodford Green, Essex), who is interested in Aurora statistics, suggests that December 3-5 and 11-13 should be periods worth watching for VHF *Ar* conditions. So let's do that, and see what happens. G3JAM had a couple of *Ar* contacts during the November opening, and reports hearing HB9RG, 144·29 mc. after midnight on the 13th, with a 56A note; he did not respond, nor did he reappear, but from other reports it would seem that the Aurora had died down by then.

VHFCC Elections

Those to be recorded this time are Hermann Ebner, OE5HE, who gets VHFCC Certificate No. 278; he lists 108S worked in 5C, of which the most unusual (to the U.K. eye) are YU3DF and I1CWX; the great majority of his contacts were with DJ/DL/DM and OK, the latter totalling no less than 34S.

Certificate No. 279 is awarded to Fritz Mayer, DL9FO, Pforzheim, who includes no G's in his list, but shows contacts in 7C, including LX1SI and 15 HB9/HB1's.

Ian Mackenzie, GM3FGJ, Edinburgh, gains Certificate No. 280, his totals being 139S worked in 45C and 14 countries; his EU's include DL, ON, OZ, PA and SM, and his tally of GM's worked is nearly 50—but, GM3FGJ says: " . . . have been at it for about

TWO METRES

COUNTIES WORKED SINCE SEPTEMBER 1, 1960

Starting Figure, 14

From Home QTH Only

Worked	Station
50	G3HBW
42	G3JWQ
40	G6GN, G6XA
37	G2CIW
35	G3KPT
28	G3MPS, GW3MFY
27	GW3ATM
26	G3KQF
25	G3HS
23	G2CVV, G3NAE, G3OBD
22	G5QA
21	G3HWR
20	G3GSO, G3OBB
15	G3NNK

This Annual Counties Worked Table opened on September 1st, 1960, and will close on August 31st, 1961. 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.

7 years; it's a slow job up here in GM-land!"

Reports and Comment

G3JAM remarks that in about six months he has worked 38 stations new to him on two metres. GW3ATM reports that he has made a start on 70 cm. with the Tx/Rx gear working and the 12-ele stack to be pushed up to 32 ft. "when I can get a ladder long enough." He and G5QA (Exeter) have heard one another on 70 cm., and GW3ATM has worked G6GN (Bristol).

G2CIW, who is in general agreement with the band planning proposals outlined here last month, has been trying NBFM on his two-metre transmitter in order to eliminate a small amount of TVI.

G3IJU (R.A.F., Upavon) writes to say that he hopes to be active on both VHF bands w.e.f. early in the New Year, and draws attention to the R.216—a current VHF type—as a receiver to look out for on the surplus market; it covers 19-157 mc in five switched tunable ranges and can be rated as "good on the two-metre band."

G2DHV has been out /M on two metres and was glad to work G2ANS, G3MZW and G4PS—an area covering from Roade in Northants. round to Crookham, Hampshire, *via* Oxford. G5QA (Exeter) reports that his sked with GW3ATM "still proceeds three times a week" and confirms that they are in touch on 70 centimetres; the distance is about 75 miles, over some of the heaviest ground in the West Country.

G3JDN (Reigate) writes to say that he missed the *Ar* openings! On the constructional side, he is busy with a complete two-metre receiver around a BC-454. "as it seems a shame to tie up an HRO." He now has a slot-fed 8/8 at 30 ft. which shows a considerable improvement over the old 5-ele Yagi at the same height—and so it should! G3HWR (London, N.W.3) claims for the Tables and mentions that he has been on 4 metres, with five stations worked so far on CW.

[over

TWO METRES

ALL-TIME COUNTIES WORKED LIST

Starting Figure, 14

From Fixed QTH Only

Worked	Station
79	G5YV (787)
77	G6NB
76	G3CCH
74	EI2W
72	G6XM
70	G5MA
69	G3HBW
68	G3BW, G3GHO
67	G3KEQ
66	G3BLP (840), G3IUD (302), *G5BD*
65	G3EHY, GM3EGW (276)
63	G2FJR (542)
62	G3FAN (760)
60	G2OI (402), G3IOO, G3DMU
59	G4SA
58	G8OU, G2CIW (251)
57	G8SB, G3HAZ (535)
56	G3WW (770), G5DS (654), G6XA
55	G2HDZ (495), G2HIF, G3JWQ (517), G5BM, GW5MQ
54	G8VZ
53	G2AJ (519), G3LHA (387), G4CI
52	G2NH, G3FZL, G6RH, G6XX, GW2ADZ
51	G5ML
50	G3ABA, G3GSE (518)
48	G3FIH, G3KPT*, G6TA (487)
47	G3DKF, G5WP
46	G4HT (476), G5BY, *G6YU*
45	G2AHP (647), G2DVD (362), G2XC, G3BJQ, G3GFD, G5JU, G6GN
44	G3BK, G3DVK (282), G3NBQ (218), G8DA
43	G2DDD, G2FCL (322), G3BA, G3BNC, G3COJ, G3DLU*, G3HWJ, G3KHA (262), G3KQF, *G3KUH*, G3WS, G4RO, G5DF
42	G2HOP, G3DO, G3IER, G6CI (220)
41	G2CZS (282), G2FQP, G3GSO
40	G3AYC, G3CGQ, G3MPS, G5MR (366), G8KL, GW3ATM

(Continued)

Worked	Station
39	G2IQ, G3CO, G3GBO (434), G3LTF, G3VM, G8IL (325)
38	G3APY, G3CKQ, G3HTY, G8VN (190)
37	G3FNW, G2FZU (180), G3DLU, G3LAR (435), G3MAX, GC3EBK (260), GW3MFY
36	G2DCI (155), G3CXD, G3DLU*, G3IIT, G6CB (312), G8DR (354), G8IP
35	G3FYY (235), G3HCU (224), G4LX
34	G3AEP, G8IC, GM3DIQ
33	G3JAM (349), G3LTN, G3FUR, G3HHY (125)
32	G3HIL, G8QY, G8VR, GC2FZC
31	G3HXO, G3KPT (180), G5RP
30	G2AHY, G3FRY, G3GOP (208), G3GVF (129), G3IOE, G3IRA, G3KEF (110), G5NF, GW8UH
29	G2CVV, G3AGS, G3AKU, G3FIJ (194), G3HWR (315)
28	G3ICO, G3ITF, G3OBD, G4JJ/A, G8DL, GM3BDA
27	G3CVO (231), G3DAH, G3ISA (160), G3JGY, G3LTF/A, G6GR, G8NM, GI3GQB, GW3GWA
26	G2BRR, G3CFR (125), G3MED, G3SM (211), G3YH, G4MR (189)
25	G3JHM, G3JMA, G3JXN (220), G5SK, G6PJ
24	G3FD, G3FEX (226), G3FXG, G3FXR, G3OBB
23	G3CWW (260), G3HSD, G3NNK, G5PY
22	G2DRA, G3AGR (135), G3ASG (150), G3BPM, G5AM
21	G2AOL (110), G3BDQ, G3DVQ, G3IWJ, G6XY
20	G3EYV
19	G2DHV, G2HDR, G3GCX, G5LQ (176)
18	G3DBP, GC2CNC
17	G3EGG
16	G3FRE, G3MLS
15	G3IWA
14	G3CYY, G3MHD

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

TWO-METRE FIRSTS

G/DL	G3DIV/A-DL4XS/3KE	5/6/50
G/EI	G8SB-EI8G	23/4/51
G/F	G6DH-F8OL	10/11/48
G/GC	G8IL-GC2CNC	24/5/51
G/GD	G3GMX-GD3DA/P	29/7/51
G/GI	G3DA-GI2HML	29/6/49
G/GM	G3BW-GM3OL	13/2/49
G/GW	G5MQ-GW5UO	22/10/48
G/HB	G6OU-HB1IV	12/9/53
G/I	G5NF-I1KDB	14/6/59
G/LA	G6NB-LA8RB	29/6/53
G/LX	G5MR-LX1AS	23/7/55
G/OE	G3HBW-OE1WJ	4/1/60
G/OK	G5YV-OK1VR/P	27/10/58
G/ON	G6DH-ON4FG	25/9/48
G/OZ	G3WW-OZ2FR	1/6/51
G/PA	G6DH-PAØPN	14/9/48
G/SM	G5YV-SM7BE	1/6/51
G/SP	G5YV-SP6CT/P	28/10/58
GC/DL	GC3EBK-DL3VJ/P	22/3/53
GC/EI	GC2CNC-EI2W	8/10/51
GC/F	GC2CNC-F9OK	17/11/53
GC/GI	GC3EBK-GI3GXP	14/9/56
GC/GW	GC2FZC-GW8SU	16/6/54
GC/ON	GC3EBK-ON4BZ	4/3/53
GC/OZ	GC3EBK-OZ2FR	2/3/53
GC/PA	GC3EBK-PAØHA	16/7/55
GD/EI	GD3DA/P-EI2W	30/7/51
GD/GM	GD3DA/P-GM3DA/P	29/7/51
GD/GW	GD3DA/P-GW5MQ	28/7/51
GI/DL	GI3GXP-DL1SE	5/1/56
GI/EI	GI3GQB-EI2W	13/6/51
GI/GD	GI2FHN-GD3DA/P	29/7/51
GI/GM	GI2FHN-GM3OL	1/7/49
GI/GW	GI2FHN-GW3ELM	8/7/49
GI/OK	GI3GXP-OK1VR/P	27/10/58
GI/ON	GI3GXP-ON4BZ	5/1/56
GM/DL	GM2FHH-DJ1XX	29/5/55
GM/EI	GM3BDA-EI2W	12/6/51
GM/HB	GM3HLH-HB1RG	4/8/57
GM/ON	GM3EGW-ON4BZ	21/11/53
GM/OZ	GM2FHH-OZ2IZ	18/6/57
GM/PA	GM3EGW-PE1PL	22/4/53
GM/SM	GM2FHH-SM6ANR	22/7/55
GM/SP	GM3EGW-SP3GZ	7/10/60
GW/DL	GW5MQ-DL4XS	22/9/51
GW/EI	GW2ADZ-EI8G	19/4/51
GW/F	GW2ADZ-F3LQ	14/5/50
GW/HB	GW2ADZ-HB1IV	14/9/53
GW/OK	GW2HIY-OK2VCG	6/10/60
GW/ON	GW2ADZ-ON4YV	13/5/50
GW/OZ	GW2HIY-OZ5AB	14/6/59
GW/PA	GW2ADZ-PAØHA	13/5/50
GW/SM	GW2ADZ-SM6QP	1/7/53

More than a few of those who follow this piece will remember G6XM — first of Farnborough, then of Tollerton, Notts. (where he had some aerial trouble with the local authority!) and now of B.A.O.R., where he is doing a three-year stint in the Cologne-Dusseldorf area, signing DL2XM. Bill is getting busy on two metres, and hopes to be able to work south-east England under normal tropospheric conditions. Using only an indoor dipole in the roof-space, he has heard over 40 local or semi-local DJ/DL's and a couple of PA's. Plans are for a good 120-watt transmitter for two metres, with a gainy outside beam, and /P operation from the Eifel Mountains, in which he has found first-class sites accessible by car, at heights above 1,400 feet.

And if GM2FHH is listening, DL2XM heard him calling G3KFD at around 1815-1830 GMT on November 12, during the *Ar* opening — Bill tried hard to raise GM2FHH on his subsequent CQ, and hopes he will be luckier next time! Another GM3 was heard during this period, but was drowned-out by local QRM as he signed over. All this on the indoor dipole already mentioned.

Statistical Evidence

When preparing the last two or three offerings for this space, there has been a note on the memo. pad about asking all VHF operators to look back over the log for the year and take out what, for your A.J.D., would be essential statistical information.

What is in mind is a count of the total number of QSO's; the different stations worked; and an estimate of the hours put in on the air — all over the 12-month period to August 31, 1960. If a reasonable proportion (say, 20%) of VHF operators were to respond to this suggestion, and if the replies were fairly well distributed over the U.K., we would have a very good picture of the pattern of VHF activity over the country as a whole; to make this survey really effective, we would want the information for all active VHF bands (four metres, two metres and 70 cm) and, in particular, from as many as possible of those who have only been on VHF for the last couple of years or so.

CN2/CN8	CN2AO-CN8MB	26/6/55
DL/OZ	DL6SW-OZ2FR	4/3/51
DL/SM	DL2DV-SM7BE	10/3/51
EI/DL	EI2W-DL3VJ/P	29/8/52
EI/F	EI2W-F8MX	9/8/56
EI/ON	EI2W-ON4BZ	21/9/51
EI/OZ	EI2W-OZ5AB	14/6/59
EI/PA	EI2W-PAØFC	10/10/53
ON/LA	ON4BZ-LA1KB	4/7/53
ON/LX	ON4TR-LX1MS	? ?
ON/OZ	ON4BZ-OZ2FR	3/6/51
ON/SM	ON4BZ-SM7BE	2/3/53
ON/SP	ON4BZ-SP6CT/P	28/10/58
ON/9S4	ON4UD-9S4BS	19/8/56

Some of the Comments

"You may be interested to know that I get my copy of the *Magazine* from the local Y.*W*.C.A. bookstall! They say they get it regularly every month" (DL2XM/G6XM, Hq. B.A.O.R.) . . . "As soon as my gear arrives from Malaya and I can move into suitable married quarters, I shall be in operation" (G3IJU) . . . "Perhaps the Zone spacing could be assigned according to the number of *active* stations in the area" (G2CIW) . . . "The recent Aurora results were my first on *Ar* since moving down into Mon. two years ago" (GW3ATM) . . . "If your dark glass is not dark enough, look at the sun's reflection in a pail of water" (G3JAM).

In Conclusion ——

It now only remains for A.J.D. to wish all who follow *VHF Bands* a very Happy Christmas, and luck and prosperity in the New Year. He will have to be thinking of you over Christmas because the tussle with the January issue falls right in the holiday period (as usual!) Could we have everything for that issue by **Friday, December 16,** addressed A. J. Devon, "VHF Bands," *Short Wave Magazine*, 55 Victoria Street, London, S.W.1? *73 de A.J.D.*

PHUTILE PHONETICS

FLAILING FATUOUS FONE

THIS may be regarded as an Impassioned Plea or an Angry Tirade — whichever you like. But the writer has become so exasperated with some of the gibberish heard on the amateur phone bands that he has to let the steam off before it starts coming out of his ears.

When will some of our phone operators learn sense? There seems to be a certain proportion of them who think it clever to surround their conversation with unnecessary verbiage and extraneous nonsense by using so-called " phonetics " in the most unnecessary circumstances.

We have always winced and gone slightly green at " Q R Mary," whoever she might be, but now it's " Q R Morocco " or even " Queen Roger Madagascar," and if anyone can see the necessity for spouting *that* lot on an overcrowded band, then we are extra dim. " QRM " is fine for the CW operator; as it stands, it's tolerable for the phone man; but " jamming " or " interference " would be better. (Yes, yes, we know . . . you use the Q Code because it's international and overcomes the language difficulty. That's why two G's working each other talk about " Queen Roger Morocco "!) For goodness' sake let us grow up and talk an intelligible language — and down the drain with all Q-signals rolled off to sound clever. Don't try to tell us that " Your sigs are fading " is not more intelligible, even to a Uruguayan or a Latvian, than " You have some Queen Sugar Baltimore on you."

" I Spell "

A recurring nightmare is to work a station whom you have already given Readability 5, Strength 9, who then tells you his name is Nebuchadnezzar (which you naturally get first time — otherwise he wouldn't be 5 and 9, would he?) and then adds the dread words " I Spell." You know what's coming . . . even if it were " N . . . e . . . b . . . u . . . " and so on it would be bearable, but it has to be " *N for Norway, E for England, B for Boston* " and right through the ghastly lot, followed, no doubt, by " *I repeat.*" To those persistently driven up the wall by this kind of nonsense, we say " Hit back ! Invent you own phonetic alphabet, and let 'em have it."

We tried it once, with devastating results. As far as we remember, the reply went " The name is Freddy . . . I spell . . . F for Fear, R for Rear, E for Ear, D for Dear, D for Dear, Y for Year." Invent a better name than that, though, so that you can introduce " Q for Queer, C for Clear, L for Leer, M for Mere, N for Near " and many others. You can, with luck, deal with your own call-sign in the same way and become Gear Three Peer Dear Queer — or something near. Almost as good for exploration is the Bog family, enabling you to become Gog Three Tog Dog Wog, or thereabouts.

Foreign Parts

The really shocking thing is the use of *place names*, of all things, for phonetics. No wonder the newly-interested SWL's and the eavesdropping BCL's think they have wonderful receivers . . . they hear Mexico, Germany and Canada all at once! Believe it or not, but we actually did hear a G station a few weeks ago declaiming thus: " *CQ, CQ, CQ, this is Germany* . . . " Cut him off there and there's only one interpretation. Of course it wasn't Germany at all, but only old G3 so-and-so; but of all the words to choose for " G " we can hardly think of one less suitable.

So we must tell all the listeners that when they hear Canada Ontario they are listening to Cuba; that Denmark London means Germany; that Yokohama Ontario is really in Roumania; and so on *ad nauseam*. Could it be more confusing and unnecessary!

Listening round the SSB section of Twenty one night we heard a weak station who was probably a good DX piece. But every time he signed he used long-winded phonetics and spoke so quickly that it was literally impossible to get his prefix. We finally switched off and never *did* gather who that man was. If he had spoken his call-sign, as it appears on his licence, just once, we should have got it. This is what we mean by the real futility of the so-called phonetics.

Be Fashionable

Enough of destructive criticism! We offer a new phonetic alphabet which will put you right in the swim, among the Top People. Use only this one (it washes whiter than all the others) and you will stand right out on the band as something different (a moron, probably). But that's the thing — *Be Different*. Be a Beatnik if you like, but *use our phonetics*.

A for Able	N for Near
B for Babel	O for Oesophagus (*I Spell*)
C for Cable	P for Peer
D for Dear	Q for Queer
E for Ear	R for Rear
F for Fable	S for Sable
G for Gable	T for Table
H for Hear	U for Unintelligibility
I for Ipecacuanha (*I Spell*)	V for Veer
J for Jeer	W for Weir
K for Khatchaturian	X for Xylophone
L for Label	Y for Year
M for Mabel	Zee for Zed

Good luck to you all and may you dodge the Queer Rear Near, nor ever suffer from Queer Sable Babel. (I will even send you my Queer Sable Label). The name, of course, is Mabel Able Cable and the QTH Llanfairpwllgwyngyllgogerychwyrndrobwllllantysiliogogogoch . . . I spell! (*No, you definitely don't* . . . Ed.).

Up the wall, everybody.

L.H.T.

PHOTOGRAPHS AND ARTICLES

We are always on the look-out for good technical material for publication, and for photographs of Amateur Radio interest. Anything we can use is paid for at fair rates. immediately on appearance. For technical and constructional articles of outstanding merit. we pay the highest rates in the world in the Amateur Radio field. The Editor is always glad to hear from potential contributors who can offer useful material in the Amateur Radio context.

NEW QTH's

This space is available for the publication of the addresses of all holders of new U.K. callsigns, 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.

GW3CW, C. J. Watson, 5 Eleanor Road, Old Colwyn, Denbighshire. *(Re-issue.)*

G3OAT/T, M. J. A. Bryett, Nobles Farm, Wood End, Bluntisham, Hunts.

G3OCY, S. Wearmouth, 56 Lumley Crescent, Ferryhill, Co. Durham.

G3ODI, G. N. Partington, 3 Cheltenham Avenue, Liverpool, 17.

GW3ODI, G. N. Partington, Gaythorne, Hafodty Lane, Upper Colwyn Bay, Denbighshire.

G3OGN, N. B. Lomas, 26 Tweedale Avenue, Higher Blackley, Manchester, 9. *(Tel.: Cheetham Hill 6924.)*

G3OGT, G. Thomas, St. Teresa's Cheshire Home, Long Rock, Penzance, Cornwall.

G3OGU, R. Hodgkinson, 70 Mitella Street, Burnley, Lancs.

G3OHB, Miss E. Bottomley, St. Teresa's Cheshire Home, Long Rock, Penzance, Cornwall.

G3OHS, J. C. Perry, 399 Higham Hill Road, Walthamstow, London, E.17.

G3OID, R. D. Josephy, 8 Westwood Park Drive, Leeds, 16, Yorkshire.

G3OID/A, R. D. Josephy, Nowell House, Giggleswick School, Settle, Yorkshire.

G3OJH, R. Bennett, 13 Alfonso Road, Kirkdale, Liverpool, 4.

G3OJL, M. W. Plaster, 26 Silver Street, Chard, Somerset.

G3OJT, P. Redshaw, 110 Queensway, West Wickham, Kent.

G3OKB, M. Ireson, Church Lane, Bulwick, Corby, Northants.

G3OKC, G. D. Brown, 5 Croft Place, Brighouse, Yorkshire.

G3OKW, L. Wilkinson, 20 Jubilee Crescent, Gosforth, Newcastle-upon-Tyne.

G3OLB, T. Boucher, 19 Churchill Road, Brislington, Bristol, 4.

G3OLP, B. Wadsworth, 13 Summerfield Road West, Todmorden, Lancs.

G3OLS, L. S. Standalof, 7 Whaddon Road, Newton Longville, Bletchley, Bucks.

G3OLT, G. M. Robinson, Old Brewery House, Buckby Wharf, Rugby, Warks. *(Tel.: Long Buckby 322.)*

G3OLU, J. T. Saunders, 2 Westbourne Grove, Beehive Lane, Chelmsford, Essex.

G3OLW, J. G. Burnett, 135 Prince Consort Road, Hebburn, Co. Durham.

G3OLY, J. E. Boylett, 22 The Crescent, Letchworh, Herts.

G3OMA, S. Kay, 6 Parkmore Road, Pennywell, Sunderland, Co. Durham.

G3OMC, A. E. Jenkinson, 3 Daisy Bank Avenue, Pendlebury, Salford, Lancs.

G3OME, D. Holland, 41 Farfield Crescent, Buttershaw, Bradford, 6, Yorkshire.

G3OMF, A. Czunyi, 244 Mackadown Lane, Birmingham, 33. *(Tel.: MAR 2640.)*

G3OMH, D. F. S. Hayward, 6 Larkhill Road, Yeovil, Somerset.

G3OMJ, E. Judkins, 20 Highbury Crescent, Bessacarr, Doncaster, Yorkshire.

G3OMK, T. Kirk, 19 Northdale Road, Bakersfields, Nottingham.

G3OMM, Mrs. M. I. Shaw, 107 Norfolk Mount, Halifax, Yorkshire.

G3OMN, T. Jonsen, 2 Sterndale Road, Hammersmith, London, W.14.

GM3OMN, T. Jonsen, 28 Kyleakin Terrace, Thornliebank, Glasgow, S.W.3.

G3OMR, M. Russoff, 20 Bunns Lane, Mill Hill, London, N.W.7. *(Tel.: Mill Hill 1623.)*

G3OMS, Dr. R. A. Simpson, 75 Stoke Road, Shelton, Stoke-on-Trent, Staffs. *(Tel.: Stoke-on-Trent 48041.)*

G3OMU, A. Bradbury, 2 Station Road, Knaith Park, Gainsborough, Lincs.

G3OMW, B. F. J. Davis, 6 High Street, Falmouth, Cornwall.

GM3ONA, J. Paterson, 83 Merrick Drive, Dalmellington, Ayr. *(Tel.: Dalmellington 205.)*

GW3ONN, G. C. Griffiths, Charlbury, Fosterville Crescent, Abergavenny, Mon.

G3ONS, D. Sloan, 39b Golders Way, Golders Green, London, N.W.11.

GW3ONU, D. A. Barry, R. Signals, All-Arms Junior Leaders' Regiment, Tonfanau Camp, Towyn, Merionethshire.

G3ONY, D. MacIntyre, 31 Chapman Crescent, Kenton, Harrow, Middlesex. *(Tel.: Wordsworth 0670.)*

GI3ONZ, W. H. Chambers, 27 Hopefield Avenue, Portrush, Co. Antrim.

G3OOD, W. V. Ruffell, 63 Cambridge Grove, London, W.6.

G3OOH, G. Lander *(DJØBF)*, 13 Ommaney Road, New Cross, London, S.E.14.

GM3OOK, J. Plenderleith, 27 Greenbank Road, Irvine, Ayrshire.

CHANGE OF ADDRESS

G2FUD, A. W. Owen *(ex-GW2FUD)*, 184 Hale Road, Hale, Cheshire.

G2HIL, R. Roberts, 25 Neville Avenue, Kidderminster, Worcs.

G3DWZ, J. K. Robinson, Brooklyn, Station Road, Wombourn, Wolverhampton, Staffs. *(Tel.: Wombourn 2496.)*

G3FDT, Amateur Radio Society, Dept. of Marine Radio and Radar, Bristol Technical College, Bristol, 7.

G3LOX, B. M. Johnson, 44 Randall Road, Chandlersford, Hants.

G3MIL, F. J. M. Marr-Johnson, 15 Cromwell Road, London, S.W.7. *(Tel.: KNI 3826.)*

GM3NCS, D. H. M. Noble, Stanes, Cummingstown, Burghead, Morayshire.

G3NQW, G. F. Welsh, 16 Lloyd Road, Worcester Park, Surrey.

THE MONTH WITH THE CLUBS

By *"Club Secretary"*

(No Club Reports in January Issue — MCC Results Only)

THE first leg of the **Magazine Club Contest** showed the highest activity ever heard in this event, with at least 71 stations giving Club numbers. Last year 60 stations participated, and 54 logs were sent in ; so this time we can probably count on well over 60 logs.

The conditions on the first Saturday and Sunday were far from good and very variable. Stations were coming in at 599 for a period, and later they would be heard at only 569 with " watery " signals. Static was quite troublesome, and it was obvious that some stations were having difficulty in copying weakish signals.

In short, this looks like having been a Contest which will sort out the men from the boys, and we shall, as usual, be giving the results and the full report in next month's issue.

Club Secretaries are particularly asked to note that there will be no normal Club Activity Reports in the next (January) issue, as the space will be devoted entirely to MCC. Note that the deadline for the February offering will be *January 13*.

Meanwhile, from your " Club Secretary " to all Club Secretaries, officers and members, a Merry Christmas followed by a happy and prosperous New Year. And so to the activity reports for this month . . .

Bradford are holding a Junk Sale on December 6, and are having a Social Evening on the 20th at the Mechanics' Institute Café ; January 10 is booked for a talk on Transistors. **Chester** have their Net Night on December 6—join in if you hear them ; the 13th is an Open Night (waiting for a lecturer) and the 20th will be the date for the Christmas celebrations—all at the Y.M.C.A., The Old Bishop's Palace, Chester.

Crystal Palace hold their Morse class and normal meeting on December 6, and on the 17th (a Saturday) they have arranged a Junk Sale. **Derby** have a Junk Sale on December 7 and their Annual Christmas Party on the 9th—admission by ticket only ; the 14th is booked for a Film Show with " This is the BBC " as the main attraction ; December 21 is an Open Evening, and there is no meeting on the 28th.

Hastings will meet on December 6th and 20th, but the lectures are not yet definitely fixed. Their officers were re-elected *en bloc* at the AGM in November, and the Club is in a flourishing condition with 57 members.

The **Irish Radio Transmitters' Society** send a copy of their (printed) journal, giving news from their widely-spread regions ; they will be meeting at the Standard Hotel, Harcourt Street, Dublin, on December 16. **Mitcham** are meeting on publication date, December 2, for a talk by G3OCA entitled " Round and About with a Camera." **Newbury** hold their December meeting on the 30th, when G3GKH will be judging the Home-Constructed competition.

Norwich gather every Friday at the Golden Lion, Madder Market, where recent activities have included talks by G4ZU on Aerials, G4KO on VHF and G3JIE on SSB. There have also been a mobile Treasure Hunt, a Quiz by G3BHJ and a " Mobile Scram " finishing at Wells.

Nottingham have a full month, with an Open Night on the 6th, a show of colour slides by G3FGY on the 13th, a film of the South Pole expedition on the 20th and the Christmas Party on the 22nd ; four of their six RAE entrants passed, and two are already

The South Yorkshire Amateur Radio Society dinner on October 27 was a highly successful affair. In the draw, one of the prizes was a microphone, won by G3NXZ. In this photograph are, left to right: G3ESP (hon. secretary, S.Y.A.R.S.), G3JLZ, G3HNJ (chairman), G4JJ, G3NXZ and G3OMJ, the latest member of the society to become licensed.
Photograph courtesy " Yorkshire Evening News."

Names and Addresses of Club Secretaries reporting in this issue :

ACTON, BRENTFORD & CHISWICK: W. G. Dyer, G3GEH, 188 Gunnersbury Avenue, London, W.3.
ARMY WIRELESS RESERVE: Maj. D. W. J. Haylock, G3ADZ, 3 Norris Gardens, Grange Estate, Havant, Hants.
BRADFORD: M. Powell, G3NNO, 28 Gledhow Avenue, Roundhay, Leeds 8.
BRADFORD GRAMMAR SCHOOL: W. D. Kaye, G3NEK, 151 Halifax Road, Brighouse.
CAMBRIDGE: A. H. G. Waton, G3GGJ, Arkengarthdale, New Road, Barton, Cambridge.
CHELTENHAM: J. H. Moxey, G3MOE, 11 Westbury Road, Leckhampton, Cheltenham.
CHESTER: H. Morris, G3ATZ, 24, Kingsley Road, Boughton Heath, Chester.
CHILTERN: C. Simpson, 2 Mead Street, High Wycombe, Bucks.
CIVIL SERVICE: G. Lloyd-Dalton, 2 Honister Heights, Purley, Surrey.
CLIFTON: C. H. Bullivant, G3DIC, 25 St. Fillans Road, London, S.E.6.
CORNISH: W. J. Gilbert, 7 Poltair Road, Penryn.
CRAWLEY: R. G. B. Vaughan, G3FRV, 9 Hawkins Road, Tilgate, Crawley.
CRYSTAL PALACE: G. M. C. Stone, G3FZL, 10 Liphook Crescent, London, S.E.23.
DERBY: F. C. Ward, G2CVV, 5 Uplands Avenue, Littleover, Derby.
DORKING: J. Greenwell, G3AEZ, Wigmore Lodge, Beare Green, Dorking.
ENFIELD: V. Croucher, G3AFY, 15 Nelson Road, London, N.15.
HALIFAX: A. Robinson, G3MDW, 7 Upper Brockholes, Ogden, Halifax.
HARROW: S. C. J. Phillips, 131 Belmont Road, Harrow Weald.
HASTINGS: W. E. Thompson, G3MQT, 8 Coventry Road, St. Leonards-on-Sea.
I.R.T.S.: T. O'Connor, EI9U, 280 Collins Avenue, Whitehall, Dublin.
LEEDS: D. Dinsdale, 69 Spen Lane, Leeds 16.
LEICESTER: P. G. Goadby, G3MCP, 535 Welford Road, Leicester.
LIVERPOOL: H. James, G3MCN, 448 East Prescot Road, Liverpool 14.
LLANELLY: H. J. Hughes, 4 Pen-y-morfa, New Dock, Llanelly.
MANCHESTER GRAMMAR SCHOOL: D. H. M. Reekie, G3OFC, Manchester Grammar School Amateur Radio Club, Rusholme, Manchester 13.
MIDLAND: C. J. Haycock, G3JDJ, 360 Portland Road, Birmingham 17.
MITCHAM: M. Pharaoh, G3LCH, 1 Madeira Road, Mitcham.
NEWBURY: J. A. Gale, G3LLK, Wild Hedges, Crookham Common, Newbury.
NORTHAMPTON: S. F. Berridge, G3ITW, 20 Ethel Street, Northampton.
NORTH KENT: D. W. Wooderson, G3HKX, 75 Mount Road, Bexleyheath.
NORWICH: H. Staff, G4KO, 59 Charles Avenue, Thorpe, Norwich.
NOTTINGHAM: E. C. Weatherall, 16 Avebury Close, Clifton, Nottingham.
NOTTINGHAM UNIVERSITY: G. Coates, Radio Society, Societies' Room, The University, Nottingham.
PETERBOROUGH: D. Byrne, G3KPO, Jersey House, Eye.
PURLEY: E. R. Honeywood, G3GKF, 105 Whytecliffe Road, Purley.
R.A.F. GAYDON: J. A. Edson, NBS Section, Electronics Centre, RAF Gaydon, Leamington Spa.
REIGATE: F. D. Thom, G3NKT, 12 Willow Road, Redhill.
SLADE: C. N. Smart, 110 Woolmore Road, Birmingham 23.
SOUTH BIRMINGHAM: J. Bratby, G3GVA, Westmead Country Club, Hopwood, Birmingham.
SOUTHGATE: A. G. Edwards, G3MBL, 244 Ballards Lane, North Finchley, London, N.12.
SOUTH SHIELDS: R. Ray, G3NCL, 16 Holystone Avenue, Gosforth, Newcastle-on-Tyne 3.
SOUTH YORKSHIRE: W. Farrar, G3ESP, 2a Highbury Avenue, Bessacarr, Doncaster.
SPEN VALLEY: N. Pride, 100 Raikes Lane, Birstall, Leeds.
STEVENAGE: C. A. Kenny, 290 Chertsey Rise, Stevenage.
SURREY (CROYDON): S. A. Morley, G3FWR, 22 Old Farleigh Road, Selsdon, South Croydon.
SUTTON AND CHEAM: F. J. Harris, G2BOF, 143 Collingwood Road, Sutton.
WIRRAL: A. Seed, G3FOO, 31 Withert Avenue, Bebington.
WOLVERHAMPTON: J. Rickwood, 738 Stafford Road, Fordhouses, Wolverhampton.

on the air.

Nottingham University report that they are back in circulation ; they are running a BC-640 transmitter on Two Metres, and are also hoping to build a TV transmitter, towards which they have already acquired an Image Orthicon.

Slade meet on December 2 for " Sound Effects " —a lecture and demonstration by Mr. D. Brown of the Birmingham Tape Recording and Audio Club. On the 16th they have Fun and Games, organised by two members ; and on the 30th the tape-recorded lecture entitled " The Human Machine as a Radio Operator." **Spen Valley** have a Film Show (subject not announced) on December 7, but no other meetings during the month. **Wolverhampton** likewise meet only once—on the 12th, when the subjects will be The GDO and The Art of QSL'ing. Their New Year's Party is arranged for January 9.

The **Army Wireless Reserve** A.R.S. held their AGM in October, electing GW8PG chairman, G3ADZ secretary, GM3OJC treasurer and G3EJF editor of their News-Letter, *Broadcast*. Membership is available to any serving or past member of AWRS, 2 Press Comm. Sqdn. or 404 Sig. Sqdn., and any serving members of R. Sigs. Associate membership to serving members of non-Signals units and past members of R. Signals units other than AWRS and those given above.

Chiltern met at High Wycombe (British Legion) on October 27 and heard G6JF's talk on his all-band mobile Tx. G3INZ gave the lecture on November 24 ; and on December 29 the subject will be " This or That." **Leicester** meet every Monday at Old Hall Farm, Braunstone Lane, 7.30 p.m. The Shack is being rebuilt, together with facilities for tea and ragchewing in a lounge. Morse classes are held on meeting nights ; on December 5 G3HAN will describe a Two-metre transmitter and converter, and on the 19th G3GXZ will talk on transistor FM transmitters.

Northampton held their AGM and elected G2HCG president, G3FWB chairman, G3ITW secretary and SWL S. Haddon treasurer ; they meet every Thursday at Allen's Pram Works, 8 Duke Street, 7 p.m. to 10 p.m. **Peterborough** met on November 4 for a talk on SSB Transmitter Construction, by G3HES, who showed members his all-band SSB rig built from scratch ; at the December meeting there will be a lecture-demonstration on Meters, and in January on Simple Short-Wave Receivers. The meetings are on the first Friday of the month ; R.A.E. and Morse classes are held on Tuesdays and Thursdays at the Technical College.

Surrey (Croydon) met on November 8 to hear How to Get Started, from G8TB and G2RD. On December 13 they will hear a talk from G2FKZ on the work of the amateur in IGY. The Annual Social, previously fixed for this date, has been deferred until January, and will be announced later on.

Acton, Brentford and Chiswick will hear a talk on Transistorised Equipment, by G3BBL, on December 20 ; as from the 6th this Club will be meeting on the first Tuesday of each month for CW instruction and general discussion ; all meetings at 66 High Road, Chiswick, W.4.

Cornish held their November meeting at the YMCA, Falmouth, when a long discussion took place on some recent QSO's; G3AET gave a talk on the uses and operation of the Sonar buoy and the TF-20 antenna; next meeting, also at Falmouth, is on December 7 at 7.30 p.m. **Halifax** recently had a lecture from G3LGS on SSB; on January 3 G6BX will give a talk on his holiday at Interlaken; and January 17 is booked for a Pea-and-Pie Supper at the Sportsman Inn, Ogden, 7.30 p.m.; normal meetings are on the first and third Tuesdays.

Leeds have arranged a visit to Kirkstall Power Station, 7.30 p.m. on December 7, and the 14th is fixed for the Christmas Rag-chew; on January 11 there will be a Junk Sale, and on the 18th a visit to the GPO Parcels Office.

Llanelly announce the opening of their new Headquarters, at the Bynea Steelworks; all interested amateurs and SWL's in the neighbourhood are asked to contact the secretary (*see* panel) for information on membership and Club activities; they have been meeting unofficially for the past year or so, but are now organised. **Midland** hold their Christmas Bring and Buy Sale on December 20, and January 5 is booked for a Film Show. Meetings take place at the Birmingham and Midland Institute, Paradise Street, Birmingham, on the first Thursday and third Tuesday of each month; visitors always welcome.

North Kent recently had a very interesting talk by G3GWD (VQ4CW) on the East African Safari; this mammoth motor rally relies on Amateur Radio for its communications, which are quite complex. Next meeting is on December 8, subject not arranged at present.

Southgate, Finchley and District hold their AGM on December 8 at Arnos School, Wilmer Way, N.14, and this will be followed by a talk on Stabilised Power Supplies. **Bradford Grammar School** report that seven members passed the recent R.A.E., one of them being only thirteen! Morse classes are in full swing and all seven should have licences by Christmas—jolly good show. The club recently visited the National Switch Factory at Keighley, and future plans include a talk and film on Transistors.

Cambridge recently heard an illustrated talk by G3CJY on his visit to Moscow—well attended and enjoyed by all; on December 30 there will be a talk on Measuring Bridges—second in the series on Test Equipment. A full course for R.A.E. is running, and the club hopes to have its own premises soon. Meanwhile meetings continue at The Jolly Waterman, Chesterton Road.

Cheltenham, at their AGM, elected G3YZ chairman, G3MOE secretary and SWL A. Ward treasurer; business was unfinished and will continue on December 7. On the 14th there will be a demonstration of Heathkit Equipment, and it is hoped that a visit by the GPO "local investigator" can also be arranged. Meetings are at the Clubroom, St. Mark's Community Centre, 7.30 p.m.

Crawley will gather for their first AGM on December 22 at The Brewery Shades, Crawley High Street; they have a full lecture programme for the winter months, to which visitors and prospective members are welcome.

Civil Service Radio Society members operating GB2SM steered the Science Museum station to top honours in the 1960 ARRL Contest, Phone section. Meetings are at the Science Museum on the first and third Tuesdays, December 6 being booked for a Hi-Fi demonstration and January 3 for a talk on VHF Techniques; visitors are welcome, but should notify G3JUL by phone (*KENsington 6371*).

Clifton held another Quiz, organised by G3OAW, in November; a Junk Sale was dated for December 2; the Club Tx was active in MCC, G3GHN being operated by six licensed members.

R.A.F. Gaydon (near Leamington Spa) have started their own Club and AT station, signing G3NYQ/A on Top Band. They have only one licensed operator, but others are on the way. **Harrow** are buying a new transmitter in kit form, assembly to take place on their Practical Nights, starting December 9 and 23. On the 16th G2TA will talk on Measuring Things, and on the 30th there will be a Junk Sale.

Manchester Grammar School have recently formed their own Club, and have their own call, G3OKL. Membership is limited to boys at the school, but they would like to hear from Old Mancunians who are licensed, especially those in the Manchester area; membership is about 25 and they meet during the dinner hour for Morse practice and listening on the CR-100. Three members have licences and three more have passed R.A.E., with many more ready to make the attempt.

Reigate report that five of their members passed the last exam, making a total of eight this year. Members are asked to bring items of their own equipment for demonstration at the next meeting—December 10 at The Tower, Redhill; the AGM will be held on January 21.

South Birmingham are considering re-naming themselves "Birmingham." They will be meeting on

HON. SECRETARIES PLEASE NOTE

In the January issue, the whole of this "Clubs" space will be given over to a full report on the Fifteenth MCC. "Month with the Clubs" will revert to its normal form with the February issue, for which all Club reports should be with us by January 13 latest, addressed "Club Secretary," Short Wave Magazine, 55 Victoria Street, London, S.W.1.

MID-WINTER RALLY

Peterborough are staging a mid-winter rally at Peterborough Technical College on January 6 at 7 p.m. The main attraction will be live demonstrations of the latest American equipment, including SSB transmitters and receivers. Talk-in by G3KPO/A on 1960 kc.

IN BRIEF

Crystal Palace: December 17, Junk Sale.
Liverpool: December 6, Film Show; 13th, Quartz Crystals; 20th, Party.
Stevenage: Meetings every Tuesday at 114a High Street (new Clubroom).
Sutton and Cheam: December 20, Brains Trust.

CLUB PUBLICATIONS RECEIVED

We acknowledge, with thanks, the receipt of the following Club Publications: **Surrey** (SRCC *Monthly News*, November); **South Birmingham** (*News Sheet*, Vol. 1, No. 9); **Slade** (*Contact*, No. 16); **Wirral** (*Newsletter*, Vol. 13, No. 6); **North Kent** (*Newsletter* No. 39); **Purley** (*Newsletter*, October); **A.W.R.A.R.S.** (*Broadcast*, Autumn 1960); **Southgate** (*Newsletter*, November); **Mitcham** (*Newsletter*, November); **Irish R.T.S.** (*I.R.T.S. News*, Vol. 12, No. 5); **Enfield** (*Newsletter*, November); **Hastings** (*Natter-Net Notes* No. 13).

December 15 for their Christmas Event (of which we have no actual details). **South Shields** met on November 30 to hear a lecturer from the GPO discussing "topics of mutual interest." Their station G3DDI was organised for MCC, and normal weekly meetings are held on Wednesdays at Trinity House, Laygate Lane, from 6.30 p.m. (Tea is laid on at 8.15 or thereabouts.) An R.A.E. course has been arranged for Friday evenings.

South Yorkshire held a very successful first Annual Dinner on October 27, with the usual prize draw. They now hope to organise a Christmas Party. The AGM is booked for January 12, normal meetings being on the second and fourth Thursdays at the Stag Inn, Dockin Hill Road, Doncaster.

Wirral meet for a Junk Sale on December 2 and the Chairman's Night on the 16th. Recent activities have included an "expedition," in frightful weather conditions, to Cardiganshire on Top Band and Two metres, and their second D-F Contest, won by G8BM. At the recent AGM all the officers were returned unopposed.

"CQ JAMBOREE"

THIRD INTERNATIONAL SCOUT JAMBOREE-ON-THE-AIR, OCTOBER 22-23, 1960

THERE is no doubt that this third annual Jamboree-on-the-Air was the most successful event so far. Over forty British amateurs were on the air during the period as scouts, ex-scouts or representing their local scout units and districts.

Within minutes of the commencement at midnight on the Friday, October 22, a net formed on 80 metres linking scouts in Dublin, Dundee, Manchester, Sutton Park and Dorset. Similar nets continued throughout the week-end in all parts of the country, the main activity being on the Saturday afternoon and evening. DX conditions were reasonable and many more overseas Scout stations were heard calling "CQ Jamboree" than in former years. A considerable number of Canadian and U.S.A. Scout stations were operating. British stations worked Scout stations in VE1-3 and W4, W5 and W7 districts, also PA, LA, SM, OH, DL and VP9. Other Scout stations were known to be active in HH, XE, YV, VK and ZL.

Hq. Station Activity

The organisers of the Jamboree, the International Scout Bureau, Ottawa were on the air under call VE3JAM; with two transmitters working simultaneously, they covered the 80, 40, 20 and 15 metre bands; these transmitters, loaned by the Canadian Army, were operated at 400 watts input. VE3JAM broadcast recorded greeting to all Scouts from their Director, Maj.-Gen. Spry; this recording was made on the Friday evening prior to the Jamboree, just before he flew on business to South America, and was replayed to each Scout station contact.

During the Jamboree VE3JAM made 400 contacts in 23 countries, including nine U.K. stations and whilst it is not certain that these were all scout contacts, it is known that GB3ISM (representing the International Scout Club at Manchester) and G8ML (representing the Pershore and District Scouts, Worcs.) were among the lucky ones. In fact G8ML did the trick twice. VE3JAM has already sent out special QSL cards for all contacts made during the Jamboree.

Mobile Tour

During the week-end G2CAJ/M, in company with three scouts from the 19th Kensington Troop, toured the South of England. On the Saturday night they camped out in an orchard (spurning all offers of comfortable accommodation) as guests of G3HRJ (representing Romsey, Hants. Scouts.) During the period they worked many other Jamboree stations and were talked into G3FKF (representing the Wilton, Wilts. Scouts) and G3BHK (a Rover of the Isle of Purbeck Rover Crew, Dorset). Since the Jamboree one of the scouts in the mobile party has heard that he has passed the R.A.E.; as his own initial introduction to Amateur Radio was at the First Radio Jamboree in May, 1958, it can be judged just how much interest this event arouses in the Scout Movement.

Rounding off a very successful week-end on the air the British Organiser, G3BHK, received a letter from an SWL in South Devon, part of which reads as follows:

> "Greetings to you all from a very young scout who joined in 1912 but has since had to give it up! The old saying still goes 'Once a Scout always a Scout,' so much so that I sat until 0130 on the Sunday morning and again from 1020 Sunday until 1700 listening to the Jamboree. I suppose I will listen again from 2200 hours to the bitter end!"

Amateurs taking part in this year's Jamboree who would like a souvenir participation certificate should send their requests, together with a 3d. stamp, to:—G3BHK, Katoomba, Tyneham Close, Sandford, Wareham, Dorset.

SMALL ADVERTISEMENTS

(" SITUATIONS " AND " TRADE ")

9d. per word, minimum charge 12/-. No series discount: all charges payable with order. Insertions of radio interest only accepted. Add 25% for Bold Face (Heavy Type). No responsibility accepted for errors. Replies to Box Numbers should be addressed to The Short Wave Magazine, 55 Victoria Street, S.W.1.

TRADE

QSL's and Logs by Minerva. The best there are.—Samples from Minerva Press, 2 New Road, Brentwood, Essex.

WANTED FOR CASH: Good clean communication receivers and SSB equipment. Please state price. — Short Wave (Hull) Radio, 30/32 Princes Avenue, Hull *(Tel. 18953.)*

QSL CARDS AND LOG BOOKS, G.P.O. APPROVED. CHEAPEST, BEST. PROMPT DELIVERY. SAMPLES. — ATKINSON BROS., PRINTERS, LOOE, CORNWALL.

"TELECOMM" 2-metre transmitters, receivers, converters and mobile Tx/Rx's; also transistor DC power converters.—R.E.E. Telecommunications, Ltd., 15a, Market Square, Crewkerne, Somerset.

CQ SERENADE. Yours for Christmas! Two-sided 45 r.p.m. record of the radio amateur's own song. VE2QS orchestra and vocal, 10s. 3d.—G2HDU, 292 Hatherley Road, Cheltenham.

RECEIVERS AR88, excellent, from £35. — L. Solloman, Ltd., Beaufort Street, Manchester, 3. *(Phone: BLA. 4571.)*

FULLY TESTED AR88LF, £40; 888A (mint condition) with matching S-meter and speaker, £97; DB20 Pre-Selector, £8; Rx R.1392 (new), 100-156 mc, £7; Vanguard, £37 10s.; 2in. sq. S-meters, 0-1 mA, £2 each.—K.W. Electronics, Ltd., Dartford, Kent.

COMPLETELY REBUILT TV Tubes, guaranteed 12 months; Mazda and Mullard, etc.; 14in., £5 6s.; 17in., £5 16s. Other types available. Carriage and Ins., 8s. 6o.—Anchor Tubes (G3MGR), Portland Road, Malvern, Worcs. *(Tel. 1678.)*

READERS' ADVERTISEMENTS

3d. per word, min. charge 5/-, payable with order. Please write clearly, using full punctuation and recognised abbreviations. No responsibility accepted for transcription errors. Box Numbers 1/6 extra. Replies to Box Numbers should be addressed to The Short Wave Magazine, 55 Victoria Street, S.W.1.

MINIMITTER 150-watt transmitter, 80-10 metres, £45 o.n.o.? R.107 receiver, £8 o.n.o.? Minimitter Beam Rotator and Indicator Unit, £12 o.n.o.? All in perfect working order. Buyer collects.—H. A. Meyers, 19 Norrice Lea, London, N.2. *(Speedwell 9186.)*

R.107 RECEIVER with official handbook of diagrams, illustrations, working and maintenance instructions. Best offer secures.—K. Potter, 4 Trevelyan Road, Seaton, Devon.

AR88 SPARES for sale: Genuine S-meter, 57s. 6d.; dial window, 7s. 6d.; AVC/NL switch, 5s.; RF/NL Pot., 5s.; postage extra. IF's, coils and many other items available for "D" and "LF" models. Send s.a.e. for list.—A. J. Reynolds, 139 Waller Road, New Cross, London, S.E.14. *(Telephone: New Cross 1443, after 7 p.m.).*

SMALL ADVERTISEMENTS, READERS—*continued*

FOR SALE: SX24 Receiver, £8; 160m. Tx, VFO/BA/Dvr./PA 5763 CW/Phone, series gate mod., needs only 300v. and 6·3v., £7. Type 36 Sender Power/Mod. unit, no case, £3. Buyer collects.—G3MAY, 11 Hanover Road, London, N.15.

WANTED: Converter, Gonset Super Six or Tribander.—Larsson, Vulcanusgatan, 8. Stockholm, Sweden.

FOR SALE: SX-28, original manual, very good condition, spare valves, £35; BC-453, good condx., less p/pack. £2 10s. New Transformers, modulation, 60w., 1:1·3, 10s.; Heater 6·3v. 10A, oil-filled, £1 o.n.o.?—G3OCA, 216 St. Helier Avenue, Morden, Surrey. *(Mitcham 2592.)*

BC-342J, by RCA, with separate speaker/230v. power unit, £9 10s., plus carriage.—G3IIO, 5 St. Michael's Terrace, Lewes, Sussex.

AMATEUR emigrating and has the following for sale: Advance E2, £16; BC-342L Receiver, £8; Marconi 428B Valve Voltmeter, £5; American Service Valve Tester, £8; Wireless Set No. 18, Mk. 3, £2; Eversheds Decade Box, 9999 ohms., stud switched, 30s.; LM7 frequency meter, minus original calibration book, but perfect, £9; TCS transmitter, modified PA to 807's, £7; PU 300v. 200 mA, 12·6v. 3A AC, 30s.; sectional mast aerial ("D" Rods), 36ft., £2. Best offer secures or quick sale, £55.—G3KBB, 13 Ashridge Green, Bracknell, Berkshire.

AR88LF with S-meter, but dicky BFO, otherwise good, £22. Deliver 40 miles.—G3NVK, 64 Victoria Street, Melton Mowbray, Leics.

EXCHANGE Leica 111B with Summar F2, perfect condition, for 150-watt Table Topper. Collection arranged.—G4BL *(Phone: Derby 49758.)*

FOR SALE: Philips AG-8108G Tape Recorder, in excellent condition, £45 (or will exchange for good commercial-built transmitter).—M. Standige, 5 Greenacres Road, Burnley, Lancs.

BARGAINS: Disposal of transmitters, receivers, radio and television; also photographic equipment. All at bargain prices; s.a.e. for lists.—Box No. 2372, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

AR77 RECEIVER, good order, £22; HRO Receiver, with all bandspread coils and power unit, £19 (or first cheque over £30 secures the lot).—Write J. R. Killeen, Plot 5, The Lane, Hauxton, Cambs.

WANTED: IF transformers from BC-453 85 kc, and BC-454 1415 kc; Command receiver xtal 1490 kc.—Chambers, 46 Ware Road, Hoddesdon, Herts.

PANDA PR120V Owners: Two brand-new, boxed and sealed by Mullards RGI-240a Rectifiers, 15s. each; one Low-Pass Filter (Panda), 15s. (postage 1s.); two HRO main tuning dials, 5s. each (postage 6d.); one set of AR88 Trimming Tools, 15s.; six 832 valves, 10s. each (postage 6d.); brand-new. WANTED: Two TU-5B tuning dials, c/w slow-motion mech.; must be perfect.—Powell, 25 Cheriton High Street, Folkestone, Kent.

SALE: New 813's, £1 each. WANTED: VHF Converter 30-250 mc, any condition. — Woodhouse, Trenoweth, Porthpean, St. Austell, Cornwall.

SMALL ADVERTISEMENTS, READERS—*continued*

R.1155 Converter, 10-15 metres, PSU, fitted in console cabinet with nine drawers, clock, lamp, switching; excellent condition; lot, £20 o.n.o.? Many other items.—Pedler, 72 Rosebery Road, Smethwick, Staffs.

FOR SALE: Two complete sets (boxed) quartz crystals, Type FT-171-B, ¾in. spacing, in BC-610; frequencies 2030 to 3995 kc; 72 crystals per box. One complete set (boxed) Type FT.243, ½in. spacing; frequencies 5675 to 8650 kc. — Clarkson, 20 Ebor Street, Burnley, Lancs.

SALE: Tiger TR200 HF, £135; Eddystone 750, £35. "GM3BQA" Quad with mast, motor coax, indicator, £12 10s. (you collect). Valves from 2s.; mains transformers from 12s. 6d. All items carriage extra; send s.a.e. for list of bargains.—Milne, 4 Woodside Drive, Penicuick, Midlothian.

SELLING: 580-0-580v. xfmr, 15s.; VCR97, 6s.; 20 Hy. 300 mA choke, 10s.; carriage extra. WANTED: Eddystone Speed Key, or W.H.Y.?—Box No. 2373, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: R.1155 Communications Receiver, with speaker, power unit, O/P stage, RF-24, £10; good working order. Buyer collects.—Craft, The Bungalow, Corn Mill Road, Cheltenham Road, Evesham, Worcs.

EDDYSTONE 888A, S-meter, as new; Mullard RC Bridge; Class-D Wavemeter; unused Tiger Z-match. What offers? Consider SP-400, or similar, in part-exchange. (Scotland.)—Box No. 2376, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

AR88D for sale, good condition, service manual included, £40 o.n.o.?—Dixon, 142 Sulgrave Road, London, W.6. *(Riverside 6966.)*

CRYSTAL CALIBRATOR No. 10, £3 10s.; 12v. DC motor, £1; aerial direction indicator, £1; Electronic Bug Key, £3 10s. WANTED: Compact, portable Rx, 160/80/40m.—G3MEW, 5 Testcombe Road, Gosport, Hants.

AR88D, mint condition, S-meter, no mods., £45. Buyer collects or would transport reasonable distance.—Price-Jones, GW5SA, Maesquarre, Llandeilo, Carms.

SALE: German Tx/Rx, 15 w.s.e.b., £10 including carriage; also many receivers, etc., working and non-working; s.a.e. for full details. — Hardcastle, Rigton Grange, East Keswick, Leeds.

WANTED: B2 Transmitter and power unit; also first-class mobile rigs, two-metre and Top Band. —Box No. 2374, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

WANTED: Service Manual for Eddystone S.556, clean condition.—State price to: Williams, 107 Riverview Road, Ewell, Surrey.

AR88D, good condition, matching speaker, manual; buyer collects; £35.—E. C. Porter, 109 Hamsey Green Gardens, Worlingham, Surrey.

HRO Senior with 9 coils and power pack, excellent appearance and working condition, £24 (plus carriage). No offers.—J. F. MacMahon, The Brook, Enniskillen, Co. Fermanagh, N. Ireland.

SMALL ADVERTISEMENTS. READERS—*continued*

G3III SALE: Panda Cub, fair condition; requires attention above 7 mc; also matching ATU and LP filter; R1155, no PSU; pair 815 valves, new and unused. Any offers?—Lovelock, Sgts. Mess, R.A.F. Lyneham, Chippenham, Wilts.

WANTED: *Short Wave Magazine*, August 1958, for article on AR88.—Write: Donovan, Kon Marialaan, 92, The Hague, Holland.

BC-221Q, no mods., as new, £25 o.n.o.? BC-348R, mains, S-meter, mint condition, £10.—G3GMC, 107 Bury & Bolton Road, Radcliffe, Manchester. *(Phone: Bury 2778.)*

SALE: Panda PR120v. Tx, ATU 150, 1·8/28 mc.—Offers to: Box No. 2375, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

LG. 300, mint condition, with 1100v. and 300v. power packs, £40. Woden 750-0-750, 250 mA. £3.—G3ELJ, Claypole, Newark, Notts.

SALE: V.R.L. 19-valve Receiver, manual, £30; Baird twin track tape recorder, £25. R.1155A. slow-motion drive and power pack, £8. Type 3 power pack, £2 10s. RF-26 unit, £1. Typewriter, £5. Buyer collects.—C. Morris, 12 Crwys Place, Cardiff, Glam.

SIDEBANDERS: You are invited to join the "SINGLE SIDEBAND AMATEUR RADIO ASSOCIATION." Official publication, *The Sidebander*, issued to members. Annual fees, $3 or 24s. Application forms and sample copies available from British representative: Ted Hayes, G3KHE, 19 Monmouth Drive, Sutton Coldfield, Warwickshire.

WANTED: Minimitter 80m-10m Converter with 1·6 mc IF. Also DX-40U and VFIU.—G3NZO, 44 Ingatestone Road, Woodford Green, Essex.

SALE: Vanguard Tx, LPF Chan. 3, £45. P.58 Rx, needs attention, £15, collect.—Marriott, 9 Wycliffe Avenue, Wilmslow, Cheshire.

CLASS-D Wavemeter, £5. Command Transmitter, 4-5·3 mc, as new and complete, £2. Type 53 Transmitter, 2·4-13 mc, £2.—Armstrong, 32 Hillfield Place, Parcllyn, Cardigan.

FOR SALE: Type 52 Transmitter, Receiver, rotary power pack, 813 final, £12 10s.—Reed, The Crescent Cafe, Alton, Stoke-on-Trent, Staffs.

PANDA PR120V for sale, in good condition, £45 or offers, buyer collects.—G3HDA, 35 Hawkhurst Road, Maypole, Birmingham, 14. *(MAY 3075).*

WANTED: Tape Recorder, commercial or home brew, must be good, no junk, also TZ40.—Openshaw, 516 Walmersley Road, Bury, Lancs.

WANTED: Eddystone 888A and Simon Tape Recorder, will collect.—Write G3IRQ, Bounds Farm, Ardleigh, Colchester, Essex.

£15 TCS Transmitter ready for the air, complete with relay operated power pack and microphone. Covers 160-80-40 metre amateur bands.—Manning, 140, Bodmin Road, Chelmsford, Essex.

SALE: All-Band Elizabethan Tx with clamp mod., El-Bug and power supplies, in three Philpott's cabinets, £17 o.n.o.?; s.a.e. list other gear.—Cooke, 128 Drayton Road, Norwich.

SMALL ADVERTISEMENTS, READERS—*continued*

SX24, £15; CR-100, £17; Williamson Amplifier, £5; BFO, £1 10s.; Transmitters: 12 Set, £9; TA-12, £5; power supply 400-volt 500 mA, £3; Transformer 620-0-620v., £1.—*Telephone Ruislip 7810.*

WANTED: Service Manual, containing circuit details and operation for Marconi set Type H.18. Cash terms to.—OZ9AJ, A. Jorgensen, Falck, Give, Denmark.

R.208 in transit case with spares drawer, also manual, offers? Buyer collects.—Joll, 25 Herrick Road, Woodhouse Eaves, Loughborough, Leics.

NEW TRANSISTORS, OC24, 50s.; 2N601, £3; OC170, £1; GET106, 7s. 6d.; OC71, 5s.; used OC45, OC44, 4s.; OC71, OC72, GET106, 2s. 6d.; 6J6, 2s. 6d.; 5B/255, 5s.; 5U4, 2s. 6d.; EC91, 3s. Johnson SWR Bridge, £3 10s.; Cadenza Ribbon Mike, 100 ft. cable, £7; 5-ele two-metre beam, 12s. 6d.; Printed circuit kit, 12s. 6d.; Crystals channels 44, 45, 3s. Plenty other gear, must sell all components, books, etc., s.a.e. new list.—P. Buck, 54 Ashford Road, Iford, Bournemouth.

AR88 S-meters, original, new boxed, 45s.; complete gear-train tuning assembly, new, 25s.; both plus postage. Wanted: HRO-6, HRO-60, HQ-170, Collins 75A3, 51J3, or similar high quality receivers, good price paid if in original condition.—Box No. 2377, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

"Z" MATCH by Tiger, little used, £5 10s. R.M.E. Rx 5-10, complete one cabinet, offers?—Butler, 32 Pilkington Avenue, Sutton Coldfield, Warks.

B2 Tx UNIT (with coils), £5. Commercial HRO Power unit, £3 10s. Plug-in PA tank coils, 80, 40, 20m., with ceramic bases and holders, 10s. each. Valves: 807, 6L6, 7s. 6d.; 6J5, 6C5, 6V6, 6J7, 5Z4, 6s.—Ward, Blue Waves, Worsley Road, Guarnard, I.o.W.

HRO POWER UNIT, 50s.; velvet vernier drive, 6s.; 6B7, 6D6, 42, 5s. each. Morse practice set, 7s. 6d.; R1392, 90s.; 0/200 mA meter, 6s. 6d.; HRO GC coils, 20s. each; W.1191, 80s.; various RF Units, 17s. 6d. each; all plus postage/carriage; s.a.e. enquiries, please.—G8UO, 12 Cartmel Road, Keighley, Yorks.

SALE: R.1155A, p/pack and internal speaker, good condition, £12 10s., plus carriage, or buyer collects.—Berry, 4 Falcon Road, Bingley, Yorks. *(Tel. 4376.)*

FOR SALE, 36 Sender, complete with power and modulator, almost new, £10; 12 Set, complete, but rough, £8; BC-213, 1·5-18 mc, £12; R.1392A with pack, £6.—Box No. 2378, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

WANTED: All-band commercial Table Top Tx.—Ratcliffe, Wayside, Chobham, Surrey.

HRO COILS, 100 kc-14 mc, 6 coils gen. coverage, 20s. each; 20-, 15-, 10-metre b/spread, 30s. each.—R. Monks, 7 The Meadows, Ingrave, Brentwood, Essex.

DX-100U, £58, only 4 months old; Labgear coax relay, £3; Mosley 4-band vertical ant., £9; G.E.C. Miniature Oscilloscope, £10.—W. H. Brown, Sunnymount, Gib Lane, Hoghton, Nr. Preston, Lancs.

SMALL ADVERTISEMENTS, READERS—*continued*

FOR SALE: 5763, 5s.; 832, 7s. 6d.; 829B, £1; 12SK7, 12A6, 2s. 6d.; odd crystals, 2s. 6d. each; 10m. Command Tx, £2.—Box No. 2379, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SALE: R.1155B with power supply and output stage, 160-metre coverage, £10 (or exchange for National HRO with cash adjustment).—K. Darch, 8 Burns Road, Port Talbot, South Wales.

BENDIX BC-639 Rx, 100-156 mc continuously tunable, with circuit, perfect order, £10 o.n.o.?—Coates, Cripps Hall, University Park, Nottingham.

840A Mounting Blocks, spare speaker, £28 carriage paid. *QST*, 1949 and 1951, £1 each.—Box No. 2380, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

ENVOY 3½in. x 2½in. Enlarger for sale, complete with lens; excellent condition; s.a.e. for details. Would part-exchange for good, clean Rx, Eddystone S.640 or similar. — Send details in first instance: Newman, 25, Elms Lane, Wembley, Middlesex.

PARTNERSHIP: G8VB, tired of retirement since selling Tiger Radio Limited, last March, desires meet competent Amateur as possible working Partner in new Electronics venture requiring £1,000 immediate capital. Applicant must agree invest £500.—Replies to Simmons, 136 River Way, Christchurch, Hants.

B2 Tx Rx power pack, original cases perfect, £15. Wilcock Gay VFO, £2. Power packs, 19in. panels, Woden 500v., £4; 600v., £4; 1000 and 500v., £6. 100-watt Modulator, Woden driver, UM3 output, £8. Buyers collect.—Panter, 23 Cecilia Road, Blackburn.

LABGEAR "Topbander," new in carton, £14 (plus carriage. WANTED: HRO in original condition, preferably with B/S coils and manual.—Box No. 2381, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

HALLICRAFTER'S Receivers: S-36A, 27 mc-145 mc, S-27CA, 125 mc-220 mc, RDO Receiver, 38 mc-4,000 mc with Panoramic Adaptor, CR 150, 2 mc-60 mc; s.a.e. list.—R. V. Wright, 4a Nepal Avenue, Atherton, Manchester.

AR88LF Receiver, £25; HRO, £16 10s.; Collins TCS equipment, Rx, Tx, etc.; RCA Mike, 8s. 6d.; headphones, 8s. 6d.; plus carriage.—Wright, 88 Bolton Road, Atherton, Manchester.

FOR SALE: R208 in transit case with spares drawer, £7 o.n.o.? (including carriage). — R. Collins, Zodiac House, Porthcurno, Penzance, Cornwall.

TWO-METRE GEAR: Labgear Converter, commercial 6-over-6 beam, 1-95-A Field strength meter, Type 50 Tx, Type 165 Modulator, TT11's, etc. The lot, £24 (delivery 40 miles). — G3NVK, 64 Victoria Street, Melton Mowbray.

WANTED: Bendix RA-10, good condition, with or without power pack; state price. — A. Farmer, 33 Minto Street, Edinburgh 9, Scotland.

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S-88

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