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SHORT WAVE LISTENER AND TELEVISION REVIEW



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JULY 1950
VOLUME 4 · NUMBER 8

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THE SHORT WAVE LISTENER AND TELEVISION REVIEW

VOLUME 4

JULY 1950

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EDITORIAL

BSWL

IT is just eight months since the British Short Wave League became identified with us and the *Short Wave Listener*, as it then was. Since then, the original BSWL membership total has shown a steady increase and for our part we have made, and are still making, considerable efforts to get the League on to an independent self-supporting basis. In these days, no membership association—whether the interest is radio or anything else—can be efficiently run and administered without the essential prerequisite of an assured and sufficient income. Without the money to do it, little or nothing can be done.

The current circulation of *Short Wave Listener & Television Review* is something like fifteen times the present League membership. This clearly means that there is more than ample scope for a very considerable increase in the BSWL, and we already have the organisation to cope with at least a ten-fold increase! The advantages to the SWL in becoming a member of the British Short Wave League are many—a pamphlet can be had for the asking which tells you all about it—not the least of these advantages being a regular monthly copy of the enlarged *Short Wave Listener & Television Review* incorporating as an additional 12-page supplement the League's own *BSWL Review*.

The future success of the League depends upon increasing membership from the ranks of all interested in short wave radio. Without exception, every present BSWL member who has expressed an opinion to us has declared himself as well satisfied with the League and what it is doing for him.

With the assurance that you will be in good company, we hope that you also will join.

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Modification Details for the BC-348

FURTHER CIRCUIT DATA

PART II

By W. A. SPARKS (G3DGT)

It is generally accepted that in order to obtain the maximum signal-to-noise ratio in a receiver, the first RF stage should be operated "flat out" and not be controlled by either the RF gain or the AVC supply. This is because a large proportion of the receiver noise is due to thermal effects in the first stage which are amplified by succeeding stages. Noise generated after this stage, whilst still contributing to the general noise level, is not amplified to the same degree.

There are two major differences from normal practice in the double-ended valve version (afterwards referred to as type A) of the BC-348 in that the first RF valve is on the AVC line and is also on the RF gain control line. Removal of the AVC and RF gain controlling influences causes very wide fluctuations in the screen voltage supply, and consequently a modification has to be made in this supply. This can be done quite easily by connecting a 30,000-ohm resistance between the junction of the screen bleeder resistors and ground. This junction is at the point where R62 and R56 join, as shown in Fig. 1. This improves the regulation of the screen supply and prevents excessive voltage fluctuations. In order to remove the valve from the AVC line, resistance R40-1 is taken from the junction at condenser 38-18 and the free end grounded. The grid stopper resistor R48-1 may be left in the circuit to limit the grid current on the first 6K7 should the set be overloaded from a nearby transmitter. However, the gain can be further improved by removing the AVC bus from where it connects the left-hand side of the resistor on the back of the aerial coil can (viewed from the back) and taking this wire off completely; then ground the floating end of the resistor to the coil can. This will help in preventing overloading of the first RF stage on strong local signals, since driving the grid positive will generate a voltage across this resistor tending to limit the anode current. The resistor may be removed entirely and the coil end earthed.

(The first part of this useful and interesting article appeared in our issue for June, and covered the first essential point—the provision of a mains power supply.—Editor.)

In this particular case it is suggested that the reader try out the various modifications in turn, finally deciding upon that most suited to his own particular requirements. Another worthwhile modification in the case of the first RF valve is to increase the screen voltage by supplying the screen from the line feeding the second RF stage instead of from the IF stage line. This can be done by connecting the end of the screen resistor R43-1 from the pin No. 6 on the valve socket to pin No. 6 on the second RF valve socket. This, together with the alteration to the bleeder supply, will give both RF valves a screen voltage of about 85 volts (with a 230/240-volt DC input from the power unit) on telephony and about 70 volts for CW operation, instead of the original values of 70 and 37 volts for the first RF and 86 and 65 volts for the second RF for phone and CW operation respectively.

In the case of the second type of receiver, using single-ended valves, in the case the writer has dealt with, the first RF valve was triode connected. Altering the connections to pentode did not have much effect since the load impedance was not a suitable match for pentode operation. However, better RF performance resulted due to the improvement effected when an RF gain control was fitted.

In the case of both sets, it has been found that substituting a 6AC7 for the 6K7 in the first class (A) and a 6SG7 or 6SH7 for the 6SK7 in the second class (B) made a world of difference in the sensitivity. Although the receivers were slightly noisier in operation, the signal-to-noise ratio was improved enormously. In the Type A receiver the cathode resistor on the RF valves is 470 ohms. If the

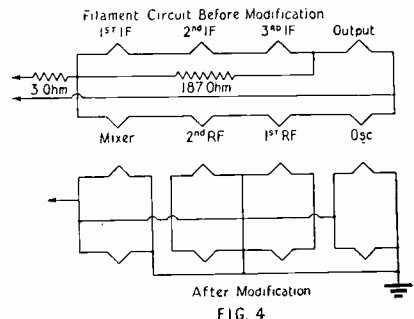


FIG. 4. BC-348 heater circuit alterations for the power unit of Fig. 3. (See text Part I.)

modification suggested for the first RF stage of removing the cathode resistance from the RF gain control line is carried out, another worthwhile modification is to replace this resistance with a 250-ohm type. This will improve sensitivity slightly.

In the Type B receiver the cathode resistance of the second RF stage may be altered to 150 ohms and the screen resistance from 100,000 ohms to 25,000 ohms. This will improve the sensitivity considerably. The signal-to-noise ratio will not be improved over the original modification, but the RF gain may be let down a little, which gives a similar effect, the loss in gain being more than replaced by the additional gain from the second stage of RF.

Modifications to IF Stages

Probably the greatest failing in the 348 series of receivers is the lack of selectivity in the crowded amateur bands. No means exist in the receivers as they stand of controlling selectivity except for the crystal filter, which is a plain in-or-out type with no front panel control over the phasing.

One method of overcoming the difficulty is to rewire the final stage of IF so that it becomes regenerative and transfer the detector and

audio stages to the dynamotor platform, leaving a spare valve base for the noise limiter. In order to do this it becomes necessary to wire the final stage of IF using a single-ended RF pentode of the 6SJ7 or 6SG7 type—the former being preferred owing to a tendency for the 6SG7 to “take off” on its own. By controlling the degree of regeneration the selectivity can be controlled.

Another method is to build up an audio filter with a controlled band width of, say, from 800-3500 cycles in switched sections. One section could be from 800-900 cycles for CW and with the crystal filter switched in, the BFO phasing control can be used as a selector to pass the signal through the audio pass band. This method is becoming very popular in the States and will be dealt with in detail later.

On the question of regeneration, the fact that the last IF valve is not on the AVC line makes the modification of introducing regeneration easier to carry out. Probably the simplest method of doing this is to solder a wire on the grid contact of the valve-holder and a similar wire on the anode tag. These wires should be approximately three-quarters of an inch long. Then by careful adjustment, the wires may be spaced in such manner that regeneration, controlled by the variation of the screen voltage, just fails to set in at maximum gain. Admittedly the introduction of regeneration makes the set more noisy, but the signal-to-noise ratio does improve as regeneration is advanced and weak signals can be brought up to a very high level, riding the noise level quite comfortably.

(over)

TABLE OF VALUES

- Fig. 5. Noise Limiter for the BC-348**
 C1, C2 = .01 μ F
 R1 = 100,000 ohms
 R2 = 3,000 ohms
 R3 = 1 Megohm
 R4 = 750,000 ohms
 R5 = 400 ohms
 R6 = 150 ohms

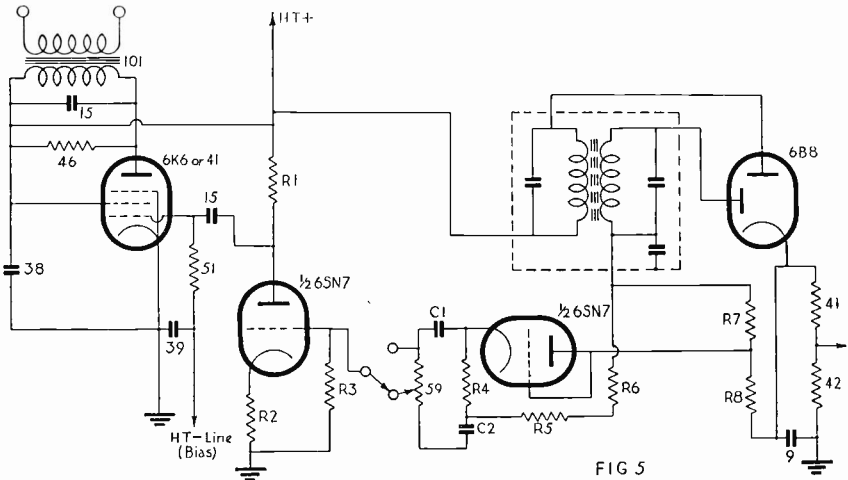


FIG 5

Fig. 5. Noise limiter circuit suitable for incorporation in the BC-348—see text for discussion.

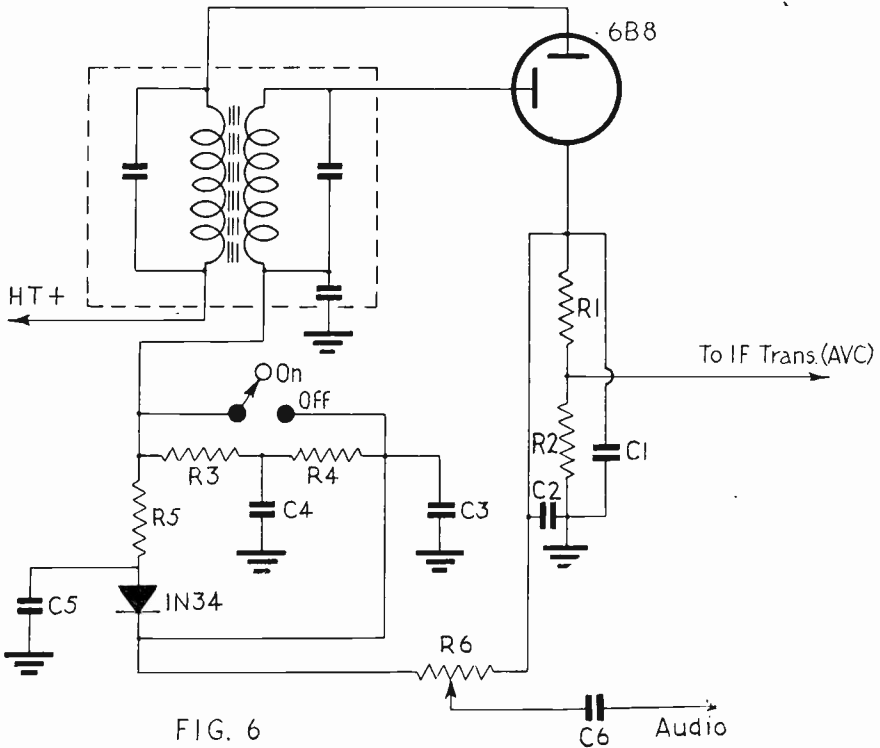


FIG. 6

Fig. 6. Another possible noise limiter arrangement, using an IN34 crystal diode.

An RF gain control can be introduced quite easily by rewiring the dial light circuit as previously suggested and mounting the RF gain control on the position previously occupied by the dial light dimmer. A potentiometer of 2,000 ohms value should be used with one end connected to the cathode return of the second RF valve, the slider being connected to earth and the potentiometer bypassed with a $0.25 \mu\text{F}$ condenser. An alternative is to use the 20,000 ohm potentiometer already in the circuit on the front panel (forward potentiometer of the ganged gain control). The rear potentiometer should be removed or replaced with a similar type unit mounted on the panel in the position formerly occupied by the dimmer control and wired up to the previous position with screened leads.

The Audio Side

The audio end of the receiver leaves much to be desired and the only possible improvement appears to be the introduction of a

TABLE OF VALUES

Fig. 6. Noise Limiter using Crystal Diode

C1	= 25 μF , 25 VW
C2	= $.01 \mu\text{F}$
C3	= 50 μF
C4	= 100 μF
C5	= $0.1 \mu\text{F}$
C6	= $.0015 \mu\text{F}$ (15)
R1	= 470 ohms (42)
R2	= 1,000 ohms (41)
R3, R4	= 33,000 ohms
R5	= 1 Megohm
R6	= Audio gain

further audio stage between the detector diode and the output valve. This can be effected in three ways :

(a) If the suggested improvement of introducing regeneration in the last IF stage is carried out, the second detector may be made a double-diode-triode and the triode stage used as an audio amplifying stage prior to the output stage.

(b) A 6C5 or 6J5 may be used between the detector diode and the output stage.

(c) A section of a 6SN7 may be used as a voltage amplifier. This is a preferred method since the remaining section can be employed as a noise limiter.

In the case of the Type B receiver, a material improvement in selectivity can be obtained by a modification to the IF transformers. This could probably also be used in Type A receivers, but the writer has not had an opportunity of proving its value on this type. Briefly, the method consists of reducing the coupling between the adjacent coils on the IF transformers in order to sharpen the response curve. This may be done by winding a two- or three-turn coil between the anode and grid coils of the IF transformers and shorting the ends of the coil together.

The gain will be reduced and the transformers will require re-aligning, but the effective gain of the IF stages can be improved tremendously by carrying out the other suggested modifications and the collective improvement will be found to be worth while. Aligning the IF stages is a simple matter providing that they were originally true to the crystal filter.

NOISE LIMITERS

Practically every amateur has his own pet noise limiter circuit. One operator may find a circuit particularly suitable to his own requirements whereas another will probably say that the same circuit is no use at all to him. In view of this, the writer does not intend to cover all possible methods of introduction of noise limiters in BC-348 receivers but instead to make suggestions which have been proved satisfactory in many cases.

The first noise limiter circuit requires a fair amount of re-arrangement in the layout. It will be recalled that previously alterations were suggested in which the 6B8 valveholder became occupied by a 6SJ7 operating in a controlled regenerative circuit. Then a little later it was suggested in amendments to the audio stage that a 6SN7 could be introduced.

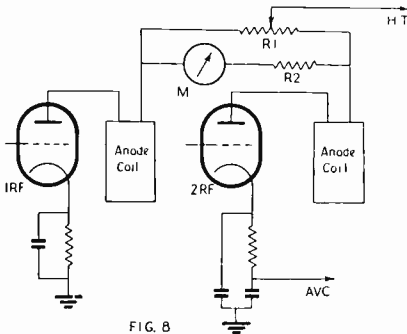


FIG. 8

Fig. 8. The S-meter can also be connected as shown here. R1, 500 ohms ; R2, 150 ohms ; M, 0.2 mA.

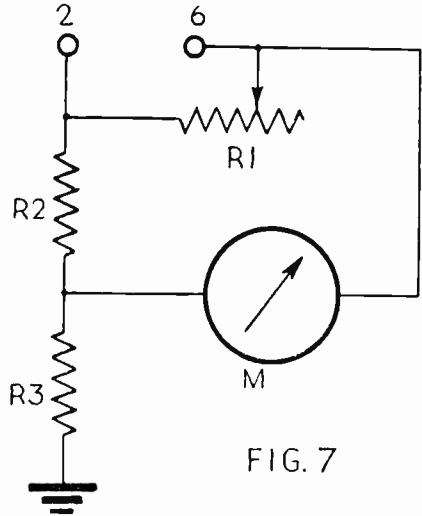


FIG. 7

Fig. 7. Simplified S-meter connection for the BC-348 ; this is suitable only for comparative readings.

TABLE OF VALUES

Fig. 7. Simplified S-Meter Arrangement

- R1 = 1,000 ohms, wirewound.
- R2 = 500 ohms
- R3 = 50,000-150,000 ohms
- M = 0.1 mA meter

In view of the re-arrangements to be effected in this quarter of the set, a suggested layout would be as follows : Substitute 6SJ7 for 6B8, rewiring as necessary. Install 6H6 and 6SN7 on the dynamotor platform and wire back to audio valve in its present position. The layout for the suggested alteration is shown in Fig. 5. A crystal diode is a thing of beauty and a joy which very few present-day amateurs (or the next generation) are likely to see unless some British manufacturer succeeds in marketing a type with a sufficiently high reverse resistance. However, if any reader wishes to try a type of noise limiter using a 1N34 a typical circuit is shown (Fig. 6). It should be mentioned that the cathode decoupling condenser C1 (25 μ F, 25 volts) is necessary due to audio leakage across the AVC circuit, which appears across the cathode and gets into the audio stage without passing through the limiter circuit.

S-Meters

A full article could be written on S-meters, their use and usefulness and their introduction into various circuits. A word about S-meters in general, however, may not be out of place.

(over)

Listening to many amateurs on 10 metres, one hears that a certain signal is "40 dB over S9." Then one finds that one's own receiver, which has never failed to pick up that elusive DX at reasonable level and in the owner's opinion is very hot, only shows the loudest signals at S9 plus a fraction. Until some method of standardising S-meters is developed, there seems very little justification for their use except as tuning meters. However, if an S-meter reading can be given which the operator knows is a certain level in either microvolts input or can be referred to a given power level, the S-meter can act as a useful guide, and it is of course of value for comparative purposes. The writer intends to give full details for the introduction of an S-meter in 348 receivers for two categories of owner: The reader who only wishes to compare signal levels arbitrarily on a scale of his own devising, and the reader who has good quality test equipment and can afford the time to introduce a circuit which will give him the actual microvolt value of a signal across the aerial input.

The simplest method of all consists of using a meter of from 200 microamps to 1 milliamp deflection in a series type circuit connected across the stand-by contacts 2 and 6 on the Jones plug at the rear of the receiver. This circuit is shown in Fig. 7. The meter sensitivity is controlled by the 1000-ohm potentiometer. The quarter megohm potentiometer acts as a zero-ing control or balancing resistor. The value finally fixed upon is controlled by the meter sensitivity.

A second method consists of connecting a bridge circuit across the anodes of the two RF valves providing that the first RF valve is operated in a "flat out" condition. However, this method, depending as it does on the degree of bias supplied to the second RF valve and the consequent unbalancing of the bridge due to variation in anode current, is rather difficult to adjust. (See Fig. 8.)

The third method consists of building a valve-voltmeter circuit up on a bracket fixed to the position originally occupied by the dial light ballast resistor. This method is the most

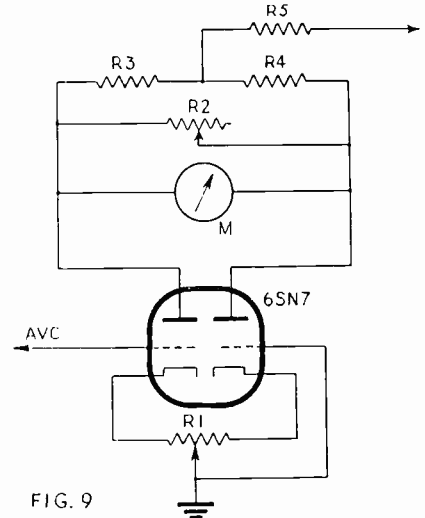


FIG. 9

Fig. 9. Improved S-meter arrangement, enabling correct calibration for different signal levels to be applied, and allowing use of the receiver for field strength measurements.

TABLE OF VALUES

Fig. 9. Improved S-Meter Modification

- R1 = 5,000 ohms, wirewound
- R2 = 500 ohms, wirewound
- R3, R4, R5 = 50,000 ohms, 1/2-watt
- M = 0-200 DC Microammeter

involved requiring, as it does, the use of carefully calibrated test equipment. However, for the serious amateur this modification is well worth while as it provides an accurate field strength meter and, with an RF attenuator across the input circuit, probably beam alignment and various experimental work of an involved nature could be carried out. The receiver then becomes an accurate calibrating set and therefore all the more useful.

The advantages to be derived are as follows:

- (a) The sensitivity of the meter can be arranged to suit any particular type of receiver.
- (b) The IF circuit does not need to be altered in any way.
- (c) The zero-ing of the bridge, once carried out, seldom needs adjustment.

The circuit diagram is shown in Fig. 9, the layout consisting of a valve-voltmeter com-

TABLE OF VALUES

Fig. 10. Dummy Aerial for S-Meter Calibration

- C1 = 200 $\mu\mu\text{F}$
- C2 = 400 $\mu\mu\text{F}$
- R1 = 400 ohms, 1/2-watt
- L1 = 20 mH RF choke

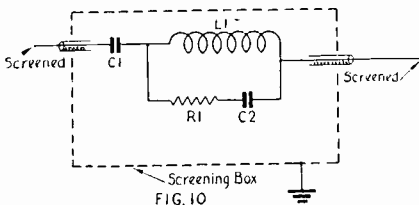


FIG. 10

Fig. 10. Dummy aerial for carrying out the calibration of the S-meter when connected in the circuit of Fig. 9.

prising a 6SN7 double-triode connected in such a way that each triode acts as one leg of the bridge. One triode section is stable and acts as a reference leg, the other section being the controlled leg. The other two legs consist of the 50,000-ohm resistances R3 and R4. Sensitivity is controlled by R2 and balance by R1.

For the purposes of calibration, zero level is taken as being given by an input of one microvolt and the scale is calibrated in steps of 6 dB per S-unit, *i.e.* each S-unit advance indicates a power increase of four times at the transmitter end. Table 4 shows the calibration system adopted and the various S-meter markings are set first by adjusting the signal generator attenuator to read one microvolt input; this is 0 dB, or zero level, or S1. Then the attenuator is adjusted to give S9 or 48 dB over the reference level, or 256 microvolts. This position is adjusted to the required point on the scale by varying R2 or the sensitivity control. Then return to S1 and calibrate the scale according to the equivalent markings shown.

It is advisable to calibrate the meter for the particular amateur band on which it is desired to be used, since the effective AVC voltage derived from a particular input voltage varies considerably over the range of the receiver; a suggested method is to calibrate on each band and arrange the sensitivity control so that it can be altered for each particular band, either by using a calibrated scale or using different potentiometers and switching the required one in for the band in use. The latter method is to be preferred.

The reason for this variation from band to band is because the conversion gain of the frequency changing circuits in any receiver is proportional to the wavelength of the incoming signal, and consequently a signal on, say, Forty, does not need to be the same strength to give a required AVC voltage as a signal on Twenty.

It should be mentioned that a dummy aerial such as is shown in Fig. 10 must be connected between the signal generator and the receiver during calibration.

(Part III will follow)

MINIATURE GEAR

Some interesting designs have recently been published of transmitting equipment devised to pack the maximum efficiency into the minimum space—in fact, portable transmitters have become, in general, smaller, lighter and much more compact than the receivers with which they are operated. On the other hand, there may be readers of *Short Wave Listener & Television Review* who have been equally successful with miniature receivers on the same lines; if so, we would very much like to hear from them, if possible with a photograph of the set.

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Television for Beginners

AN OUTLINE OF THE SYSTEM

SPOT-CONTROL — THE RASTER — FOCUSING — TUBE TYPES

PART III

by W. N. STEVENS (G3AKA) and L. E. HOWES (G3AYA)

WE have seen how a spot can be produced on the tube face, but in order to build up a complete picture it is necessary that the spot be moved over the tube face by both the line and frame deflection systems. This operation is called "scanning."

Let us first of all consider the line coils only. If there were no varying magnetic field brought about by the alternating current in the line deflection coils there would merely be a spot in the centre of the screen (Fig. 9a). Should, however, the coils be energised from a pure DC source the position of the spot would change—that is to say as the current through the coil rises the spot will be drawn across the screen rapidly from left to right or *vice versa* according to the direction of the current flow. If it can be so arranged that the current is cut off the moment the spot reaches the edge of the screen it will return immediately to its original position in the centre of the screen. This movement is so rapid as to be undetectable by the eye and owing to the "persistence of vision" the movement will appear as a thin line, providing that the process was repeated about 25 times per second (Fig. 9b). This rising and falling current would, therefore, give a similar effect to that produced if an alternating current were fed through the coils. Incidentally, the "length" of the apparent line is determined by the maximum current passing through the coils since the greater the current the greater will be the magnetic effect and the longer the line.

Should an alternating current be fed to the coils, the line would appear to be spaced equidistant from the centre of the screen (that is, on either side of the "spot"). This is due to the fact that as the alternating current reverses its direction of flow the spot will be deflected in the opposite direction (Fig. 9d). For television purposes it is necessary to feed the coils with an alternating current waveform of a sawtooth nature (Fig. 10).

How this waveform is produced and why will be discussed when the scanning generators (or time bases) are described. The sawtooth waveform is used so that the spot will produce

a linear scan at the end of which it will fly back to its original position at a speed many times greater than the scan speed. This rapid flyback of the spot is necessary for several reasons, one of which is that it does not appear to the eye as a trace on the screen.

The Raster

The line deflection coils are fed with an alternating current sawtooth waveform with a periodicity of 10,125 cycles per second; each cycle being equivalent to one complete scan plus flyback. If, at the same time, an alternating current with a periodicity of 50 cycles per second is fed to the frame deflection coils (which deflects the spot in a vertical direction) a "raster" will be formed. This raster will appear to the eye, when viewed at a close range, as a sheet or frame built up of light lines due to the spot being deflected in both the vertical and horizontal planes (see Fig. 9f).

In order that the previously mentioned

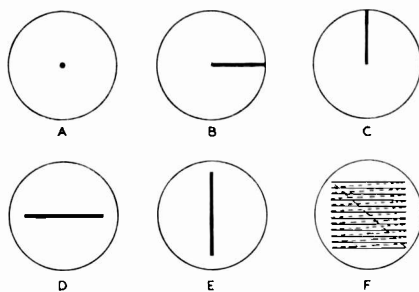


Fig. 9. (A) Stationary spot focused on screen centre. (B) Apparent line, built up by rapidly moving spot, when a DC voltage is applied to the horizontal deflection system. (C) Apparent line when a DC voltage is applied to the vertical deflection system. (D) Trace, equidistant from centre of screen, as produced by an AC voltage on the horizontal plates. (E) The same, using the vertical plates. (F) This is the raster built up by the combined horizontal and vertical scan. The dotted lines indicate the horizontal fly-back period and the dotted diagonal the vertical fly-back.

raster fills the whole of the tube face, it is necessary that the sawtooth waveforms fed to the deflection coils are of sufficient amplitude. At this stage (*i.e.*, with no synchronisation applied to the time bases) the raster may appear to be unsteady and the lines composing the raster moving either up or down.

In the complete television receiver this raster is produced 50 times per second, but due to the transmission system adopted in this country it is necessary to use two of these 50-cycle frames to form one complete picture. This, therefore, gives a complete picture every 25th of a second. This process—that of “interlacing”—will also be discussed in greater detail later.

Focusing

The type of cathode ray tube generally in use for television receivers is of the magnetically deflected and focused variety. In the cathode ray tubes usually to be found in oscilloscopes and similar test equipment (and in some televisions built up around war surplus units), the deflection and focusing systems are electrostatic. In the electrostatic tube (see Fig. 6, p. 208, June), the focusing electrode is anode 1 (marked A1) ; this electrode is connected to a point of positive potential, usually of the order of 300-500 volts, depending on the type of tube. This potential is controlled by the provision of a potentiometer forming part of a potential divider—usually part of the EHT network.

Focusing is achieved by varying the DC potential on the focusing anode (as shown in Fig. 7, p. 209, June). The electron stream passes through the aperture in anode 1 and thence through the second anode which is

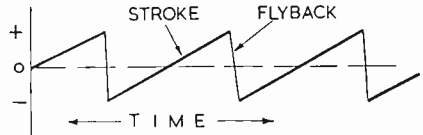


Fig. 10. Typical waveform, known as “sawtooth,” as applied to the deflection systems in a CR tube ; the essential point is rapid fly-back, as indicated by the shape of the curve.

operated at a higher positive potential than anode 1. An electrostatic field will exist due to the difference in potential between these two anodes which acts on the electron beam in a similar manner to a convex lens on light rays, thus converging the beam. Therefore the potentials on these electrodes must adhere to the maker’s specification, since if the first anode’s potential is too high the electron beam will be too divergent and, on the other hand, if this potential is too low improper focus will also result.

In a magnetic type cathode ray tube, focusing is achieved either by the use of an energised coil or by a permanent magnet situated around the neck of the tube. Both these are in the form of a ring and both rely on their magnetic influences to focus the electron beam.

In the case of the energised coil it is supplied by DC with which means are provided to vary the current (usually by a potentiometer) so that the strength of the magnetic field, and therefore the focusing, can be controlled. When an electron enters the magnetic field it

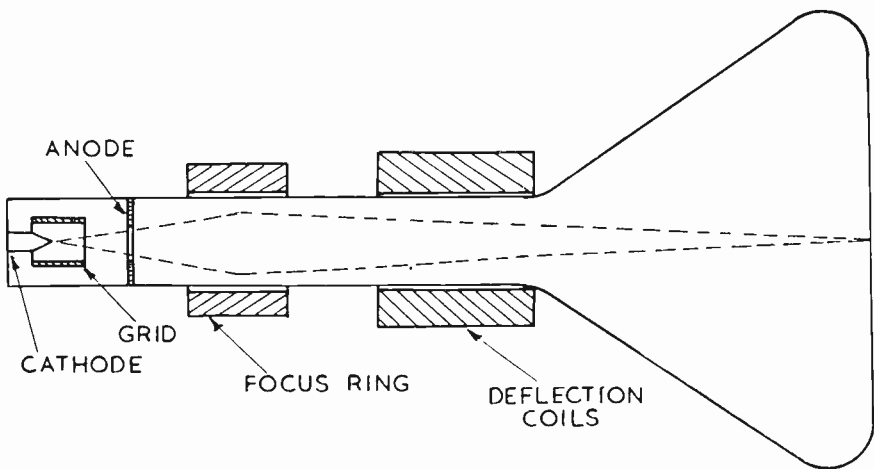


Fig. 11. Showing how magnetic focusing works on the electron beam.

will commence to travel in a spiral, due to the magnetic influence, and when it leaves the coil it will travel towards the axis of the coil.

Therefore it can be seen that by correct positioning of the coil and the right degree of energising current, all the electrons which are travelling in curved paths can be directed to one point (the screen) which can be termed the focus point.

By using an energised coil for focusing it is, of course, necessary to provide the means to energise the coil. Also, the energising current is drawn from the receiver supply and a variable resistor is required. A method of overcoming

these disadvantages is by the use of the permanent magnet type of focusing.

Other advantages of the permanent magnet focus ring are that (a) Focus shift due to heating of the focus coil is eliminated, and (b) No separate focus control is required since once set the focus ring needs no further attention. The magnetic influence is controlled by varying the gap between the two faces comprising the assembly, and the spot can also be centred correctly by adjusting the ring around the neck of the tube.

(Part IV of this article will follow)

South Africa Sees "Live" TV

SUCCESSFUL JOHANNESBURG DEMONSTRATION

MORE than 500,000 visitors to the famous Rand Agricultural Show held in Johannesburg in April saw "live" television shown in South Africa for the first time.

Demonstrations were given by the two British firms which were recently Britain's sole representatives at the First International Television Conference in Milan—Marconi's Wireless Telegraph Co., Ltd., and Cinema Television, Ltd.

The demonstration was organised in South Africa, in co-operation with the South African Broadcasting Corporation, by African Consolidated Theatres, Ltd., whose chairman, Mr. John Schlesinger, first conceived the idea for the show and agreed plans with Mr. J. A. Rank during a recent visit to London.

Although a general service to viewers cannot be introduced into their territory for several years, the S.A.B.C. are following all television progress abroad very closely and have shown particular interest in the development of TV and cinema-television equipment which has so far been achieved in Britain.

Until April, South Africans have had to be content to read about TV programmes in England and America, but at the Rand Show they saw live TV demonstrated by British engineers and specialists using the most advanced equipment; the personnel and

equipment, by the way, were flown out to Johannesburg and flown back immediately the Show ended.

Among the TV developments which were seen at the Show were transmissions received on domestic receivers and simultaneously projected on to a full size cinema screen; a complete two-camera TV studio; and a portable Outside Broadcasts Unit working "in the field."

A glass panelled studio built inside the Television Hall enabled 500 people at a time to watch the transmissions being made. At the same time they could see the studio scene in the ten Bush domestic receivers suspended above the glass panels. They could then enter the adjoining room to see the same programmes on a cinema screen.

The Television Hall was specially built for this demonstration to ensure the highest standard of technical performance and was air-conditioned throughout to provide the maximum comfort to viewers. The advanced stage of television design and manufacturing technique was seen in the outside broadcast unit built into containers no larger than ordinary suitcases.

CLOSED-CIRCUIT TV SYSTEMS

It is more and more coming to be realised that there is a great future and wide scope in the industrial field for closed-circuit TV installations—that is, for instance, the transmission of pictures between different parts of a large manufacturing plant; this can be done on a wire circuit, no radio link being necessary. When one comes to consider what really are the possibilities of television, and the full scope for its development, the mere entertainment angle pales into insignificance. A leading British firm busy in this field is Pye, Ltd., of Cambridge.

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More about the R.3515 for TV

FULL CIRCUIT DIAGRAM WITH FURTHER MODIFICATIONS

by L. E. HOWES (G3AYA)

THE details for converting the Type 3515 unit for television reception, published in the May issue of this magazine, have aroused considerable interest in what hitherto was a comparatively unknown unit. One of the chief difficulties appears to be the obtaining of a complete circuit diagram of the R3515, since many readers experimentally-minded feel that they would like to make further modifications to the unit and generally to tap its potentialities—for instance, converting it to a TRF vision receiver.

We are glad, therefore, to be able to publish herewith this much-sought-after circuit diagram, as given in Fig. 1. As can be seen, the unit consists of eight stages, V1-V6 inclusive being VR65's (SP61), V7 a VR92 (EA50) and V8 a VR53 (EF39) or VR56 (EF36). All stages are transformer coupled,

T1-T7 being 13.5 mc RF transformers tuned by a single dust core. It will also be noticed that heater chokes are included in the "live" side of valve heater returns (L1-L8).

Included in the HT positive line are two miniature RF chokes, which provide additional filtering of the RF component. The ideal arrangement when modifying the unit for vision reception is to use V1-V6 as RF or IF stages, V7 as vision demodulator and V8 as the video amplifier.

The terminal numbers shown in Fig. 1 are the white numbers which are engraved on the terminal tag board on the unit. It will be observed that no number "6" is shown; this is due to the fact that this tag is blank and no connection is made to it in the unit. Connections to these tags are as given in the accompanying panel. (See p. 253)

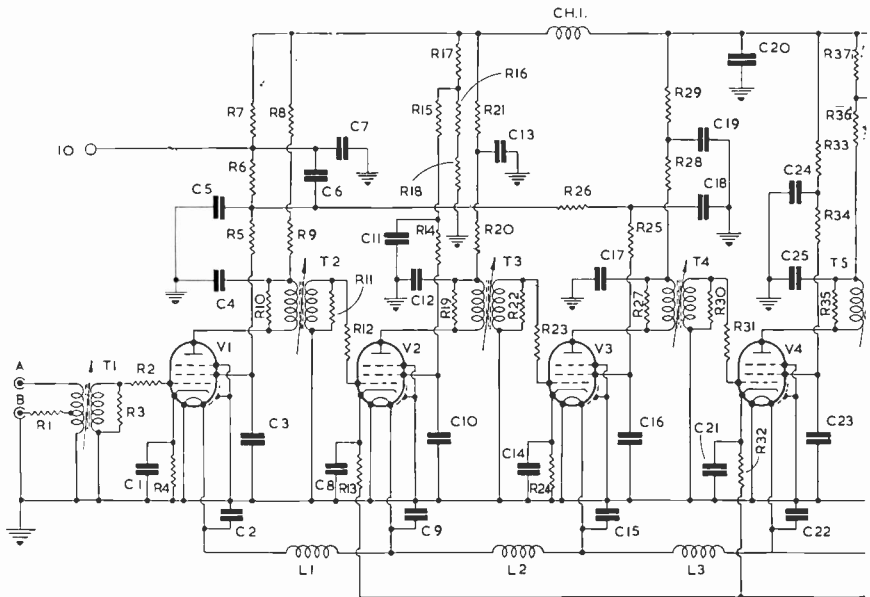


Fig. 1. Circuit diagram complete of the unmodified R.3515 Unit, which electrically is the same as the Type 194. (Note that in this diagram there should be a fixed capacity C49, .0023 μ F, from junction L6, L7 to chassis earth.)

Grouped around the grid cap of V8 are various components which are removed (see May issue *Short Wave Listener and Television Review*) and these are C44, R58 and R59. The connection from Ch3 is modified as shown in Fig. 2a. The completely modified video stage is shown in Fig. 2—(a) being the

theoretical diagram and (b) a pictorial representation. The latter also shows the probable connections to the tag board and the contrast control.

The resistor R59 is a 10,000 ohm quarter-watt component (and not that "1,000 ton" resistor mentioned in the May issue!). Also

TABLE OF VALUES

Fig. 1. Circuit complete of the Unit Type R.3515 (or 194)

- | | |
|-------------------------------------|---------------------------------------|
| C1, C2, C4, C7, C8, C9, | R10 = 3,000 ohms |
| C10, C11, C12, C13, C14, | R11 = 1,500 ohms |
| C15, C17, C19, C20, C21, | R16, R18, = 20,000 ohms |
| C22, C23, C24, C25, C26, | R19, R34, R35, R42, R49 = 15,000 ohms |
| C27, C28, C29, C30, C31, | R22, R38 = 5,600 ohms |
| C32, C33, C34, C35, C36, | R26 = 2,200 ohms |
| C37, C38, C39, C40, C42, | R27, R43 = 6,800 ohms |
| C43, C45, C47, C48 = 0.0023 μ F | R30, R48 = 3,600 ohms |
| C3, C5, C16, C18 = 100 μ F | R53 = 2,000 ohms |
| C6, C44, C46 = 0.1 μ F | R54, R55 = 6,200 ohms |
| C41 = 5 μ F | R56, R57 = 27,000 ohms |
| R1 = 56 ohms | R58 = 100,000 ohms |
| R2, R12, R23, R31, R39, | R61 = 36,000 ohms |
| R47 = 10 ohms | R62 = 24,000 ohms |
| R3 = 12,000 ohms | R63 = 75,000 ohms |
| R4, R13, R24, R32, R40, | R64 = 22,000 ohms |
| R46 = 180 ohms | L1-L8 = Heater chokes |
| R5, R8, R9, R14, R15, | T1-T7 = 13.5 mc RF trans- |
| R20, R21, R28, R29, R33, | formers |
| R36, R37, R41, R44, R45, | Ch1-Ch4 = Miniature RF chokes |
| R50, R51, R52, R60 = 1,000 ohms | V1, V2, V3, V4, V5, V6 = VR65 (SP61) |
| R6, R17, R25, R59 = 10,000 ohms | V7 = VR92 (EA50) |
| R7 = 40,000 ohms | V8 = VR53 (EF39) |

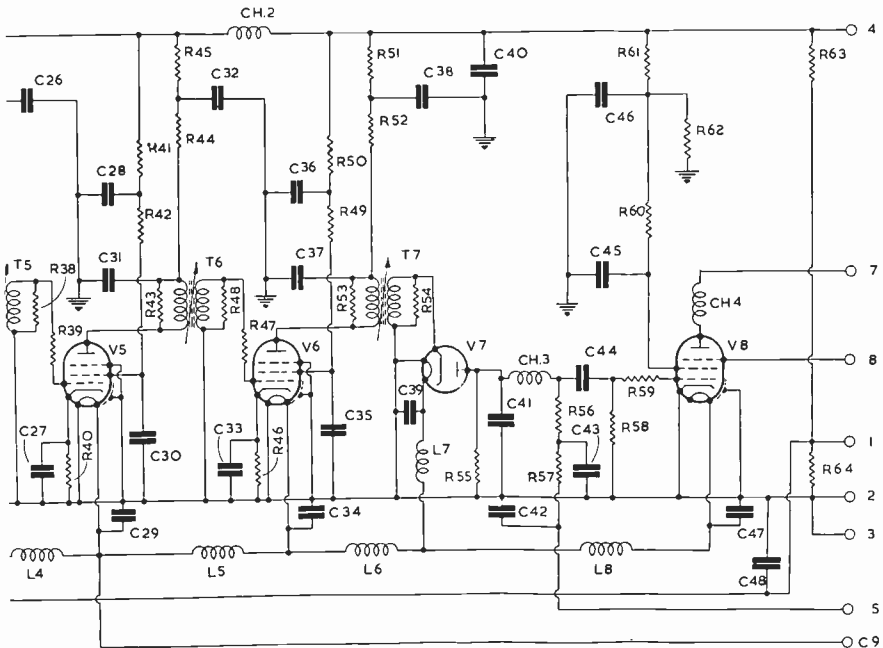


Fig. 2. (A) The video amplifier stage as modified. (B) Wiring round the V8 valveholder (below chassis) after the suggested modifications have been carried out.

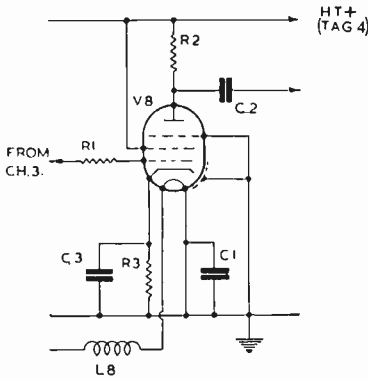


FIG. A.

TABLE OF VALUES

Fig. 2(a). Video stage modifications for the R.3515

- C1 = 0.0023 μ F (existing)
- C2 = 0.1 μ F, 450 volt, DC working
- C3 = 0.0023 μ F
- R1 = 33 ohms, $\frac{1}{2}$ watt
- R2 = 4,700 ohms, 1 watt
- R3 = 56 ohms, $\frac{1}{2}$ watt
- V8 = VR65 (SP61)

in this previous article a 36,000 ohm half-watt resistor was given—it should have read 24,000 ohm half-watt and this is shown as R62 in Fig. 1.

It may be wise to include some resistance in the screen-grid lead of V8 and therefore, instead of taking this electrode to HT positive, its existing connection to C45/R60 may be retained and then taken to the HT positive line. The components R61, R62 and C46 may then be completely removed. The only other components which are of little use and which can be taken out are R56, R57, C43 and C42—the first three components being in the diode compartment and C42 being located on the underside of the chassis.

A useful feature in the R.3515 is the provision of two separate inputs, one of which is attenuated. One of these connections is, of course, taken to the output of the RF unit being used, although if the 3515 equipment is being converted to a TRF strip then the inputs will constitute the aerial connections, using the "A" where the field strength is weak and "B" in areas of high signal level. The input is suitable for aeriels using unbalanced feeders.

It should be drawn to readers' attention that the 194 Unit is the same as the

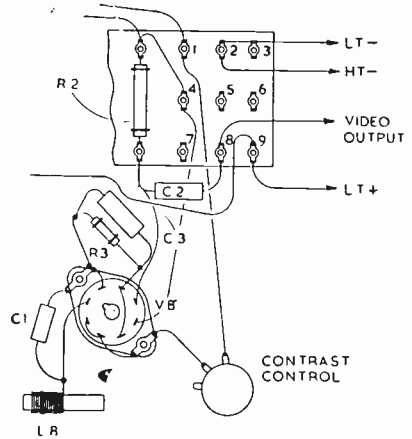


FIG B

TAG BOARD CONNECTIONS

1. Contrast, or gain, control.
2. & 3. HT negative and LT negative.
4. HT positive (approximately 250 volts).
5. Ignored.
6. Blank.
7. Blank (due to the fact that Ch.4 is removed, R2—see Fig 2a—is inserted and the top end taken to HT positive at tag 4).
8. V8 suppressor-grid connection is removed and grounded.
9. Live side of the 6.3 volt heater supply.
10. This is adjacent to V1/V2 valveholders and is ignored.

popular 3515 Unit. The circuit diagram of Fig. 1, therefore, and the modifications discussed, will also cover those equipments described as the Type 194 Unit.

TELEVISION FOR SCOTLAND

The contract for the site works and the construction of the approach roads for the main Scottish TV station at Kirk o'Shotts has been awarded to McLean & Co. of Wishaw, Lanarkshire.

This station has been provisionally allocated the frequencies of 53.25 mc (sound) and 56.75 mc (vision). It will have a 750 foot mast of design similar to the one at Sutton Coldfield and, soon, as at Holme Moss. An order for the construction and erection of this mast has been placed with British Insulated Callender's Construction Co., Ltd.

American Colour Television

USING HORIZONTAL INTERLACE PRINCIPLE

AN all-electronic colour television system, with a projection type receiver giving pictures equivalent to a 22-in. tube, was displayed recently by the Columbia Broadcasting System to the Federal Communications Commission. This demonstration was a result of the FCC's probe into the latest developments in colour TV and although the CBS all-electronic receiver is not yet considered far enough advanced for commercial use, a few notes on the subject will be of interest to television enthusiasts in this country.

The all-electronic colour receiver uses a single tube and a single gun; it has three images on the face of the projection tube which are combined optically. The originator of the system, Dr. Goldmark, states that "as a practical matter, there is no limit to the brightness of a picture in the new colour system." And visitors were shown how the long-persistence phosphors on the single tube increased the brightness to which the colour picture can be raised without flicker.

The horizontal interlace principle has been added as an optional feature to the colour system within the last few months and it is said almost to double the potential ceiling of performance of the system in question. The addition of horizontal interlace increase the geometrical resolution of the colour pictures; it can be likened to the improvement in quality encountered in "high fidelity" radio receivers and would be an optional feature if the receivers can be marketed. Tests proved that there is no significant difference in the behaviour of field sequential colour television in the presence of interference, whether with or without the horizontal interlace.

During the demonstrations, the 4 mc field sequential colour TV without horizontal interlace was shown. Then the 4 mc colour with horizontal interlace added was switched in. A third switch showed the colour system as it would look on a 9-6 mc bandwidth, which gives the equivalent overall geometrical resolution of a 525-line black and white picture.

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Have you heard?

RATHER a tricky month, May, 1950! It has, for some listeners, been the most difficult one they have yet encountered since they started exploring the short waves. But we know quite a lot about the sunspot cycle, and we know that there will be many worse months before conditions really become exciting again. So let your experiences during May serve as a rehearsal for things to come; and don't, in future, expect to hear something new or exciting *every* time you switch on!

The Set Listening Periods were quite well supported, although nothing terribly interesting emerged from the 14 mc session. That band *has* yielded some nice DX from time to time, but one has to put in a lot of time to make sure of finding anything. And 28 mc has, of course, been even more erratic, although I was pleased to note the number of Calls Heard lists relating to that band. Quite nice results are still obtainable there from the African countries and, less frequently, the Far East.

Since there has been nothing of great moment on either 7 or 3.5 mc, I do not propose to split up the bands in the usual way this month, but will take our correspondents as they come and refer to their various points.

FAREWELL, TEN!

A. H. Edgar (Newcastle) sums up the feeling of many by saying "I never saw Ten at its best, and 10 years or so is a long time to wait." Much too long, too—the band should be back in its 1946 form by about 1954, so cheer up! A. H. E. has heard CT1BW (ex-CR5UP) saying that there are still some active CR5's on 14120 kc. Furthermore, it is not at all likely that they would be on the St. Thomas and Prince Islands, as CR5UP was, so they must be in Portuguese Guinea, which would give lots of you another country. So have a look.

R. J. White (London, S.E.10) found that a few nights stood out as being very good for South Americans on 14 mc, and he also mentions the terrific phone signal from VQ4RF. P. King (Offaly) sends in the first

DX log from Eire, having watched our columns for some time to see if any activity was stirring from over there. R. G. Poppi (Beckenham) agrees with the theory put up by A. Bannister last month; he always finds that good conditions by day spell bad ones for the same night. He also finds that a good day for the Far East (AP, VU, VS1, VS6, KG6, JA and so on) heralds a fade-out and a period of short skip, usually some twelve hours after the Eastern DX has disappeared.

WHERE'S THE PACIFIC?

I. S. Davies (London, N.13) wants to know when to listen for Pacific DX. The unkind answer is "last year"—but it should be turning up from time to time. For the past three or four years I have heard nice ones like VR2, ZM6, ZK, KB6 and so on in April-May and again in September-October, usually between 0730 and 0900. This year they were by no means evident in the spring; let's hope the autumn will be better. I. S. D. also asks what the "LB" prefix means; it is used by Norwegian portables. He brings up the old one, too, of AE2US and AE3US; read through some back numbers, I. S. D., and you'll find out all about them! They are U.S. Military Stations and *not* in the amateur bands.

K. Parvin (Thornton Heath) concedes that summer conditions have arrived on 28 mc but he thought May was definitely a good month for 14 mc. His best were three VS6's, PJ5RX and VK1YM (Macquarie), all on phone. He would like to know more about JAØIJ, being called by East Coast W's at 1100 GMT.

NEWS FROM AUSTRALIA

The redoubtable Eric Trebilcock (Williamstown, Victoria) writes again and now enters the Four Band table, as well as reporting that his country total is up to 214. He points out that 3.5 mc is pretty difficult for them down under, and that in 24 years' listening he has heard only seven countries on the band. As he says, within 3,000 miles of his QTH there are only three or four active countries, whereas in Europe there are 40 or 50. Eric

AMATEUR BAND COMMENTARY *by the DX Scribe*

says he copies Europeans on 7 mc every day, and wonders how many of us can say the same about VK's !

F. Pilkington (Colwyn Bay) reports for the first time; he is studying for his amateur licence and also hopes to qualify as a Radio Op. in the Merchant Navy. J. W. Cave (Parkstone) says, for the benefit of those listeners who neglect Ten when they think it ought to be dead, that it opened up last summer for Asia, Africa and South America and, on rarer occasions, for Oceania. Best times, he found, were 0800-1000 and 1800-2000.

A. M. Norden (London, N.W.11) was rather pleased to collect JA2HQ, VP3MCB and PJ5RX, all on 14-mc phone, not to mention FD3RG, KV4AQ and W6YYT/ZS3 on 28-mc phone. He awards the prize for consistency to PK4KS, VS9AH and KR6AD on 28, and to XE1AC, VS7SV and VK3AWN on 14. A. M. N. thinks that even 25 calls in a Calls Heard list may be too many, when seven or eight of them are "padding," and is of the opinion that anyone including PY's or EA8's should be . . . well, disposed of somehow.

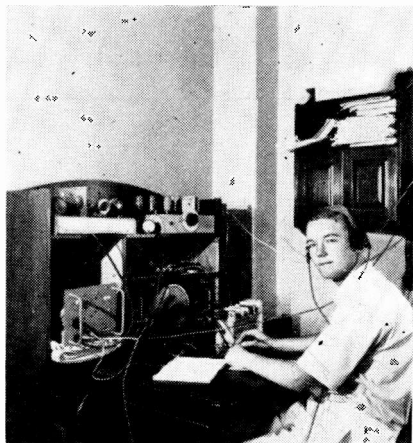
Two nice new ones on ten-metre phone for E. J. Logan (Hertford) were VT1RF and FD3RG; other good ones were VK9GW, FM7WE, VPIAP and a doubtful ZA1B. On Twenty E. J. L. found CR4AC, KH6CT, VS6BS and on Forty he logged CX6BT, HH3DL, EK1AO and XE3K—all on phone. Apparently E. J. L. sent in a log of 35 calls in our "Crazy Contest" last month, which either didn't reach me or was overlooked. It seems as though it might have topped the bill, but all I can do at this stage is to offer humble apologies.

D. S. Kendall (Potters Bar) also winkled out a new one on 28 mc in the guise of VK9GW. Other phones on the band were AP2J and 2N, KZ5CP and 5FA, PK4DA and 4KS. D. S. K. suggests that UA9KCA is in Sverdlovsk (in Zone 17) and not in Zone 18 as claimed last month. See the following paragraph !

THE RUSSIAN ZONES

N. S. Beckett (Lowestoft) has gone to the trouble of preparing the following list of Zone 18 and 19 stations, the information having been gleaned by him at various times. Zone 18: UA9CL, 9KCA, 9KOA, ØAA, ØAC, ØAT, ØKAA, ØKBA, ØKOA, ØKTU, ØKSB, ØOA, ØPA, ØSF, ØSG, ØSI, ØUA, ØUB, ØVA, ØVB, ØVC. Zone 19: UAØFG, ØFL, ØKFA, ØKFB, ØKFC, ØKFD, ØKFO, ØKGA, ØKKB, ØKQA, ØLC.

So there is still a divergence of opinion about 9KCA. If he's in Sverdlovsk he isn't in Zone 18; if he is in Zone 18 he isn't in Sverdlovsk. Some say one, some say t'other.



ST2RD, Port Sudan, being in the tropics can normally work only on Ten and Twenty. He also suffers from what many might think is the extreme disadvantage of having to build much of his equipment, as the nearest radio shop is some 1,000 miles away. The 100-watt push-pull 1625 PA unit, for instance, is mounted on the side of a petrol tin. Power is from 250 volt DC mains. The operator is ex-G3EAO, and he achieved WAC within three days of putting ST2RD on the air.

But you can rest assured that no authentic information will emerge from behind the Iron Curtain.

The same N. S. Beckett has been having an interesting time on 7 mc—see his Calls Heard list for that band. He finds it very good around 0400-0600 GMT, and was pleased to collect CR4AL and HR2AM for two new ones. He has found 14 mc erratic (who hasn't?) with early mornings deteriorating but late afternoons producing some interesting stuff such as EQ3FM and 3SAM, Y13DYN, PK1RI, UL7AB and PK4DA.

D. K. Cocking (Farnborough) has been practically off the air owing to aerial collapse and receiver repairs, but he did hear HC2JR, HI6EC and YS1MS on 14-mc phone just before the crack-up. R. Brooker (London, S.E.24) heard a three-way on the *Top Band* between G6HD, UA3CR and UA3CU, the two Russians being 559 and 549. I view this with some suspicion, since I am pretty sure that they are not allowed to use the band; but we shall see. R. B., like others, remarks that the W's still come in on 3.5 mc, although the last time he heard them was May 21 at 0500. And he adds that he has heard HC2JR on 14 mc, so obviously HC8GRC packed up and returned home safely.

L. M. Singletary (Bicester) reports a low level of activity, but mentions just a few high-

FOUR-BAND DX						
(STARTING JANUARY 1, 1950)						
Listener	28 mc (1)	14 mc (2)	7 mc (3)	3.5 mc (4)	Total Countries (5)	Total Score ★
R. S. Stott (Upminster)	126	170	87	42	177	425
J. C. Beal (N. Wembley)	108	156	72	27	166	363
D. W. Waddell (Hitchin)	106	146	70	22	163	344
W. J. C. Pinnell (Sidcup)	109	142	61	22	153	334
D. W. Bruce (Eltham)	116	130	38	22	144	306
N. S. Beckett (Lowestoft)	66	134	73	29	137	302
P. H. Strudwick (London, N.W.11)	115	129	21	25	151 (P)	290
L. Singletary (Bicester)	95	123	50	21	142	289
D. S. Kendall (Potters Bar)	114	113	25	27	135 (P)	279
E. J. Logan (Hertford)	125	101	32	20	135 (P)	278
R. A. Hawley (Goostrey)	94	119	42	17	136	275
A. Bannister (Manchester)	101	117	28	21	131 (P)	267
A. M. Norden (London, N.W.11)	107	97	23	23	126 (P)	250
M. G. Whitaker (Halifax)	93	94	33	21	128	241
T. W. Jones (Birmingham)	45	114	48	12	121	219
L. Tombs (Swindon)	87	92	24	15	115 (P)	218
E. Cafley (Gt. Yarmouth)	80	112	9	12	132 (P)	213
E. J. Parrish (Watford)	85	93	16	17	121 (P)	211
T. Spencer (Slimbridge)	80	85	17	13	117 (P)	207
J. P. Warren (S. Croydon)	82	101	10	11	120 (P)	204
J. M. Graham (Glasgow)	78	72	30	24	110 (P)	204
D. Shallcross (Derby)	85	82	16	14	113	197
H. M. Graham (Harefield)	63	92	24	16	111 (P)	195
L. Corder (Hadleigh)	79	95	18	15	108 (P)	193
E. Trebilcock (Victoria, Australia)	5	118	58	3	124	184
R. J. Line (Birmingham)	79	61	23	15	107 (P)	178
K. M. Parry (Sandwich)	81	84	4	8	114 (P)	177
D. E. Tomkinson (Brighton)	53	75	19	19	96 (P)	166
P. Bysh (London, N.8)	60	66	21	18	103	165
K. Smeeton (Barnton)	32	86	35	12	101	165
B. Hummerstone (Harrow)	60	63	19	17	99	159
R. A. Fowler (Marlow)	53	62	25	16	96	156
F. Pilkington (Colwyn Bay)	26	85	23	13	90	147
D. G. Martin (Cheltenham)	55	61	19	10	93 (P)	145
F. A. Herridge (London, S.W.12)	33	59	38	15	76 (CW)	145
E. A. Parkinson (Leeds)	56	50	9	9	78 (P)	124
G. Musk (Blackpool)	18	77	13	14	82 (P)	122
D. K. Cocking (Farnborough)	37	61	16	6	84 (P)	120
A. L. Higgins (Aberkenfig)	27	59	16	16	75	118
G. Murray (Newcastle)	49	38	15	15	75 (P)	117
R. T. Gabriel (Derby)	39	44	13	15	84	111
T. Ward (Ilminster)	20	70	11	10	81 (P)	111
A. O. Frearson (Birmingham)	35	48	15	8	69	106
O. R. F. Mason (Prittlewell)	7	28	13	13	36 (P)	61
D. E. Hayes (Hoddesdon)	25	13	3	4	28 (P)	45

★ Sum of figures in Cols. 1, 2, 3 and 4.

spots, such as ZK1AZ on 14 mc CW (0630, RST 577), PJ5FN on 14-mc phone (0040) and FM7WF, 14-mc CW, about the same time. A funny one heard was JU3B calling CQ.

C. S. Pollington (Chichester) confirms that 28 mc is by no means dead yet, and throws in PK1CR, VS7GD, VS7PW and XZ2EM. On 14 mc his best DX was KL7ACO, VE8SM and W2DD/KP4. D. G. Martin (Cheltenham) adds to the Zone 19 list by saying that he heard UAØBM saying that he was in Far Eastern Siberia, Zone 19.

TOP BAND EXCITEMENT

G. C. Allen (Thornton Heath) has received his Top Band QSL from VE1EA, who states on it that he has heard XE1A and HC1PK on the band. He also confirms that FA8BG is up there. So it now seems that at least 26 countries are known to be on 1.7 mc. Look out for a *Five-Band* table next winter. G. C. A. noted recent remarks about G3CUC and G3CRJ in Westmorland, and promptly logged them both, so he now has all English countries in the bag.

On the other bands G. C. A. has also been finding some interesting items. He says VP7NM on 14 mc is genuine enough, and he also heard FP9FM (?) and a Brazilian calling FC7CC. Far Eastern stations like DU1GT, VS2CP, JA2CU, VS7KR, VS7SV and KR6CA were all heard on one day between 1500 and 1700. On 28 mc one good spell was noticed, with phones from ZS, VQ4, AP and CR6, all heard between 1415 and 1545.

J. P. Warren (South Croydon) reports his best on 14 mc phone as VP7NH, KR6AF, KH6OA, VE8NX and M1B; on 28 mc he quotes XZ2EM, VS7PW, AP2N, CE3CZ, KZ5LE, MD7HV, VQ2HW and ZE3JD. He also logged I5ZC, said to be in Italian Somaliland—but is he genuine?

O. A. Good (Oswestry) has found it a dull month, but his log doesn't look so bad. On 28 mc he found W6YYT/MM, first at Lourenco Marques and then at Walvis Bay, and also VQ3AK, VQ3AWL, XZ2EM and ZS4BL. On 14-mc phone he logged CP4DG, W7LTR/KL7, VP7NH, VS6BS and ZP2AE. He also heard a station with the prefix OA6, but didn't get the call. He would like more information on this as OA6's are by no means common. Turning to CW on 14 mc, O. A. G. was rewarded with KX6BA, UAØKFD and ZM6AB—a very nice little trio. QSL's arrived from VP8AK and VK9NR.

SHORTER SLP's?

When we start issuing smaller Report Forms with only 25 spaces on them, W. J. C. Pinnell (Sidcup) suggests, we shall have to cut the SLP's to half an hour. Even so, there

has never been a suggestion that an SLP list should contain everything heard; the 25 best would still make an acceptable offering. W. J. C. P. was interested in the Top Band SLP, which gave him two new countries—G3AKU (Hunts) and GM3GAY (Banff).

F. A. Herridge (London, S.W.12) has been on the Top Band for a month only, but is very sorry he didn't discover it before. He says it puts the others in the shade as far as friendliness and sanity are concerned. He has already logged five countries, 25 counties and 123 stations.

J. Neal (Birmingham) scooped a nice one in the person of VR1C, on 14-mc CW at 1730 GMT. This station, by the way, is genuine, and will be active for possibly another year. Others for J. N. were PK1HX, VP8AO, HH2G and CR5AC, who is probably in Portuguese Guinea. On 3.5 mc CW he heard TA3FAS at 2200 one night. On the subject of rare countries, J. N. wants to know whether amateurs in VP5, TG, XE, YN and ZP are losing interest? He finds them very scarce, especially by comparison with the number of entries in the Call Book for some of those countries.

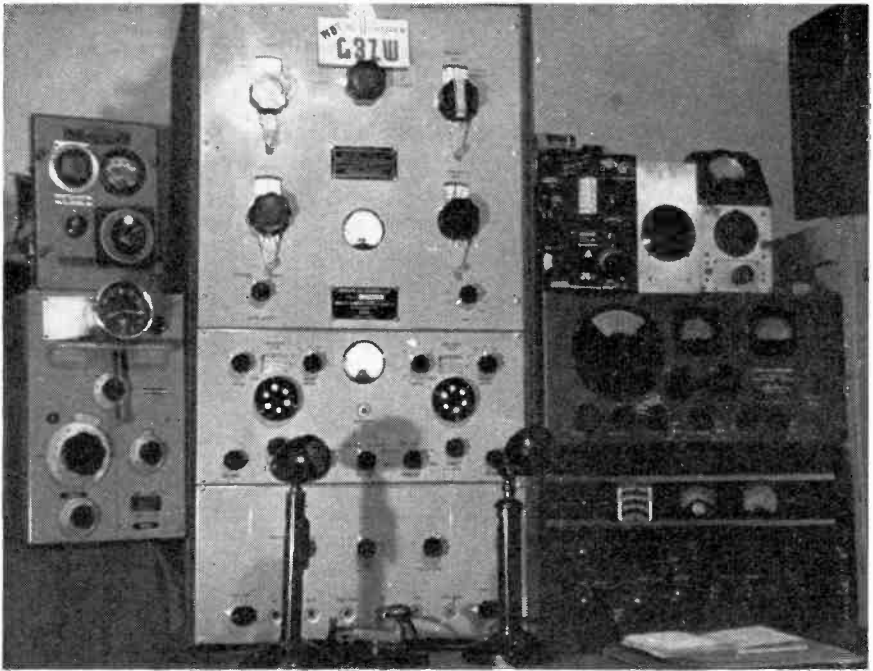
COULD IT HAVE BEEN?

Referring to the query about PX1B, D. A. Loe (Upminster) asks whether it could have been PIBX? The latter is the call of the ocean-going tug *Tyne*, the operator of which is said to make frequent amateur contacts. I think the more likely answer is that there have been all sorts of PX1B's about at various times. The PX prefix is a favourite with pirates. (Perhaps "PX" stands for Pirate, like "WX" for weather!)

T. G. Spencer (Slimbridge) squeezed the 28-mc band, and out came VK9GW, CR4AC and ZS3D. He found the most consistent transmissions were from VQ4RF and VS9AH. On 14 mc he heard VS2BS, XZ2KM, PJ5RX and VK1YN—together with VQ4VL, who was running at 20/30 dB over S9 for two-and-a-half hours. T. G. S. was also pleased to snag GD5CZ on phone during the Top Band SLP.

H. M. Graham (Harefield) would like to put down May as the most difficult month this year—chiefly because of short skip, high noise level and static. On 28 mc he didn't manage much, but 14 mc brought in VS7SV, OQ5CF, AR8BM and lots of semi-locals. The 3.5-mc band produced LX for a new country.

An old supporter, A. G. Scott (Liverpool) has returned to the receiver after an absence, and has concentrated on 14 mc phone. As a result he sends a formidable list of South and Central Americans, plus a good collection from the West Indies and Africa—but very little from Oceania or Asia. Among the nicer



G3ZW, Bolton, Lancs, has a comprehensive outfit covering all bands from the Top right up to Seventycems (430 mc), the Rx side including an AR88D, SX24, HRO Senior, RBJ4, and converters for 144 and 430 mc operated with the AR88. On the communication bands he runs 75 watts to an 829 in the final.

ones were HC1FG, YN4CB, YS1MS, HH3DL, H16EC, VP6IS and 6CDI.

M. G. Whitaker (Halifax) remarks that the "dead" 28 mc is once more taking an awful long time to lie down. For him it cropped up with CE2CC, CE3LX, CR6AI, VQ5ALT, ZD2AR and ZS3O—all phone. 14 mc was good for South America, North Africa and Australia late at night. 3.5 mc yielded OH3NY at S9 for a new country. M. G. W. is just embarking on an Air Wireless Mechanic's course at Yatesbury, and would like to know where some of the other "SWL Conscripts" are stationed.

G. Moses (Crewe) makes precisely the same remark about 28 mc, and says that several lunch-time sessions recently have produced the odd PK or something interesting. Short skip has brought in French and Italian stations, but still with a PY or LU in among them. All that G. M. now yearns for is for some kind soul to tell him how and when to hear Zones 17, 18 or 19 on phone.

P. H. Strudwick (London, N.W.11) chides me gently for making all the recent 14 mc SLP's late at night, when one doesn't normally hear much of interest. My experience is that

if I set one for 1700 GMT or thereabouts, everyone says that they were (a) Playing cricket, (b) Shopping with the wife, or (c) Not in the mood for staying indoors. But I admit that there *has* been rather a sameness about the times, which I will rectify forthwith, although the June period was already announced last month, so we must stick to it.

Best DX from P. H. S. on 14 mc was CP5EZ, KG6FAA, KR6CF, 6DO and 6SU. UA9CL and VS6BI. On 28 mc he snagged CP5FB, CR4AC, KV4AQ, TG9RB and VK9GW. B. P. Middleton (London, S.W.11) is still wavering between the Broadcast and Amateur side of SWL, but is now using a better aerial and has thus pulled his scores up somewhat. Loggings on 14 mc have included HC1FG, M1B, CO2SG, MF2AA and others. The 7-mc score was increased by OH, HB and LX.

G. H. Coulter (Dover) reports for the first time and enters the Zones Heard listing. He doesn't have much luck on 28 mc and says he has heard very little except W's, although he did once collect a VP9. W. T. Botley (Slough) is another "new face," and he, too, sends in his first list of calls for the SLP.

P. M. Crawford (Darlington), who mentioned PK4KS as a "new country" and therefore had his leg pulled somewhat last month, is just a little bit sore and thinks I might have put it more gently. Sorry, P. M. C.! I'm *always* gentle; kind to children, good with dogs, qualified baby-sitter and all. If there seems to be a slight sting in an occasional remark, it means nothing at all. P. M. C. works under difficulties, comprising four radio relay cables, five 66 kV lines, 440-volt traction lines, an electric saw, electric waving and drying machines. All this collection seems to be within a hundred feet of his aerial! Even so, he appends a nice list of DX heard during the month.

AN IDEA ON REPORTING

B. Giles (Upwell) puts up an interesting idea. He says, rightly, that many foreign amateurs receiving reports in English are probably just as mystified as most of us would be to get one in Spanish. He suggests that one should not send a mere "rubber-stamp" report oozing the Q Code, but should include a message of greeting in the other fellow's language. He would like to see a published set of standard phrases for the purpose in French, Spanish, German and possibly Javanese!

Now I know we have several linguists among our readers, so maybe they would like to help. If anyone will be kind enough to do so, I will pass the remarks on.

D. L. McLean (Yeovil) still pulls in the DX; on 28 mc he has found CR4AC, FD3RG, PK's, AR8's and eleven VQ4's. On a few days he has found the band remaining open until 2200—sometimes for South America but occasionally for W's. On 14 mc his best were CR6AI, VE8MI, 8OX and 8SI, VS2BV and YN4CB—all phone.

DX ON 21 MC!

R. A. Hawley (Goostrey) tells us that ZE stations are now officially allowed to operate on 21 mc; they are the first in the world to do so. M. G. Whitaker confirms this, having heard a ZE3 coming in on phone on that band. So now for a *Six Band* table! R. A. H. logged CP5FB and CR4AC on 28 mc; his outstanding Far East DX on 14 mc has been VS6BS, who has been coming in at S7-8 with no other DX audible.

A slight "bind" from R. A. H. concerns stations listed in our "Pse QSL" feature who do not QSL. The answer to this, of course, is that some of them are surprised by the large volume of QSL's they receive, and eventually find answering them somewhat beyond their spare time and possibly cash. But, in general, they are very good, and it is an undoubted fact that cards sent to stations appearing in that list will bring in a much better return, on the whole, than cards just sent at random.

P. Short reports from Gutersloh, Germany, in connection with recent remarks about



W0CXF of Fort Scott, Kansas, has an HQ-129X as receiver with a Collins table-top band-switch transmitter.

"ZONES HEARD" LISTING (POST-WAR)

Listener	Zones	Countries	Listener	Zones	Countries
PHONE and CW			PHONE ONLY		
M. E. Bazley (Kidderminster) ..	40	225	D. L. McLean (Yeovil) ..	37	175
E. Trebilcock (Victoria, Australia) ..	40	214	O. A. Good (Oswestry) ..	37	172
D. W. Bruce (Eltham) ..	40	213	K. Parvin (Thornton Heath) ..	37	165
O. A. Good (Oswestry) ..	40	212	J. M. Graham (Glasgow) ..	37	154
A. H. Edgar (Newcastle) ..	40	212	P. H. Strudwick (London, N.W.11) ..	37	151
R. S. Stott (Upminster) ..	40	211	J. C. Beal (N. Wembley) ..	37	150
R. A. Hawley (Goostrey) ..	40	196	A. M. Norden (London, N.W.11) ..	37	148
W. J. C. Pinnell (Sidcup) ..	40	191	J. P. Warren (S. Croydon) ..	37	146
D. W. Waddell (Hitchin) ..	40	191	G. Moses (Crewe) ..	37	144
J. C. Beal (N. Wembley) ..	40	181	D. Vincent (Beckenham) ..	37	140
A. W. G. Boulton (Norwich) ..	40	172	R. J. Line (Birmingham) ..	37	139
M. Shortland (Sunderland) ..	40	167	K. M. Parry (Sandwich) ..	37	136
B. Davies (Beckenham) ..	40	161	E. J. Parish (Watford) ..	36	163
D. Rickers (Wrexham) ..	40	138	D. G. Martin (Cheltenham) ..	36	149
N. S. Beckett (Lowestoft) ..	39	176	B. W. Sutton (Liverpool) ..	36	121
R. A. Fowler (Marlow) ..	39	162	D. J. Williams (Pontyberem) ..	36	105
L. M. Singletary (Bicester) ..	38	177	R. A. Fowler (Marlow) ..	35	140
R. G. Goulding (Wrexham) ..	38	142	H. M. Graham (Harefield) ..	35	139
F. A. Herridge (London, S.W.12) ..	37	156	C. S. Pollington (Chichester) ..	35	138
B. Hummerstone (Harrow) ..	37	132	A. L. Higgins (Aberkenfig) ..	35	126
K. Smeeton (Barnton) ..	36	154	L. B. Bailey (Stockton-on-Tees) ..	35	123
G. H. Coulter (Dover) ..	36	138	P. Bysh (London, N.8) ..	34	129
C. J. Goddard (Coventry) ..	35	123	C. J. Goddard (Coventry) ..	34	112
PHONE ONLY			A. O. Frearson (Birmingham) ..	34	110
E. J. Logan (Hertford) ..	40	198	D. K. Cocking (Farnborough) ..	34	106
D. W. Bruce (Eltham) ..	39	187	W. C. Askew (Melton Mowbray) ..	33	118
R. G. Poppi (Beckenham) ..	39	162	B. L. Stedman (Hawkhurst) ..	33	103
R. A. Hawley (Goostrey) ..	38	183	G. Musk (Blackpool) ..	32	112
A. Bannister (Manchester) ..	38	173	G. Murray (Newcastle) ..	31	100
D. S. Kendall (Potters Bar) ..	38	170	O. R. F. Mason (Prittlewell) ..	31	80
L. Tombs (Swindon) ..	38	154			
M. G. Whitaker (Halifax) ..	38	148			

listening for trawlers, lifeboats and the like on the Top Band. He suggests that all SWL's should make themselves familiar with the locations and telephone numbers of coast-guard stations, lifeboat stations, RAF Air-Sea Rescue Units and so on; and that in bad weather they should make a point of spending an hour or so listening to the trawlers. Quite apart from being interested and possibly increasing their vocabularies, they might be able to render a valuable service or even be instrumental in saving life.

R. G. Goulding (Wrexham) had an unusually varied bag on 28 mc, which included CR6AV, KG6HG, MP4BAB, MS4A and the PK's. On 14 mc he logged CE3AT, OX3MC, PZ1Z, Y1ZUW and ZA1A. K. I. Browne (London, W.14) sent in two Calls Heard lists which, unfortunately, arrived just too late for inclusion. During the SLP he heard CO2CX, HP1FG, VP3BG, 3MCB, 5FR and 7NH.

THE MAY CONTEST

I found it very difficult to judge which was the best list of a dozen stations sent in for this contest. You will remember that it was to include an hour's listening, the hour to be chosen by the listener.

After much consideration I have divided the position of merit between G. C. ALLEN and K. PARVIN, both of Thornton Heath. G. C. Allen chose the hour between 2205 and 2305 and logged CE3AG, KZ5AU, LU5CK, CX4CZ, LU7JN, PJ5CW, YV5BJ, MD7XP, CR4AE, HK4AE, CP1AP and FM8AD. K. Parvin listened between 0611 and 0711 the next morning and logged HC1FG, VK3LA, W7BYR, VK7SK, ZL2JB, VP6NH, VK3HW, VP6MO, YN4CB, W6KQY, VK3RE and KH6OR. G. C. A.'s list was for CW and K. P.'s for Phone. As an honourable third I would place the Phone list of H. M. Graham (Harefield), who listened

from 2205 to 2305 and logged mostly Central and South Americans.

HOMEWORK FOR JUNE

Just for the record, we will revert to the favourite paastime of logging Zones and Countries, to see how it compares with last year. So the June Contest will be based on how many Zones and Countries you log (all bands) during the month. (Yes, I know this only gives you half the month to collect your thoughts, but maybe it will find out whether you keep a good log or not !)

Many thanks to those of you who have sent in details of your receiver and aerial system, as asked for last month. Will those who have not done so please send them in with next month's mail? I want to produce a short article on the subject, but it ought to be representative of at least half of those who appear in the DX Tables each month. One paragraph, please, on the subject of Receiver, Aerial, and, roughly, the Reason Why.

SET LISTENING PERIODS

June 24, 2100-2200 GMT, 14 mc CW and Phone.

June 25, 1100-1200 GMT, 1.7 mc CW and Phone.

July 28, 1700-1800 GMT, 14 mc Phone.

July 29, 1700-1800 GMT, 14 mc Phone.

That seems to be about that lot for this month, and so I will wish you Good Hunting. Please have your June reports in by first post on July 4, addressed to DX Scribe,

MORE COMMERCIAL QRM

It would seem not at all unlikely that one result of the recent Three-Power decision to intensify the radio propaganda war against Soviet Russia will be the appearance of a new flock of high-power stations in the band 6-23 mc; if the accepted techniques are used, it is not to be expected that the amateur bands within this area will be avoided by the giants. In the midst of peace we are at war in all sorts of unpleasant ways.

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JOHNSONS (RADIO) MACCLESFIELD

DX QTH's

EA8LP	Box 175, Las Palmas, Grand Canary.
FD3RG	Lome, French Togoland.
MR6CA	APO 331, c/o PM, San Francisco.
KD7AG	Box 451, Nicosia, Cyprus.
MF2AD	65 (GT) Coy., R.A.S.C., Betfor, Trieste Free State.
PJ5FN	c/o W5FNA, Bill Case, 122 W. White Ave., San Antonio, Texas.
VP4CO	Navy 117, FPO, New York.
VP7NK	D. Hawkins, Box 1280, Nassau, Bahamas.
VP9D	J. Mann, ex-G3XL, St. George, Bermuda.
VP9II	S/Sgt. Russell, 1934th AACs Sqdn., APO 856, c/o PM, N.Y.
VP9KK	Dean Snyder, Navy 138, c/o FPO, N.Y.
VQ3AK	Box 457, Dar-es-Salaam, Tanganyika.
VQ4AA	S. H. W. Tanner, c/o Stationmaster, East African Rlys., Mombasa, Kenya.
ZK1BC	Radio Station, Rarotonga, Cook Islands.

Short Wave Listener, 53 Victoria Street, London, S.W.1. Keep letters as short as you can, please; put your claims on separate pieces of paper, or postcards; restrict your Calls Heard to the Best 25. For all this, you will have your Scribe's blessings! 73 and BCNU.

USEFUL TV BOOKLET

For those possessing a commercial TV receiver, or otherwise non-technically interested in television, a new booklet entitled *Television in Your Home* is worth having. In 64 pages of seven chapters it discusses TV strictly from the angle of the viewer who wishes to get the best results without having to learn the technicalities. The price is 2s. 2d., of the Books Department, Iliffe & Sons, Ltd., Dorset House, Stamford Street, London, S.E.1.

BARNES RAD-ELEC & WHOLESALE CO.

12 Pipers Row, Wolverhampton Central

R1355, with valves and transit case, good condition, 55/-; B.C.624, with valves, new, 35/-, less valves 22/6; R.1147, with valves, 50/-; oscilloscope units (tube 3" and network), 32/6; set of 12 coils for T1115 transmitter, in fitted box, 35/-; R.1116, all wave, battery double superhets, tested, £11 (send for leaflet, 3d.), only a few left; chokes, 80 m/a 15 Hy, 5/6; converters, 24v D.C. input, 200v output, 7/6; or 12v input, 11/6; volt stabilisers S.130, 10/- pair; new 60 amp. 3-pole 500v switches, in case, 42/6; bargain for stripping, 69 sets less valves and motor, 21/-. All prices include free delivery anywhere in U.K. See "S.W. Mag." for other bargains; thousands of items for callers.

CALLS HEARD

SET LISTENING PERIODS

14 mc

May 26, 2200-2300 GMT

N. Robinson, 56 Avondale Avenue, Bury, Lancs.

PHONE: CE3AB, CN8EB, CX2CO, FA3ACC, HK5FI, LU1TC, 5CZ, PY1AKT, 2FC, 2XY, 4XY, 4ZS, YV5AB, ZC6JM, ZB1BB, 6JS, 4X4AL. (Rx: CR 100.)

W. T. Botley, 48 Windermere Way Slough.

CO2CL, CQ1PK, CR7AP, EA8AW, LU4BH, PY1AQM, 1KZ, 4X4AK, 4DR. (Rx: AR77E.)

B. Davies, 73 Eden Road, Beckenham, Kent.

CW: CE5AW, CN8MB, EA8AL, 9BB, FA3WX, LU9CV, 9KA, TF5TP, UA1AL, 3BU, VK5KO, VP4CO, YV5BJ, 4X4CR. (Rx: 640.)

L. M. Singletary, R.A.F., Bicester, Oxon.

PHONE: CN8ED, CO8GH, CX2AF, EK1CG, 1SA, FA3DS, LU1JC, 7AZ, 7DX, OA4M, PY4LZ, VP3MCB, 7NH, YV5AV, ZB2A, 4X4DR.

CW: CE5AW, CN8MB, EA9BB, FA3RR, 3VV, 1S1AHK, LU8AE, TF5TP, UA1AL, VK5FH, YU1CA, ZB1BE, 1IH, 2A. (Rx: 0-V-1.)

R. G. Poppi, 274 Kent House Road, Beckenham, Kent.

PHONE: CE2BL, CN8AO, 8ED, CO2FA, CX2AF, AR8PP, HC1KE, KP4EG, LU1LB, 1DC, 1JN, 5BH, 7AZ, 7BO, OX3MC, PY1RH, 2AJ, 4AGR, 4AGV, 4LG, 4XI, VP5FR, 5VP, 7NH, 9NN, YV1AV, 1YA, 5BO, YS1MS, ZB2A, ZP1AU, 4X4AS, 4DR. (Rx: S.640.)

G. Moses, 65 Raiton Avenue, Crewe, Cheshire.

PHONE: CE3AT, CX3OS, EA8AP, EK1HB, FA3DS, 9WF, 1H8WF, LU1JC, 7AZ, OX3BD, 3MC, PY1ET, 5EV, VP3HAG, 3LF, 4TI, YV5AV, YS2SA, 4X4AS. (Rx: S.750 and S.640.)

Please note the following simple rules for sending in lists of Calls Heard:

28 and 14 mc : No Europeans.

No USA except W6 & W7

No VE except VE5, 6, 7 & 8.

7 mc : No Europeans.

Arrange logs in the form given here, with (a) prefixes in alphabetical order, but not repeated; (b) numbers in numerical order and repeated as part of the call-sign; (c) call-signs in alphabetical order. For example:—
VK2GW, 3CP, 4UL, VP1AA, 6CDY, VQ3HJP, 4EJT, W6ENV, 7VY. Please underline each prefix, keep each list to one band, and, in short, make your lists exactly like those below, except that the more space you leave, the better.

N. S. Beckett, 194 Waveney Drive, Lowestoft.

CW: CE5AW, EA8AL, 9BB, FA3RR, 3VV, 3WX, 8CR, 9VE, HC1JW, HK5UH, HP9FG, KP4CC, 4KA, 4LK, LU9KA, PY1AC, 1GJ, 1SW, TF5TP, ZB1BE. (Rx: Ham-bander.)

W. J. C. Pinnell, 40 Melville Road, Sidcup, Kent.

PHONE: CE3AT, CN8AI, 8ED, CX1CA, EK1SA, LU1JC, 1LB, 3CB, 4BH, 7AZ, OX3BD, 3MC, PY1AKE, 1FT, 1RF, 2JD, 4CF, 4KL, 5AW, 6AF, VK3HW, VP3HAG, 7NH, ZB2A, 4X4AV.

CW: EA9AT, FA3RR, 8CR, KP4CC, 4LK, VK5RX, ZB2A. (Rx: V55R and converter.)

1.7 mc

May 27, 2200-2300 GMT

N. S. Beckett, 194 Waveney Drive, Lowestoft.

CW: G2BVU, 2YY, 3AKU, 3QB, 3DUB, 3FAT, 3NT, 5UF, 6QB, 8NF, GM3FBA. (Rx: Ham-bander.)

L. M. Singletary, R.A.F., Bicester, Oxon.

PHONE: G2PX, 3ENY, 5RO, 5SK, 6PF, GW2BG.

CW: G2AGO, 2BVU, 2KF, 2OX, 2YY, 2AKU, 3CRK, 3DKO, 3DUB, 3ENH, 3EVV, 3FCU, 3FIB, 3FLQ, 3FRF, 3FTY, 3GMI, 3NT, 4MR, 5VM, 6QB. (Rx: 0-V-1.)

T. G. Spencer, Cherry Tree Cottage, Slimbridge, Glos.

PHONE: G2AON, 2BCX, 2BZ, 3DNY, 5RO, 5SK, 6PF, GDS5Z, GW2BG. (Rx: Commander.)

E. J. Logan, Linten Cottage, Fanshawe Street, Bengoe, Hertford.

PHONE: G2AON, 2AYN, 2BCX, 2PX, 3AMF, 3ENY, 3EPV, 3EUH, 3FEW, 3HM, 5RO, 5SK, 6PF, GW2BG. (Rx: BC.342 J.)

G. Moses, 65 Raiton Avenue, Crewe, Cheshire.

PHONE: G2AON, 2DKH, 2NY, 2PX, 3ART, 3CGT, 3CNM, 3EJF, 4GN, 5RO, 6LC, 6PF, GDS5Z, GW2BG. (Rx: S.750.)

D. W. Waddell, 53 Orchard Road, Hitchin, Herts.

PHONE: G2PX, 3HM, 6PF, GW2BG.

CW: G2AGO, 2BVU, 2KF, 2MJ, 2PX, 2QX, 2YY, 3AKU, 3CRK, 3DUB, 3EMY, 3FRF, 3GDC, 3GMI, 3NT, 4MR, 5UF, 6QB, 8NF, GW3FWY, 8CT. (Rx: S.640.)

H. M. Graham, 28 Park Lane, Harefield, Middlesex.

PHONE: G2ACK, 2AYN, 2PX, 3AMF, 3ENY, 6PF, GW2BG. (Rx: 1-V-1.)

W. J. C. Pinnell, 40 Melville Road, Sidcup, Kent.

PHONE: G2BCX, 2FMN, 2HFD, 2PX, 3AMF, 6PF, GW2BG.
CW: G2ABT, 2AGO, 2BQ, 2BUU, 2KF, 3AKU, 3BQ, 3CCZ/A, 3CRK, 3DUB, 3EVD, 3FCU, 3FNL, 3FRF, 3FTY, 3GCG, 3GMI, 3NT, 4GM, 5UF, 6QB, 8NF, GM3GAY, GW3FKY, 8CT. (Rx: R1224A.)

M. G. Whitaker, Stile-House, Shelf, near Halifax, Yorks.

PHONE: G2AON, 2COY, 2PX, 3ART, 6PF, 6PL, GW2BG.

CW: G2AWH, 2YY, 3BQ, 3CMI, 3DKO, 3ESP, 3GO, 3NT, 3QV, 6BV, 6KU. (Rx: Battery 0-V-0.)

P. H. Strudwick, 159 Hampstead Way, London, N.W.11.

PHONE: G2AON, 2AYN, 2BCS, 2HFD, 2PX, 3AMF, 3ECN, 3EPV, 3EQN, 4HFC, 6PF, 6TF, GW2BG. (Rx: S.640.)

GENERAL

7 mc

N. S. Beckett, 194 Waveney Drive
Lowestoft.

CW: CM2TM, 7FH, 8LD,
CO2GE, 6ED, 6VV, 7BL, CR4AL,
HH2LD, HK4DP, HR2AM,
KP4CC, 4CY, KZ5BE, 5CG,
PY1AQT, 2SR, 4ZI, 8MG, VQ3NM
W7NAV, ØKZW. (Rx: *Ham-
bander.*)

14 mc

O. A. Good, 1 Western Drive,
Oswestry, Shropshire.

PHONE: CP4DG, HI6EC,
HP1BR, 1LO, W7LTR/KL7
(Aleutians), OA6B, PZ1J, 1Z,
VK7AZ, 7JB, VP5AR, 5RS, 7NH,
VS6BS, YN1LB, 4CB, YS1MS,
ZP2AE.

CW: FM7WF, KX6BA, KZ5AK,
51P, UAØAA, ØKFD, ØSJ,
UL7AB, ZM6AB. (Rx: S.640.)

A. G. Scott, 16 Childwall Abbey
Road, Liverpool, 16.

**CE3CZ, CO7AA, 7GM, 7RO,
CX2CO, HC1FG, HH3DL, HI6EC,
HK1DZ, KP4AA, 4AZ, 4BI, 4CI,
4EE, SVØWX, TA3GVU, TF3MB,
TI2OA, 2OE, 2HP, YN4CB,
YS1MS, YV5AB, 8AD, ZD1SS.
(Rx: 0-V-1.)**

K. Parvin, 98 Winterbourne Road,
Thornton Heath, Surrey.

PHONE: HR2RF, JA2BL,
KH6OA, 6OR, KL7ACO, KR6AS,
6DN, OQ5CF, PJ5RX, PZ1Z,
TG9AL, 9MG, VK1YM, VP7NH,
VS2BV, 6BI, 6BS, 6BT, 7BR, 7SV,
VU2LJ, XZ2KM, YS1MS, 2SA,
ZD4AD (Rx: S.640.)

B. P. Middleton, 4 Jedburgh Street,
Clapham, London, S.W.11.

PHONE: CN8BA, 8ED, CO2SG,
EK1DI, 1HB, FABCC, 9WC,
HC1FG, MD2FJ, 2MD, OQ1FF,
OX3BD, TA3FAS, 3GVU, VQ4OL,
VSTSV, W6XY, 7HTB, YN4CB,
ZB1AB, ZC6DO, 3V8BB. (Rx:
5-valve S.H., Peto-Scott H52.)

P. H. Short, BSWL 3817, Guttersloh,
Germany.

PHONE: CN8BA, 8EI, 8ET,
CO8MP, CX2CO, EA8CL, EK1JC,
FA3FB, 3TN, 3ZH, 3ZS, 8PX,
HC1FG, HI6EC, KP4AZ, LU4PH,
LU7AZ, MD2MB, MF2AA,
M13AB, PY1AQM, 2CK, SV5UN,
ØWY, ØWX, TA3GVU, UA4CD,
VK2AGW, VP6CDI, VQ4RF,
W6GVM, 7HRV, XE1CO, ZB2A,
ZC6DO, 6JM, 3V8AT, 4X4AL,
4AT, 4AV. (Rx: 0-V-1.)

H. Froggatt, 28 Lea Street, New-
Mills, Nr. Stockport, Cheshire.

PHONE: CE2CC, LU4BH, 7AZ,
PY2CK, VS6BS, 7BR, ZB2A.

CW: CE3DZ, FA9VW, 9VE,
KP4LK, LU6DJX, 9KA, 8EN,
PY1ATK, 2DC, 7BA, VK2PV,
VQ4WLH, 4KRL, ZB1BE, 2I.
(Rx: 358X and R1155A.)

R. G. Poppi, 274 Kent House Road,
Beckenham, Kent.

PHONE: AP2N, JA2BL, KH6AQ,
6OA, KR6AD, 6AS, 6BN, VK6DD,
VS1AD, 2BS, 7SV, VU2LJ, XZ2KN,
ZP1AU. (Rx: S.640.)

E. J. Logan, Linten Cottage,
Fanshawe Street, Bengeo,
Hertford.

PHONE: AP5A, CE3CZ, CR4AC,
FF8FP, 8MM, HN2W, HI6EC,
HK1DZ, HP1BR, KH6CT, KZ5CP,
LU6DAS, M1B, OA4BG, PY4KL,
TA3AF, VP3LF, 3MCB, 4TK, 6IS,
9MM, YV5AB, VQ4SC, VS6BS,
ZS3F. (Rx: BC342-J.)

R. J. White, 29 Devonshire Drive,
Greenwich, London, S.E.10.

PHONE: CX2CO, LU7AZ,
PY2CK, 4QL, SP1CM, 5SG,
UA4CB, UB5BV, VP6IS, VS7SV,
YO3RZ, ZB1BB, 4X4AL.

G. Moses, 65 Ralton Avenue,
Crewe, Cheshire.

PHONE: CE2CC, 3AE, CR6AI,
CT2AE, HK1IY, HP1GD, M13AB,
3ZZ, PJ5RX, PZ1Z, TI2OE,
VK3ASD, 3HW, 3JE, 3LA, 5MS,
5NC, 5RN, VP5MU, VS6BS,
XE2KW, 2W, YV8AD, YS1MS,
ZD1SS. (Rx: S.750 and S.640.)

B. Davies, 73 Eden Road, Beckenham,
Kent.

CW: CE5AW, CP1AP, CR4AE,
9AG, DU1FC, EQ3Q, KV4AA,
MP4BAE, PK1RI, 3SM, PZ1OY,
UA9CL, 9KCC, ØAA, VP4CO,
7NM, VQ3SS, VS7KR, VU2BC,
2CP, ZS7C. (Rx: 640.)

J. P. Colwill, Hay Common,
Launceston, Cornwall.

PHONE: CN8AO, 8BW, CX2CO,
FA3ZH, 8CC, HC1FG, PY1AU,
1ECH, 2CR, 4IO, 6AG, 6DJ,
VK2AJC, VP6CDI, VS6BS,
W7ADS, 7HRV, 7HTB, 7VS,
ZB1BB, 2A, ZL4SA, 4X4AL, 4AV.
(Rx: McMichael Battery Model
No. 484.)

P. King, Boveen Lodge, Sharavogue,
Offaly, Eire.

PHONE: CE7AA, HC1FG,
VK2AGW, 3NW, VQ4RF, ZC6DO,
ZD4AD, ZE2JX.

CW: AP2N, C9OO, CR4AE,
7RF, DU1DR, FM8AD, HH2G,
HK4CF, HZ1HZ, KZ5AU,
M13AB, PK6SC, UL7AB, VK3JD,
5BO, 7LJ, VQ2AB, ZL1MP. (Rx:
0-V-1.)

D. Pool, 8a Ebsworth Street, Forest
Hill, S.E.23.

PHONE: AR8CK, CE3CZ,
CN8BA, EK1AD, FA3GZ, 9WO,
LU6DAS, MT2E, PY1AIU, 1AOR,
2CK, 6DG, SVØWX, UB5BV,
VK3HW, VP3CB, 6IS, VS6AS,
XZ2KN, YV5AB, ZC6DH. (Rx:
Sky Champion.)

I. S. Davies, London, N.13.

PHONE: AR8AB, CN8BA, 8BB,
EK1AD, 1BC, 1HB, HC1FG,
HI6EC, HP1FJ, LU7PZ, OX3MC,
PY2CK, 2WN, 4DF, 6DJ, W7ARS,
7EM, VK2NS, 3WT, 5MS, YS1A,
ZC6UNJ, ZL4SI, 4X4AJ. (Rx:
R.208.)

R. J. Riding, Fibbersley, Wednes-
field, Staffs.

PHONE: CN8ET, CX2CO,
EK1SA, FA3JY, HC2JR, LU7AZ,
7PU, M1B, MD2FJ, OX3BD,
PY7FC, PZ1Z, SV5UN, VEØX,
VK2AGU, 3HW, VP6CDI, 6RS,
VQ4ERR, 4NS, VS7SV, 5SA,
ZC6DO, ZS7JX, 3V8BB, 4X4BL.
(Rx: 1-V-1.)

S. Smith, 40 Stoneleigh Road,
Kenilworth.

**AR8BC, 8BT, 8JT, 8PP, EA8AP,
8AW, MD2FJ, 2JH, PY4VX, 4XA,
UA4CB, VP3LF, 6SD, VQ4RF,
4VL, VK3HW, 3WU, 4WJ, 5RF,
XZ2SY, ZC6JM, 4X4AK, 4AL,
4BA, 4CA, 4DR. (Rx: R.1084.)**

F. M. Spence, BSWL 3853,
69 Morton Street, South Shields.

PHONE: CE2BO, CO8GH,
CX2CO, EK1AD, HK1BZ, HR1BA,
KP4AZ, LU4BH, MF2AA, OX3BD,
PZ1Z, TI2AV, VP1BB, 3HAG,
4FK, 5OF, 6IS, 7NU, 9NN,
VQ4BJ, VS6BI, 7SV, YV5AD,
ZS1KV, 6DV. (Rx: R.1155.)

T. G. Spencer, Cherry Tree Cottage,
Slimbridge, Glos.

**AR8BC, CE3CZ, CX2CO, HH2PA,
HI6EC, KZ5AI, LU6AJ, PJ5RX,
PY7AD, VK1YN, VQ4RF, 4VL,
VS2BS, XZ2KM, ZD4AD. (Rx:
Commander.)**

D. L. McLean, 9 Cedar Grove,
Yeovil, Somerset.

PHONE: CR6AI, HI6EC,
TI4JG, VE8MI, 8OX, 8SI, VP6CDI,
6IS, VQ4RF, 4VL, VS2BV,
W7HRV, 7HTB, XE1AC, YN4CB,
ZC6DO, 6UNJ, ZD4AD. (Rx:
Sx28 and AR.88LF.)

J. Jones, 18 Boswell Terrace,
Edinburgh, 5.

PHONE: AR8KW, 8PP, FF8AH,
HC1EJ, HH3DL, HP1GR, MB9AL,
OQ5CF, SVØWL, TI2KW,
VS2BC, 7SV, XZ2SY, YN4CB,
YS1MS, ZB2A, ZD1FK, ZL1LA,
4X4XG. (Rx: S.640.)

C. J. Rourke, 130 Ravenhill Avenue,
Belfast, N. Ireland.

PHONE: CN8BA, EK1AD, EL2A, FA3DS, 9RZ, HI6EC, HK1PZ, 4CF, KP4EE, LU7AZ, OX3GE, PY4VX, PZ1Z, SV0LT, VK3HW, VP3HAG, 3MBC, 4TK, 6CDI, 6IS, VS7SV, W7ERK, YN4CB, YV5AB, 5AY, 5OB, 4X4AL, 4BU, 4CR. (Rx: *Ferguson 461.*)

P. H. Strudwick, 159 Hampstead
Way, London, N.W.11.

PHONE: CP5EZ, CR6AI, 7AP, HC2JR, HP1LA, KG6FAA, KH6DR, 6DY, 6OA, KL7BM, 7PE, KR6CF, 6DO, 6SU, UA9CL, VK8MK, VS6BI, VU2JL, XE1FT, 2NF, YN1LB, 4NW, XZ2SY, ZD4AD. (Rx: *S.640.*)

J. Neal, 217 Sladefield Road,
Ward End, Birmingham, 8.

CW: AP2N, CPIAP, CR5AC, EQ3FM, FF8MM, FM7WE, HH2G, KG6HG, KH6GS, KL7GG, MS4FM, PJ5RE, PK1HX, UA0KFD, UI8KAA, UJ8KAA, UL7AB, VP8AO, VRI, VS6BO, VU2BC, YI2UW. (Rx: *S.640 and S.680.*)

J. P. Warren, 14 Francis Road,
West Croydon, Surrey.

PHONE: CT3AK, HI6EC, HP1CM, 1LA, HZ1PC, KH6OA, KR6AF, M1B, OA4AO, 4M, PZ1Z, TG9RB, T12HP, VE8NX, VK6DD, VP6MO, 6NH, VS7SV, VU2LJ, XE2MF, YN4CB, YS1ES, 1MS, 2SA, YU1CAB. (Rx: *R.208.*)

R. Lamble, Lea House, Ardingly
College, Haywards Heath,
Sussex.

PHONE: CN8BA, 8ET, MD2FS, TA3GVV, VK2AA, 5MS, W6FSJ, 6SFZ, 7JM, ZL1KG, 2AAH, 3JD, 4AV. (Rx: *R.103, Mk. I.*)

R. J. Brooker, 77 The Cottages,
Rosendale Road, Herne Hill,
S.E.24.

PHONE: CM9AA, EA9AI, FD8XD, HC2JR, HI6EC, HK1AW, KG6AD, KH6AQ, LU6AJ, M1B, OX3BD, PY8RJ, PZ1Z, UG6AB, VE7AD, VK3GO, VP5AK, VS7BR, 7SV, W7HRB, XE2KW, YN4CB.

CW: UA9KCB, UC2KAB, UG6KAA. (Rx: *4-valve battery superhet.*)

28 mc

J. W. Cave, 12 Hilda Road,
Parkstone, Dorset.

PHONE: AP2N, AR8AB, CE3CZ, CX4CS, JA2CL, KP4DY, KZ5GM, LU4CD, OQ5CF, PK3JF, 4DA, PY2JU, ST2AM, T12BE, VK5AE, VP5FR, 6SD, 9G, VQ3AK, VS7PW, W6YYG/AM, ZC6UNJ, ZD4AU, ZE2KH, ZS6Z. (Rx: *Home-built 0-V-1.*)

F. Pilkington, The Wireless
College, Colwyn Bay, N. Wales.

PHONE: CE3AG, 3CZ, CX2CL, 3AW, FA8JO, FF3CN, 8AH, HC2CK, 2JW, HH2W, HK3BJ, 4DF, 5MO, KP4KP, LUIJG, 5XE, 6AJ, PJ5KFN, P12QM, SV0WL, T12FA, 2OEC, W2WAT/MM, 4KEJ/MM, 5AXI/MM. (Rx: *R.1116A.*)

I. S. Davies, London, N.13.

PHONE: AR8BB, CE2CC, FF8PO, KZ6CP, LU2CD, 3BAC, 4DD, 4AD, MD2AC, OQ5CK, 5CL, PY2CK, 3OI, 4LK, 5PQ, 6DJ, 6ZG, VQ4ASC, 4NSH, 4RF, 4SC, ZS1FD, 5JX, 6SG. (Rx: *R.208.*)

T. G. Spencer, Cherry Tree Cottage,
Slimbridge, Glos.

AP2N, CR4AC, CX4CS, VK9GW, VF6SO, VQ4RF, VS9AH, ZP5IO, ZS3D, 1T. (Rx: *Commander.*)

G. Moses, 54 Railton Avenue,
Crewe.

PHONE: CX4CS, HC1JW, OQ5AB, PK3LC, 4DO, 4KS, T12EV, VQ4RF. (Rx: *S.750 and S.640.*)

K. Parvin, 98 Winterbourne Road,
Thornton Heath, Surrey.

PHONE: EA8DM, EK1AD, FF8AH, HP1AL, KG4AK, 4AO, M13NC, 3XX, MP4BAB, OQ5BO, 5LL, ST2AM, TA3GVU, T12SA, VK6DD, 6RU, 9GW, VP6SD, VQ3AK, VS9AH, VU2LJ, YN4SDA, ZD2JHP, 4AB, ZP5IB. (Rx: *S.640.*)

R. A. Hawley, Torvieve, Brook-
field Crescent, Goostrey,
Cheshire.

PHONE: CE2CC, CP5FB, CR4AC, CX4CS, HZ1AB, KZ5LH, M13SC, 3XX, OA4BN, OQ5AO, 5CJ, PK3OF, 4KS, W2VRM/MM, 2WAT/MM, 3NKS/MM, 3OZA/MM, 5AXI/MM, 5OTF/MM, 6YTT/MM/ZS5, 9EWN/MM, XZ2EM, ZC6UNJ, ZD2JHP, ZS4BL. Rx: *AR-88 and S.504.*

E. J. Logan, Linten Cottage,
Fanshawe Street, Bengoe, Hert-
ford.

PHONE: AP2J, AR8AB, CR6AV, EQ3SAM, FD3RG, FF8AH, FM7WE, HH2W, KR6DV, KV4AQ, MD7HV, M13XX, MP4BAB, OQ5CJ, ST2AM, VK9GW, VPIAP, 2GG, 4LL, VS1AD, Y1TRF, VU2SWL, XZ2SY, YV1AU, ZA1B. (Rx: *BC342-J/RFU-32.*)

D. L. McLean, 9 Cedar Grove,
Yeovil, Somt.

PHONE: AP2N, AR8AB, 8BA, 8JT, 8MR, 8PO, 8PP, CR4AC, FD3RG, FF8AH, HH2W, KZ5AC, 5CP, M13AB, PK3JF, 4DA, PJ5FN, SV5UN, T12OC, 2SA, VQ3AK, VS7PW, ZD1BD, YN4C, YV1AU. (Rx: *SX28 and AR88LF.*)

P. H. Strudwick, 159 Hamstead Way,
London, N.W.11.

PHONE: AP2N, CP5FB, CR4AC, FF8PM, KV4AQ, KZ5PC, MD7HV, OQ5AB, 5AH, 5AO, 5LL, PK1CR, 1TH, ST2AM, TG9RB, VK9GW, VQ2W, 5DT, VS1CA, W6YYT/PJZ53, ODA1/MM, ZD2JHP, ZE1JO, 2JA, 2KH. (Rx: *S.640.*)

C. S. Pollington, 8 Cleveland Road,
Chichester, Sussex.

PHONE: AP2J, AR8PO, HP1AL, KP4JM, 4LA, KZ5CP, 5HP, 5OY, PK1CR, 3JF, VS7GD, 7PW, Y1TRF, VH2GB, XZ2EM. (Rx: *AR88LF.*)

D. Pool, 8a Ebsworth Street,
Forest Hill, S.E.23.

PHONE: AP2N, AR8BO, CE1AA, FA8CF, LU3DH, M13XX, OQ5AO, PY1ARU, 2CK, 5DX, TA3GVU, VK6DD, 9GW, VQ4CRM, 5ALT, VU2LJ, ZE1JB, ZS1HY, 5A, 6TP, 4X4BB. (Rx: *Sky Champion.*)

1.7 mc

F. A. Herridge, 95 Ramsden Road,
Balham, London, S.W.12.

PHONE: EI2P, GM3DZB, 8FM, GW2AXT, 2BG, 3CDH, 3VL, 4CC. CW: OK2BMK. (Rx: *Modified R.103A.*)

P. H. Short, BSWL 3817, Gutersloh,
Germany.

G2ACB, 6OA, 6PF, GM8FM, GW2BG. (Rx: *O-V-1.*)

Read the Short Wave Listener regularly—
it will keep you in touch

PSE QSL

The operators listed below have informed us that they would like SWL reports on their transmissions, in accordance with the details given. All correct reports will be confirmed by QSL card. To maintain the usefulness of this section please make your reports as comprehensive as possible.

- CR7AY Box 812, Lourenco Marques, Mozambique. 7021, 14020 and 14052 kc CW, 1700 GMT.
- CT1CO Rua dos Sapadores 25-2, Esq., Lisbon, Portugal. 7119 and 14185 kc phone and CW, also 3585 kc CW, 2100-0100 GMT.
- DL3SX Lindenstr. 35, Helmbrechts(Ofr., Germany. 3.5mc phone and CW, 1700-1900, 2100-0100 GMT.
- E1ST J. A. Bowie, Northfield House, Clonmel, Co. Tipperary, Eire. 7 mc phone, 0630-0830 GMT.
- FF8PG P. Gaillard, P.O. Box 165, Dakar, F.W.A. 28.4 mc phone, 1315-1400 and 2100-2300 GMT.
- G3DTN 38 Christchurch Road, London, S.W.2. Reports required on 14.3 mc phone.
- G3EJO 39 Kingsbury Road, Erdington, Birmingham, 24. VFO-controlled 1.7 mc phone, evenings.
- G3FZG A. Treanor, Ward 5, Mill Lane Sanatorium, Wallasey, Cheshire. 7 mc CW, afternoons and evenings. Keying. Enclose return postage.
- GM3GAY Seaview, Deveronside, Banff, Banffshire. 1.7, 3.5, 7, 14 and 28 mc CW, 1830-2300 GMT.
- HZ1KE Maj. K. Ellis, R.Sigs., B.M.M., Saudi Arabia, Taif, M.E.L.F. Reports on 1.7, 3.5, 7, 14, 28 and 50 mc phone and CW.
- I1BL Corso Padova 145, Vicenza, Italy. 7 mc phone, 0930-1030 and 2200-2359 GMT. Modulation.
- I1SW Via Col di Lana 5, Bolzano, Italy. 14146, 14166, 14250 and 14380 kc phone, 1230-1330 and 1830-1930 GMT.
- OX3RG V. O. Pedersen, Prins Christians Sund, Greenland. 3.5, 7, 14, 28 and 56 mc phone and CW, 1600-0300 GMT.
- OZ7KM Guldborgvej 44, Copenhagen F, Denmark. 14 and 145 mc phone, 0900-1200 GMT.
- PA0ART Zonneweg 39, Amsterdam N, Netherlands. 3.5, 14 and 28 mc phone, 1700-1900 and 2300-2359 GMT. Quality of modulation.
- PY4CZ Rua Rafael Magalhaes 103, Belo Horizonte, Minas Gerais, Brazil. 14212 and 28424 kc phone, 1900-2359 GMT, and weekends.
- VE1HI 3 Grafton, Charlotte town, P.E.I., Canada. 4, 14 and 28-0-29.7 mc phone. Details QSB.
- VE2AEL 2084 apt. 8, Trenholme Ave., Montreal, Canada. Modulation of 14 and 28 mc NB.FM phone.
- VE3AFE 722 Balliol Street, Toronto, Ont., Canada. 28-2-28.5 mc phone. Details of QSB and ORM.
- VE4LF 510 Ingersoll Street, Winnipeg, Manitoba, Canada. 3.5, 7, 14, 27 and 28 mc phone and CW.
- VESDI Box 48, Weyburn, Sask., Canada. 14183.5 and 28377 kc phone, 1500-1800 GMT and weekends.
- VE6AP 1927 32nd Avenue S.W., Calgary, Alberta, Canada. 7 mc CW and 14 mc phone; weekdays 0200-0800 GMT, weekends 1300-0400 GMT.
- VE6BM Box 52, Vulcan, Alberta, Canada. 4 and 28 mc phone and CW, VFO, 1200-1600 GMT.
- VE7AIH 201 North Grosvenor Street, Burnaby, B.C., Canada. 28-2-28.8 mc phone, 1600-2200 GMT. Comparative reports with VE7AZ, 7EL, 7ER, 7MS, 7OJ and 7UU.
- VK2BX P.O. Box 2, Bankstown, N.S.W., Australia. 14 and 28 mc phone, 0700-0900 GMT. Comparative reports with VK2AGW, 2JP and VK2QR.
- VK3RH 65 Railway Street, Traralgon, Vic., Australia. 3.5, 7 and 14 mc phone and CW, 0800-1200 GMT.
- VP2DB Box 23, Roseau, Dominica, B.W.I. 3.5, 7, 14, 28 mc CW and NB.FM phone, 0100-0400 GMT.
- VS6AM 16 Victory Avenue, Kowloon, Hong Kong. 14165 and 28200 kc phone, VFO, 1000-1600 GMT. Comparative reports and modulation quality.
- W1BB 36 Pleasant Street, Winthrop, Mass., U.S.A. CW and phone, all bands, especially 1.7 mc.
- W1DYV E. H. Adler, Center Street, Raynham, Mass., U.S.A. Reports on 14 mc phone and CW.
- W1NBG 18 Oak Street, Franklin, Mass., U.S.A. 14255 and 14290 kc phone, at 2200 GMT.
- W1OQK 73 Hamilton Street, Hartford, Conn., U.S.A. 7010, 7030 and 7070 kc CW, 0400-0700 GMT. Frequency, stability, quality and any chirp.
- W1QQN 14 Cloarec Court, Burlington, Vermont, U.S.A. Reports on 28 mc phone.
- W1QXO 130 South Street, Waltham, Mass., U.S.A. 7 and 14 mc CW, 0400-0600, 1000-1300, 2030-0500 GMT.
- W2HY 1951 Ford Street, Brooklyn, N.Y., U.S.A. 14020 kc CW, VFO, 1600-2000 GMT. Comparative reports. Stations heard calling W2HY.
- W2KUW 308 Hickory Street, Arlington, N.J., U.S.A. 14 mc phone and CW, 1100-1200, 2100-0100 GMT.
- W2WZ 76 Highland Road, Glen Cove, N.Y., U.S.A. 14000-14150 kc CW, 14230 lc phone; 0300-0500 and 1200-1400 GMT.
- W2YJC 6300 Willow Avenue, Garwood, N.J., U.S.A. 7006-7050 kc CW, 2000-2359 GMT.
- W3HHK 139 Gay Street, Philadelphia, 27, Penn., U.S.A. 7 and 14 mc CW, 0001-0500 GMT.
- W4KWM 251 Meadowdale Drive, Warner Robins, Ga., U.S.A. 14 mc phone, 1000-1500 GMT. Quality.
- W4OGS 3043 Bransford Road, Augusta, Ga., U.S.A. 4, 14 and 28 mc phone and CW, 1500-1900, 2300-0500 GMT. Modulation. Comparative reports.
- W5PMU Box 853, Idalou, Texas, U.S.A. 28.5-29.7 mc phone, at weekends.
- W5QS O. A. Walden, RFD. 5, Box 574, Dallas, Texas, U.S.A. Quality of 14204 kc phone.
- W6DWQ 86 Billou Street, San Rafael, Calif., U.S.A. 14-0-14-15 mc CW, 0600-0800 GMT.
- W6FHR 11339 Gladwin Street, Los Angeles, Calif., U.S.A. 14250 kc, 28.6 mc phone, weekends.
- W6HZN G. P. Cobb, RFD. 2, Box 690, Spring Valley, Calif., U.S.A. 14 and 28 mc phone and CW, 1300-1800 GMT. Comparative reports.
- W6OOU A. McI. Faries, Rancho Alta Vista, Paso Robles, Calif., U.S.A. 14 mc CW, 0200-0800 GMT, Monday, Wednesday and Friday. Comparative reports. Critical tone reports.
- W8DKF 423 Boardman Canfield Road, Youngstown, Ohio, U.S.A. Reports on 28580 kc phone.
- W8KPL W. W. Simpson, P.O. Box 2, Washington, Mich., U.S.A. Reports on CW transmissions.
- W9DAZ Box 276, Bloomington, Wis., U.S.A. Reports on 3.5, 7, 14 and 28 mc phone and CW.
- W9GMY 2217 Ogden Avenue, Superior, Wis., U.S.A. 1.7 and 28 mc phone, at 1500 GMT.
- W9LTR 327 West Spring, La Grange, Ind., U.S.A. Mobile on 29250 kc phone, 1500-1800 GMT.
- W9UZS P.O. Box 68, Wood River, Ill., U.S.A. 14, 28 and 29 mc phone and CW, 0400-1000 GMT.
- W0BMM 5370 Southwest, St. Louis, Mo., U.S.A. CW all bands, 0400-0600 GMT. Comparative reports.
- XZ2GM 85 Tamwe Road, British Burma Film Compound, Rangoon, Burma. Modulation of 14130 and 28260 kc phone, 1030-1600 GMT.
- ZL3BR 70 Wildberry Street, Woolston, Christchurch, New Zealand. 28 mc phone, 0600-1200 GMT.
- ZS6HO D. Cormack, Federal Hotel, Pretoria, S. Africa. 14 mc CW, 1500-2200 GMT. Comparative reports.
- ZS6XQ P.O. Box 88, Mafeking, S. Africa. VFO-controlled 14 mc CW, 1600-2000 GMT.
- ZS6YN 20 Coronation Road, Whiteridge, Mariaburg, S. Africa. 14 mc CW, Tuesdays 1800-2000 GMT, and weekends. Details QSB. Reports from G only required when not in contact with U.K.

THE V H I F END

by A. A. MAWSE

The DX Break on Two— Construction of Beams— Reader Reports and News— Achievement Tables and Calls Heard

MAY has been a month of thrills for the VHF listener. The two-metre band produced some real DX in the middle of the month, with distances up to 400 miles, and most of you seem to have been there at the right time. The Midlands and the North had the best of it, with PA's and ON's almost by the dozen. In fact, at times, 145 mc sounded like 7 mc! The almost complete lack of fading and the very high signal strength of much of the DX was remarkable. The South, from the Thames valley to the Coast, was somewhat unfortunate in that the Continental DX was not anything like so good as it was further North, but much of the northern DX was heard and there was considerable excitement. On 70 cm. there has also been progress and, although few of our readers are yet active on that band, it will doubtless be of interest and encouragement to many to learn that the transmitting activity is on the increase and that the DX record for the Seventycent band has been increased to 132 miles.* This was a contact between G2XC (Portsmouth) and G5BY (Bolt Tail) on May 30; it is worth recording that G2XC is situated well down the side of Portsdown Hill that is away from G5BY and is therefore very effectively screened in his direction. Signals peaked to RST-579. There is now transmitting activity on 70 cm. in the South Devon, Bournemouth, Southampton, Portsmouth, Isle of Wight, Guildford and London areas, and all using crystal control are between 435 and 437 mc. G2XC and G6LK are running a daily schedule at either 1845 or 2230 BST, the latter time usually applying on Fridays and Sundays.

Beams

Requests have been received for information on the mechanical construction of beams. Truly, this is an important matter if the beam is not to collapse in the first puff of wind, but it is not an easy question to answer in these pages as much will depend on what ironmongery and metal junk are available. The

(* But see p. 271.—Ed.)

elements can be satisfactorily fixed by drilling holes in the boom just a shade too small for the element tubing to slide in easily and then forcing the elements through by some judicious taps with a hammer. A surprisingly secure set-up results, and this method has been used satisfactorily with both duralumin and wooden booms.

A single-tier Yagi can be mounted right on the top of the pole and secured firmly by an inverted U-shaped piece of metal fixed over the boom and screwed to the pole. One point to watch in beam construction is that the use of two different metals, for example, copper and aluminium, is likely to cause electrolytic action to occur at the junction of the metals; if this is left to itself too long the beam will fall to pieces, perhaps even on a perfectly calm day, much to the astonishment of its owner. It has happened!

The centre points of the elements in a Yagi beam may be joined to the boom with metal and no insulators are required. If the beam elements are supported at any other points but the centre, however, adequate insulation must be provided.

The *Short Wave Listener* wide-spaced four-element Yagi (discussed in our September 1949 and June 1950 issues) is giving satisfactory service at quite a number of stations. In comparing one aerial with another (especially if the feeder is of a different type), it is not sufficient just to disconnect one aerial from the receiver and connect the other in its place. The coupling to the first stage of the receiver must be readjusted for each beam, and unless this is done misleading results will be obtained. The coupling that suits an end-fed long-wire is quite different from that required for a beam fed through 300-ohm line, which, in turn, is different from that for an 80-ohm line. These points are made here as one reader has found a 67-ft. wire to give superior results to a beam. It is unlikely that this is due to mismatching at the aerial end if the dimensions given in the *Short Wave Listener* in September, 1949, have been closely followed. It is much more likely to be a mismatch at the receiver end.

Station News

A. L. Mynett (Wembley) found May 9 to be the start of the good conditions with F3LQ,

G4GR and PAØPN as the outstanding DX. On May 12, the band was wide open and he heard eight PA signals, while G6YO (Bradford) was S9 for a long period. The following evening, A.L.M. logged G2FO (Stockton-on-Tees), and G2HCG (Northampton) was many dB over S9. G5RW (Ilkeston) was a good signal on May 14. All this has raised his stations-heard score to no less than 239. On 70 cm. A.L.M. has completed his converter, which has a 446A "lighthouse" RF stage working into a CV102 mixer, all circuits being piston-tuned concentric lines. The local oscillator is 10 mc Clapp, followed by 6J6 multiplier stages. So far he has heard 2 unidentified carriers.

L. A. Whitmell (Harrow Weald) listened on four days during the month and found his new pre-selector ahead of the RF27 was doing well. He heard several PA signals at S9-plus and also received the Torquay and Dorset stations well. G5MA/P on the South Downs in Sussex was a remarkable signal. L.A.W. has now logged 154 stations on 2 metres.

J. E. Harman (Eastbourne) continues to

BEST TEN OF THE MONTH

(May 1950)

Operator	Location	Total Miles	Best DX (Miles)
A. L. MYNETT	Wembley	2,420	315
P. J. TOWGOOD	Bournemouth	2,106	276
E. A. LOMAX	Bolton	2,015	340
A. W. BLANDFORD	Mitcham	1,225	230

For this monthly table send details of the best ten DX signals heard on two metres. Signals may be logged once per day (0600-0600). Give date, time and details of all signals.

excel with Continental signals, and has been receiving PA and ON at phenomenal strength, particularly from May 11 to 13. The second section of the *Short Wave Listener* wide-spaced beam will be erected shortly, and it is hoped

TWO-METRE CALLS HEARD

J. E. Harman, 10 Royal Crescent, Eastbourne, Sussex.

F3LQ, 8GH, 8JR, 8LO, 8NW, 8OL, 8QL, 9AE, 9DI, G2AIQ, 2AJ, 2AOL, 2CIW, 2CPL, 2DCV, 2FJD, 2KF, 2MV, 2UJ, 2WJ, 2WS, 2XS, 3ANB, 3AVO/A, 3BK, 3BLP, 3BOB, 3CAZ, 3CFK, 3CGO, 3CWW, 3DAH, 3ELV, 3FD, 3GHI, 3GSE, 4WW, 4HT, 4KD, 4MW, 5IB, 5IG, 5JO, 5MA, 5MP, 5MR, 5UD, 5UM, 6CB, 6CJ, 6LL, 6LO, 6NB, 6VC, 6VX, 6WU, 8KZ, 8QS, 8SK, 8SM, 8SY, 8VR, ON4HC, 4HN, 4IF, 4IW, 4YV, PAØAJA, ØBAL, ØBM, ØBP, ØDT, ØEO, ØHA, ØIK, ØJW, ØKD, ØMU, ØNL, ØPAX, ØPD, ØPN, ØTG, ØUW, ØZQ. (May 1 to 31, 6J6 pre-amp. EF54 RF and mixer, 9002 osc. 7.5 mc IF. SWL 4-ele. beam).

E. A. Lomax, 28 Welbeck Road, Bolton, Lancs.

0-50 miles : G2OI, 3DA, 3AOL, 3AYT, 3CHY, 3CXD, 3ELT, 3GMX, 3CP, 5TH, 5VN, 5VN/P, 6TL, 8SB.

50-100 miles : G3AHT, 3BW, 3ENS, 4LU, 4RK, 5RW, GW2ADZ

100-150 miles : G2XS, 2YU, 2HCG, 3BK, 3WW, 4MW, 5UD, 6UD, 6NB.

150-200 miles : G2MV, 2NH, 3BLP, 4C1, 4HT, 5TP, 5WP, 6VX, 6XM.

350 miles : PAØAJA, ØIK, ØN4YV. (May 1 to 26, 6J6 (G2IQ type) converter into AR88 on 10.5 mc. City Slicker 40 ft. high,

R. A. John, Norton Lodge, West Cross, Swansea, Glam.

G3BLP, 3EHY, 3EJL, 4KD, 6NB, 6XM, GW2DUR, 3EJM, 5SA, 8SU. (6AK5 RF and mixer, EC52 osc., into 28 mc IF 3-ele. beam),

L. A. Whitmell, 762 Kenton Lane, Harrow Weald, Middx.

G2BMZ, 2XC, 3DEP, 3DUP, 3EHY, 3RI, 5HN, 5MA/P, 5UF, 8IL, 8SB, GW3EJ, ON4YV, PAØBM, ØIK, ØPN. (May 12, 13, 15 and 23. RF27 with preselector into S640. 3-ele. beam).

R. L. Bastin, 101 Aldermans Green Road, Coventry, Warw.

G2AOK, 2ATK, 2HCG, 3EHY, 5ML, 6XM, GW2ADZ. (May 13 to 15. RF27 unit into BC342N at 918 mc; 4-ele. w.s. beam).

P. J. Towgood, 6 Guildhill Road, Southbourne, Bournemouth, Hants.

Phone and CW : 50-100 miles : G2AOK/A, 2AHP, 2AOL, 2ANT, 2BMZ, 2JU, 2MC, 2NH, 2UJ, 2YL, 3AHB, 3AZI, 3BLP, 3BOB, 3CGO, 3CZY, 3DIV/A, 3EBW, 3EHY, 3FXG, 3GBO, 3GSE, 3SM, 4DC, 4HT, 5BY, 5MA, 5MA/P, 5PY, 5TP, 6CJ, 6JK, 6KB, 6LK, 6NB, 6WT, 8IP, 8KZ, 8QC, 8SM.

100-150 miles : G2CIW, 2FNW, 2HCG, 2RI, 3ABA, 3ANB, 3BK, 3ELV, 3WW, 4MW, 4RK, 4RO, 5FO, 5UJ, 6VC, 8KL, 8QY, 8SY, GW5SA.

150-200 miles : G2CPL, 2OI, 2XS, 3AHT, 3CHY, 3CXD, 3DA, 5UD, WF2ADZ.

250-300 miles : G3BW. (Rx 6J6 R.F., 6J6 mixer, 2X6C4 osc., into 9 mc. Xtal controlled converter into 1.6 mc. IF/AF amp. Aerial : 4-ele. c.s. beam 108 ft. a.s.l. fed by 70 ohm co-ax. May 7-30 inc).

A. L. Mynett, 29 Sunleigh Road, Alperton, Wembley, Middlesex.

PHONE and CW 50-100 miles G2ANL, 2AOK/A, 2DSW, 2FJD, 2FNW, 2HCG, 2RI, 2XC, 2XS, 3ABA, 3ABH, 3ANB, 3AVO/A, 3BK, 3DAH, 3DEP, 3DIV/A, 3EBW, 3ENS, 3WW, 4MW, 5BM, 5JU, 5MR, 5UD, 8DM/A, 8IL, 8SY.

100-150 miles : G2CPL, 3EHY, 4GR, 5RW, GW3EJL.

150-200 miles : F3LQ, G2BM, 2OI, 3CC, 5BY, 6YO, GW2ADZ, PAØPN.

200-250 miles : G2FO, ON4YV, PAØDT, ØEO, ØIK, ØJU, ØJW, ØPAX.

250-300 miles : PAØMU.

300-350 miles : PAØBJ. (Rx 6J6 converter. Aerial : Two 3-ele. very wide-spaced Yagis stacked, at 35 ft. 100 ft. a.s.l. May 3-28)

R. Rew, 14 Shrublands, Avenue, Quinton, Birmingham, 32.

PHONE and CW : G2AOK/A, 2ATK, 2CPL, 3BLP, 3BMY, 3BW, 3CXD, 3DA, 3EHY, 5JU, 5VN/P, 6CB, 6SN, 6XM, 8SB, GW2ADZ. (May 11, 14, 29 evenings only. Receiver CV66-6AK5-9001-90002 converter into comm. receiver on 12.5 mc. Aerial : 6-ele. c.s. beam in roof space.)

it will enable still more RF to reach the receiver. J.E.H. passes on some information regarding activity in DL. DL4XS (Wiesbaden) is running 500 watts on 144.5 mc, while DL3DA (Suttgart), DL3NQ (Eidelberg) and DL4CK are active. OE2PK is also on 2 metres and would be a choice piece of DX for the log.

R. L. Bastin (Coventry) was one of the few to miss the Continental DX, but he added some new counties to his list. A recent move has lost him 400 ft. of height, and he finds DX more difficult to pull in. A new 6J6 pre-amplifier has so far proved disappointing. On 70 cm. he is still trying to get his ASB8 to function.

R. A. John (Swansea) has modified his general coverage converter to make it an exclusively 2-metre job. A 6AK5 mixer is being used, and the local oscillator is set to give 2nd harmonic injection. He heard G3BLP (Selsdon) on May 7, when G3BLP was finding signals from the West very poor.

A. W. Blandford (Mitcham) has reached 178 stations heard and amongst the better ones during May were G6YO and PAØIK on May 12. He reports G5DT as active on 430 mc, and A.W.B. hopes to put up a multi-element beam for 70 cm. very soon.

P. J. Towgood (Bournemouth) was one of the unfortunate southerners who had to listen to northern stations working most attractive Continental DX, and yet could not hear a whisper of it themselves. However, as some compensation he logged G3BW (Whitehaven) on two occasions. Other DX heard included G2OI, G8SB in the North, and G2CPL, G2XS and G5UD in the extreme East. An interesting point regarding P.J.T.'s reception of G3BW is that although there was not the slightest fading over this 276-mile path, G2OI in Manchester was not so consistent.

E. A. Lomax (Bolton) has been finding his "City Slicker" an excellent aerial and recommends it to everyone. He has scored 10 new counties this month. On the subject of the aerial he stresses the point that it must be well insulated and weather proofed. On May 13,

TWO-METRE DX

G. E. Magrow (Dawlish)	PAØUW	387 miles
R. Hastie (Hayes)	F3DC	221 miles
R. A. John (Swansea)	G3BLP	168 miles
A. F. Hayton (Palmer's Green)	G5BD	116 miles

Note: All claims for this Table must be accompanied by QSL card to verify and must be for distances in excess of 100 miles.

he heard several PA and ON stations which is a really fine performance from his northern location. G5MA/P provided a good signal from Sussex on two nights, and in all 45 stations were logged during the month. During July G8SB and E.A.L. are planning to go portable at a point 1200 ft. a.s.l.

R. Rew (Birmingham), with rather restricted hours of listening, missed much of the super-DX but did manage to hear G3BW and G2CPL amongst others. He has also listened on 70 cm. but heard nothing except car ignition—which at least suggests that the Rx is working! Plans are being made to operate portable on Walton Hill, using an array of folded dipoles.

Stop Press—New 70 cm. Record!

On the evening of June 4, around 2200 BST, G5BY/G6LK were in contact on the 430 mc (70 cm.) band over a distance of 161 miles, with signals up to S9 both ways! This is a new record for Seventycems. G5BY of Bolt Tail, S. Devon, used phone and G6LK of Cranleigh, Surrey, was on CW.

We very much hope that this new record, a great achievement on one of our highest frequency bands, will inspire and enthuse VHF listeners to get going with 70-cm. converters. Excellent practical designs, as actually used by the two record holders, have appeared in recent issues of our *Short Wave Magazine*.

In Conclusion

Apologies to P. J. Towgood and A. L. Mynett for getting their "Best Ten" scores muddled last month. A.L.M.'s score should have been 1,487 and P.J.T.'s 1,076. The counties table has been brought up-to-date this time, and to clarify the matter for several of you, Continental stations cannot be scored as being in any county! Next month's reports should reach A. A. Mawse, *Short Wave Listener and Television Review*, 53 Victoria Street, London, S.W.1, by July 6 latest. BCNU again on July 20, and let us hope there are a lot more exciting things to report.

TWO-METRE COUNTIES HEARD

Starting Figure, 10

P. J. Towgood (Bournemouth)	35
A. L. Mynett (Wembley)	34
R. Rew (Birmingham)	30
L. A. Whitnell (Harrow Weald)	26
A. W. Blandford (Mitcham)	23

 WORLD WIDE RECEPTION OF SHORT WAVE PROGRAMMES

DX broadcast

 MONTHLY COMMENT BY R. H. GREENLAND, B.Sc.

No doubt many of our readers are aware that there has been a wholesale change in call-signs in the United States of America. C. Costello (Wellington, N.Z.) informs us that the Cincinnati transmitters are numbered WLWO 1 to 8, the Schenectady stations WGEO 1 to 3, and so on. We would add that the San Francisco and Los Angeles transmitters are so designated, whilst those in Hawaii are now HON1 and HON2. However, when listening to the San Francisco station on 11730 kc closing at 0745 on May 20, we noted the unchanged call : KGEI.

V. R. Dutton (Staple Hill, Bristol) recently logged KCBR2, 9700 kc at 1000; KCBR1, 15130 kc with "Commentators' Digest" at 1400; and KRCA1, 9515 kc opening the Voice of America programme at 0900 : at this same time he logged HON1, Honolulu on 11780 kc.

J. C. Catch (South Shields) heard KWID1, San Francisco, 11900 kc with an AFRS baseball game at 0615; and C. Young (Coldingham, Berwickshire) at 0830 heard a Programme Preview over KWID2, 11860 kc.

H. S. Read (Bourne End, Bucks.) verified the new call-sign of Boston at 2045 on May 6, when reports were requested with the rider : "We will send you a nicely-coloured QSL card," and the address was given as : World Wide Broadcasting Foundation, WRUL1, Boston, Mass.

H. S. R. tells us that for medium-wave reports he has received verifications from CBN, Newfoundland and WTOP, Washington, D.C. In addition, he has a short wave verification from CHNX, 6130 kc, which broadcasts as follows : Monday to Saturday, 1100-0415; Sunday, 1300-0415.

B. P. Middleton (Clapham, S.W.11) sends the latest Voice of Canada English schedule, but there have since been further changes. The new schedule is : CHOL, 11720 kc, 1415-2330; CKCX, 15190 kc, 1415-1628; CKCS, 15320 kc, 1630-2330. D. K. Cocking (Orpington, Kent) heard CHOL calling Australia recently at 0840 on a Sunday morning. C. P. Turner (Crewe), who has an

interest in railways (in addition to his short wave activities) writes : "I have received a booklet which features their (Canadian) railways; it was most thoughtful of the Canadian broadcasting authorities." Finally in this section, we acknowledge with thanks, the Göteborg (Sweden) DX-Klubb's pamphlet, informing us that VED, 8265 kc, can still be heard at 0630 daily. On May 6, we ourselves logged this one with Cowboy Songs, at 0455, and the following clear identification was heard at 0500 : "This is Station VED, Edmonton, Alberta."

Africa

Last month we mentioned Salisbury, Southern Rhodesia, which we are still hearing on 4887.5 kc around 1800 daily; on May 14, at 2000, the following direction was noted : "This is Rhodesia calling from Salisbury." According to *Australian DX'ers* this station also operates on 5935 kc, and News and Weather Forecast are given from 1800 onwards, but we have failed to find them on this channel, neither have we spotted them on 9490 kc, another outlet announced by Swedish DX.

CR7BU, Lourenço Marques, 4932 kc, was well heard at 2045 on May 2, when light music provided the entertainment; at 2056 there was a final English announcement and the Goodnight Melody, and at 2100, a female spoke in Portuguese and the National Anthem of that country terminated the broadcast. The island of Mauritius, too, using 15075 kc., was heard on Sunday, April 30, 1700-1730, with a play produced by Muriel Levy, after which came the direction : "This is the Mauritius Broadcasting Service," and the playing of "God Save The King." The schedule is still quoted officially as 0300-0415, 0800-0930, 1430-1700 daily.

The Göteborg DX-Klubb gives FIQA, Radio Tananarivo, Madagascar, 7380 kc, audible from 1815 till 1900, at which time "La. Voz de la Falange" opens up on the same frequency; they also say that Radio Clube de San Thome e Principe uses 4810 kc up to 2100.

ALL TIMES GIVEN IN THIS ARTICLE ARE GMT EXCEPT WHERE STATED

TABULATED SCHEDULES

**I. Radio Republik Indonesia Serikat—Overseas Service.
Gambir Selatan No. 17, Djakarta, Indonesia.**

English Broadcasts : 1100-1200. YDC, 15150 kc, YDB2, 4910 kc.
 1300-1400. YDC, 15150 kc.
 1500-1600. YDC, 15150 kc, YDE, 11770 kc.
 1900-2000. YDF2 11785 kc.

**II. Radiodiffusion Francaise, English Service, 118 Champs
Elysees, Paris 8.**

Frequency : 6200 kc.

Time : 1845-1945. (Daily.)

Typical Programme :

1845, News ; 1855, Travel Talk ; 1905, Portraits of the Painters
 1915, Song Makers ; 1930, French Lesson ; 1940, News Summary.

III. Radio France-Asie, Saigon.

Frequencies : 6145 kc and 11830 kc.

English Broadcasts :

2245-2300 ; 0030-0100 ; 0915-1015 ; 1045-1100 ; 1400-1615.

**IV. Springbok Radio, Commercial Outlet of the South African
Broadcasting Corporation, Johannesburg.**

3356 kc : Mondays to Saturdays : 0445-0645.
 Mondays to Fridays : 1515-2103.
 Saturdays : 1515-2203.
 Sundays : 1530-2103.
 7295 kc : Mondays to Saturdays : 0700-1500.
 Sundays : 0600-1515.

V. Radio Athens, The Voice of Greece.

The National Broadcasting Institute, No. 4 Rigillis Street,
 Athens. Interval Signal : First few bars of the Greek
 song, *Kato Ston Valto*. English Broadcasts : Daily.

1545-1600 : News and Comments. 15345 kc. 7.5 kW.
 1830-1835 : Advice to shipping in Greek and English from the Hydrographic
 Service of the Ministry of the Royal Navy. 7300 kc. 7.5 kW.
 2230-2245 : News and Comments. 15345 kc. 7.5 kW.
 2245-2315 : Music.

VI. Radio Macronissos, Greece.

Frequency : 7100 kc.

Daily : 0530-0730, 1030-1300, 1530-1900.

VII. All-India Radio.

Bombay.

VUB2. 4840 kc : 1400-1730.
 VUB2. 7240 kc : 0200-0330 ; 1130-1345.
 VUB3. 7240 kc : 0715-0900 ; 1400-1730.
 VUB3. 9550 kc : 0200-0330 ; 1130-1345.
 VUB2. 9550 kc : 0715-0900.

Calcutta.

VUC2. 4880 kc : 1345-1730.
 VUC2. 7210 kc : 0130-0300 ; 1130-1330.
 VUC3. 7210 kc : 0700-0930 ; 1335-1730.
 VUC2. 9530 kc : 0700-0930.
 VUC3. 9530 kc : 0100-0300 ; 1130-1330.

Madras.

VUM2. 4920 kc : 1200-1700.
 VUM2. 7260 kc : 0130-0330.
 VUM3. 7260 kc : 0700-0930 ; 1030-1130 ; 1200-1700.
 VUM2. 9590 kc : 0700-0930 ; 1030-1130.
 VUM3. 9590 kc : 0130-0330.

M. Milne (South Woodford, E.18), considers that the Cable and Wireless Station in Nairobi, on 4885 kc, has been reasonably good of late ; he remarks that at 1820 there is an English News, prepared by the South African Public Relations Officer at Nairobi, and that they close at 1900, except on Wednesday and Saturday, when there is an extension until 2000.

For Radio Omdurman, on 9770 kc, V. R. Dutton has received a letter verification and a copy of "This is the Sudan." The quoted frequencies are 5000 kc, 9770 kc and 572.5 kc (medium-wave).

Asia

In answer to our request for the new address of Radio Indonesia, W. R. Sparling (Bogowantalawa, Ceylon) kindly supplies the following : Djawatan Radio, Repoeblik Indonesia Serikat, Gambir Selatan No. 17, Djakarta, Indonesia ; their schedule appears elsewhere.

J. C. Catch tells us that YDC, 15150 kc, has been audible at 0700 with three clock chimes, news in Indonesian and native music. Peking Radio, using 10260 kc, was logged by R. A. Savill (Sevenoaks, Kent) at 1815 on May 3 ; a man and woman were speaking at dictation speed, and the programme was interspersed with some musical efforts.

According to Göteborg enthusiasts, the Siamese station HS8PD on 6010 kc has been heard in Northern Europe between 2300 and 2400. V. R. Dutton noted Singapore, 11880 kc at 1600 with the direction : "This is the British Far Eastern Broadcasting Service on 15330 kc, 11880 kc, 9690 kc and 6770 kc. We are now joining the BBC" ; reception was excellent over a prolonged period. V. R. D.

mentions Manila on 11890 kc, heard at 1330 recently with an interesting recorded commentary on the State Fair at Tampa, Florida, U.S.A. G. D. McDermid, G3ANV (Clifton, Bristol) has received details from George H. Chapman, Chief Engineer of the Voice of America in Manila, and we quote from their letter: "Schedule: 2240-0100 (Daily), 15330 kc and 17760 kc; 0715-0845 (Tuesday to Sunday), 15330 kc; 0900-1545 (Daily), 11890 kc, 15330 kc and 17760 kc. Our address is: The Foreign Service of the United States of America, International Broadcasting Division, c/o American Embassy, Manila, Philippines. Further reports on the reception conditions in your area would be appreciated."

W. R. Sparling wonders if we in the British Isles ever hear the station of the Portuguese colony of Goa in the Indian Sub-Continent; he tells us that it supplies a programme akin to that of the Radio Club of Mozambique and uses a frequency of 9610 kc. V. R. Dutton gives S9 to Delhi, 17780 kc at 1330 and to Delhi, 15290 kc at 1530, but VUD7, 9620 kc is no more than S4 with its English News at 1530. R. A. Savill mentions Delhi on 17840 kc with a good S9 signal at 1400; Strauss waltzes were followed by a talk, and the station closed down at 1445. J. C. Catch heard Karachi, Pakistan, 17840 kc at 0710 with News in English given by a lady reader; and C. P. Turner writes: "There is a good programme from Pakistan, 11890 kc from 1700 to 1745 daily."

Further west we have Teheran, Iran which, says D. K. Cocking, is on the air on 15100 kc from 1830 to 2030 daily with music and announcements mainly in English, though there is news in Turkish at 1900, in French at 1925 and in English at 2000; M. Milne considers that the English broadcast proper begins at 1940. We have been listening to the daily broadcast from Mecca over 5957 kc. This programme consists of talks in Arabic and native songs of Arab origin; the duration of the transmission now is 1730 to 1845 daily (officially 1730 to 1830), and early in the day from 0530 to 0615: other frequencies in use are 3950 kc, 9650 kc, 11750 kc and 11950 kc.

B. P. Middleton has received a verification from Radio Lebanon which operates on a frequency of 8036 kc. W. H. M. Hindle, Press Officer of the British Legation in Beirut writes: "The English Hour of Radio Lebanon is broadcast 1500-1600 GMT on 836 and 8036 kc. Ninety per cent. of programmes are BBC transcriptions and supplied by the British Council and British Legation in Beirut." B. P. M. adds: "To my mind Beirut is one of the strongest stations from the Near East."

He has further received a letter from O. Wilker, Engineer in charge of studios at Kol-Israel, who writes: "The Kol-Israel

broadcasting station thanks you for your Reception Report. Please listen to our English transmissions at 1915 and 2100 GMT daily." Your best channel is 9000 kc!

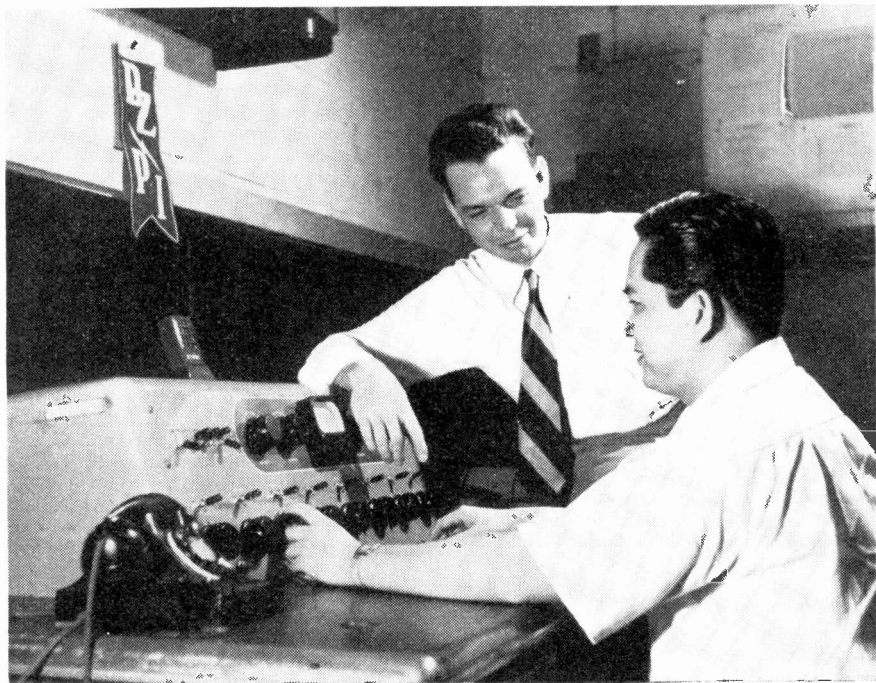
Australasia

Stop Press news from C. Costello advises us that as from May 5, broadcasting in New Zealand has been curtailed because of power shortages; the latest schedule for Radio New Zealand is: ZL3, 11780 kc and ZL4, 15280 kc: 1800 (Sun.)-1030 (Mon.); 1800-1030 (Mon. to Fri.); 1800 (Fri.)-1200 (Sat.); 1930 (Sat.)-1000 (Sun.). J. C. Catch logged ZL4 between 0715 and 0745 on May 7, with "Pacific Playground," "Song and Story of the Maori," and other features, and at 0757 a request for reports! Radio New Zealand on this frequency was heard as late as 1120 recently by C. P. Turner. We get more consistent reception over ZL3, 11780 kc, but often earlier in the morning. At 0730 on April 30, however, their headline was: "New Zealand—The Land of the Long White Cloud," and we heard an account of the rise and fall of Hokitika City on the western shores of South Island. To reach this town of 2,000 inhabitants and 20 hotels, you travel from Christchurch in a rail car which has a distinctive hoot.

Eighty-five years ago Hokitika had a population of 50,000 and possessed 100 hotels, but those were the days when gold was abundant in the sands on the shore! On May 6 at 0420, a running commentary told us that the brilliant try just scored had enabled Wellington to lead St. Cats. by 6 point to 3; and a fortnight later at 0355 we heard the concluding stages of the Otago v. British Rugby Touring Side match played at Dunedin. On May 27 also, at 0530 we listened to the last 20 minutes of the First Rugby Union Test Match; the commentator could scarcely restrain his enthusiasm and said: "It's been terrific! Final Score: Britain 9; New Zealand 9."

On May 6, FZP8, Papeete, Tahiti, 12080 kc was heard with its identification signal—the four musical notes soh-me-ray-doh—before opening its daily transmission at 0415 with the direction in French. Radio Noumea, New Caledonia is now on 6038 kc and operates from 0900 until after 1100. In Australia, VLQ3, Brisbane, 9660 kc was logged at 0550 on May 14 by J. C. Catch, who listened to a Sunday afternoon concert.

At 0600 there were chimes, "pips," call and time announced for 4 o'clock. J. C. C. also logged VLI, Liverpool (Sydney), 9500 kc heard simultaneously in parallel with VLQ3. H. S. Read has spotted VLB2, 9650 kc at 2115 with the closing stages of an Amateur Talent Programme sponsored by Lever Bros., Ltd.,



The engineer and production manager on DZPI, Manila, P.I., the station that also operates as DZH3 on 9,500 kc.

and VLC4, 15320 kc at 1000 with a play entitled "Royal Highness," sponsored by Lux Soap. D. K. Cocking hears VLG6, 15230 kc regularly with the National or Inter-State programmes of the ABC, signing on at 2000 on weekdays and 2045 on Sundays; News can be heard at 2000, 2045 and 2145 on weekdays and 2045 and 2240 on Sundays. D. K. C. says that according to announcements Radio Australia is now operated by the Australian Broadcasting Commission and not by the Department of Information, but from his own observations there have been no changes in Services to date. We listened to yet another sporting commentary during the Australian Sporting Session at 0510 on May 27, over VLG6 on 15320 kc; it was a gruelling Rugby League struggle between the English Tourists and Newcastle, New South Wales.

Central America

Costa Rica, which has not for some time been mentioned by our correspondents, has recently been heard by J. C. Catch. The station is TIPG, San José, 9620 kc, and pianoforte and dance music was heard from 035 to 0500; then

came the direction: "La Voz de la Victor en San José, Costa Rica, Centrale America," electric organ music and the closing words: "Muy buenos noches hasta mañana." J.C.C. found Mexicans good at this time of day: XEQQ, 9680 kc gave popular waltz melodies at 0415; XEBT, 9625 kc, after three cuckoo calls and slogan: "La Emisoras de America" left the air at 0509; and XEWW, 9500 kc, after giving Spanish News at 0511 and call: "La Voz de America Latina" left the air abruptly at 0515. YSUA, San Salvador, 6265 kc, was logged with clear call at 0445 on May 14, and we noted YSW, Santa Ana, 5981 kc, with operatic numbers followed by Spanish call and familiar march at 0420 on May 11. J. C. Catch logged HP5B, Panama City, 6033 kc, recently at 035. After announcements mentioning "Radio Miramar en Panama" and "Radio Atlantico," it closed at 0400 with the Panamanian Anthem. On May 20 at 0350 we discovered HP5A, Panama City, 11697 kc, with a broadcast entitled: "Radio Programa Continentale de Panama," a feature presented on this occasion by the Orquesta de Rumba of Balboa; and at the same time, YNEQ,

Nicaragua, 6963 kc, was prominent with *Sombre Las Olas Waltz* and the slogan: "La Voz de la Victoria." Arne Skoog (Stockholm) advises us that YNCHA, La Voz de Carazo, Diriamba, is a new Nicaraguan on 8440 kc; the owner, Señor Chester A. Parrales, gives 0100-0300 as the schedule. HRA, 5920 kc, and HRN, 5875 kc, both in Tegucigalpa, Honduras, were audible on May 6, the former at 0335 with orchestral music, the latter at 0340 with the vibraphone notes soh-me-doh and call; HRN closed with the Goodnight Melody at 0400.

On May 3 at 0245, ZQI, Kingston, Jamaica, was excellent on 3480 kc with a programme of poetry reading entitled: "Words Of Inspiration." At 0300 came the final announcement: "You have been tuned to Station ZQI. We are now signing off and will be back again tomorrow afternoon at 4 o'clock on 4950 kc," and God Save The King followed. R. A. Savill has received from 4V2S, Radio Port-au-Prince, Haiti, a card with text in French confirming his reception on 5945 kc; the postal address is: P.O. Box B-81, Port-au-Prince, Haiti.

South America

Radio Trinidad, 9630 kc, is reported by H. S. Read to have been good at 0001 on May 7 with a recorded interview made with the West Indies Cricket Team in London; he also found reception of ZFY, British Guiana, 5981 kc, excellent at 0120 on April 15. In Venezuela, YVKR, Caracas, 4920 kc, was logged by J. C. Catch when it was closing with the slogan "Radio Caracas" at 0430. During the brief period from 0215 to 0235 on May 3 we heard the following dozen Venezuelans in the 80-metre band: YVOG, 3310 kc; YVQL, 3325 kc (rumbas); YVMU, 3340 kc (Choral singing); YVMI, 3370 (Latin-American music); YVQN, 3380 kc (Chopin's Nocturne in Eb); YVKP, 3400 kc; YVQI, 3450 kc; YVLD, 3460 kc; YVRA, 3490 kc (pasadoble); YVKX, 3505 kc (rumbas); YVQG, 3515 kc; and YVKT, 3530 kc. Nearly all of these closed down at 0230.

In Colombia, HJAB, Barranquilla, 4783 kc, was crystal clear with call at 0345, and similarly HJCT, Bogota, 11680 kc, with direction: "Radio Nacional de Colombia en Bogota" at 0400. J. C. Catch has heard HJKB, 6000 kc, with call: "Emisora Nuevo Mundo, Bogota, Colombia," preceded by a fanfare of trumpets at 0430; and HJAG, Barranquilla, 4899 kc, logged with slogan: "Emisora Atlantico" at 0515. We heard this one closing with the Colombian National Air at 0602 on May 7. J. C. C. also hooked OAX4Z, Lima, 5898 kc, with slogan: "Radio Nacional" at 0345; we find OAX4Z to be

good when closing with call: "Oh-Ah-Ekis-Cuatro-Ah y Oh-Ah-Ekis-Cuatro-Sayta" and Peruvian National Anthem at 0426.

W. R. Sparling in Ceylon has logged a new Paraguay station, ZPA4 on 9735 kc, during the early morning, and at the other end of the day, V. R. Dutton finds HCJB's Missionary programme to be at good strength on 12455 kc at 2240. We found several of the more elusive Ecuadoreans active early on May 6: HC2ET, Guayaquil, 4712 kc, gave Latin-American music before closing abruptly at 0348; HCIVT, Ambato, 4711 kc, offered tenor songs at 0345 and closed at 0400; and HC2AK, Guayaquil, 4651 kc, was powerful with pianoforte solos, also closing at 0400.

D. K. Cocking tells us that the Argentina broadcast heard around 2035 is now transmitted over 15290 kc; R. A. Savill was surprised to find Radio Splendid at 2300 on the same frequency as Radio Brazzaville, 11970 kc, and yet another Argentinian on 11800 kc announcing as "LRA, Radio del Estado." V. R. Dutton noted LRX1, 6120 kc, with call: "Radio El Mundo, Ellay-Erray-Ekis-Oono" at 2200.

We find the S.R.I. broadcasts in English clearest between 0500 and 0600 over LRY on 9455 kc; on May 21 they included in the broadcast a rendering of Haydn's 86th Symphony, played by an Argentine orchestra and conducted by Sir Malcolm Sargent. Lastly, Brazil has ZYE7, Radio Ecuadora, Parnaiba, 4825 kc, heard by J. C. Catch at 2205 on May 8, with three gong notes, call and tune: "Anchor's Awake", and PSH, 10220 kc, heard by R. A. Savill with a powerful signal between 2215 and 2300.

Europe

Station KZCA, 9535 kc, of the Blue Danube Network, Salzburg, has been logged again by V. R. Dutton at 1410; however, the latest report gives them on a new frequency of 9560 kc. V. R. D. also heard CS2MK, 11027 kc, with light music at 2210, and another Lisbon transmitter on 15140 kc with an experimental broadcast of music at 1430. From Spain M. Milne has received a colourful card for EDV10, Radio S.E.U. en Madrid on 7170 kc, with a power of 1 kW; the address is: Radio S.E.U., Diego de Leon 49, Madrid. C. P. Turner has received from Radio Espana an illustrated booklet describing eighteen Spanish cities. B. P. Middleton reports powerful signals from Andorra, 5980 kc, at 1800, and he tells us that Paris puts out excellent programmes in English between 1845 and 1945 over 6200 kc daily.

OZQ, Denmark, 7260 kc, speaks to S9 between 2100 and 2230 daily, according to R. A. Savill, who has received from OIX7,

Helsinki, Finland, on 6120 kc, a card from which we quote: "We acknowledge with thanks your report on our transmissions. Reports on our other transmitters, OIX2, OIX4 and OIX5, are welcome." The address is: Oy. Yleisradio Ab, Helsinki K, Box 180, Finland. We also thank B. Nottage (Leigh-on-Sea) for the latest Greek programme schedule.

Your BC DX news for next month will be very welcome at this office. Please address your letters to: R. H. Greenland, *Short Wave Listener and Television Review*, 53 Victoria Street, London, S.W.1, to reach us by July 16.

Stop Press

The following new schedule for Radio Australia has just been announced and here are the times now available for listeners in the British Isles. 0655-0815 (Daily), VLC, 15200 kc; 0655-0815 (Daily except Saturdays), VLB4, 11850 kc; 2315-0050 and 0245-0815 (Monday to Friday), 2315-0815 (Saturdays), 2328-0815 (Sundays), VLA10, 17840 kc; 1400-1615 (Daily), VLA4, 11850 kc; 2000-2300 (Monday to Saturday), VLC, 15200 kc, and VLA4, 11850 kc; 2000-2315 (Sundays), VLC, 15200 kc, and VLA4, 11850 kc.

DX in ZL

OBSERVATIONS FROM THE ANTIPODES

by C. COSTELLO

(The author of this article, Cleve Costello, is one who ranks among the world's keenest and best known SWL's. He talks about DX from the point of view of an Antipodean, and readers will be interested to know about what is considered DX in the far land of New Zealand.—Ed.)

AN article such as this on an aspect of a highly-personalised hobby must necessarily represent, in the main, the writer's own views and experiences. However, while avoiding the tendency to develop into an article on "SWL Stations" I feel it may do some good to offer you my references: I started SWL DX in March 1947 after a year's acclimatisation on a short wave receiver (had previously only dabbled with a TRF broadcast receiver) and at the time of writing have just made a second century with 41 countries verified—all SW broadcast and utility. If it were not for sundry other hobbies the totaj might have been more impressive but I hope you'll accept me, nevertheless!

The QTH Counts

First requisite in any DX activity is to be located somewhere, and in New Zealand, as in every other part of the world, locations differ. New Zealand, as you know, consists of a chain of fairly mountainous islands, about 1,200 miles long and a few hundred miles wide, stretching from roughly 34 to 47 deg. south of the Equator. It is therefore to be expected that conditions in Auckland will differ from

those applying in Invercargill, and that is just the position. During the winter, the southern portion of the South Island benefits from a slightly longer period of darkness and dusk, so is able to work the lower-frequency bands to better advantage. The flat rolling land of the Canterbury Plains allows for the erection of large aerial systems with a practically unrestricted bearing on the east, while the Southern Alps in the west are too far away to have much effect. Progressing north again one comes to mountainous country around Marlborough and Wellington. Being the seat of Government, everything centres on Wellington, and the south-eastern corner of the North Island accordingly provides shelter for a colony of DX'ers. "Shelter" is the word, for the city is hemmed in by fold mountains and in only a few places is it possible to erect a large-scale aerial system. In my own case, DX'ing is done 790 ft. above sea-level on the south bank of a basin averaging 1,200 ft.; being on a ridge, a 60-ft. mast would be required to bring an aerial level with the house and this would be required to withstand a regular pounding by gales reaching anything up to 85 m.p.h. Wellington, being obstructed both east and west, is not, therefore, a choice location.

A plateau forms the centre of the North Island (it is here, incidentally, that the Navy has a large radio installation) and to the north of this is the flat country of the Bay of Plenty, another good DX hunting-ground. The Auckland peninsula has also shown results

but is best in the high, sparsely-populated province of Northland.

My Receiver is . . .

I mention this mainly to point out that most ZL operators use commercially produced receivers. Unfortunately, little radio equipment was released by the authorities after the war and to see a Service-type receiver in a station is the exception rather than the rule. Quite a large number of transceivers became available, however, and these have been bought up generally by SWL's preparing to sit the amateur ticket. Needless to say, the home-grown article figures largely in the average station. Generally speaking, receivers are multi-valve here, due no doubt to our isolation and to the fact that our interest is in Europe—after all, it is 12,000 miles away! Notwithstanding this, New Zealand has not produced a commercial receiver covering the long-wave bands for at least fifteen years; I will mention Broadcast DX shortly. Furthermore, most designs go up only to 22 mc, many stop at 18 mc while a larger number do not cover 1.6 to 6 megacycles at all. There has not, as yet, been any large-scale trend by SWL's to the regions below 13 metres—except for the 10-metre amateur band, usually reached by means of a converter—and, indeed, few ZL transmitting amateurs have concentrated on VHF. This again, is partly due to the fact that only a small number have been able to afford costly American communication gear, while English makes have only been trickling out over the last two years or thereabouts.

To Hear or Not to Hear

What may be common-or-garden varieties of DX in the U.K. often has New Zealand readers of the *Short Wave Listener* watering at the mouth—and no doubt the reverse applies, too.

Here then is a summary of what offers during the DX day in the Antipodes, the times being in GMT: 0001-0300, European transmissions to the American continent; 0300-0500 or 0600, Latin and Central American relays; 0500-0700, European Home Service morning programmes; 0700-1000, Pacific and Australian stations with Americans and Canadians until, say, 1400; 1000-1400, Asians, with Indians and Middle Easterners holding until about 1600; 1600-1730 or 1800, South and Central Africans with North Africa holding until 1900; 1600-2100, European Home Service evening programmes and American beams to Europe; 2000-2200, Australian Inland relays (not Perth); 2200-0001, Australian Overseas programmes.

In winter, the longer wavelengths open up earlier and Latins can be logged from 0100 or 0200; they can also be heard opening around

1100, of course, and this is, in fact, the best time for 60-metres Venezuelans and others. The American A.F.R.S. can be heard from California from 0300-0700, although I have not specifically mentioned it, and this too holds till signing off at 1400 GMT. Canada is not actually broadcasting International programmes at the time mentioned (except when beamed to the South Pacific on Sunday nights, NZT) but the inland stations can be heard signing and opening around 0700 and 1100 respectively. I will not deny, however, that these are difficult, most being on 49 metres; very few are reported and CBNX is regarded as almost, if not, impossible on its present frequency and schedule. (*This is very different from our experience.*—Ed.) We are, of course, well supplied with Europeans due to their appearance on almost every band which at some time or other is suitable for logging. It will be noted, however, that as darkness moves westward, DX becomes more elusive and India may be regarded as the western limit. As the reach crosses to the Middle East and Africa, stations become scarcer and hearing of the same harder. If you could examine a Great Circle map centred on Wellington you would see that a beam radiating from there and touching the edges of Antarctica will cover almost every portion of Africa and from this it will be realised that the absorption effect over the South Magnetic Pole seriously affects any signal coming that way. We therefore have about one and a half hours only out of the twenty-four to log this continent, *South Africa being the most difficult division*. Signals from North, and to a certain extent Central Africa, may of course travel the other way around the world in darkness or semi-darkness but are then severely attenuated by the immense distance added to their travel. FZI and OTC, being international stations, are naturally "regulars"; the foregoing remarks really apply to non-beamed relay stations. Transmitters in Angola, the Cameroons and the Congo are, together with the Union of South Africa, the most difficult from the New Zealand point of view; on the other hand Kenya, Mozambique and others on the east coast are somewhat easier.

And no matter how it may look on paper, DX listening between 1230 and 1800 GMT is no more pleasant in New Zealand than is 0030-0600 working in the British Isles!

One further point which does not seem to be generally known outside ZL is that the country is permanently, by Act of Parliament, on Daylight Saving Time, that is, GMT-plus-12. Although by solar time we are only 11½ hours ahead, non-radio people regard DST as "standard" time. Amateurs and DX'ers, however, usually quote "New Zealand Time" to avoid confusion.

SHORT WAVE BROADCAST STATIONS

Revision 31.06-33.20 Metres

Giving Frequency, Wavelength, Callsign and Location

These lists appear each month, covering the 11-128 metre section of the wave band within which all the short wave broadcasting services of the world operate. For economy of space, this band is dealt with in five sections, a list of active stations in one of the sections being given in full every month. Such revision is necessary due to constant changes of frequency, callsign and operating schedules. All stations appearing in our lists are normally receivable in this country and are under regular observation.

Frequency	Wave-length	Callsign	Location	Frequency	Wave-length	Callsign	Location
9660	31.06	VLO3	Brisbane.	9550	31.41	VUB2	Bombay.
		VUD9	Delhi.			VUB3	Bombay.
		LRX	Buenos Aires.			OAX4K	Lima, Peru.
		EQC	Teheran, Iran.	9545	31.43	LRX	Buenos Aires.
			Moscow.				Moscow.
9655	31.07	JK12	Nazaki, Japan.	9534	31.43	XEFT	Vera Cruz, Mexico.
9653	31.08	CR7BJ	Lourenco Marques.	9540	31.45	LKJ	Tromsø, Norway
9650	31.09	RW99	Moscow.			VLB	Melbourne.
		WABC1	New York.			VLR	Melbourne.
		KRCA2	San Francisco.			YSLK	San Salvador.
		VLB2	Shepparton.			VLC2	Shepparton.
			Limassol, Cyprus.				Rangoon, Burma.
9645	31.10	APK1	Karachi, Pakistan.				Munich.
		TIFC	San Jose, Costa Rica.				Moscow.
			Mecca.	9535	31.46	SBU	Stockholm.
9643	31.11	HVJ	Vatican City.			HER4	Berne.
9640	31.12	GVZ	London.			KZCA	Sarzburg.
		DZH2	Manila, P.I.	9530	31.48	WGEO1	Schenectady.
		CXA8	Montevideo.			VUC2	Calcutta.
		YVKC	Caracas.			VUC3	Calcutta.
			Accra, Gold Coast.				Manila, P.I.
9630	31.15	CBFO	Montreal.				Bathurst, Gambia.
		VUD2	Delhi.	9525	31.50	GWJ	London.
		VUD11	Delhi.			H12L	Trujillo, D.R.
		CKLO	Sackville, Canada.			ZBW3	Hong Kong.
		VP4RD	Port of Spain, Trinidad.	9523	31.51		Johannesburg.
		CP12	Sucre, Bolivia.	9520	31.51	OZF	Copenhagen.
			Rome.			CBFR	Montreal.
9625	31.17	GWO	London.			VL17	Port Moresby.
		XEBT	Mexico City.			HJKF	Bogota, Columbia.
9620	31.19	ETA	Addis Ababa, Ethiopia.				Paris.
		CXA6	Montevideo.	9515	31.53	KRCA1	San Francisco.
		VUD7	Delhi.	9510	31.55	GSB	London.
		DUH4	Manila, P.I.	9506	31.56	YUC	Belgrade.
			Paris.	9505	31.56	HOLA	Colon, Panama.
9615	31.20	TIPG	San Jose, Costa Rica.			JBD	Kawachi, Japan.
		VLB9	Shepparton.	9500	31.58	DZH3	Manila, P.I.
9610	31.22	VLX	Perth, W. Australia.			VL13	Sydney, N.S.W.
		LLG	Oslo.			XEWVW	Mexico City.
		CHLS	Sackville, Canada.			ZYC2	Rio de Janeiro.
		CBFX	Montreal.			OAX5C	Ica, Peru.
		XERQ	Mexico City.	9490	31.61	H12A	Santiago, D.R.
9605	31.23	JKL2	Goa, Port. India.	9485	31.63	CP38	La Paz, Bolivia.
		HP5J	Yamata, Japan.	9480	31.65	RW96	Moscow.
		ZRL	Panama City.	9470	31.68	CR6RN	Luanda, Angola.
9600	31.25	GRY	Cape Town.	9465	31.70	TAP	Ankara, Turkey.
		RW96	London.	9460	31.71	CP1	Sucre, Bolivia.
9593	31.27	CE960	Moscow.	9455	31.73	LRX1	Buenos Aires.
9590	31.28	PCJ	Santiago, Chile.	9440	31.78	FZ1	Brazzaville.
		VUM2	Hilversum.			COCH	Havana, Cuba.
		VUM3	Madras.			RRE	Moscow.
		VUD3	Madras.	9430	31.81	CP21	Sucre, Bolivia.
		VUD7	Delhi.			XERQ	Mexico City.
9580	31.32	GSC	Delhi.	9410	31.88	GRI	London.
		VLB9	London.	9380	31.98	OAX4W	Lima, Peru.
		VLH3	Shepparton.			OTM2	Leopoldville.
9570	31.35	GWX	Melbourne.	9368	32.03		Madrid, Spain.
		WRUL4	London.	9362	32.04	COBC	Havana, Cuba.
		KWID1	Boston, Mass.	9340	32.15	OAX4J	Lima, Peru.
		KWID2	San Francisco.	9320	32.19	LRS	Buenos Aires.
			San Francisco.	9273	32.35	COCX	Havana, Cuba.
			Algiers.	9254	32.42		Bucharest.
9567	31.36		Algiers.	9250	32.43	YSF	San Salvador.
9565	31.36	ZYK3	Yenna.	9235	32.49	COBQ	Havana, Cuba.
		VUD7	Permanbuco.	9220	32.54	ZYC2	Rio de Janeiro
		RW96	Delhi.	9210	32.57	OTH	Leopoldville.
9560	31.38	JBD2	Moscow.	9200	32.61	CE920	Funta Arenas, Chile.
			Kawachi, Japan.	9190	32.65	HC1GQ	Quito, Ecuador.
9555	31.40	OIX2	Paris.	9165	32.73	CR6RB	Bensuela, Angola.
9550	31.41	GWB	Lahti, Finland.	9148	32.79	FIA6	Douala, Cameroons.
		OLR3A	London.	9110	32.93	ZRB	Waterkloof, S. Afr.
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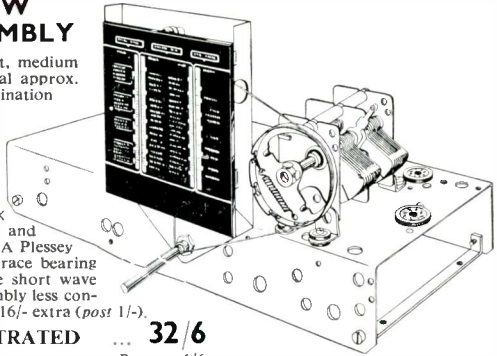
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Rucksack, back sling, webbing type, to hold complete unit.

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Clydesdale's £5/19/6 Carriage Price only paid

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All tuned stages are in screening cans.

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10 henries, 650 mA, test 8,000v. Parmeko shrouded type. Adm. Patt. 54364.

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RECEIVER UNIT TYPE 25. Cat. No. H229.

Ref. 10P/IL part of the TR1196 equipment.

Frequency Range 4.3-6.5 mcs.

Valves : 2/VR53 (EF39), 2/VR56 (EF36), VR55 (EBC33), VR57 (EK32), 2/1FT 460 kc, plus various microdenisers, mic. and output transformers, pots., condensers, resistors, etc., plug connections brought to 10-pin Jones type chassis plug.

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Clydesdale's with valves 22/6 Post Price only less valves 8/6 paid

ASB8 RECEIVER CAY46ACE Cat. No. H224

12-valve double superhet operating on 516 m/c.

Containing an R.F. stage 446A lighthouse triode in a precision machined silver-plated cavity.

955 1st oscillator 460 mcs.

955 mixer.

2-6AC7 1st and 2nd I.F. 55 mcs.

6J5 2nd oscillator 39 mcs.

6AC8 Mixer.

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6H6 Diode detector.

6AC7 Video Amplifier.

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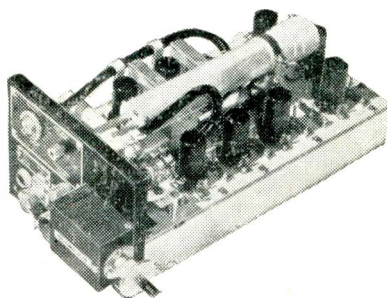
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