

*The*

# RADIO AMATEUR

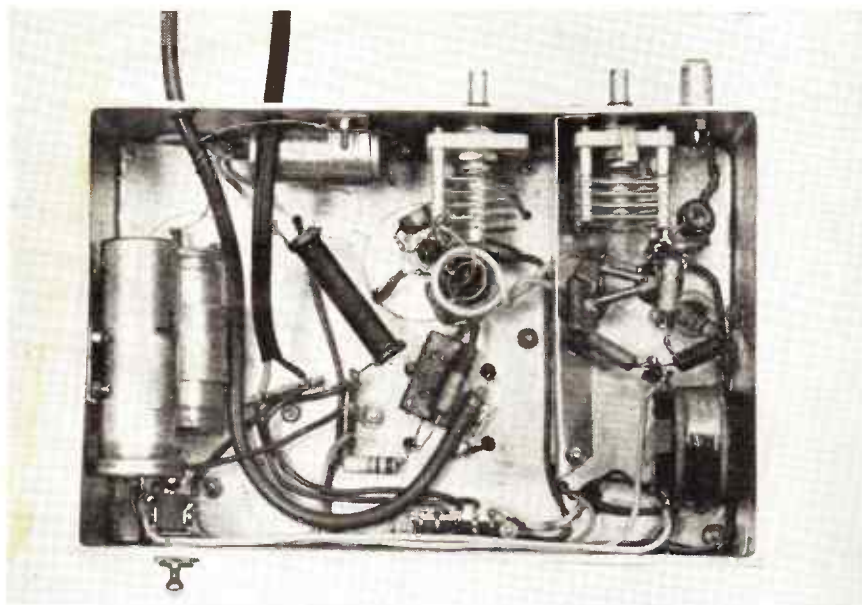
Incorporating "SHORT WAVE NEWS"

Vol. 7

Number 12

DECEMBER

1952



*Under chassis view of 2 metre Converter described within.*

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2 Metre Converter. Radiation Patterns of Model Aerials.  
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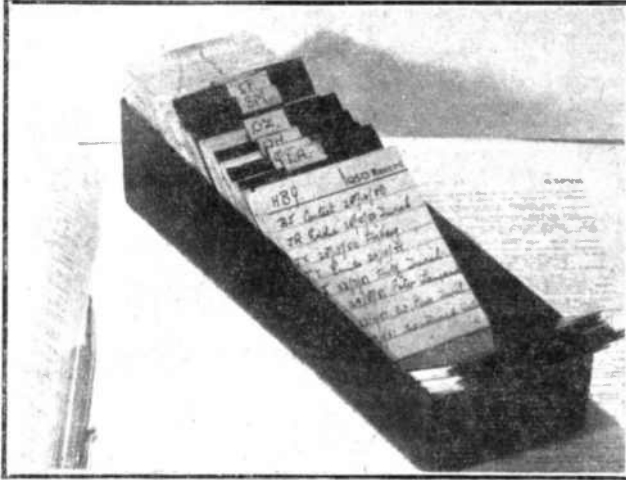
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**Christmas Greetings**



*The Editor and Staff join in wishing their readers a very jolly Christmas and all the very best for the New Year.*

# The RADIO AMATEUR

Vol. 7 No. 12

December



incorporating "SHORT WAVE NEWS"

Editorial & Advertising Offices : 57 Maida Vale, London, W.9

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## EDITORIAL

This number brings us to the end of Volume 7 and concludes a most momentous year in the development of this periodical.

When we started the "Short Wave News," we were the first non-society publication catering for the radio amateur to appear following the war and at that time it seemed likely that we should continue to be the only one for some time to come. Other publications, however, soon appeared, covering the same field and in spite of this competition we went from strength to strength.

During those boom years immediately after the war, interest in short wave listening was at a high level and thanks to comparatively low production costs and patronage from advertisers with much surplus gear for disposal, we were able to produce a magazine devoted primarily to the needs of the short wave listener. We knew that this happy state of affairs would not last forever, and when a year or so ago, the signs of the times showed a change in policy was necessary, we were ready with our plans. Production costs were soaring, money was getting tighter, advertisers had less to sell, television had won many away from their first love and the future of amateur radio was quite obviously going to be at a somewhat lower level of activity.

Different publications reacted differently to the emergency. Price increases were inevi-

table, but by keeping our margins small, our type of a reasonable size and packing our magazine full, we got away with a very small price increase, which we promised our readers would be temporary. This promise we have kept, the return to our old price of 1s. 6d. in such a short time being one of the highlights of this year's progress.

It has always been the ambition of your editor to produce a truly independent magazine for the Radio Amateur. Toward the end of last year, it was made so abundantly clear to your editor that an unbiased, tolerant, scientifically accurate journal available at a reasonable price was needed by "the fraternity" that we knew the time had arrived for our development plans to be put into action. The change over in policy from a predominately SWL interest to an all-embracing one, has received general approval from all quarters and our increasing circulation is the best indication of the accuracy with which we sensed public opinion.

We would like to make it quite clear that we still do not consider ourselves in competition with the R.S.G.B.'s journal. A Society journal must inevitably devote much of its space to Society affairs and it cannot therefore give space to other aspects of our hobby which a journal such as ourselves can cover. The policy of a Society journal must

(Cont. on p. 442)

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THE EDITOR invites original contributions on short wave radio subjects. All material used will be paid for. Articles should be clearly written, preferably typewritten, and photographs should be clear and sharp. Diagrams need not be large or perfectly drawn, as our draughtsmen will redraw in most cases, but relevant information should be included. All MSS must be accompanied by a stamped addressed envelope for reply or return. Each item must bear the sender's name and address.

Component Review. Manufacturers, publishers, etc., are invited to submit samples or information of new products for review in the section.

CHEQUES and Postal Orders to be made payable to "Amalgamated Short Wave Press Ltd."

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A Companion Journal to THE RADIO CONSTRUCTOR

# A TWO METRE CONVERTER

## A MODERN DESIGN

by

J. N. WALKER, G5JU

Part 2.

First of all this month, we must clear up one or two points omitted from last month's instalment. L4, which was not marked on the circuit diagram is of course all the inductance of the oscillator anode circuit, the wire loop C being included in it. The coil shown from C10 to the HT supply is a RFC. L5 is the grid inductance. Cc should have been placed against the lines in the circuit diagram representing the osc/mixer coupling capacitor.

### CONSTRUCTION

As with any 145 Mcs converter, the lay-out must be such that all RF leads are reduced to the shortest feasible lengths. A good idea of the lay-out and construction can be obtained from the photographs whilst the following notes will prove of assistance.

As can be seen in Fig. 4, a piece of metal is fitted to the underside of the chassis to act as a screen for the RF stage. Two holes are made in appropriate positions to give passage to the leads which form part of coil L2. The valveholder is oriented to bring the anode tags near the screen, at the same time allowing fairly short leads from the grid tags to the condenser stator lugs. The coil L1 is soldered directly on to the stator lugs, which brings it near the coaxial socket. Aerial—or rather feeder—coupling is fixed and is fairly tight, which condition gives an improved signal-to-noise ratio. The cathode and heater by-pass condensers are TCC Micadiscs, soldered in position with practically no connecting wire. A value of 200 ohms for R1 has been found suitable but some may desire to experiment with a lower value.

Neutralising a miniature double-triode valve is not so easy in practice as may be thought—at least not at 145 Mcs—and others have probably experienced difficulty in this direction. Very small trimmers, cut down by removing vanes, can be used in the positions marked Cn in the circuit diagram but it is an awkward business trying to position them where they will not be in the way, where leads will be short and where they can be reached to make adjustments. Odd pieces of wire placed near each other can be too easily displaced. The system adopted is as follows.

The leads from the anode tags on the valveholder are first taken to a tag strip bolted close to the valveholder and from there the wire (all in one piece and covered with sleeving) is taken through the holes in the screen and formed into L2. Two narrow tubes  $\frac{3}{8}$  inches long are soldered to the top of the tags on the

strip, in a position such that the open ends point towards the opposing grid tags on the valveholder. It is unlikely the constructor will have by him suitable tubes and, as with the writer, they can be made by rolling copper (or brass) foil around the shank of a number 32 drill (6 BA), running solder along the joint. Wires encased in polythene sleeving are attached to the grid tags and pushed inside the copper tubes. The capacitance of the small condenser so formed depends mainly on the gauge of the inner wire. A single 22 gauge wire was found insufficient, so two pieces of 22 gauge were twisted together. Fully in, this gave too much capacitance and, on withdrawing some, neutralisation was achieved, as indicated by the stage remaining stable at any positions of C1 and C5 and with the feeder on or off. The same result could probably be achieved by using short lengths of twin feeder cable, as with the oscillator coupling condenser described earlier, if the constructor has the patience to "cut and try."

Reverting to L2, the total length of wire is  $11\frac{1}{2}$  inches, which, with the stray capacitances, resonates at about 145.5 Mcs. When L3/C5 is set to 144.5 Mcs, a fairly even response is obtained over the amateur band without the necessity for re-adjustment. With both L1 and L2, it is manifestly difficult to arrange centre tap connections, hence two resistors are used in place of a single one. Good balance is thus secured and the loading caused by the resistors is negligible in practice. The grid resistors R2 and R3 are taken from the stators of C1 to chassis, whilst R4 and R5 are attached to the tag strip holding the neutralising tubes and held on a single tag strip at the ends connected to HT.

Micadisc condensers are again used for by-pass purposes around valveholder V2, excepting C9 which is a moulded mica. The coil L3 is soldered in position between the metal tube in the centre of the valveholder (earthed, of course) and the upper lug on the stator of C5 so that the three turns are well spaced. It should be noted that the grid is taken, not to the condenser, but to the middle turn of the coil (the actual point is not critical), so reducing the otherwise heavy damping across the L3/C5 circuit.

It will be well to experiment with the coupling between L2 and L3. If too tight, L3 tunes at too low frequency—it then peaks at the image frequency around 123 Mcs and will not peak over the amateur band. Reducing the coupling too much will result in a

loss of signal strength. When correct, L3 should tune to 144/144.5 Mcs with the rotor vanes of C5 slightly in. Variation of coupling is made simply by bending the double loop away from the lower turn of L3—the wire is stiff enough to hold its position.

A suitable length of coaxial cable ( $\frac{1}{4}$  inch diameter) is taken from the output side of the IF transformer through the wall of the chassis, for connection to the aerial terminals of the receiver.

Little more need be said about the oscillator stage. Actually, the starting point for the construction of the converter as a whole is the positioning of C10 and its holding bracket. This bracket is fixed so that the nut on the condenser bush is  $2\frac{1}{8}$  inches from the front edge of the chassis, whilst the centre of the condenser spindle is  $3\frac{1}{8}$  inches from the side.

The grid coil L5 is wound on a former, slipped off, the ends shaped to meet the tags on the valvholder and soldered in place. Again two grid leaks are used to avoid trying to make a centre tap on the coil. Pin 9, the heater centre tap, is connected to a tag underneath the valvholder fixing screw, whilst pins 4 and 5 are connected together, taken to a Micadisc by-pass condenser and thence to LT. The two cathodes and the centre metal stub are earthed with short lengths of copper strip. The RF choke is made by winding forty turns of thin wire on a  $\frac{1}{4}$  inch former.

Screening cans are fitted to all valves, to reduce interaction and unwanted pick-up of signals, particularly with V2.

#### POWER SUPPLY UNITS

As mentioned before, the power supply units cannot be grouped together as space does not permit. The mains transformer fits in near the RF valve, the metal rectifier in a corner of the chassis near the oscillator stage, and the smoothing condensers are clipped under the chassis. The only place left for the small smoothing choke is in the RF compartment. The transformer and the metal rectifier can be bought, as a pair, from C. Marks and Co., 88, Commercial Street, Newport, Mon.

If mounted directly on the chassis, the valvholder for the neon stabiliser will take up too much room and it is therefore mounted on pillars above the chassis. Ventilation is adequate as none of the components becomes more than warm, even after a long run.

Some care will be necessary when it comes to fitting the chassis into the cabinet, to ensure the spindle of the bandspread condenser C10 lines up accurately with the spindle of the slow motion driving head. A smooth drive, without undue strain, is essential if the good features of the oscillator are to be retained to the full. The chassis is fixed to the cabinet by drilling 4BA holes and tapping them to take 2BA screws which pass through the front of the cabinet. Self-fixing screws will serve equally well.

#### SETTING UP

A grid dip oscillator is practically indispensable for this operation, at least where the oscillator is concerned. The oscillator must be set to cover 133 to 135 Mcs—the converter will work with the oscillator on the high side of the intermediate frequency (around 156 Mcs), but then C12 will be at a low setting and the amount of bandspread will be much reduced.

The output coaxial cable should be attached to the receiver and the latter tuned to around 11 Mcs. The core in the IF transformer is unscrewed until resonance is indicated by a noticeable increase in noise from the receiver. Adjustment of C1 and C5 should now also give indications of resonance, again by slight but definite increases of noise level. With a reasonable aerial system, at least car ignition noise should be audible at most locations and, with careful searching, signals should be found. The IF gain of the receiver should be adjusted so that not too much noise is present.

If no signals are heard over an evening period, it may be that the RF circuits have been tuned to the image frequency—if C1 and C5 are well meshed, this is almost certain to be the case.

The converter has been used on the air for quite a time and the performance has been found most satisfactory. During a recent contest, signals have been heard (in the Midlands) from many parts of the British Isles, including Devon, Cornwall and Scotland and also from Dublin. After the initial warm-up of about ten minutes, a signal once tuned in usually stays put and, on going back after a period of transmission, the signal is there on the same spot. The high stability of the converter does show up one thing—the amount of drift which occurs in some amateur transmitters in the 145 Mcs band, presumably due to the crystal warming up.

The input as described is intended for 72/80 ohm coaxial feeder and it will be desirable to increase the aerial coupling by one turn (making three) when 300 ohm feeder is employed.

The mains transformer, which is designed for 230 volt operation, has no input tappings. On lower mains voltages, the neon stabiliser will strike as the full HT voltage is developed immediately on switching on, but may go out when the valve heaters warm up. If this occurs, resistor R9 should be reduced to about 8,000 or 9,000 ohms, the simplest way of so doing being to connect in parallel with R9 a half-watt resistor of about 60,000 ohms.

In the circuit is shown a switch on the mains input side but this will not be found in the instrument as photographed because, with the writer, the switch is remote and inter-connected with other equipment. Room can easily be found for the switch on the front wall of the chassis, if it is required there.

# RADIATION PATTERNS AND OTHER MEASUREMENTS WITH HIGH FREQUENCY MODELS OF AERIALS

by F. C. JUDD, G2BCX

Part 2.

Considerable time was spent in gathering all the available information on other micro-wave model aerial systems, and from this several ideas were incorporated in the construction of a complete Model Antenna Table with additional equipment for measuring field strength, etc. This is described in detail in the following.

## General Description of the Table and Equipment

The table shown in Fig. 1 is constructed mainly from wood (framework, etc.) but the top, in three sections, is 4 ft. 6 in. square and made from plywood backed with thin aluminium sheet. This latter forms the ground plane, or artificial earth. Since the metal sheet is on the underside of the plywood a "ground depth" of approximately a  $\frac{1}{4}$  in. is obtained. On the table top part of a typical section of a village has been modelled (4 mm. to the foot) complete with roads, paths, walls, buildings, and fences, etc., all accurately scaled and constructed from material to simulate as near as possible that normally used for such structures. For example, the lamp standards and downspouts of the houses are made from thin metal tube. In addition one or two model buildings have been constructed on separate baseboards so that they may be placed near an aerial under test to produce the effects of reflection from the walls and internal wiring, etc., the latter being incorporated in the model. An example of the effect is discussed later.

Mounted directly under the centre of the table is a 3,000 Mcs Klystron oscillator (CV67). A specially designed rotating coupling enables the valve and its associated assembly to be turned through 360 degrees. The RF output to the model aerials is taken through the coupling, the open end of which is flush with the top of the table. This coupling is screwed into one of the resonant cavity outlets, and a twin feed line which runs through it from the top, is taken down into the cavity where it terminates in a pick-up loop. The twin line, constructed from this brass tube (0.08 in. diam), provides a balanced output with an impedance of approximately 150 ohms. Matching transformers of the "Q" type are used to couple the aerials to the output from the Klystron. The whole of the Klystron assembly is coupled to a right angle gear drive by means of central shaft which is fitted with a bearing scale. A slow motion drive and hand wheel, located at the side of the table, rotates the whole assembly via an extension rod connected with right angle gears.

With this arrangement field strength readings may be taken at any bearing; thus provision is made for plotting radiation patterns in the horizontal plane.

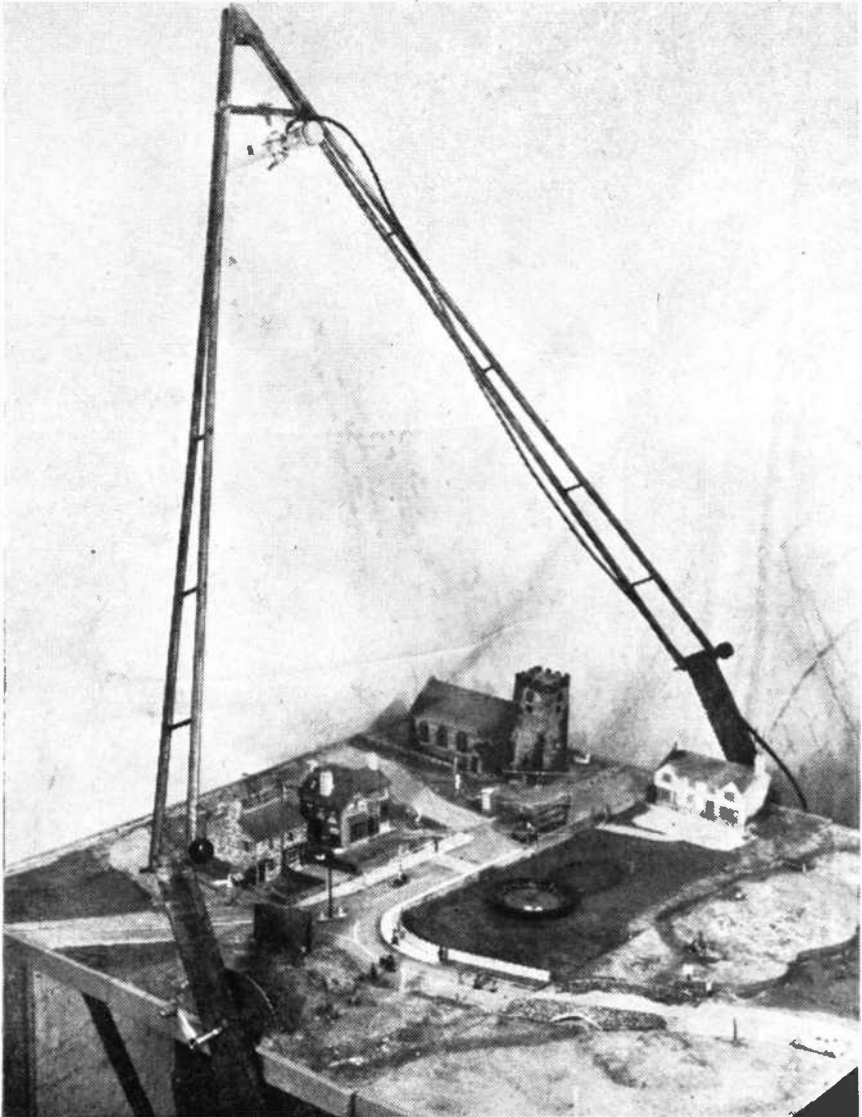
Mounted on either side of the table, and on a line through the axis of the rotating coupling are two supports which carry the inverted "V" frame to which is attached the field strength receiver. (See Fig. 1). The amplified modulation component from the F/S receiver is rectified, attenuated as necessary, and fed to a large scale micro-amp meter. The inverted "V" frame is a feature based on an arrangement used by the U.S.A. Standards Bureau Antenna Testing Range (see part 1). It permits the F/S receiver and its aerial which are mounted at the apex of the frame, to be moved through an arc of 180 degrees, that is from ground level or zero degrees on one side of the aerial, through an angle of 90 degrees (directly above the aerial) to ground level on the other side. The frame may be moved continuously or locked at any angle so that a horizontal radiation pattern may be plotted at any vertical angle with respect to earth. A bearing scale and indicator are fitted to the "V" frame.

The power supply and variable frequency oscillator/modulator are mounted on a shelf beneath the table. The H.T. positive supply to the Klystron is "earthed" to the metal table top via a milli-amp meter so that the Klystron current may be adjusted. Modulation is also in series with this supply.

## The Field Strength Receiver, Amplifier and Meter

The 3,000 Mcs receivers are simple and consist of a resonant cavity with coarse and fine tuning adjustment. A dipole aerial is connected to the receiver via a balanced to unbalanced line, and the demodulated output from the crystal diode taken direct to the F/S amplifier. The output from the receiver being therefore the modulation component, is amplified, rectified, passed through a variable attenuator (1.DB steps), and thence to the micro-amp meter which is calibrated in units up to 15 this being the maximum number of divisions on the Chartwell polar co-ordinate paper (Sheet No. 4001). The meter is also used in conjunction with the attenuator when making "gain" measurements. For demonstration purposes the output from the amplifier can be switched to operate a loudspeaker so that variations in signal strength will be audible to an audience. A field strength





*Fig. 1. General view of the table top and the V frame which is constructed from  $\frac{1}{2}$ " diam. dowel. Metal must not be used in the frame ; all joints and cross members being of wood dowelled or glued. A six element stacked array is in position at the centre of the table.*



Fig. 2.

A. Field strength receiver for 3000 mcs.

B. Amplifier and Meter.

Note size of dipole aerial on the field strength receiver, viz., 5 cms. long.

receiver and the special amplifier and meter are shown in Fig. 2 (photo).

**The Klystron Oscillator and Modulator Circuit**

These are illustrated in the photograph which shows the underside of the table. The Klystron power supply and modulator chassis may be seen in the lower portion of the photograph with the Klystron assembly visible at the top RH side. The turning shaft with the bearing indicator may be seen in the bottom RH corner.

The circuit diagram of Fig. 3 might appear a little confusing because of the back to back rectifier system. This is to ensure that the high voltage for the Klystron reflector is positive "earthed," and when in use the table and power supply should be connected to a good earth. The rectifiers are operated half wave and the low voltage supply (normal

negative earth) of 250 volts is used for the audio oscillator cum modulator. This part of the circuit may require adjustment by trial methods in order to get it to oscillate in the audio frequency range. Basically, it is an electron coupled oscillator the "tuned circuit" being composed of an LF type transformer with the primary in series with the secondary. The modulator transformer was obtained from some ex-govt. surplus equipment but two loud-speaker transformers back to back could be used. The condenser C9 should have a value of around 0.05  $\mu$ F, and C6 of around 0.005  $\mu$ F, with C5 included if the circuit fails to oscillate after other values of C8 and C9 have been tried. The variable grid leak VR1 will provide some control over the frequency of oscillation.

Klystrons suitable for 3,000 Mcs band may be obtained on the surplus market the CV 67

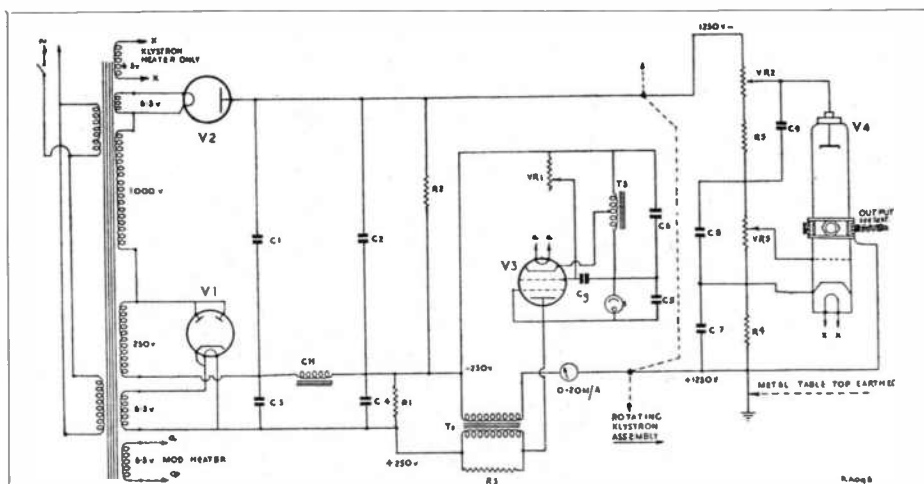


Fig. 3. Basic circuit for Klystron oscillator, power supply and self-oscillating modulator.

COMPONENTS

- |    |                                   |    |                            |     |                               |
|----|-----------------------------------|----|----------------------------|-----|-------------------------------|
| V1 | 250v Rectifier valve.             | C1 | 2 mfd. 1500v wkg.          | R1  | —5 ohm.                       |
| V2 | 1250v Rectifier valve.            | C2 | 1 mfd. 1500v wkg.          | R2  | —                             |
| V3 | 6B6 modulator (or similar valve). | C3 | 8 mfd. 350v wkg.           | R3  | 10K ohm (2 watt).             |
| V4 | CV67 Klystron (approx. 3000 mcs.) | C4 | Grid condenser (see text). | R4  | 1/2M ohm (1 watt).            |
| n  | Neon tube (230 v type).           | C5 | (See text).                | VR3 | (Variable) 100 K ohm.         |
| T1 | Modulator transformer.            | C6 | (See text).                | R5  | 50K (1 watt).                 |
| T2 | Tapped trans. (sec. only).        | C7 | (See text).                | VR2 | 50 K (variable).              |
| CH | Smoothing choke.                  | C8 | (See text).                | VR1 | 2M ohm (variable) (see text). |
|    |                                   | C9 | 0.1 mfd. 1500v wkg.        |     |                               |

used in this equipment operating at 3,300 Mcs. Other suitable for this work include the CV36 (2,850 Mcs), CV 116 (3,540 Mcs), CV 23 (3,300 Mcs), CV 238 (3,050 Mcs). The latter two are low voltage types and require 250 volts from anode to cathode, with an additional 100-200 volts for the grid bias and the target anode. The others operate with up to 1,500 volts on the target anode and take an average total current of 5 milli-amps. (Ref. 1).

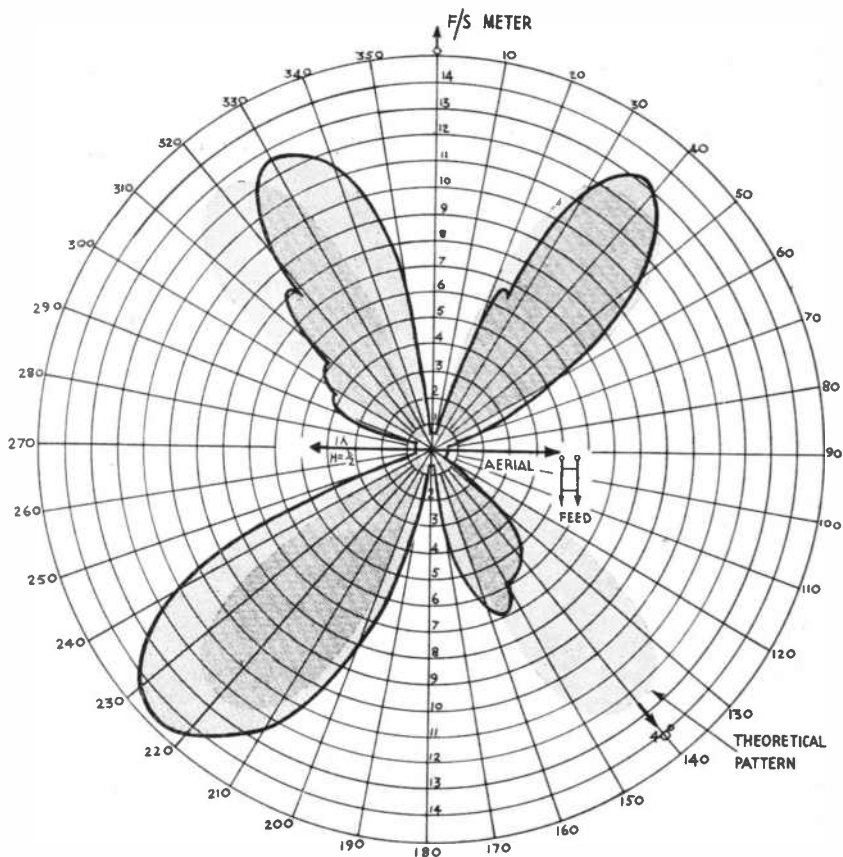
The CV 67 has fine and coarse tuning adjustment by means of screwed plugs let into the side of the resonant cavity. Control of oscillation is affected by variation of VR2 and VR3 these controls permitting selection of the correct 'mode.' An RF output of approximately 0.1 to 0.15 watts may be obtained, and this is more than sufficient to energise the model aerials providing care is taken to avoid loss of power in the output loop and feed line. The aerials and their associated feeders must, of course, be matched as accurately as possible to the fixed impedance output of the oscillator.

**The Field Strength Receiver, Amplifier and Meter**

The field strength receiver may prove the most difficult part of the equipment to con-

struct since it involves "plumbing"! However, it may be possible to secure ex government surplus 10 cm. tuners as those used by the writer. (One converted for use as a receiver may be seen in Fig. 2.) The receiver consists of a resonant co-axial line and cavity with provision for coarse and fine tuning. A dipole aerial, matched into the co-axial input by a quarter-wave twin line, is fed directly into the crystal diode which is balanced across the co-axial tuning section and resonant cavity. The range of tuning is sufficient to cover that of the CV 67 Klystron. Output from the crystal diode is taken via a co-axial line to the FS amplifier and meter shown in the photograph, Fig. 2.

The amplifier, which is quite straightforward consists V1 (6K7 or similar valve) RC coupled to the output valve (6V6 or similar) as shown in the circuit diagram of Fig. 5 which also shows schematic details of the receiver unit. The output from the amplifier is fed through a 2—1 step down transformer to the attenuator and thence to the crystal diode and a 0-200 micro-amp meter calibrated in units up to 15 to match the polar co-ordinate paper mentioned earlier. A "step" type attenuator is a costly item, and



POLAR RADIATION PATTERN NO OGA  
SIMULATION OF EFFECTS OF THE FEED POINT

RA076

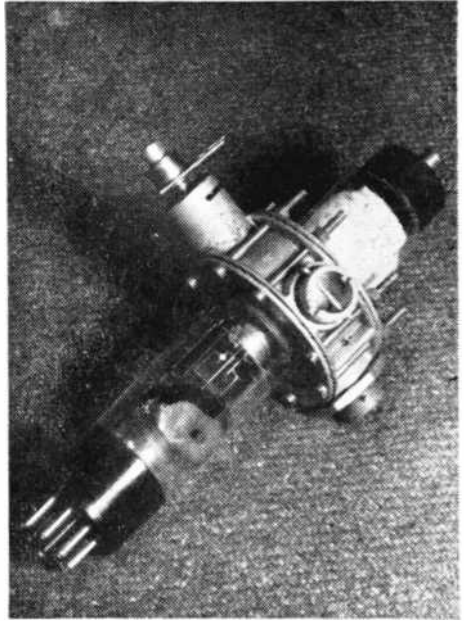
*Fig. 4. This diagram illustrates the type of pattern obtainable from the table described herewith. It shows a pattern taken from a one wavelength long aerial fed at one end. The distortion of the main lobes are due to end feed.*

although there are one or two to be found on the surplus market they may be difficult to obtain. Instead, and for experimental work where a high degree of accuracy is not called for, an ordinary wire wound variable resistor may be used. This could be calibrated in DB gain or loss against a zero reference level which may be gain of a dipole, this aerial being generally accepted as the standard.

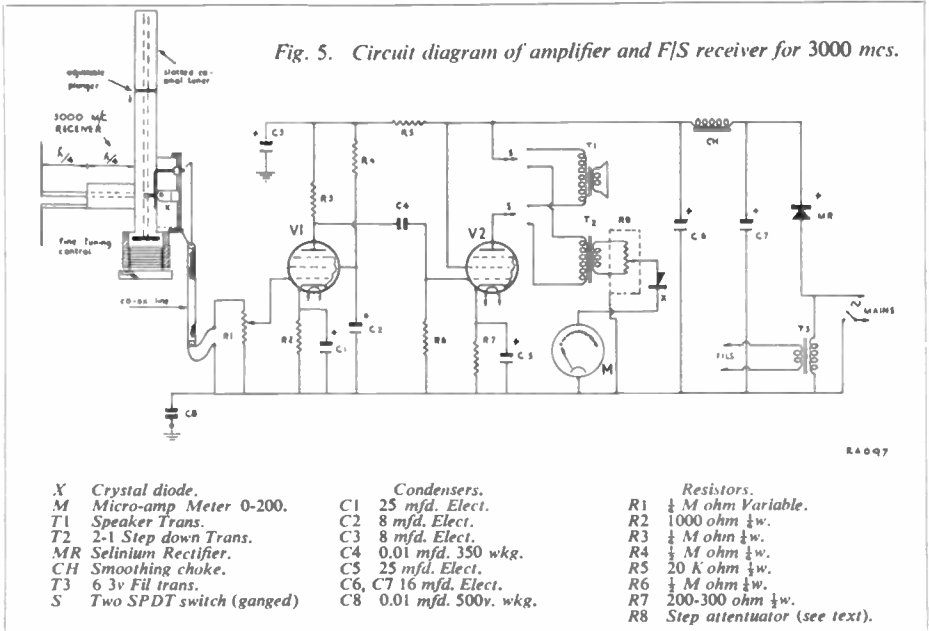
The equipment described in the foregoing may appear a little difficult to construct, or perhaps too elaborate, but anyone wishing to carry out experiments on a similar but less accurate scale may do so at somewhat lower frequencies (thus overcoming the difficulties of Klystron oscillators and "plumbers" receivers. The requirements are a single oscillator, a simple field strength meter of the

crystal diode type and some adjustable stands on which to mount the aerials. Useful frequencies are 144 and 470 Mcs. (see part I of this article) the latter providing for a dipole of only some 13 inches long. Experiments at 470 Mcs. can be carried out in an average garden or even a large room. In the latter case an "earth mat" of paper-backed metal foil could be used. This should be at least four or five wavelengths square for good ground reflection. In the garden damp soil or a watered lawn is sufficient for most purposes. It must be pointed out, however, that with any appreciable power at either the above frequencies radiation may be strong enough to travel considerable distances, and with only  $1\frac{1}{2}$  watts input at 144 Mcs., and a simple two element aerial array 6 feet high, an S8 signal was recorded at 12 miles. Radiation must be extremely limited (unless a transmitting licence is held for these frequencies), and with a power output of a few *milli-watts* radiation is quickly absorbed and does not travel very far, particularly if experiments are carried out indoors.

Ref. 1. Model Aerials. F. C. Charman. B.E.M. (G6CJ). Proc. R.S.G.B., Spring, 1949.



A CV67 Klystron oscillator valve. Approx. 100 milli-watts output at 3000 mcs.



# T.V.I.

by  
G. Vilfin

Strong words and much heartburning are the order of the day in official and manufacturing circles, this time over the question of amateur interference with domestic television reception. Strange as it may seem to the cynics, the Post Office officials are putting strong pressure on manufacturers to design their TV receivers so that they are less susceptible to such interference. There seems little doubt that logic and justice are on the side of the amateurs in this matter, but their just rights may be overridden in the rough and tumble politics of Industry versus Officialdom. Already amateurs working their transmitters in legitimate fashion have been told to leave the 14 Mcs band.

For many years now the British Radio Equipment Manufacturers' Association have aimed a propaganda campaign at the Post Office to keep domestic radio reception free from interference. Now much embarrassment is caused by the large number of cases in which radio reception is interfered with by manufacturers' own television receivers, reputed to be the biggest single cause of complaint from radio listeners. As if that wasn't enough for the professional designers, it seems that most of the cases of amateurs interfering with television reception are due to shortcomings or cheap design of some television receivers, and not to improper amateur working.

The two issues are quite separate ones, of course, but there are rumours that the amateurs may be sacrificed on the altar of political expediency. If manufacturers put their own house in order and prevent their TV receivers from ruining radio reception, then there are signs that the Post Office would reciprocate by keeping commercial television IF bands clear. This would involve preventing amateurs in urban areas from transmitting in the 14 Mcs band.

Amateurs who find themselves accused of interfering with domestic TV reception may find the following remarks useful in maintaining their amateur escutcheon spotless. In those cases where the fault can be firmly pinned on the television receiver, much can be done to improve matters by a few simple dodges at the receiver installation. Knowledge of these, and a co-operative approach, can bring prestige instead of vituperation to the amateur. Usually the interference can be removed at the TV receiver with far less

*Most articles on TVI so far published have dealt with this problem at the source, viz., the transmitter. In this article, our contributor approaches the question from the receiving end and suggests remedies what can be applied to the televisor.*

bother to the set owner than would be entailed by the amateur having to leave the band he has been working.

With the Kirk-O-Shotts television transmitter soon to operate on high power, and with Wenvoe now on low power, many more amateurs may soon find themselves embroiled with normally peaceful neighbours. These, having paid seventy-odd quid or so for the latest product of our electronic industry, probably see no reason why their enjoyment of television programmes should be ruined by that chap round the corner with his bits of junk. We can only advise you to keep cool and start asking questions.

## Types of TV Receivers least Susceptible

Ask the irate neighbour if his television set is a superhet or a straight receiver. The poor chap almost certainly won't know and will say that it's a new one and that should be good enough. Persevere, ask to inspect the set or to consult the dealer from whom it was bought. If it turns out to be a straight receiver, be very polite because it is then almost certain that you are putting out energy in the television spectrum of 41 to 68 Mcs. Straight television receivers have practically no sensitivity to frequencies more than two or three megacycles outside the channel to which they are tuned. In order to keep them stable the designer has usually included plenty of screening with the result that such receivers are unlikely to pick-up enough signal outside the television band to cross-modulate on one of the RF valves or to operate the detector directly. If the television set is a home constructed one you may find one of these effects occurring, but approach the problem with an open mind.

Most of the pre-war and early post-war television receivers were superhets, the largest single exception being Pye receivers. Receivers of the 1948-50 era were about equally divided between straight sets and superhets. The majority of the new receivers are superhets, and if inspection of the back of the cabinet reveals knobs or plugs for tuning the receiver to any of the five television channels, then you are safe in asserting that the receiver is a superhet, and in looking cheerful!

## Superhet Spurious Responses

Most superhet television receivers have spurious responses, some of which overlap

the 7, 14 and 28 Mcs bands. An example of one expensive make marketed by a well known manufacturer was found to have five frequency bands in which it had nearly the same gain as in the television channel to which it was tuned.

Should the receiver which you inspect turn out to be a superhet you would be fairly safe in dogmatically asserting that it has such spurious responses and that it is up to the dealer or manufacturer of the set to provide adequate protection against the allocated amateur bands. In this you may obtain the backing of the Post Office, particularly if you show that another manufacturers' receiver, for instance a straight set, is operating satisfactorily in the neighbourhood. The manufacturer will probably say that it is the dealer's responsibility, although they will tell him what to do. What the dealer will say probably won't be printable, but you shouldn't worry.

### IF Frequency of Receiver

If you want to be helpful, find out the IF frequency that the TV receiver is using. Different receivers use very different intermediate frequencies and it is not possible to give a complete list here. However, of the new television receivers, the following list gives the more popular frequencies.

	Mcs		Mcs
Alba ..	16	K.B. ..	16 or 18
Ambassador ..	7	Marconi	13.5 or 34
Bush ..	16	McMichael ..	23.5
Cossor ..	16	Murphy ..	13.5
Decca ..	10	Peto Scott ..	13.5
Defiant ..	14	Pilot ..	13.5
Ecko ..	16	Philips ..	13.5
English Electric	20	Pye ..	35.0
Ferguson ..	16	Regentone ..	12.5
Ferranti ..	19.5	S.R.M. ..	14
		Ultra ..	19

Bear in mind that the vision IF response of these receivers will usually extend about 1 Mcs lower than the nominal frequency and 3 Mcs higher, since most receivers use an oscillator frequency higher than the TV carrier frequency. Then it becomes clear that a good many receivers may be susceptible to IF breakthrough by amateurs using the 7 and 14 Mcs band in legitimate fashion.

The oscillator frequencies are not given as they will depend on the TV channel which is being used, but can be obtained by adding the TV carrier frequency to the nominal IF frequency. The receiver will have spurious responses at the normal image frequency, and at those frequencies obtained by adding and subtracting the IF frequency to or from the oscillator second and third harmonics. In general, however, the effect in which you are most likely to be interested is the direct IF breakthrough.

### Inadequate R.F. Selectivity

Commercial television superhet channels, which are designed for economic production, sales competition, and easy tuning by the dealer, have very little RF selectivity. Consequently a strong signal at either IF or Image frequency will walk through the single RF Stage which is customary, and then through the mixer, without being unduly attenuated. In fact, it is unlikely that the attenuation will be much more than 30 db, in other words, about the same as the gain of each of the IF stages.

The resulting beat produced by your radiated carrier and the television IF mixing causes the most objectionable bar patterns to wander across the TV screen, and no one can blame the unfortunate set owner for objecting.

It is worth making sure that the RF circuits are correctly aligned according to the manufacturer's instruction book, of which the dealer will have a copy. Incorrect adjustment of this stage will aggravate the trouble of breakthrough quite unnecessarily. Be tactful in your approach to the dealer, who is certain to insist that it was adjusted correctly when he installed the receiver. Remind him that circuits may drift, and that set owners may twiddle.

### Aerial Directivity

Most television aerials are directional with a broad acceptance lobe forward and a very sharp minimum. The polar diagrams of most TV aerials will be familiar to amateurs. Remember that inverted-V aerials have their minima at right angles to the plane of the aerial, and that slot aerials have minima in the plane of the conductor sheet. It is often possible to rotate the television aerial so that the sharp minima, which will need accurate alignment, points at your transmitting aerial. The wanted signal from the B.B.C. will then be off the main acceptance lobe, but as this is pretty broad it should be possible to adjust the gain control of the TV receiver, probably labelled "contrast," to make up for the loss in gain. As the minima will probably give 20 or 25 db rejection of your carrier, the signal/noise ratio should be improved.

If you wish to try a TV aerial with its minimum in a different direction to the one which has been installed, you can always improvise with pieces of flex wire in the loft. Although such wire is thin, it gives adequate bandwidth for television.

### Adjacent Sound Channel Trap

One of the problems which the professional television receiver designer has to face is that of providing adequate rejection of the sound signal of the television station which is using

the adjacent channel. Thus a receiver in say, Stafford, receiving Holme Moss on Channel 4, is required to accept signals from 62 Mcs to 58.75 Mcs and at the same time to reject the 63.25 Mcs signal from Wenroe on Channel 5.

Conscious of the inadequate rejection of the commercial receivers RF circuits, the designer usually provides an extra rejector circuit in either the RF or IF channels for the purpose of discriminating against the adjacent sound channel. This rejector circuit is normally tunable and is usually in the IF, in which case its range of adjustment should cover your frequency. If in your area the rejector circuit is not essential for adjacent sound rejection, then it will be permissible to tune it to reject your own carrier. Consult the dealer who installed the receiver.

**Other Precautions**

It may be found that the interference is picked up not only on the aerial but by direct induction into the IF circuits themselves, often from the mains wiring. This will usually only occur in the case of nearby neighbours. The cures are better screening at the receiver and mains supply filters at the neighbours' set. The only practical way to tackle the problem of screening is usually to line the inside of the receiver cabinet with foil. If mains filters are used, make sure that they are effective at these frequencies and have not been designed only for medium wave broadcasting.

**Other Causes of Interference**

It is worth remembering that amateurs are not the only source of CW interference with television reception. Eddy current heaters in factories and medical diathermy machines in surgeries and hospitals are prolific sources of such trouble. The Standard Blind Approach Beacon systems used on some aerodromes can create havoc with receivers using high IF's.

Receiver manufacturers often supply aerial rejector circuits for eliminating such interference. There seems no clear reason why they should not do the same for amateur transmission interference.

Also, most high wattage vacuum filament lamps, and many low wattage lamps of the same type, spontaneously generate frequencies in the television band. Such lamps can cause interference for some fifteen yards or so around. Fortunately gas-filled lamps appear to be immune from this peculiar trouble.

**21 Mcs Band**

Now that the Post Office has opened up this band it should be borne in mind that amateurs beginning to use this band may cause interference with television reception, as will be seen from the table of manufacturer's intermediate frequencies.

There is a suggestion in commercial quarters that manufacturer's should make a general move to use IF's around 20 Mcs. Such a suggestion can only be called unfortunate !

**A Standard IF for Industry ?**

Manufacturers are well aware of the difficulties inherent in producing TV receivers with such a wide range of frequencies as the types at present on sale. There is some pressure being exerted to get them to standardise on a 35 Mcs IF, but many manufacturers are reluctant to change their customary techniques. If a single IF for all receivers could be standardised there is some chance that the Post Office and other organisations would co-operate to keep such an agreed frequency clear. Such a course has already been adopted in Italy.

With the present wide spread of commercial IF's, however, little short of a complete ban on frequencies from 7 to 70 Mcs being used for anything other than television, can protect the present range of domestic receivers.

**Editorial (Contd. from p. 431)**

be in keeping with the wishes of the officials and council of the Society and that again inevitably leads to a more formal and less individualistic character. It has been stated publicly by the Societies' officers, that there is plenty of room in the field of amateur radio for publications other than the Societies' journal and we are proud now to be one of those publications.

In conclusion your editor would like to express his sincere thanks to both old and new readers for the support he has had with this new venture. As this Volume closes, we have plenty of evidence that our present editorial policy is going to be successful, so much so, that we know we can look forward with confidence to an even better Volume 8.

—2UK.

**CORRIGENDUM**

In the diagram on p. 353, No. 10, Vol. 7 viz., the circuit for the Magnetic Tape Recorder amplifier, several misprints need correcting.

C3 is the capacitor shown between R5 and P1.

There should be a connection between the junctions of R4 and C2 and R3 and R5. Similarly there should be a connection between the junction of R9 and C7 and the junction of R8 and R10.

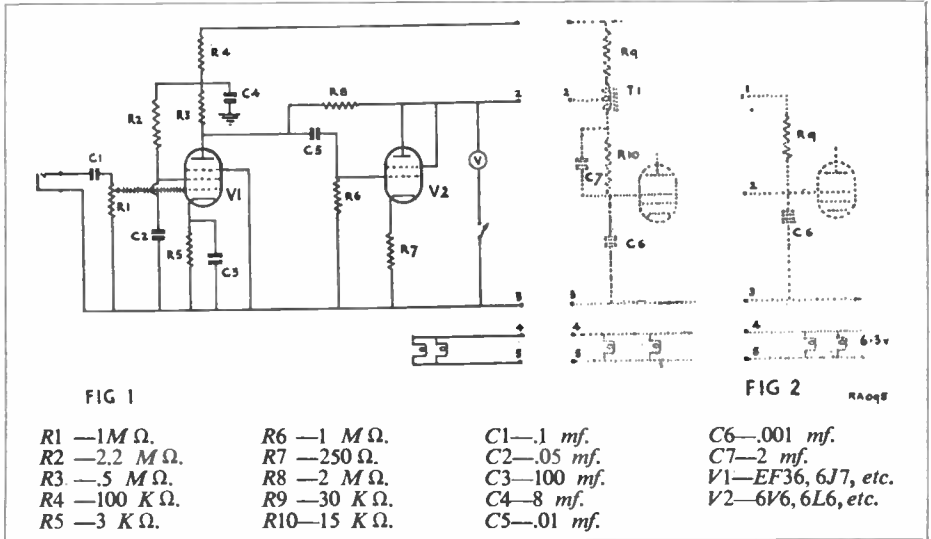
C13 is 100  $\mu$ Fd not 1000 as shown in the circuit diagram.

V5 should be a rectifier, Type 80, not a 6V6 as shown.



# IN DEFENCE OF CLAMP MODULATION

by R. C. ELDRIDGE, G3AGQ



Criticisms have recently been expressed of the clamp method of screen grid modulation, it having been stated that by the very nature of the method the resultant signal must be broad and of mediocre or bad quality. Most of the criticisms have been based on purely theoretical considerations, but undoubtedly there have been and still are some clamp modulated signals of poor quality on the bands. These are unpleasant to listen to, mainly because of (a) the "attack" which characterises each word, and (b) the noise which surges up between words.

In the writer's opinion, borne out by repeated tests with his own gear and in QSO with various other clamp modulated stations, these two outstanding characteristics of the clamp method both arise from the same cause—too high a ratio between the mean modulated carrier and quiescent carrier, or stated more simply, too much audio.

But it will be conceded that there *are* many poor quality telephony signals using normal high level modulation. Furthermore, unless an efficient speech compression or clipping circuit is incorporated in the modulator, any high level modulated transmission is liable to be over-modulated on peaks of speech, with well-known results rather more unpleasant than an "over-modulated" clamp signal. "Over-modulated" is in inverted commas because the encouraging thing about a clamp

modulated signal is that it cannot be over-modulated in the normal sense of the word. The carrier can never be reduced to zero because the anode impedance of the clamp tube can never approach zero, and in any case the effect of modulation by this method is always to increase the mean level of the carrier.

There is often a tendency on phone to attempt to "shout one's way through the QRM," though the operator knows in his calmer moments that a well-modulated signal is easier to read than an over-modulated one (our friends on "fish-fone" please note!). So why should we denigrate a method which makes it impossible for the over-enthusiastic to carve up his carrier? Particularly when the method is also so eminently suitable for converting an existing CW transmitter easily, quickly, and (important for many of us) at practically no cost except the additional valves.

Here then are the writer's conclusions:

(1) Providing a ratio of not more than 1.5 to 1 of mean modulated carrier to quiescent carrier is used, excellent speech quality indistinguishable (to the ear) from plate and screen modulation can be produced. As in any system of efficiency modulation the PA must of course be run well under its normal ratings.

(2) The application of simple negative feed-back improves the speech quality very

markedly.

(3) The system is easy to set up, and quite large changes of component values can be made without materially affecting the results.

(4) It is very important to have a normal Q in the PA tank circuit and the correct aerial coupling.

(5) It is desirable, but not so important, to have plenty of RF drive to the PA.

#### A Practical Circuit

Fig. 1 shows the modulator circuit at present in use at the writer's station. The microphone is a "deaf-aid" crystal insert type, easily obtainable on the surplus market. The speech amplifier stage is straightforward and needs no comment, except that the bias by-pass condenser is of 100 MF only because one happened to be around.

The clamp tube is a 6V6, triode connected, and in passing it is worthy of mention that a 6J5, 6L5, 6K6, 6F6, 6L6, and even a 6B8 have been plugged into the socket without changing any component values, and each one gives good results. The only notable changes is in the quiescent carrier level and the amount of carrier control.

The 250 ohms shown in the clamp tube cathode circuit results in the input to the 807 PA being halved when the modulator unit is plugged into the TX chassis. This could very well be a variable resistor, and would enable close control over the carrier amplitude to be obtained, but there is naturally some effect on speech quality if the value of the resistor is varied widely. The resistor is not by-passed, and this, in conjunction with R8, provides sufficient negative feed-back to achieve a marked improvement in the quality. If a more sensitive microphone is used, R8 could be of a smaller value, resulting in a further improvement in speech quality.

It will be noticed that there is no diode across the grid of the clamp tube. A 6H6, EA50, and a Westector were successively tried in this position, with absolutely no detectable effect on performance. The grid and cathode of the clamp tube apparently perform this function quite efficiently unassisted.

#### In Defence of Clamp Modulation

The meter V is useful to check the fluctuations of the PA screen voltage with modulation, but is of course not really necessary. If used, it should be of high resistance, or have a high resistance in series with it, to limit the current flow.

The screen circuit of the 807 PA is shown dotted. R9 and C6 were the original components in those positions, and if the simplest possible conversion is desired it is necessary merely to connect terminals 1 and 2 of the modulator to the top and bottom respectively of the PA screen resistor, as in Fig. 2. The addition of R10 however, by-passed for audio by C7, will be found to increase the depth of

modulation slightly. The optimum value for individual cases should be found by experiment, but is not at all critical. The further addition of T1, a centre tapped choke or auto-transformer will give a better impedance match with a resultant slight improvement in speech quality. The actual component in use in this position is the centre-tapped winding of the modulation transformer from a TR1143. Lest the presence of these extra modifications should deter some people from trying clamp for themselves, it should be made clear that only one station contacted over the air has been able to detect any change when these components were inserted and removed. The modification is nevertheless worth while if that part of the PA is easily accessible.

The TX is 6L6 osc—807 PA. The PA has a 1,000 ohm cathode bias resistor and no external bias is used. The power is derived from a B2 Power Pack.

When using the 500 volt HT outlet the conditions are, with 6V6 damp tube:

Quiescent PA input 20 mA. Drive 2 mA. PA screen 100 V.

Mod peaks PA input 30 mA. Drive 2 mA. PA screen 200 V.

Due, however, to the writer's addition to QRP, the 250 volt outlet is generally used, and a series resistor drops the voltage to 200, under which conditions the figures are:

Quiescent PA input 8 mA. Drive 0.5 mA. PA screen 40 V.

Mod peaks PA input 11 mA. Drive 0.15 mA. PA screen 75 V.

If it is desired to use "QRO" on top band, a 6L6 is plugged in place of the 6V6, reducing the quiescent carrier to 7 watts, but a better method would be to use a variable resistor in the clamp tube cathode circuit.

When used under the above conditions, speech quality and depth of modulation are apparently the same whether on 10 watts or 1.5, and with a 6J5 as clamp tube the quiescent carrier is 14 watts. 1.5 watts has been used extensively on 80 metre phone even during the busier periods, and the signal has been well enough heard to draw unsolicited reports of excellent speech quality, and usually only when it has been mentioned that the transmitter is clamp modulated has the tell-tale wobble of the S-meter been noticed at the other end.

Too light, a loading of the PA introduces distortion on the speech, so loosening the aerial coupling is definitely not the best way of reducing the power input.

If a CW transmitter is being converted, don't forget that the plate and screen by-pass condensers need to be of a low enough value to give satisfactory top-frequency response. And don't forget that if at the moment the "Plate current" meter actually reads the combined plate and screen currents, it will now read the clamp tube current too. It is

(Contd. on p. 465)

# WWV

## WORLD WIDE SERVICE

### of the U.S. BUREAU of STANDARDS

compiled by  
K. LUHMANN  
and  
P. MEYER



Modern science has always called for more accuracy of technical measuring. So in most countries institutes were formed to solve this problem. In the United States of America the "Bureau of Standards" was founded for this purpose.

How does this institute work ?

Here are a few examples:

The clocks in aeroplanes, the chronometers on board liners and many other watches and clocks in the United States are adjusted by the time signals of the Bureau of Standards in Washington, D.C. These signals are broadcast night and day by the special short wave transmitters WWV at Beltsville, Maryland. The signals of these transmitters consist of sharp pips, with intervals of one second—i.e., for 59 times in one minute. At the 60th minute the signal stops and starts the next minute.

The announcement of time can be heard every five minutes. The signal is accurate for

at least  $\frac{1}{100\ 000\ 000\ 000}$  sec. That

means that the signal will be wrong for one second in 300 years. Such remarkable accuracy is obtained by the atomic oscillations of ammonia molecules. The WWV-time signals are relayed by all radio stations in the United States and so control the clocks of a whole nation. But this is only a small part of the work of this organisation. Other transmitters broadcast a standard audio frequency of 60 cycles. This is of importance

for electric power stations for frequency testing. If they produce A.C. of 59 cycles, all electric clocks would be slow for one minute every hour.

Besides this there are two other services which are not less important. One group of transmitters announce the frequencies which should give the best propagation results for various parts of the earth. Another group gives the "Radio Propagation Notices." In spite of careful scientific research, unpredictable sudden ionospheric disturbances arise now and then. These disturbances are announced in advance by several transmitters.

The WWV stations also broadcast standard radio carrier frequencies. They are of value to radio, electronic and acoustic research. In addition to these services, higher frequencies are transmitted for geologists prospecting for oil, coal, etc.

Below is appended a list of the services, the Bureau of Standards offers:

**Time signals** (Pulse of 0.005 seconds duration at intervals of one second).

**Time announcements**.—Eastern Standard Time is announced in CW every five minutes. At the hour and half hour, announcements are followed by station announcements in voice.

**Audio Frequencies and Musical Pitch**

600 cycle tone first four minutes, on minute announcements, 440-cycle tone next four minutes, on minute announcements, repeated every ten minutes.

(Contd. on p. 461)

# AMATEUR RADIO EXPEDITION TO GUADELOUPE



The QSL card reproduced above, which was sent to us recently by one of our readers—Bill Giles of Upwell, Cambs.—recalls a private amateur radio expedition carried out in 1951 by Walter W. Richard CM9AA and his wife CM2AC. It must have been the ambition of all of us at sometime or another to operate with a real "Dx" call, but few of us manage to fulfil our desire. However, CM9AA and his wife managed to carry through their plans and after some initial difficulties obtained authority to operate an amateur radio station in Guadeloupe, an island situated in the Leeward Islands group, administered by the French. But let Bill take up his story. He writes :—

" Whilst tuning round on ' twenty,' I stopped on a quite nice CQ—Q5, S7—which went as follows : CQ, CQ. This is FX7XA Guadeloupe Island, I will not answer on this frequency. CQ, CQ, CQ . . ." Bill continues : " I listened on, but heard no answer from any other station nor any further CQ's. I sent off a report to FX7XA, c/o Post Master, Pointe a Pitre. However, my report was returned. I had made an entry in my log querying this reception as a possible pirate—having been caught out by HV and ZA ! I subsequently heard that it was a genuine expedition run by CM9AA and CM2AC and so I sent a further report to CM9AA. Imagine

my pleasure when I recently received the above QSL."

The gear used for this expedition was as follows :—

The TX was a home built 50 watt rig with 807 in the final, a Lysco ECO feeding into the 6L6 crystal oscillator stage. A good selection of crystals was taken for spot frequency working. Both phone and CW were worked, the modulator consisting of a 6AC7 driving p.p. 6L6's. Folded dipoles were used on all bands, operation being on 10, 20 and 40. The receiver used was a Hallicrafters SX 71. Power supply was from the island mains which caused many difficulties through its great fluctuations in voltage.

During the 12 days FG7XA was on the air, 110 countries were worked, WAC being made 8 times on phone and 12 times on CW.

## TECHNICAL AWARD RESULT

We have pleasure in announcing that the winning entry in the Double Superhet section was submitted by Mr. Cyril R. Greenland, G4HD. His winning entry will appear in this journal in the very near future.

No award was made in the transmitter section.

# AMATEUR BANDS COMMENTARY

by STANLEY HERBERT, G3ATU

Although the last month has certainly seen no startling improvement in conditions, most bands have had their moments. Weekend activity has been at an even higher level than usual, especially during the CW and Phone sections of the "CQ" DX Contest, even Ten Metres took a hand and produced a fair selection of DX, mostly of the African variety.

As several people note, European short-skip on Twenty has been absent on several occasions making the Phone band in particular a much pleasanter spot for the seeker after DX.

The high spot for the country chasers was the appearance of ZD7A, more or less according to schedule, but, at any rate as far as Europe was concerned, he turned out to be much easier to hear than to work. Operation was on both Phone and CW, mostly the latter and spot crystal frequencies were used in various parts of the bands. Twenty had the lion's share of the activity, but Ten and Fourteen were also used regularly. Arthur, the operator (ZS6GV), had his troubles at the beginning. There is no electric power laid on at St. Helena, so that it had to be generated from scratch. This was eventually done and ZD7A was on the air.

Somewhat naturally, the principal "target-area" was South Africa and that country, with the U.S.A., took the lion's share of the QSO's. We imagine, too, that the aeriels in use were directed very nearly East and West.

ZD7A was active for some two or three weeks and is now no more, so that all but the lucky few will have to wait patiently for the day when some other keen type gets the wander-lust and puts St. Helena on the air once more.

Last month, we made reference to forthcoming activity on the islands of Crete and Rhodes. Unfortunately, the plan has fallen through, as the necessary permission has after all been withheld.

As a sidelight on this sad situation, there is the story of DL4QH, who actually holds a Crete "ticket." However, its a long way to Tipperary and as Crete is no day trip, prospects are by no means bright. However, '4QH has something up his sleeve and we may yet have activity, if not from Crete, then from somewhere nearer but no less DX-worthy.

We hear, too, that George of GM3DHD has contracted a bad case of that DX man's affliction "itchy feet" and is currently organising a group of Scottish fellow-sufferers. Some time next year, the gang hope to cross the border, bound for ZD8, VQ9 or some other such DX paradise. Operation is planned twenty-four hours a day for the duration of the trip. "Seychelles, Wa-Hae" !

The CE3AG/CE3CZ trip to Easter Island is apparently under control. The date is still uncertain, but may be early in the new year. The call-sign will probably be CE0AA and operation time will be limited to a few days only.

## Band News. Eighty Metres

Yes, we give first innings to Eighty this month. As a result of contest activity, the band has thrown up some excellent DX, both on CW and Phone. Conditions weren't good, either, not by any means, so take a look at what was heard and make a resolution to keep a keen ear on 3.5 this Winter. Things look promising.

N. C. Smith (Petts Wood), who can be relied on to sift the DX from any band, found things poorish during the "CW" weekend. However, CT3AB, EA9AP, KZ5DE, K5FBB, SP3PF, TA3AA, KP4JE, UQ2AS, UA4, W2 and 4, VP9BF, ZL4IE, ZL4MY and ZS6OW (0225-0300) were logged and ZS2A, called by a DL1, was missed. Norman was shaken to hear the VP9 and wonders if it is VP5BF on holiday. We'd say he was a new "regular" and an active one, too ; so far, we've heard him on other three bands—21, 14 and 7Mc.

On Phone, Norman's best were 9S4AD, W1BND, W2WZ, W1ATE and VP6SD. He hears that KH6ARA is active on the band. Reckon he should come through about the same time as ZL, or perhaps a little earlier, so if anyone has a case of insomnia. . . .

J. Whittington (Worthing) extracted PY7GC and TA3AA from the Phone QRM.

M. Lillington (Orpington) did the same with 9S4AD, LZ1DU and GC3EBK.

R. Goodman (Edgeware), who obviously knows how to get the best out of his O-V-1 receiver, emerged with Phones CO2OZ, CT1, 11, KT1AK, PY7GC, TA3AA, W1, 2, 3, 4, W8UKS and W0WL, which makes his Eighty Metre score 31 Countries in 11 Zones.

"Anon" (Ellistown) reports excellent Phone signals from W1ATE, 4RQG, VP6SD and ZD9AA, all between 0500-0600 GMT.

B. J. C. Brown (Derby) extracted KT1AK from the QRM and QRN.

G3ATU (Roker) managed to raise CT3AB (0100), EA9AP (2015), FA9UO (0110) and ZC4IP (0010), heard ZS2A (RST 229-0200), ZD4AB (RST 339-0300), VP9BF, a KP4 and a weak W8, all CW. TA3AA, S9 on Phone, was an easy one.

DL1FF (Hamburg) told us half way through the CW affray that he had already contacted forty countries and eleven zones on Eighty ! Shows what can be done.

**Twenty Metres**

N. C. Smith comments on the increasing commercial interference which is making life so difficult. He also had to cope with local Phone splatter and harmonic trouble, to say nothing of the usual overmodulated stuff from Southern Europe!

In these trying conditions, he collected CR7LU, 7RF, FB8BB, FQ8AP, FR7ZA, HC2OT, HR1AT (1845), KA2JS, 2OM, KH6, PJ2, UI8KAA, UA9KYB, VE7AEU, 7GI, VK2SC (1728), VP6DG, VS7YL, YI3NC, ZD7A, ZS2MI, ZS7F and ZS8MK. All CW.

On Phone, the best were CR4AI, CX3CN, CR6AJ, 6BX, EQ3AL, VP7NB, FF8, FQ8AB, FB8BA, FM7WF, HR1SO (1215—there is often a good opening to Central America and the West Indies around this time), I5SG, KA2OM, VQ2DC, VK4RT, VQ5DQ, VS2BS, ZL2BE, 2GX and, last but not least, ZD7A.

John Whittington's efforts on CW (fast improving) resulted in KM6AX, KP4AZ, VK3KR, ZS3Y, 4X4FQ and eight USSR countries, including UA9KOG and a UG6. He heard some good phone DX, too, with CR4AC, AP2L, G3AAT/OX, KA7RC, KR6AF and VQ2AT, but was unlucky with ZD7A and ZS9G.

"Anon" (Ellistown), with his modified I155A and dipole, got Phone from CR6BW, ZL2BE, VK4RW, KV4BB, VQ4CR, M1MA (San Marino?), KA2, FB8BA, KL7AFR, ZD7A, ZS9G, SV5UN (Rhodes), W1-Ø and a queer one, CE13AA/LU (Border of Tierra-del-Fuego. Hmm!). There's some good stuff there—about all that is missing is the writer's name!

R. Goodman snagged several new ones this month and boasts the score of 150C-35Z. The new ones were CP6JB, CR4AC, I5SG, FF8AP, ZA3KAA (we have our suspicions about this one, but time will tell). SV5UN also was new and others, all Phone, were CO2OX, 8MP, CX2CO, 3CN, KA3RR, KG4AF, KG6AD, KL7, KV4BB, SVØWD, VE4RO, 6AI, VP7NC, VP9AB, YV5, VQ4 and 5, ZL2BE, ZS1 and 6.

M. Lillington listens mainly at weekends these days, owing to pressure of work. He is pressing on with CW, but is annoyed by the habit certain stations have of calling "CQ" slowly and steadily, then galloping through their call-sign at speed. As he says, it doesn't matter if the call is sent often enough, but usually it isn't and M.L. is left up in the air. However, Phone presented no snags of that kind and was good for SV5UN, VK5BT, ZS6K, ZS7C, FF8AP, KP4, VP6, CS3AC, FI8AC, VP9AV, TI2TG, ZS6TE and AJ5AB, the latter a MARS station, in North Africa, we believe, although we stand open to correction on that point.

P. M. Crawford (Darlington), despite

changes in work routine, still finds time for an occasional session on the bands. This month, his efforts were rewarded on Phone by KV4BB, CS3AC, ZS3G, 3S, PY8AJ, HZ1MY (wonder where he was at the time?), ZDOAA, FI8AD, VO6L, 4UAG (Karachi), VP1AA and all W call areas. Although conditions were erratic, CW accounted for DX such as KA2OD, HB1JJ/HE, ZD9AA, TI2TG, VP5BH, KG6ABI, VR2AS, HP1BN, VK1RG, HK1AL, CR7BW, ZL1BY, ZK2AA and VR1B.

Martin has heard a VS5AP on Twenty Phone, but regards him with suspicion. So do we, but you never know!

H. Lee (Oslo) sends a welcome report from Norway, where conditions are rather worse, normally, than they are in U.K.

Using a Philips PCR-1 receiver and a five metres vertical (sixty feet above ground!), he pulled in Phone from KG6AD, KP4WAB, ODSAD, OY3FV, VE8MC (Prince Patrick Is.), VK4YA, SZR, VP9CZ, VQ2AT, VS7FG, W5KGX, W8BOQ/AM and 3V8BA.

Bill Hardie (Hawick) made the most of odd half-hours and caught KA5HF, ODSAC, VK2CC, 3HG, VR3C (0750), ZS2DY and ZS7A (ZD7A?).

R. Balister (Croxley Green) took advantage of the contest weekends and logged considerable new DX thereby. The Phone period delighted him with ZL2BE, 3GX, KL7AFR, KA2OM, W7, VS7, VS1AY, ODSAM, DU1AL, SV5UN, CR6AT, OX3BI, CO2OZ, VK4KS, ZS6Q, VE4NI, 4XO, all new ones and W5UWN/AM (5500N-0203W), HZ1TA, MP4KAC, ZC4RX, M13LK, KP4, VP6, FF8AP, KG4AF and YV5AB.

On CW, the best were KP4AO, 4JE, KA2OM, KV4AA, KZ5GF, TI2TG, SU1BN, VQ2AT, LU6AJ, MP4BBD, LB9IC, VE4BL, KL7PI, ZE5JA, ZS1, VK2ID and numbers of W6 and Ø.

Until this month, R.B. had not heard a single Russian, but this time he broke the ice with a vengeance and turns in a bundle of them, UA1 to 6, UA9KOG (Zone 18), UB5, UC, UG, UO and UQ making seven different districts, all of which count as separate countries.

Ron wonders if the different prefixes count as separate countries, remarking that Russia is a big place to count as one only. With Franz Josef Land (UA1KEC used to be there), there are eighteen different countries in all, but from the transmitter's viewpoint all they represent at the moment is a lot of QRM! One of these days, they may once more be allowed to talk to the outside world.

B. J. C. Brown refers to the spells of mediocrity, followed occasionally by others producing "heart-warming" DX. That sums up the position on Twenty rather neatly, we feel!

He, too, has found early mornings disappointing, but mentions ZL2BE, whose Rhombic really puts a signal over when things are anywhere near normal.

Two interesting Phones were G3AAT/OX (The British North Greenland Expedition) and M1MA, giving his QTH as San Marino! Other DX—CE3AI (0740), CX2CO (0730), HC1FG (2110), HK4FV, OQ5BG, SV5UN, VK2QR, 2AGW (1330), VQ2AC (1820), VQ3BU, 5DQ, VS7EA, 7FG, 7PW, W7DL (1730), ZS6AFF (we had the pleasure of a personal QSO with him a few weeks ago) and ZS6BW.

P. D. Lucas (Redhill) reports for the first time. He uses an Eddystone 740 with a folded dipole and has recently started learning Morse. P.D.L. sends in a CW report, remarking that although his results don't compare yet with some of the expert types, he is gaining confidence—and that, surely is the right way to look at things. So far, he has heard CT2BJ, KV4AC, LU8EN and ZS1NO, which isn't a bad start.

P. M. White (Williton, Som.) now has rather more time and is able to listen rather earlier, with a consequent increase in his country total, which has reached 79 in 25 Zones.

Due to poor early morning conditions, VK and ZL are still missing, but new ones on Phone were EA6AR, 8AW, 9AS, FA, FF, HC1FG (1940), MP4KAC, OD5AB, OQ5BG, OK, VO2IR (which, incidentally, counts as Canada, these days), VQ3BU, 4CO, YU, VS2, ZS6, 4X4 and 3V8AP. The most consistent signals emanated from YI2AM, VP6SD, ZS6BW, EA8AW, YV5AB and CT3AF.

P.M.W. queries CS3AC, giving his QTH as "The beautiful Azores Isles." He is, of course, quite genuine. Although the official prefix for The Azores is CT2, the Portuguese authorities have given special permission to American personnel on the Islands to use the CS3 prefix.

Gotaways, in addition to VK and ZL, were CR6, ZD7A, VQ5, DU and YS.

P.M.W. wonders about the country position of the various ZS districts. It's quite uncomplicated. ZS1, 2 (except ZS2MI, Marion Island), 4, 5 and 6 are all in The Union of South Africa and count as one. Separate countries are South West Africa ZS3, Swaziland ZS7, Basutoland ZS8 and Bechuanaland ZS9.

D. E. Nunn (Hove) is another whose score was boosted as a result of the Phone contest. He emerged triumphantly with CR5BD, CE3CZ, ZD7A and OK1HT, all new, and then logged EA6AR, KP4TV, MI3VG, VP9BE, 9AB, VS9LV, YA5SV (?), CO2OZ and G3AAT/OX.

Don adds confusion to the "CS" position by referring to CS3AB (Azores) and then harks

back to the CS2 stations who were reported to be operating from The Canal Zone. Yes, it does get complicated at times, but remember that The Azores is CS3 and the other chaps were using CS2 and you won't go far wrong.

C. R. Johns (Bournemouth) is a lucky fellow. He had receiver trouble, but cleared it just in time for the Phone contest. Result—new countries (these contests are wonderful things, if you don't have to take part in 'em!).

ZD7A was missed; lots of people were calling him, but they probably blotted him out. However, compensation arrived in the form of CR6AT, 6AM, F18LH, KG4AF and VS9AW (Southern Oman), all new ones. In addition, C.R.J. picked up FF8AP, HZ1AB, KP4, MI3, OD5AD, OQ5BG, 5EB, 5DQ, VO2G, VP6, VP9AV, 9BE, W7GUI, 7RO, 7ALH, several ZS6's and ZE4JW.

Last month, P. M. White remarked on the scarcity of Cuban signals, so C.R.J. passes on the following in the hope they may be useful. CO2BL, 2OX, 2WV, 8MP and CM9AA were all heard within the last six weeks. CO8MP was the star turn and QSL's with a handsome card.

K. B. Ranger (Strood, Kent) weighs in with some good DX. On Phone, his O-V-1 was able to wrestle successfully with TG9RB, KA2MI, ZL's 2BE, 3LE, 3GX and 2JB, CE6AM, AP4HQ, VU2BH, ZS3S, CR6AT, ZS6ZU/P (Marion Is.), MP4KAC and CT3AM.

There's some good CW DX too, with CE7AA, CR7CJ, HC2OU, eight FF8's, FQ8AP, FR7ZA, FY8AA, VS2CR, ZD4AX, ZD7A, FB8BE, 8BB.

K.B.R. has been using CW for three months now and it has helped to push his score up to 141C in 36Z, all on an O-V-1 "with a broken switch and a shocking frying noise" resulting!

D. L. McLean (Yeovil), in his usual interesting summary, agrees that early mornings are still below par. Best time for DX is still early evening, which was good for CR4AC, CR6AG, 6AJ, 6AT, CT3AF, 3AN, EL9A, FQ8AD (1910), G3AAT/OX (14185-1720), KH6IJ (1810), KL7AFR, T12TG, OQ5EB, PJ2CB (1730), VS7EA, 7PW, ZD7A (14345), YS1A (14335-1530), ZS3S (14150-1815) and three W7's, all 1800-1900.

D.L.Mc. mentions ZD7A's three week spell and says he was hoping to go on to ZD8 (Ascension Is.). This is interesting. We haven't heard anything exotic yet, but we know ZS6GV has plans for further rare DX operation. He was disappointed at not being able to stay longer in ZD7 and plans to make up for it by firing up from somewhere else.

Other news from D.L.Mc. quotes W3CHV/MM and W4VUM/MM, both of the "Courier," the V.O.A. floating relay base. These boys, talking in the V.O.A. Amateur Radio Programme, said they intended to

operate SV5UN (Rhodes), which, apparently, they have done. In addition, they are going to operate ashore from any DX location they strike—watch the Twenty Metre Phone band, it's liable to be interesting.

A. A. Edwards (H.M.W/T Station, Anderson, Colombo), in a letter to our Editor G2UK, passes along the news that he has heard quite a few "G" stations on Eighty during September. The time was around 2100 GMT -0300 Ceylon time and although static was bad, at least one ten watt and two twenty-five watt stations came through!

G3HSL (West Hartlepool) adds two new ones, CO7AH and 5A2TS to his score and worked AP4UN, FF8, FOI, VK6GU, VS6AE, VP9GX, SUIBN and sundry VK2's and 5's. VE2JI (Hudson Straits) was an unusual one and Fred was unlucky with ZD7A.

G3ATU also had no trouble in missing ZD7A. He also missed EA0AC and SV5UN and it was only a QSO with FB8ZZ (1530-1404) that prevented a little hammer-work being applied to the '3ATU P.A.!

#### Other Bands

There has been considerable activity on Forty, Fourteen and even Ten, which shows what can happen when activity is at a high level.

N. C. Smith pulled some plums from all three bands. His Forty CW successes were CO20M, 6PP, 8AI, FF8AG, YJ3BUX (a funny one, but that was the call, copied at 2140), HZ1MY, KV4AA, LU's, SV5UN, TA3AA, nine UA9's, UD6KAB, 6BM, UI8AE, UJ8AG, VK2, 3, 6, VP4K, VP6, VP8AJ, VQ4DO, VU2EJ (0130), T12PZ, UH8KAA, Y12FD, ZD4AB, ZE3JP, masses of ZL's, including two-ZL2FA and ZL3OA- at 1830 GMT, three 4X4's and ZS3K. Y13BZL and OD5AD came through on Phone. That little lot should convince the doubters about the DX possibilities of Forty.

On Ten Phone, Norman heard CE3AB, 3CZ, CR4AC, 6AT, 6BX, CX, TA, LU, VQ2HW, VP6FR, ZS3M, ZS7C, ZS9G and much lesser DX.

Fourteen CW found CE3AG, CR7AL, FQ8AR, KZ5IL, SU1FX, UO5, UG6, VP9BF, VK4FJ, VQ4HJP, VE4RO, all W districts bar 7, ZE, ZS1, 2, 6, ZS3K and lesser lights. Phone produced CE3CZ, CN, FA, LU, PY, TA and VP6SD.

Norman checked the Top Band, too and heard GM, GI and OK1ZW.

J. Whittington's Ten Phone list starts with three near misses—ZD9AA, CR7IV and VP1AD, but he did collar CX7BH, ZD2TVI (have they got it out there too?) and sundry nearer stuff.

On Fourteen, too, John missed ZD9AA and ZD7A, which was bad luck. On CW, he logged LB5Q, ZE3JP, N. Africans and W's.

On Forty Phone, he snagged CR4AC and 4AI (two good ones) EA6AR and YI2AM.

M. Lillington's best on Ten was ZS9G and on 21 Mcs, ZE2JV, PY4RJ and VP6SD. OD5AD popped up on Forty.

P. M. Crawford did log ZD9AA on 21 Mcs, plus KH6AY and KG4AF.

R. Balister, heartened by his USSR catches on Twenty, dashed up to Forty and caught another gaggle of 'em, plus LZ1KAB, EA9BC and ZB1KQ.

B. J. C. Brown caught a good opening on Ten and heard lots of stuff besides CE3CZ, CR6AT, 6BX, CX, EA8AW, HZ1MY, LU, MI3BL, VP6, ZS and PY. On Fourteen, he had CE3CZ, EA9AR, FFB8CN and short-skip.

K. B. Ranger, too, has been amongst the Russians on Forty CW, where he pulled in four new countries with UD6DC, UB, UC and UR. He guesses rightly that the "A1" and "A3" we sometimes use, stand for CW ("A1") and Phone.

D. L. McLean misses very little on Ten. This trip, he has CE3, CE6AB, CO2CK, CR4AC, 6AG, 6AT, 7IV (28360-1630), CT3AN, CX, EA8, KP4, twenty-two LU's, VE1PP, VQ2DQ, 2DT, 2HW, W2PFL/MM (S.S. Marven—off the Florida coast), W1SVP, 4TWW, 8SVM, ZD7A (lucky man), ZD9AA, ZP5DC and sixteen ZS stations.

Fourteen was lively during the contest. A good one was AP2L and other DX was FF8CN, HZ1MY, OQ5HL, YV5AB, ZE2JV and some PY's.

ZE3JO (Salisbury, S. Rhodesia), who is our old friend Mal Geddes, ex-G2SO, is very active on Twenty-one CW and has worked G, GM, GW, HB, DL, F, W1, 3 and 8, VE4, VS9, ZC4, VQ4, ZS and ZE. Conditions are not too good just yet, but are improving. On Ten, TA2EFA was worked on Phone. On Twenty, VS5ELA was a rare QSO, while on Forty CW, Mal caught his first KH6, so he appears to be doing very nicely indeed.

In Oslo, H. Lee tuned the 7 Mcs Phone band and collected LU4BH, YU1AG and TA3AA.

P. M. Crawford heard W7ESW (Portland, Oregon) for a nifty one on Eighty Metre Phone. "Hot" Item

G3ATU has at last been consigned to his rightful place—"The Nether Regions." During a recent QSO, the fellow at the other end put an extra "a" into 'ATU's name, which then read "Satan." Ah well, its a comfort to know that at least we're the Boss down there!

And as space is running short, that must be all for now. QSL's received we'll try to fit in next month. Until then, good hunting. News and comments, please by December 6th to—Roker House, South Cliff, Roker, Sunderland.



# THE EDDYSTONE "750" RECEIVER



The latest model of the Eddystone range of communication receivers—the "750"—is an instrument which will please the most discerning user. Not only is the performance well ahead of any similar receiver we have handled, but both mechanically and aesthetically, one is left with the impression that this is, indeed, a quality production.

The wide full vision tuning dial scale and the arrangement of the controls as well as the general proportions of the receiver, give it a most pleasing appearance and whilst admittedly the appearance of one's receiver is not the main feature one is interested in, it is good to see such a good performer also looking well. The velvet smoothness of the controls also adds to one's pleasure in handling this receiver.

We have now had one of these receivers in use ourselves for some time so we can give readers a first hand impression of its performance. The first most noteworthy feature is, of course, the wide dial scale. This and the absence of separate band setting and band-spread dials, enables one to retune to a station with perfect certainty and is a most useful asset to the SW broadcast listener. The accuracy of the dial readings—which are in Mcs—on our receiver is most praiseworthy.

The second feature which deserves comment is the selectivity control. When in the maximum position, the selectivity is certainly quite adequate for the most crowded of amateur bands and the system used gives an ideal range from phone conditions to CW working. The double superhet circuit has certainly resulted

in a receiver whose selectivity is well able to cope with the QRM on the lower frequency amateur bands. Briefly, the technical specification is as follows:—

A 6BA6 is used as the RF amplifier followed by a ECH42 as mixer, with a 6AM6 as oscillator, the signal frequency being converted to 1620 kcs. The frequency changer (1620 to 85 kcs is an ECH42. The 85 kcs IF is a 6BA6. 2nd Det., AGC and AF are provided by a 6AT6. A 6AL5 is used in the noise limiter and "S" meter circuits, with a N78 as output amplifier. BFO is a 6BA6 with 5Z4 rectifier and VR/150/30 completing the compliment of eleven valves.

The tuning range is in four bands: 32 to 12 Mcs; 12 to 4.5 Mcs; 4.5 to 1.7 Mcs and 1465 to 480 kcs.

Sensitivity is stated as being better than 5uV for a 20 db signal to noise ratio at all frequencies. Selectivity is variable from 30 to 60 db down for 5 kcs off resonance. The "drift" is stated by the makers to not exceed 300 cycles after 20 minutes warming up for a 5% change in mains voltage and it is our experience that this claim is well justified.

The dimensions of the receiver are 16½ ins. width, 10 ins. deep and 8½ ins. high. Weight 40 lbs. and current consumption 70 watts.

This is a really first class receiver, well suited to the needs of both the transmitting and the SW listening enthusiast, which we have no hesitation whatsoever in thoroughly recommending. List price in U.K. is £68 and the receiver is exempt from Purchase Tax.

# BROADCAST BANDS REVIEW

by JACK FAIRS

All Times G.M.T.  
"Nf"—New Frequency.

Many readers regularly mention poor conditions these days, but there have been a few bright spots lately, and we have received several comments on better reception of the Asiatic and Far Eastern stations during the afternoons—nothing unusual, of course, at this time of year, but a little careful "searching" around the 1400-1600 period may well prove to be worthwhile, especially this coming month!

## EUROPE

**England.** New BBC frequencies use call-signs with the "M" prefix for the first time, and are MCM (7135), MCN (9770), MCO (11910) and MCQ (11945 kcs), reports Arthur Cushen of Invercargill, New Zealand. In addition to these, we found another one on 9760 kcs around 1630-1730.

**USA in Europe.** "Radio Free Europe" has been noted on many channels by Sidney Pearce (Berkhamsted), and they were heard afternoons and evenings at periods on 10300 kcs (Nf), often in parallel with 11675 kcs. From 2130, 11675 is often in parallel near 9170 kcs (Nf). Arthur Cushen reports them testing on 11917 kcs at 0800-0900 with popular music.

**Spain.** W. P. Griffith lists a new Spanish station this month, announcing as "Radio Cartagena," and he adds: "No doubt about the call." He logged it at good strength at 2000 on about 7410 kcs; your scribe heard it near 7415 closing at 2210 with the usual "Falange" sign-off and march.

John Simpson of Hassocks, Sussex, had an unknown one with a commentary on a bull-fight (or a football match!) on 6994 kcs; our guess is "Radio Mediterraneo de Valencia," as mentioned last month. John says he finds himself being driven to comb the blank patches between the recognised Broadcast bands, as he finds it less maddening to have to deal with CW QRM than to try and overcome the swamping effects of solid jamming in blocks of up to 100 kcs on occasions! (But it does help you to appreciate good Dx when you *do* hear it, OM!) "Radio Juventud de Murcia" has returned to 7100 kcs, and "Radio Juventud de Cadiz" remains on 7310 kcs. (Pearce). "Radio Nacional de Espana," Madrid, 9363 kcs, is mentioned by Stanley Coppel, Belfast, at the end of their English programme: Q5 S9 at 2045.

**Yugoslavia.** Further to our note on "Radio Yugoslavia" last month, the 7200 and 9505 kcs outlets have again been brought into use. (*World Radio Handbook*).

**Belgium.** Another alteration to the schedule of ORU "The International Goodwill Station," Brussels, has taken place. Details

are: 1000-1300 on 21510 kcs; 1000-1200 on 17860 kcs; 1215-1300 on 15335 kcs. 2330-0500 on 9745 kcs; 2330-0145 on 9767 kcs; 0200-0500 on 6065 kcs. The evening transmissions are uncharged, with English at 2015 on 11850 kcs. OTC at Leopoldville (Belgian Congo) relays ORU at 0100-0500 on 9655 kcs (not to be confused with the previous 9665 kcs!) ("Sweden Calling Dx-ers!")

**Poland.** The English schedule of "Radio Warsaw" runs as follows: 0630-0700 (5995, 6140, 7155); 1700-1730 (7175, 9555); 1730-1800 (6115, 7145, 9555); 1900-1930 (as 1730); 1930-1955 (5975, 6140, 7155); and 2230-2300 (as 1930). This news has been sent along by S. Berry (Leeds), F. C. Boucher (Rochester), Mike O'Sullivan (West Hartlepool), and Sidney Pearce.

## AFRICA

**Tanganyika.** "Radio Dar-es-Salaam" has extended its rather modest schedule, and now operates on 1250 kcs (MW), 3251 and 5050 kcs (250 watts each), at 1630-1730 in Swahili, with English on Mondays only at 1730-1830; there are no broadcasts on Sundays. (WRH).

**Cape Verde Islands.** CR4AA "Radio Clube de Cabo Verde," Praiaia, is heard at 2000-2200 near 5890 kcs, in parallel with 7112. (Pearce). Their QSL gives an increase of power to 3 kW for the latter frequency. (Cushen).

**Angola.** Here is the latest schedule of the "Radio Clube de Angola" at Luanda, for which we are indebted to WRH. CR6RA, 4869 kcs (Nf-250 watts), CR6RL, 7142 kcs (1 kW), and CR6RN, 9632 kcs (1 kW) are all on the air at 0600-0715 (Sundays 0800-1000), 1130-1330, and 1730-2130 (Sundays 1730-2030). The 10 kW Tx on 11862 kcs is quoted to use the slogan "Voz de Angola" and is in use at 1830-2230.

**Tangier.** "Radio Africa" is now heard near 7195 kcs (Nf—on the HF side of "Radio Ceylon") during the afternoons, and with strong signals in the evenings. (Pearce and Scribe).

**Nigeria.** Fred Pilkington of Littleport, Cambridge, will be, at the time of writing, bound for Cape Town as R/O on the "M.V. Kirriemoor," and before sailing he sent along a fb report of stations in West Africa. To commence with, Lagos is listed on 6100 (7.5 kW), 7255 (350 watts) and 9655 kcs (350 watts), though frequencies are not reliable. (We agree, OM!) The last known channels were, in fact, 7295 and 9660 kcs. The schedule on 6100 kcs is 0500-0800, 1030-1300 (Sundays 0630-1300) and 1700-2000; on 7255 and 9655 kcs: 0500-0800 and 1030-2000 daily.

The opening tune is "Old Calabar," and the call is "This is the National Programme of the Nigerian Broadcasting Service." BBC General Overseas Service relays are regular features, and the Posts and Telegraph relays are soon to be discontinued. The regional station at Kaduna (Northern Nigeria) is listed on 4795 kcs, but drifted to 4897 kcs when last heard! The schedule is 1700-2000 and the call: "This is the Kaduna Programme of the NBS."

**Cameroon (French).** "Radio Douala" on 7280 kcs has an output of 1 kW at 1745-2000 (also heard on Sundays at 1030-1310). News is usually presented around 1810, often preceded and closed with the "Harry Lime Theme." (Fred Pilkington).

**French Morocco.** The Armed Forces Station WNAF at Port Lyautey operates on 1500 kcs (ex-1607) at 0700-2400 daily, and continuous from 0700 Saturdays through to 2400 Mondays. "Radio Maroc," Rabat (611 and 6006 kcs) features a daily transmission for American listeners at 1100-1200 and 1800-1830, excepting Saturdays and Sundays. (Pilkington).

**Belgian Congo.** Manfred Lepple of Stuttgart, Germany, has been listening to "Radio Congo Belge." Leopoldville, over OTM on 9380 and OTH on 9210 kcs, both with their separate programmes at 1700 onwards. OTH closes at 1830, and features mainly native music and French announcements.

**Sao Tome.** Ron Thorndike, Kenton, Suffolk, mentions the 17677 kcs frequency of "Radio Clube de Sao Tome e Principe" (CR5SB) with Q3-4 S4-5 signals at 1240 to close at 1259 and "quite a nice programme." (Rx: Pye T19D). The full schedule of CR5SC, 4807.5 kcs is 0600-0645 and 1930-2100. (Pilkington).

**Northern Rhodesia.** ZQP "The Central African Broadcasting Station" at Lusaka, on the latest frequency of 4827 kcs is logged by Sidney Pearce with good signals around 1700 or earlier, in English and African dialects. Our own log shows that musical programmes "of a local character" are usually featured until 1800, when the BBC News is relayed daily; "News from Africa" follows at 1810, and records with English announcements at 1815-1830. At 1830 to close at 1900, the English programmes vary from day to day, and include talks, request records, Magazine features, etc., with "Take It From Here" on Sundays.

John Simpson found them as early as 1610 on one occasion, with "Alexander's Ragtime Band"! Fred Pilkington says Lusaka has been logged on 7280 instead of the listed 7220 kcs, and the MW outlet is 1092 kcs.

**Sudan.** Omdurman was noted Q5 S9-plus on 9732 kcs to close at 1930. (Scribe).

**Liberia.** Station ELBC Monrovia 6025 kcs, has a power of 1 kW and English transmissions

daily at 1550-2345; the announcer and disc-jockey is Mr. Peter Brown. Broadcasts include VOA and other American programmes plus "commercials." "Your Hit Parade" is featured at 2115 Tuesdays, and "Jazz Battle of the Air" (pew!) at 1900 weekdays. (Fred Pilkington. Thanks for all the first-hand gen—all the best OM, and hope to hear from you again soon).

**NEAR EAST**

**Turkey.** English programmes for Europe at 2100-2145 from "Radio Ankara" will be over TAS, 7285 kcs, instead of TAU, 15160 kcs, during the winter months; TAP 9465 kcs remains in parallel.

**Israel.** 4XB31 "The Voice of Israel," Tel Aviv on 9010 kcs is listed by Stanley Coppel: Q5 S9 in English at 2145. Stanley has been logging a French speaking station on 10020 kcs at 2035-2340 with a four-chime interval signal; well, we haven't had much time lately, but cannot find anything here. Has any reader any ideas on this one, or is it second channel of a 31-metre band station? (No-one seems to have identified those Arabic signals on 5000 kcs, by the way).

**ASIA**

**Pakistan.** "Radio Pakistan" now has regular broadcasts to Turkey at 1930-2015, and to the UK at 2015-2100, on 7010 and 9484 kcs, the former being a reversion from 11914 kcs. (Pearce and Cushen). Alex Mackenzie, St. Annes-on-Sea, reports 9484 kcs with Q5 S9 signals at 2030, and dance music by the Ray Norris Quintet. L/Cpl. J. Akehurst (ISWL/DL2-3730), over there with the Berlin Signal Sqdn, BAOR 2, prefers the 7 Mcs channel, and reports them Q5 S8 with no QRM at 2015 onwards.

**Hong Kong.** Ian Hardwick of Thames Line, New Zealand, lists ZBW3 "Radio Hong Kong" on 9525 kcs, logged at 1000 with an English programme of popular recordings.

**Korea.** Arthur Cushen has received a letter verification, registered "with 13,400 worth of stamps in local currency"—(we think they call them 'woons,' OM!) and enclosing a fine hand-painted picture. Details show the Korean Broadcasting System operates a network of no less than 15 stations, the two on SW being HLKB on 2510 and 7935 kcs, both of 1 kW output and located at Pusan. A new SW station at Seoul (HLKA) will open shortly using 10 kW, while MW stations at Seoul (HLKA, 970 kcs) and Taejon (HLKI, 880 kcs) will also increase power to 10 kW. The present schedule is 2100-2330, 0200-0500, 0800-1530. The letter is signed by Mr. Hahn Ki Syan, Chief Engineer, Korean Broadcasting System, Office of Public Information, Pusan, Republic of Korea, who writes: "Fighting for peace in Korea is fighting desperately on Broadcasting wave as other Nations for the protections of freedoms. . . ."

Not very good English, perhaps, but the meaning is clear enough.

**Indonesia.** The evening transmissions of the "Voice of Indonesia," Djakarta, are now on the "winter" frequency of 9580 kcs (presumably YDF6) instead of YDF7, 11770 kcs ; English is still at 1900-2000, with News at 1915. Djakarta has also been logged on 9865 kcs (Nf) from around 1300 to sign-off at 1530, with Arabic and other oriental languages. (Scribe).

**Taiwan (Formosa).** Station BEC26 Tsoying is heard near 10060 kcs from around 1400 to close with call and chimes at 1500 ; announcements are all in Chinese, but a number of Western recordings were featured. (Pearce).

**Thailand (Siam).** Bangkok is reported at good strength on 7105 kcs by Ian Hardwick, when opening at 1130 with English announcements, followed by a programme in the Thai language.

**Kazak (USSR).** John Simpson lists Alma Ata on 9342 kcs from 1215 onwards with an unrecognisable language "sounding like Hindustani with a Russian accent." (Hi.). 7480 kcs was logged at 2135 with a symphonic musical programme accompanied by CW and a betro. W. P. Griffith also mentions Alma Ata this month, on 9340 and 9380 kcs at 1600, the former being an S9 signal.

**Malaya.** Sidney Pearce reports the 7120 kcs outlet of the British Far Eastern Broadcasting Service, Singapore, with good reception around 1600, as well as on 11955 and 17755 kcs. The schedule is announced at close-down, which is 1630 weekdays, 1645 Sundays, and marked "CD" below ; Sidney copied it as follows : For India from 1300 (17755), from 1415 (21720), and at 1530-CD (17755 and 21720 kcs). For Burma at 1300-1315 (7120 and 11955), 1315-1400 (7120), and 1400-CD (7120 and 11955 kcs). Ian Hardwick reports the BFEBS opening at 0930 in English on 6110 kcs (Nf), and lists the frequencies in use : 6110, 7120, 9690, 11820, 11955, 15300, 15435 and 17755 kcs.

**India.** AIR New Delhi now broadcasts daily French programmes at 1945-2030 on 5965 and 7125 kcs. (Pearce and Radio-Sweden). Arthur Cushen lists the AIR Home Service on the latest 3945 kcs outlet, with English news at 1530, Hindu news at 1545, and signoff at 1600 ; this will be the 10 kW station VUD. (Scribe). The following were all logged in parallel with an Indian-language transmission, and all closing at 1730 : VUB2 Bombay (4840 kcs), VUC 2 Calcutta (4880 kcs), VUM2 Madras (4920 kcs) and VUD2 Delhi (4960 kcs). (Scribe).

#### PACIFIC

**New Zealand.** "Radio New Zealand" now broadcasts to NZ troops in Korea at 0800-1035 on the previously-inactive frequency of 9520 kcs (ZL18), according to "Radio-Sweden."

**Guam.** The "Radio Free Asia" station KZP9 on Guam is just about audible here in Britain around 1400 on 9490 kcs. John Simpson lists this one at the above time, apparently relaying a VOA programme, and Chinese at 1430, after which signals were gradually lost. We found them from 1350 in Chinese and a VOA Newscast at 1410-1425, then more Chinese to close at 1447, so it appears that the schedule as published has been altered and extended. (Scribe). Mike O'Sullivan seems to have been about the first to spot this one, however, and has already received a QSL—nice work OM ! Mike gives the call-sign as KUJZ.

**New Caledonia.** "Radio Noumea" is now heard by Ian Hardwick in NZ on 6000 kcs, which is a reversion from 6035 kcs, opening in French at good strength at 0700. (Many thanks for the photo, OM—sorry we forgot to mention this last month !)

**Philippines.** Station DZH3 "Radio Philippines" at Manila, 9500 kcs : fair signals at 0930 in English with popular recordings, and local news at 0945. (Hardwick).

#### NORTH AND CENTRAL AMERICA

**United States.** The "S.S. Courier," VOA floating relay base, has changed the 6040 kcs frequency to 6015, relaying 1394 kcs (MW) when signing-on at 1700. English programmes are broadcast at 2000-2045, and close-down is 2115. When reopening at 2230, the additional 7200 kcs channel is used. (Cushen, Griffith, Patrick, Pearce and Scribe). The "Courier" is still located at Rhodes Island, and Arthur Cushen adds that the Greek Government has given permission for it to operate from here for the next twelve months.

WRUL Boston is still using 11740 kcs at 2115-2200 in English (and not inactive as mentioned last month), in parallel with 15350 kcs. (Pearce and Scribe).

**Trinidad.** "Radio Trinidad" now broadcasts on 9625 kcs at 1000-2015 and on 3275 kcs at 2015-0300. (WRH).

**El Salvador.** A new station reported by *Radio and Television News, USA*, is YSG "Radio Victoria" at San Salvador, and heard opening at 1230 to close at 0200 or later, on approximately 11767 kcs. The Universal Radio Dx Club of California, in their bulletin "Universalite," also reports this one on 11770 kcs around 0100-0130.

**Mexico.** "Difusoras XEMC y XESC," Mexico City, 15205 kcs, has been an excellent signal from 2130 onwards. (Pearce and Scribe). Station XEQQ "La Cadena Azul," Mexico City on 9680 kcs, is heard relaying medium-wave XEQ around 0500, and have obliged with their QSL. (Sidney Pearce).

**Haiti.** Station 4V2H, Port-au-Prince, seems to a new station on 6200 kcs. ("Sweden Calling Dx-ers !")

**Costa Rica.** Station TIDCR (formerly TTPG) "La Voz de la Victor," San Jose, 9615 kcs, have sent Sidney Pearce a fine QSL card; the station is owned by Radiodifusora Diario de Costa Rica Ltds., Apartado 3611, San Jose.

**Guatemala.** "La Voz de las Americas," Guatemala City, is now off the air, the building in which it was housed being burned down and completely destroyed. Stations were TGO (1140 kcs MW) and TGOA (6101 kcs). (URDXC).

**SOUTH AMERICA**

**Brazil.** New stations continue to make their appearance in this country, and here are details of the latest collection as listed by *World Radio Handbook*. "Radio Gaucha" at Porto Alegre, in the state of Rio Grande do Sul, is now on the air with 7.5 kW over PRC21 on 6135 kcs (1000-1300, 2000-0500) and PRC22, 9675 kcs (1300-2000); other channels, at present inactive, are 11865 (PRC23) and 15115 kcs (PRC24). The QRA is: Avenida Borges de Medeiros, Edificio Uniao, 110 andar, Porto Alegre.

Station ZYR59 on 3335 kcs has the call "A Voz do Sertao" with a schedule of 1100-0200, and ZYR57 "Radio Cultura" uses 9745 kcs; both are located at Sao Paulo. "Radio Clube de Marilia," Marilia, operates ZYR62 on 3255 kcs at 1030-0200, and ZYR61 "Radio Difusora de Taubate" at Taubate has 1 kW output on 4805 kcs. URDXC lists PRA8 Recife (presumably "Radio Clube de Pernambuco"—Scribe) on 11815 kcs (NF), heard around 2135.

**Ecuador.** HCJB "La Voz de los Andes" are busy installing new equipment at Pifo, 18 miles from Quito, and in due course hope to be on the air with one of the 50 kW Tx's. (S. Berry and Roy Patrick). The 11915 kcs frequency has been logged in English at 0730 to sign-off at 0800: (Mike O'Sullivan).

**Peru.** OAX4V "Radio America," Lima, has been noted to be operating again on the old frequency of 5905 kcs at 0500, reports Arthur Cushen. (Last listing here was 5984—Scribe).

**Venezuela.** "Radio Barquisimeto," Barquisimeto, has been heard in the USA on 9510 kcs (Nf) opening at 1100 and announcing for YVMR on 1475 kcs (MW), YVMQ on 4940 and 9510 kcs (URDXC). Bernard J. C. Brown of Derby lists YVKB "Radiodifusora Venezuela, Caracas, 4890 kcs, and YVMM "Radio Coro," Coro, 4910 kcs, both around 2300-2315.

**Chile.** Station CE1173 "Radio Nacional de Minería," Santiago, which appears to have been dropped from some lists, is now reported by URDXC on 11735 kcs with good signals around 0430.

**British Guiana.** Cable and Wireless Station ZJA6 at Georgetown has been placed at the

disposal of the British Guiana United Broadcasting Company (operators of the popular ZFY) and is reported by "Sweden Calling Dx-ers" on 15075 kcs with cricket, baseball and horse racing commentaries at 1545 to shortly after 2100; these transmissions were interlaced with sponsored announcements, and reports requested to the usual ZFY address in Georgetown.

Bert Clear lists the regular broadcaster ZFY on 5981 kcs, with an extremely powerful signal recently at 0100-0145, and wonders if they have at last stepped-up the output to 5 kW. (Does anyone know?) Bert has apparently been taking particular notice of the "commercials" and adds: "They were making an endeavour to sell practically everything in Georgetown!"

**CONCLUSION**

So we come round again to the Honour Roll of countries verified. Sidney Pearce slips in another one with the QSL for Radio Kabul, making him now 131. (What does it feel like, way up there, OM? Hi!) For the guidance of new entrants to the HR, we request that the station QSL'd, and its frequency, should be given in the case of each country claimed; it is not sufficient to state merely "Colombia," "Brazil," etc.

All lists and items for this column should be sent direct to: J. Fairs, 2a, Durham Road, Redcar, Yorkshire, England, so they arrive before the 27th December, and in order to avoid any possible confusion, may we suggest that "posting early for Christmas" is good idea? Tnx, OM's!

The Editor and your Scribe thank all readers for their interesting letters and acknowledge all items used in these pages.

Best wishes to you all for Christmas and the New Year, and may 1953 bring everyone lots of fb Dx.

**HONOUR ROLL**

1.	Sidney Pearce .. .. .	131
2.	Arthur Cushen (NZ) .. .. .	127
3.	Mike O'Sullivan .. .. .	89
4.	Jack Fairs .. .. .	88
5.	Roy Patrick .. .. .	87
6.	Carl Shapiro .. .. .	83
7.	Stanley Coppel .. .. .	82
8.	Ivor J. Street .. .. .	81
9.	William P. Griffith .. .. .	78
10.	Ian Hardwick (NZ) .. .. .	67
11.	Manfred Lepple (Germany) .. .. .	66
12.	Dr. James Kyle .. .. .	64
13.	Bert Clear .. .. .	63
14.	Ronald Thorndike .. .. .	54
15.	John Whittington .. .. .	50
16.	Phil. Allwood .. .. .	48
17.	Tony Allmey .. .. .	47
18.	Fred Pilkington (MM) .. .. .	41
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# ON THE HIGHER FREQUENCIES

## Monthly Notes and News

by

H. E. SMITH, G6UH

### Two Metre Band Planning

From the observations and advice to VHF operators published in the October issue of the RSGB Bulletin it would appear that the Hon. Editor is not in favour of any kind of Band Plan for 2 metres. It is seldom that we find ourselves in disagreement with any matter contained in the Bulletin but we do feel that everyone, especially the newcomer to the band, should carefully study the position on its merits before embarking on a helter skelter of QSY. It is stated that there has been a "retreat from the Band edges because other operators do not search the band extremities," and all operators are urged to "spread out and occupy the full band." Regarding the searching of the band extremities, this is of course, quite incorrect, and we would say that more band edge searching goes on now than ever before.

### The Zone Plan

When the Zone Plan was first put into operation, we were not in favour of it being generally accepted, mainly because it provided insufficient band space for Zone J, which includes the London area. We have been proved right in our forecast by the fact that over 400 stations are now active in this Zone (not all at the same time of course!). This means that each station has less than a kilocycle of band space if CW QRM is to be avoided. QRM *does* exist at times when one is working locals, and it is not to be wondered at that some stations move out of the Zone to avoid this QRM, often sitting on a DX station in consequence. There is little point in condemning the Zone Plan as being unworkable because of this. It is just unfortunate that some modification was not made when it was becoming apparent that Zone J was being crowded out. Devon, Somerset and Cornwall share 150 kcs of band space between less than 20 stations and some 100 kcs of their portion could easily have been allocated to Zone J.

However, the purpose of these notes is not to dwell on any shortcomings of the Zone Plan, but rather on its merits.

Contrary to the Hon. Editors statement that few stations are operating near the band edges, there are in fact a large number consistently operating between 145.300 and 146.000 Mcs. This includes most of the Irish stations, and in the near future *all* of them will be operating according to the Zone Plan. There are an even larger number operating between 144.000 and 144.400 Mcs, and we have yet to hear a Northern station operating outside of his Zone. It would be

extremely difficult for many stations in the London area to work a Northern station if this "spread out" idea is followed. It would only need three or four of the "big guns" in the London area to open up on phone about 20 kcs apart, round about 144.400 Mcs, to prevent many of the Northern stations being even heard, let alone worked.

They could of course QSY !! To the HF end of the band perhaps. Then with some of the Northern stations on the LF end and some on the HF end we should have to be pretty slick in searching the *whole* of the band after a CQ North. It is generally agreed that it is not possible to thoroughly search more than 300 kcs of the band after a CQ. Where is the point? Is it that everyone is going to be encouraged to use a VFO on 2 metres? Heaven preserve us if that is the idea. Whether we, or anyone else agrees with the Zone Plan or not, either in full or in part, it is abundantly clear that it:—

- (a) Allows DX operation free from local QRM for the majority,
- (b) Makes for easier band searching,
- (c) Increases the chance of making a DX QSO.

If any band plan offers these advantages, it is surely a Plan worth adopting, and that is perhaps why some 80 or 90% of VHF operators are working in conformity with it.

The Hon. Editor of the RSGB Bulletin has had long experience on the VHF bands but we would humbly suggest that he gathers some evidence on operating conditions in some of the remoter parts of the country. What may appear to be perfectly OK for stations in the London area in the way of a mass spreading out across the band, would make 2 metre operation virtually impossible for a large number of stations in other parts of the country.

So we voice a hope that those of our readers who are not operating in their correct Zone, will do so at the earliest opportunity and so keep the band nice and tidy.

### VHF Research Society of Ireland

The October meeting at the Royal Avenue Hotel, Belfast, drew 40 members, nine of them travelling from Eire. Mr. S. N. Johnson took the chair in the absence through illness of Mr. W. H. Martin, M.A., B.Sc.

Mr. Johnson (G15SJ) recalled the course of VHF operation over the past 20 years and dealt with the efforts made on the old five metre band. He also paid a warm tribute to those who were developing interest in the two metre band, particularly Sandys, Kane and Dickson.

Gi5SJ went on to say that the new Society was a necessary and useful one to the development of Research work on the VHF and UHF bands.

The President (Ei2W), in his speech which followed, appealed to all members to *support the Zone Plan*. He said that the next meeting would be held in Athlone towards the end of January. After that, meetings in Londonderry and Dublin were planned.

#### Transatlantic Tests

Ei2W also mentioned that it had been decided to operate a station on the west coast of Ireland during the period July/August next year, in order to carry out tests with U.S.A. Amateurs with a view to establishing contact on two metres. Facilities had already been promised, and a team of operators would work round the clock for a ten day period. Ei2W stated that contact with America on this band was more than a probability, and he forecast that this would be accomplished within three years.

#### Irish Perpetual Trophy to Gi3GQB

Bill Kane, Gi3GQB, was awarded the IPT for his outstanding work on VHF and for his great help to the Society. Gi3GQB was also praised for his great work in carrying out a nightly contact with G3EHY, in Banwell Somerset, proving that communication over this 280 mile path was possible in all kinds of weather and conditions.

#### 20 Stations ready to go

A check taken at the meeting gave the number of stations actually constructing VHF equipment as over twenty. Many of these are ready to operate and are waiting for crystals to put them in the correct Zone.

#### A Christmas Wish

The season of peace and goodwill is fast approaching, and although it is perhaps a little early to wish all readers a Happy Christmas, we should like to wish everyone all they would wish themselves for a grand time during the festive season. We should also like to extend a special greeting to all those contributors who have so generously supported these columns with many interesting reports. During this year your conductor has made many new friends. Some we have met, others we write to, and imagine what they look like! But the friendship is as warm for all that. A right Merry Xmas to you all.

#### The VHF Newcomer

Among the questions we have been asked, is one that deals with the problem of which is the best type of receiver to use as the IF in conjunction with a VHF converter, and whether a receiver of the RII55 type would be suitable.

This is not a very easy question to answer in a general way, but we can give an opinion based on experience in regard to the RII55, and that is, we do *not* recommend it. The main reason for this is that it is not a good

receiver from the signal to noise ratio point of view. Judging from correspondence we have received regarding VHF converters there seems to be some points which are still not very clear in the minds of some newcomers. One is the question of converter noise factor. When dealing with this, it must be remembered that it is the converter itself to which the noise factor refers, and not to the IF which follows. For instance, if you are using, say, an SX24 as the IF, the signal to noise ratio of the receiver itself will be in no way improved by the addition of a VHF converter. So you see, the first requirement for a receiver to be used as the IF. For VHF work must be a good signal to noise ratio. It naturally follows that it must also have a good RF stage, or stages, ahead of the mixer, because the RF stage is the first IF when used with a converter, and good selectivity is necessary in order to avoid images and spurious signals. A wide bandwidth is only necessary in the RF stages of the VHF converter itself, in order that it will cover the whole 2 megacycles with equal response (or nearly so). Any communications type receiver of reputable manufacture will provide an excellent IF for VHF work, and the Eddystone range are particularly recommended in this respect.

Of the surplus receivers, the RII32A has been found to give quite good results from the point of view of signal to noise ratio, but it cannot be made selective enough with its existing IF stages. The construction of the IF transformers is such that it is not possible to obtain a better IF bandwidth than about 150 kcs, which is pretty hopeless. A modification to the IF, i.e., changing over to 465 kcs, produced a great improvement in selectivity but worsened the signal to noise ratio, or appeared to.

We have since heard that a station is using one of these receivers with the IF modified to 5 mcs, and it is apparently giving quite good results. Avoid using any of the surplus airborne receivers as IF's. They are in the main, all much too noisy for the job. Although it is true that they were used for VHF work, it was for the reception of strong signals at comparatively short ranges, where a good signal to noise ratio is not so important.

Finally, to the question of where to do the tuning. On the oscillator or on the Main receiver? Whatever else you do, *try* and do the job properly—a crystal controlled converter, with all tuning on the Main receiver. It's so much easier that way, provided you take all precautions against IF breakthrough. Fully screened leads from the converter IF to the Main receiver, *and* make certain that the aerial is not still connected to the receiver when used as an IF. This actually happened quite recently, and the operator wondered why he was receiving S9 SW Broadcast signals

on the 2 metre band! So that's about all for the Newcomer this month.

Don't forget to send in your ideas for anything which you would like us to talk about in this section. You need not confine your requests to the Amateur bands, there are other VHF bands in use and some interesting things to be heard on them.

#### STATION REPORTS

**G3GBO (Denham, Bucks)** who's report arrived only just in time last month and was added as a tail piece, gets his report in first this month and is thus the headline! Don worked several new stations during October, including G3GOP, G3FUH, G6BO, G8LN, G2DSW and G2NM. (We are certainly bucked to hear that Gerry is active on the band again). The grand total of stations worked up to October 31st, is 307. On October 17th G5YV was heard and called, but without success. Don says "I did *not* hear G5MA/P, is this a record? I fear so" (Hi).

A calamity occurred on October 28th. The gale tore off the delta matching sections of the beam. We hope that by the time this appears the necessary repairs will have been effected.

G3GBO knocks us cold by asking "Have You heard Old Jumbo lately?" (As a matter of fact we haven't, but at any time now he is likely to be transmitting on 2 metres, so keep your beams swinging towards the I.O.W. and you *may* hear G5TZ once again).

G3GBO was very pleased to receive a visit from G5LK (the blind Ham from Reigate). As we stated in last month's issue, G5LK has been having some TX trouble, and G3GBO and G3HBW have been lending a hand in making it easier to tune up.

**G3HZK (Hayes, Middx.)** has not been quite so active of late, due to exams. John is still struggling with the indoor aerial problem, as it is impossible for him to erect an outside job. An indoor stack has been found to give insufficient coverage, and G3HZK would like any information on good omni-directional indoor aerals. Any such information may be addressed via your conductor.

**G5LK (Reigate, Surrey)** is again active on 2 metres, having received some timely assistance from G2MV in the repair of the TX.

The October tit-bit was the reception of G5MA/P's signals, and although Bob's strength was 59 plus, Leslie was unable to raise him, which has confirmed his suspicions that the path between Reigate and South Wales is a very difficult one. G5YV has been heard several times, but DX in general has been poor. Some good local QSO's have been made with G2MV, G2DTO, G2UN, G3GBO, G3HBW and G3EBW. (The latter station is welcomed on his return to the band).

Les also had a lengthy and very helpful QSO with G5DS.

A visit was made to G3GBO, and G5LK was somewhat surprised to find that many stations active in the London area do not appear to be audible in Reigate, as many of the Calls heard on G3GBO's gear were new to him. G5LK says his visit was most interesting, and after exploring G3GBO's station he realises why Don's signals are so consistently good.

(For those who may not be aware of the fact, G5LK is blind. His interest and keenness in VHF operation is something to be greatly admired, and we are proud to number him among our reporters.)

**G3WW (Wimblington, Cambs.)** sends his usual concise and up-to-the-minute report, written *at home*. We suspected that G3WW did spend *some* of his time at home, how else could he return such activity reports? What continues to amaze us is that, with all his commitments up and down the country, he still manages to be one of the most active stations on the two metre band, quite apart from erecting various aerals. The latest effort is a replica of the four slot stack with reflectors used so successfully by G2HCG when working portable in the second RSGB Field Day contest. This has been erected at the height of 59 ft. to the top of the Stack, alongside the "Old faithful" 5 over 5, so it was at last possible to compare results on the two aerals.

Tests with GW2ADZ revealed that one aerial was no better than the other. On one transmission, the slots were up over the Yagi, and on the next the Yagi gave a higher signal. "So" says G3WW "What." Hi.

Sunday, October 5th produced several good contacts, the best of these being G3DIV, G2HCJ/P (12 miles north of Warrington), G4GR, and a new contact, G3GVL of Derby. G3BKQ was heard on the above date.

On Monday the 6th, another new contact G3CUA (Bourne, Cambs.) an ex VK and a well known call in the five metre days. (We are glad to hear that 'CUA has appeared again. We will remember working him on five. If this happens to catch your eye 'CUA, welcome to two metres.)

G3WW was *away from home again* for the 7th to the 10th of October. On the 12th, he had a look round on 3.7 Mcs (yes, he works *other* bands as well!) and made a few contacts, but reverted to two metres between 1435 and 1513 and worked G5YV, G3FEX, G3FFX and G2FFG (Beds.).

Yet another new one on the 15th, G3BOF (Chilwell, Notts. Freq. 145.26.) On the 16th, G3GJZ of Newmarket, Suffolk was on the band for the second consecutive day, and was worked. G3GJZ had been spurred on by G2XV to appear on 144. On the 17th,



G8AO/MM appeared again, having put the gear back in the ship until he gets his new command in the New Year. The 18th brought a surprise QSO with G5MA/P (Monmouth), then two more new contacts, G3100 (near Oswestry. Freq. 145.650), and G8SC (Worcester). The following week was quiet, with little else but local contacts. On the 23rd, another test was carried out with the two beams, this time with G2HCG. The 5 over 5 gave signals at S9 plus 32 dbs, and the four slots gave S9 plus 30 dbs, at best. October 25th and 26th produced 27 contacts in 18 counties, the most notable being with ON4BZ, G4DC (RF stage still working!), G2DSW and G3EHY. G4DC was again worked on November 2nd after he had signed off with G8AO/MA.

(Many thanks G3WW for yet another extremely interesting account of your activity over the past month.)

G5GX (Leven, Yorks.) says he and the locals have come to the conclusion that the two metre band is over planned and what with Band Plans, Ladders, Tables, etc., there seems to be no actual policy.

Most newcomers say, quite rightly, that unless they are in an "exotic" county, they can bang away for weeks without obtaining a QSO.

(We certainly agree that this does occur in many parts of the country, and it is surely due to the lack of really serious interest in the experimental side of the VHF band. E12W has given a great lead in this respect, in the formation of the VHF Research Society of Ireland, with a determined policy. The one main aim of the Society is to further the art of VHF operation in a planned scientific manner, and we would do well to follow this example. There are many of the true experimental types operating on the VHF bands in this country, and much good work is being done, but there is no doubt that the majority are merely interested in working as many new stations as possible, never changing the aerial or gear, and just sitting night after night waiting for conditions to be good before sending out a CQ.)

As G5GX says, "Mere rubber stamp contacts do not interest me very much, and I got tired of chasing new counties a long time ago, although the total stands at 46 with no effort on my part. We have not heard a signal on two metres for weeks, and that is probably because none of us have sat up night after night waiting for something to turn up." G5GX thinks the RSGB appear to be giving up 70 cms as a bad job, and most of the Hull stations think they are right in turning over part of the band to Super-Regens and SEO's. (It seems to us that they are giving up the two metre band as a bad job as well, in view of the October Bulletin, Editorial!)

G4DC (New Cross), the station with the RF stage that works! has found conditions to be only mediocre for most of October. So far as DX is concerned, the limit seems to have been G5YV to the north, G3EHY to the west (also GW8UH and G4GR), and GW2ADZ to the northwest.

Bill tells us that G8LN (Plumstead) is working QRP on 145.700 Mcs, and would like everyone to look out for him.

Two new Essex stations have been worked, G3ANB and G4OT, the latter not being a very strong signal, but quite workable from the London area. The regular schedule with G8AO/MM is continuing, but a Thames to Tyne QSO still eludes them. The best DX to date has been between Flamborough and London, and in reasonable conditions, a two way QSO is obtainable from the Humber down.

On October 12th G4DC broke new ground by working G2BUJ (Swindon) and G3BJQ (Rugby), and about a week later acquaintance was renewed with G8PX. The highlight of the month was a QSO with GW5MA/P at Monmouth. G4DC pays a tribute to the activities of G5MA in breaking new ground. Besides demonstrating the reliability of his gear, he rejuvenates the emancipated spirits of the county hunters!

(We also think Bob is doing a fine job. His precision work in a professional capacity is reflected in his amateur activities. His patience is inexhaustible and he fully merits the great successes he has achieved.)

G3MI (Chesham, Bucks.) has found the band to be devoid of signals on so many nights that he has had to check the converter to make sure it is still working! It seems a great pity, he says that more people do not come on the band, even when conditions are poor. One particularly good signal heard has been G3100 in Shropshire. He has been heard working many London stations but G3MI has not yet been able to raise him. On 70 cms the oscillator section of the converter has been rebuilt, using a 12AT7 as PP oscillator as per G5CD. The eight element stack is still in use but not much has been heard in the way of signals. "As far as I can discover, no one ever does hear much on 70 cms" says G3MI.

(Turn your beam westwards OM, and listen for the Irish boys on two metres.)

GW2ADZ (Llanymynech, Mont.) has found conditions very monotonous on both 144 and 70 cms. Some contacts have been made with London stations and with G3ANB (175 miles). Bill reports on the recent appearance on the band of G3100 (Freq. 145.700 mcs, but will be changing shortly). G4LU is getting the shack ready at his new QTH and should be well heard in London as he is well up in the clear. He will be operating on both 70 cms and 144 mcs.

GW2ADZ has increased the input to the CV127 on 70 cms and is now getting between 13 and 15 watts out. It is hoped to have an RF stage working on this band very soon.

G3HBW (Wembley, Middx.) is still unable to devote much time to VHF, but has managed QSO's with GW5MA (Monmouth), G3100 (Oswestry), and has heard G3AUS. On October 10th he was very pleased to hear G3BKQ on the band again after a long period of inactivity (due to illness?), and a most enjoyable QSO was had with him.

Stations heard but not worked over the month include G2HCG, G2XV, G3AUS, G3BHS, G3CCP, G3FAN, G3FUM, G3UM and G4SA.

G5ML (Coventry, Warks.) who's report is routed via the station "scribe," Ray Bastin, is running a sked at 1800 on most evenings with G2FXK of Aldridge, Staffs. The 3 element Yagi has been dismantled and he is now using a 16 element stack at 25 feet fed with tubular 300 ohm feeder. Signals are about 25 db down off the back of the stack, and forward gain is about 15 db over a dipole at the same height.

It is hoped to raise the stack to 45 or 50 feet with the aid of a telescopic mast similar to G5YV. (Further mention of G5ML will be found in the report from Ray Bastin).

G6ON (Colliers Sood, S.W.19) remarks on the lack of activity on the band as compared with the same period last year. During the last weeks of October Reg counted at least 20 stations on Top band who were on 2 metres this time last year. "Why this migration," says G6QN. He suggests that it may be due to the old question of many stations not being interested in working another station more than once. All this business of everyone just listening and avoiding each other like the plague when one sends out a CQ. A dead band until a new station starts up, then the band is full of stations calling the newcomer, to work him *once* and get his card. (There is no cure for it. The only thing is to encourage the newcomer into doing some serious experimental work. The real experimenter *likes* to work stations more than once in order to compare signal strengths, etc. So why not let these stations emigrate if they want to, and and let us keep the band purely experimental. In any case 144 and 70 cms are bands on which many interesting tests of aerials and converters can be made, so let us do all we can to give every new station as much encouragement as we can. Even if he has not the convenience or space to carry out aerial tests, he can concentrate on converters. In either case he will need known signals to carry out comparison tests, and thus we shall eventually get a great number of stations all eager to work each other with a really serious purpose. That, we think, is one answer to this "working once only" problem).

## LISTENER SECTION

Reg. Russell of Southampton is redesigning the station, and has started with the 2 metre gear. The eventual line up will be: 6AK5/6J6 Cascade, 12AT7 mixer, 12AT7 Squier CO and multiplier, together with a first IF of 9 to 11 mcs. This job is already in an advanced state of construction.

So far as Reg is concerned, the main activity on 2 metres is over until next year. In his poor location, it is hard to believe the statements of G3EHY that the band is always open up to 150 miles. Even 50 miles is a good haul to the N.E. under winter conditions. A detailed survey of the local topography is to be made this winter in an attempt to find out why little is heard from the North and North-east. Little listening is being done at the moment as the urge to build is dominant. (We look forward to receiving even bigger and better lists of calls heard when the new gear is completed OM).

Ray Bastin of Coventry turns in a report so long and detailed that we can only deal with the most interesting parts. An item of great interest is the local activity on 70 cms.

G6YU (434.025 mcs), G2FNW (433.230 mcs), G3HAZ (433.533 mcs), G3BKQ (433.380 mcs), and G3ABA (433.650 mcs). All can be heard by Ray, the strongest being G6YU, and G2FNW at 38 miles the weakest. RX is an ASB8 using a GL446 Lighthouse as RF stage.

On 2 metres the main constructional effort has been a CC oscillator for the G2IQ converter. Ray is hoping to qualify for his "ticket" in the near future, and is beginning to get the gear together for the great day! (Good luck OM. With your VHF experience you will be working the DX almost before you switch the TX on!)

Conditions have been poor in Coventry during the latter weeks of October, and very little in the way of DX has been heard, although G6NB and G3HBW have been heard at S5. G3GVL (Derby) a new station at the LF end, has been heard, also G2ASF (Coventry Amateur Radio Society) on 144 mcs exactly. This station is active about one night a week from a difficult QTH in the centre of Coventry, and QSL's would be highly appreciated. These should either be sent via RSGB or direct to Ray Bastin at 152 Avon Street, Coventry.

(We are very sorry that we had to cut the report a little OM. The Editor has allowed us more space for these notes, but it still doesn't seem enough!)

Our Northern friend Eric Lomax is still very QRL with business, but we hope to receive another report from him next month.

Once again we thank you all for the nice batch of interesting reports, and please do not forget to turn the beam towards Ireland from time to time. There is a lot of activity going

on there, and will be still more in the near future.

**"The Upper Spectrum."**

Knowing the thoroughness with which Ei2W tackles any job he sets out to do, we looked forward to receiving the latest copy of the journal of the VHF Research Society of Ireland.

We have now received a copy, and what an excellent publication it is. Twenty pages full of highly interesting VHF notes and news, and it is quite obvious that Harry Wilson has put in many hours of hard work in producing it. His untiring efforts to further the cause of VHF are bearing full fruit, and membership of the VHFRSI is now nearing the 90 mark. We do not know at the moment whether this journal will be generally obtainable in this country, but we feel sure that if it is, there will be a great demand for copies. Messages of encouragement have been received from all quarters, including one from WIHDQ (Ed. Tilton), the VHF editor of QST. It is most gratifying to know that the accent is on the experimental side of VHF operation, and one of the aims of the Society is to foster an interchange of notes and observations between its members. Ei2W would welcome any notes and news from VHF operators in this country for publication in the journal. Any material which may be considered to be of interest to Irish VHF operators would be most acceptable.

In the "For Your Notebook" section there are some useful Irish frequencies which we reproduce for *your* notebook:—

			Mcs
Gi2FHN	Co. Down	Operating	145.800
Gi3GQB	" "	"	145.818
Gi3BIL	" "	"	145.854
Gi3AXD	Co. Antrim	"	145.877
Gi6VU	Co. Down	"	145.200
Gi5HV	Co. Antrim	On shortly	145.924
Gi6YW	Co. Down	"	145.890
Ei2W	Dublin	Operating	145.809
Ei6G	Cork	On shortly	145.836
Ei2G	Dublin	"	145.872
Ei19N	Dublin	Operating	145.980
Ei3R	Waterford	On shortly	145.908
Ei3S	Dublin	Operating	145.942
Ei5Y	Dublin	On shortly	145.960

Ei2L (Kildare), Ei3L (Dublin), Ei9G (Donegal) and Ei9U (Limerick) are also active on the band, but their frequencies are not quoted. Other stations commencing building operations are, Gi3HFT, Gi3GQA, Ei5D and Ei3W. G stations are asked to beam on both North and Southern Ireland as many stations are testing and will welcome contacts and reports.

**Information Wanted**

Capt. M. E. Doyle (Ei8Y), Collins Barracks,

Cork, would like some gen. on the S.440-B Transmitter with a view to using it on VHF. If anyone can help, please write direct to Ei8Y!

**"Range Buster" G3WW!**

Among the many interesting notes in the Upper Spectrum is one which runs as follows: "If you hear G3WW on the band, be sure to have your relay well oiled. Reputed to be 'quick on the draw' he is usually saying 'Good-bye OM' before you switch over. Nevertheless, he is a favourite station with us, and we hope the greater activity in Ireland will result in a number of new counties for him. Good luck OM."

**Ireland—U.S.A. Tests**

The VHFRSI is already in communication with American VHF stations regarding the Transatlantic Tests which are taking place during July-August, 1953, and it is expected that at least ten of the leading stations will take part. A full report will appear in the next issue of the Upper Spectrum and we shall keep our readers fully informed of the arrangements.

VHFRSI members will operate 100% according to the Zone Plan, so the section of the band to look for Irish stations is 145.800 to 146.000 Mcs. We extend our most hearty congratulations to Ei2W and all concerned in the production of the Upper Spectrum, and we wish the VHFRSI all the good fortune it deserves.

Good hunting and 73 to all and please remember the Zero date for reports is the 6th of each month, direct to your conductor at 176 Station Road, Hayes, Middlesex. Tnx. G6UH.

**WWV. (Contd. from p. 445)**

**Disturbance Warning**

At 19 and 49 minutes past the hour in CW. W=Warning (six times), U=Unstable (six times), N=Normal conditions (eight times).

**List of Frequencies:**

Call sign for all stations: WWV.

2.5 Mcs	0.7 kW	
5.0	" 8.0	"
10.0	" 9.0	"
15.0	" 9.0	"
20.0	" 8.5	"
25.0	" 0.1	"
30.0	" 0.1	"
35.0	" 0.1	"

No disturbance warnings.

Reports are answered by QSL—cards or by letter. They should be sent to:—

Radio Station WWV, National Bureau of Standards, Washington 2, D.C., U.S.A.

# STRICTLY FOR THE BEGINNER

by O. J. RUSSELL, G3BHJ

## Part. 2—GETTING FURTHER

*This month our contributor takes the beginner to amateur transmission a step further and discusses aerials suitable for one's first transmitter.*

Before getting further with the topic of getting started on simple lines, there is a point in connection with the simple crystal oscillator circuit of last month. In cases where the screen resistor is a little high, it may be found that a neon stabiliser will go out when the key is depressed. This is in cases where a single neon is used to stabilise the screen supply. In such a case, the remedy is to reduce the value of the screen resistor so that the neon just remains alight when the key is down. In this way the screen voltage will be held steady under keying. As screen current varies due to tuning and loading, it may be necessary to experiment a little to get the right conditions under which the neon remains alight under all operating conditions. It is important also that the rated current of the neon is not exceeded under running conditions. As the screen current is only a few milliamps however, it will be found that almost any of the small neon stabiliser tubes are satisfactory in this application.

Having once generated RF, whether in the simple crystal oscillator rig, or in the oscillator-amplifier circuit, the next problem is to RADIATE the RF energy efficiently. This involves coupling to an antenna, and there are several snags in this process to trap the unwary. A few of the simpler ways of "getting the soup up the spout" may be considered, as the problems encountered are the same in principle as are found with any form of transmitter/antenna setup. The experience obtained with even the most elementary arrangements will be useful when handling more elaborate systems. Furthermore, as a simple system is often an efficient one, time will not be wasted, as useful contacts will be achieved.

As the top-band seems increasingly popular these days as a starting point, we come up against one problem. It is only the very few who can achieve a half-wave dipole of 264 feet of wire in the clear! Some form of Marconi "against ground" radiator may have to be used. This may even be the conventional "forty metre dipole" . . . i.e., a 66 foot top centre fed with say 33 feet feeders. Such aerials can be used as a Marconi by connecting the feeders together, and using the whole aerial system feeders and all against ground (Fig. One). In such a case, the feeders act as the vertical radiating portion, with the "top" acting as a capacity loading.

This is quite an efficient radiator of mainly vertically polarised radiation. However the Marconi may equally well be a length of wire operated against ground (Fig. 2). Marconi systems are in fact aerials whose electrical length is less than half wave. To bring the system up to resonance, inductance loading is employed. In order to vary the effective value of loading inductance, a variable series tuning condenser is employed (Fig. 3). In this way the whole system of aerial, loading coil, series condenser AND the earth return may be resonated to the desired frequency.

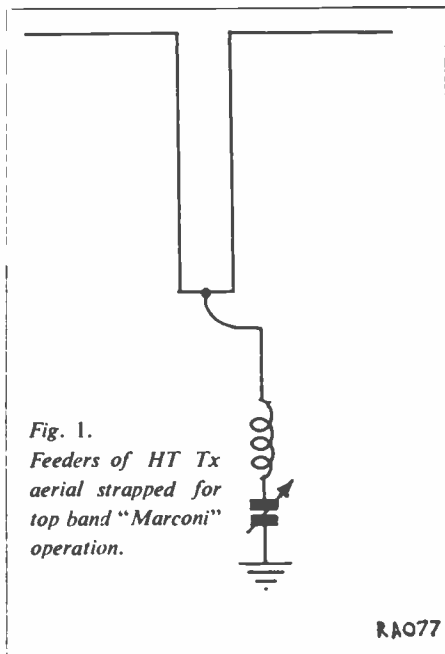
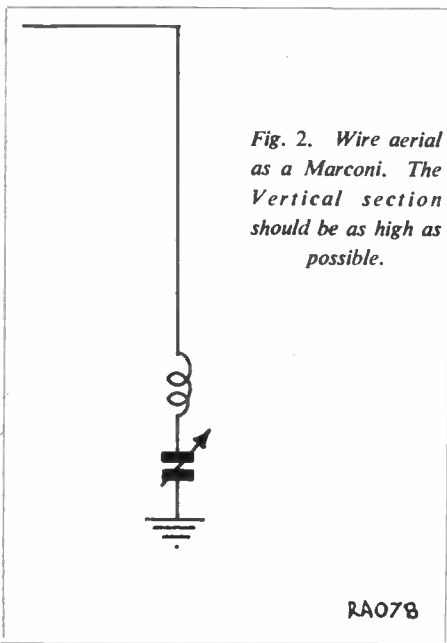


Fig. 1.  
Feeders of HT Tx  
aerial strapped for  
top band "Marconi"  
operation.

RAO77

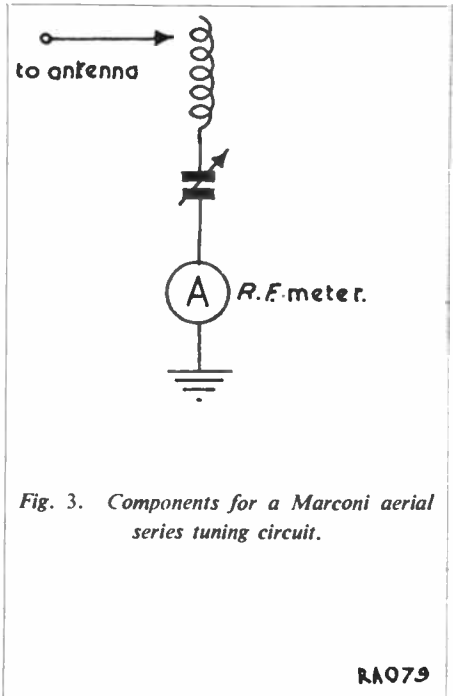
It should be stressed, that the efficiency of the Marconi type antenna depends upon getting as much aerial up and in the clear as possible. The fact that inductance loading enables short lengths of wire to be resonated, does not make them efficient radiators. All that the loading does is to enable the length of wire to be FED efficiently and so have a sporting chance of radiating effectively.



ridiculously short lengths of wire, fantastically high currents can be obtained, but in such a case the larger part of the power fed to the system will be used in heating up the soil and only a small fraction will actually be radiated.

The above arguments are of course only for the case of Marconi "against ground" aerial systems, and it cannot be stressed too highly that an efficient low resistance earth system is necessary. Commercially an elaborate ground system of radial wires is used. The wires either being buried in the earth, or suspended a foot or two above the surface. A single long earth wire is reasonably satisfactory provided there is sufficient room for something of the order of half a wavelength long. Such a wire when suspended just above the earth rather than buried is familiar to the old timers as a "counterpoise." Electrically it does provide for electrical balance of the Marconi system. In default of such earths, a fairly low-loss earth system may be obtained by burying several earth rods spaced round the shack, and bringing a wire from each up to a common earthing point in the shack. An earth taken to the cold water pipes is often effective, as it does provide a contact to the large underground system of supply pipes. No attempt at all should be made to use the gas pipes as this is extremely dangerous, and the

A further important point about the Marconi aeriels, is that the GROUND connection is of supreme importance. The radiation resistance of short Marconi aeriels is very low . . . of the order of a few ohms, so that a ground connection having even an ohm of resistance will absorb an appreciable fraction of the power fed to the aerial system. Unlike most antenna systems for the higher frequencies, resistance losses are of great importance in these Marconi systems. It should be remembered that the ground RF resistance is the important figure. The resistance of a ground connection to RF may be much higher than the apparent earth resistance measured at DC. In view of the low radiation resistance of the Marconi, a high reading will be obtained on the aerial current ammeter. A figure of say two amps for a ten watt topband transmitter is not uncommon. With a very short aerial, even higher readings may be obtained, while with a larger aerial (incidentally a MORE efficient radiator) a lower reading . . . even down to half an amp or less will be obtained. It is impossible to quote a specific figure as this will depend very much upon the size and shape of the aerial in question. The point to note however is that no comparison in terms of aerial current can be made between the currents taken by a large aerial and a small one. In fact the larger and more efficient aerial will take less current as against the smaller one. By using



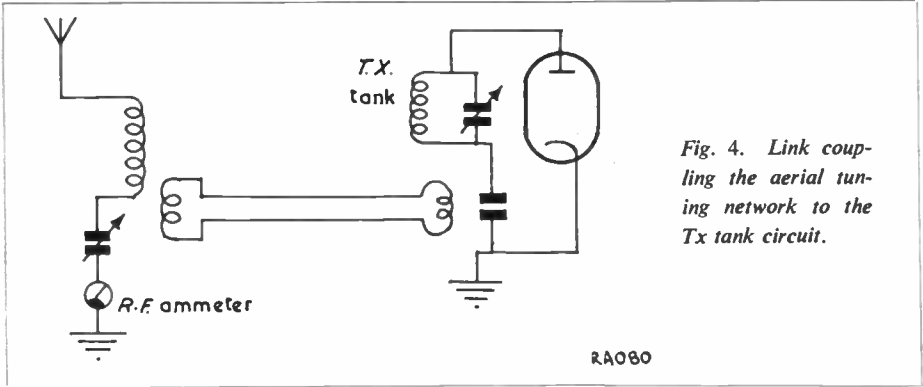


Fig. 4. Link coupling the aerial tuning network to the Tx tank circuit.

jointing in the gas pipes has a high resistance, so that the earth obtained is very inferior and of high losses.

In cases where the earth has been casually made to the chassis of the transmitter, no effective earth at all other than by devious paths and capacity to the mains input can exist. In such a case results are likely to be very disappointing unless a decent earth connection is provided.

Just as no definite aerial current can be specified, so no definite size of loading coil can be specified. In the well known phrase . . . "it all depends." With a suitable transmitting type variable of say 160 pf maximum, wind an experimental coil tapped at every five turns or so, and link couple to the TX as indicated in Fig. 4. Assuming that a single ended amplifier or oscillator transmitter

similar to the circuits discussed last month is in use, the link coil at the transmitter end will be placed at the end of the tank coil at the opposite end to that connected to the anode. Similarly the link coil at the aerial coupling end will be placed at the earthy side of the aerial loading coil and NOT at the end where the aerial is connected. For top band use 5 turn links will do for a start.

With the link coils closely coupled, or even actually wound over the tank coil and the aerial coil, ordinary flex will be found quite suitable for piping the RF from the transmitter link coil to the aerial link coil. Only for piping the RF for some distance need we worry over using low loss cables such as coax or twin line.

With the TX running, and the plate tuning adjusted for a good dip in the plate current,

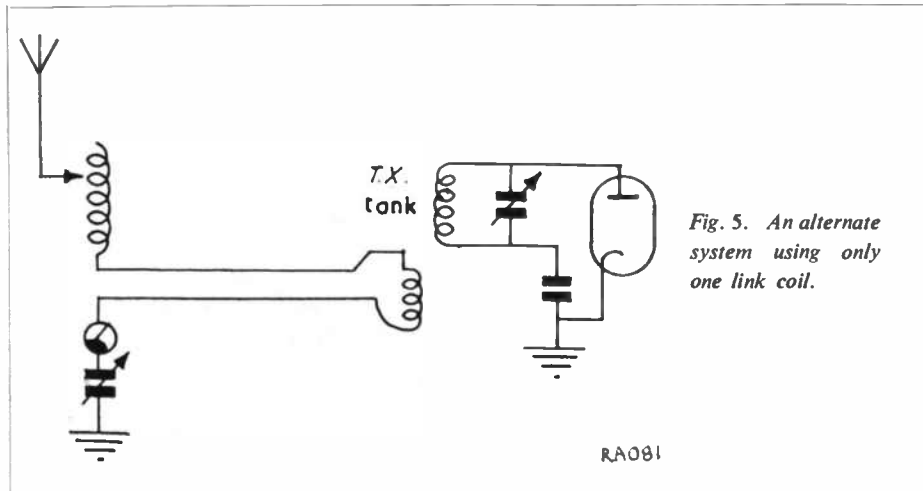


Fig. 5. An alternate system using only one link coil.

place all of the loading coil in circuit and adjust the series aerial condenser for some indication on the aerial current meter which may be an 0 to 1 amp. thermo-couple meter. If only a slight indication is obtained with full tuning capacity, the coil is too small, and a new one of more turns is needed. If an indication is only obtained with the condenser all OUT, then the coil is too large. If the coil has been made too large, tap down until resonance on the aerial tuning condenser is obtained comfortably within the tuning range of the aerial tuning condenser. As resonance is approached, the TX plate current meter will indicate a higher reading. If necessary readjust the TX tuning to minimum dip position, but as the aerial circuit comes into resonance it will be found that the dip in the TX plate tuning becomes smaller. This is the usual loading effect upon the TX, and when all adjustments are completed, the TX should be drawing the rated input and efficiently transferring power to the aerial. However, it is likely that the links suggested will need adjustment before all is in order. Excessive coupling, due to too tight link coupling, will be indicated by violent reactions upon the TX plate tuning. If a small adjustment on the aerial tuning causes the minimum dip position on the TX to require excessive retuning then the coupling is too great. This can be remedied by reducing turns on the link coils and by moving them further away from the coils they are coupled to. Coarse adjustments of coupling are made by adding or removing a turn to the link coil, and fine adjustments by altering the distance apart of the link coil to the circuit it is coupled to. It is unlikely that the close coupled 5 turn links suggested as a start will be exactly right, but they will at any rate give a good initial indication on the aerial meter. If on the other hand coupling is not sufficient with the suggested trial link coils, then try a turn or two more or bring them nearer to the coils to which they are coupled. Insufficient coupling is indicated by very little reaction upon the TX plate meter as the aerial is resonated, and a very slight indication on the aerial RF meter.

As deficiencies in coupling at one link coil can be partly compensated at the other link coil, it will not be necessary usually to adjust each end of the link coupling with exact accuracy. Thus after approximately the right link coil and coupling have been found for the TX link coil, all final trimming up can be effected at the aerial link coil end. The condition to aim for is a smooth rise in the TX plate current from the minimum dip position as the aerial circuit is brought to resonance. Only minor readjustments of the TX plate tuning should be required to give the greatest reading on the aerial ammeter, and

slight tuning variations on the aerial tuning meter should not necessitate large amounts of retuning of the TX plate circuit in order to keep everything "on the nose."

Having reached this state of affairs, one can be fairly certain that the RF generated in the TX is being efficiently transferred to the aerial system. If it is being efficiently radiated depends upon the aerial system . . . in particular the efficiency and low resistance of the all important earth return ! So if your present TX is not performing too well upon the TOP band, it is just as well to devote some attention to the earth system, as with Marconi aeriels the earth is the weakest point.

Finally, the aerial coupling circuit of Fig. 5 in which the link coil forms part of the aerial tuning coil may appeal to some as being simpler than the double link system of Fig. 4. There is nothing to choose in efficiency between the two systems when correctly adjusted. However the double link system of Fig. 4 is in principle identical with the setups used on the higher frequencies for coupling almost any aerial system to the TX, so that the experience gained with the two-link system will be useful for aerial systems upon all bands. The Fig. 5 system is, however, limited to Marconi type systems as it stands, so is rather more limited in scope.

#### Clamp Modulation (Contd. from p. 444)

desirable to have the meter in the plate lead only, if its behaviour on modulation is to mean anything.

It has been found that the most satisfactory all-round operating condition is when the normal input to the PA is reduced to about two-thirds of its original value by the introduction of the clamp tube. Then, on modulation, just enough audio should be applied to swing the mean carrier up to the original amplitude. As will be seen from the following figures, the writer "plays safe." The figures are obtained with 7 watts quiescent carrier, feeding the aerial at a low impedance point.

Set up without clamp unit. PA input 30 mA.

Clamp unit in circuit. PA input 14 mA.

On speech peaks. PA input 20 mA.

A most careful search has been made for "whiskers" round the modulated carrier, both in the shack and in the receivers of the local hams. There are none.

Physically, the modulator unit referred to above is built on a chassis 6 in.3  $\times$  in.  $\times$  1 $\frac{1}{2}$  in., and is plugged into the TX chassis by means of a five-way plug and socket, the five wires being HT, PA screen, Earth, and two heater leads. The TX is first set up on full output in the normal way, and the modulator unit is then plugged in if phone operation is required.

Now go ahead and try for yourself, and decide whether "clamp" is a menace or a boon.

# CLUB NEWS

*Club Secretaries are invited to submit notes for this feature by 10th December, for inclusion in next month's issue.*

**Coventry Amateur Radio Society.** Hon. Sec. : Mr. K. Lines, G3FOH, 142 Shorncliffe Road, Coventry.

The Society's night-on-the-air on Top Band has recommenced and takes place the second Thursday of each month at 8 p.m. The 21st Anniversary Dinner will be held at the "Hare and Squirrel" Coventry on February 27th—tickets price 10/6 may be had from the Hon. Sec.

Meetings continue at the Y.W.C.A., Queens Road, commencing at 7.30 p.m. Forthcoming programme is as follows : 22nd December—Children's Party. 27th February—21st Anniversary Dinner.

**Dorking and District Radio Society.** Hon. Sec. : Mr. J. Greenwell, G3AEZ, 7 Sondes Place Drive, Dorking.

Meetings are held every Tuesday, 7.30—10.30 p.m., at the Club HQ, 5 London Road, Dorking. The Society's station G3CZU is undergoing a rebuild, during which time activity is limited to 160 metres. All visitors are cordially invited.

**The TOPS CW Club.** Hon. Sec. : J. Philip Evans, CW8WJ, "Westcroft," Meliden Road, Prestatyn, Flintshire.

The TOPS CW Club, an international club for CW operators, held their second annual "Topfest" at the headquarters of the Chester and District Amateur Radio Society on August 16th. Following tea and a ragchew, members from London, the Midlands, Wales and Merseyside assembled for the formal meeting under the Chairmanship of Bob Burns, G3GLV. After welcoming members to the meeting Mr. Burns expressed the appreciation of members for the hospitality extended by the C.A.D.A.R.S. Introducing his report for the year, Phil Evans, GW8WJ, Secretary, spoke of the continued expansion of the Club (membership stands at over 2,000 in 11 different countries) and of the good support given by members. Club contests had been very successful and call-sign badges would soon be available to members. Before beginning his presidential address Angus Taylor, G8PG, paid tribute to the fine work done by GW8WJ during the past 12 months. He then turned to his subject of "Past and Present Trends in CW Operating Technique." After tracing the changes in CW technique during the past 15 years he mentioned some possible future trends, especially those likely to be produced by the effects of T.V.I., then advocated a much more forceful anti-T.V.I. policy which should be carried out on a national scale. The last speaker of the evening was John Morris, G3ABG, who gave a most interesting account of the work of school radio societies. After describing various societies he outlined the activities of his own group, composed of boys between 8 and 15 years of age, and pointed out the great educational value of inter-school contacts. Many head teachers and education directors were sceptical at the start, but one demonstration was usually enough to make them enthusiastic about the value of amateur radio as an educational activity.

Following a "swindle" and a ragchew the meeting broke up, though an unofficial extension session occupied a large part of the 3.5 Mcs CW band during most of the following morning.

**Purley and District Radio Club.** Hon. Sec. : Mr. A. Frost, G3FTQ, 18 Beechwood Avenue, Thornton Heath, Surrey.

At the last meeting of the Club a very successful Junk Sale was held and a substantial amount was raised for Club Funds. There will be no meeting in December and our next meeting will therefore be on January 22nd 1953. The Annual Dinner and Xmas Party will be held at the Railway Hotel, Purley on February 28th, 1953. Full details will be announced shortly.

**South Shields and District Amateur Radio Club.** Hon. Sec. : W. Dennell, G3ATA, 12 St. Frederick Street, South Shields.

At the annual meeting it was resolved that the club shall be known in future as the "South Shields and District Amateur Radio Club."

A good few new members enrolled and a programme was arranged for the year which includes Lectures, Film Shows and Socials.

Meetings are held every Friday evening at the "Trinity House Social Centre," Laygate, South Shields, commencing 7.30 p.m.

Anyone interested please write or call to Secretary. **Leicester Radio Society.** Hon. Sec. : A. L. Milne-thorpe (G2FMO), 3 Winstor Drive, Thurmaston, Nr. Leicester. Hon. Publicity Officer : C. L. Wright, B.Sc.(Eng.), 36 Woodstock Road, Mowmacre Hill, Leicester.

The first lecture of the coming winter session was given in the Club room at the Holly Bush Hotel, Belgrave Gate, by Mr. H. Turner, A.M.C.T., A.M.I.E.E., of the B.T.H. Co., Ltd., Rugby. Mr. Turner's lecture which was illustrated by lantern slides dealt with "Modern Cinema Sound Reproducing Equipment" and covered such installations as the Odeon Cinema, Leicester Square, London, and the "Telekinema" installation at the Festival Hall.

On Monday, November 3rd, the Society held one of its well-known "Surplus Component Sales" and a "Free and Easy" evening was arranged for November 17th.

"Frequency Modulation" (part two) is the title of the lecture to be given on December 1st by C. L. Wright, B.Sc.(Eng.). This lecture will deal with the reception of FM signals, and will be illustrated with slides.

New members are welcome at any meeting and full details can be had from the Hon. Sec. : A. L. Milne-thorpe (G2FMO), 3 Winstor Drive, Thurmaston, Nr. Leicester.

**Portsmouth and District Radio Society.** Hon. Sec. : Mr. L. V. Shaw, 8 Belmont Street, Southsea, Hants.

The P.D.R.S. meets every week at R.M. Barracks, Eastney, on Tuesday evenings, 7.30 p.m. We have a winter programme almost fully booked now.

**Admiralty Electronics Society.** G3BPU. Hon. Sec. : Mr. W. J. Green, G3FBA, c/o D.E.E. Dept., Admiralty Offices, Foxhill, Bath.

At the October meeting of the Admiralty Electronics Society, held at the Beau Nash Rooms, on Tuesday evening, Messrs. S. W. Ames, B.Sc.(Hons.) and G. C. Johnstone, B.Sc.(Hons.), gave a talk on "The Design of Domestic Radio Receivers" before a very appreciative audience.

The speakers, authors of several articles in *The Wireless World*, are themselves on the staff of the B.B.C., and they demonstrated a receiver of their own design.

Question time brought a barrage of questions on Broadcast and Television Receivers, ranging from the construction of coils, the choice of circuits, and types of valves.

On November 25th, Mr. Shaw of Messrs. General Electric Company, gave a talk and demonstration of High Fidelity Audio Amplification.

**Warrington and District Radio Society.** Hon. Sec. : Neville D. Atkins, G3EXG, 17, Belmont Crescent, Great Sankey, Warrington, Lancs.

Recent meetings have included two lectures "Adventures with a Tape Recorder," by G2YS and "High Fidelity" by a representative of Messrs. Goodmans Ltd., both being greatly appreciated. The Society's Annual Dinner was held at The Fir Grove Hotel, Warrington, on November 21st.

**Edinburgh Amateur Radio Club.** Hon. Sec. : D. B. R. Black, 16, Edina Place, Edinburgh.

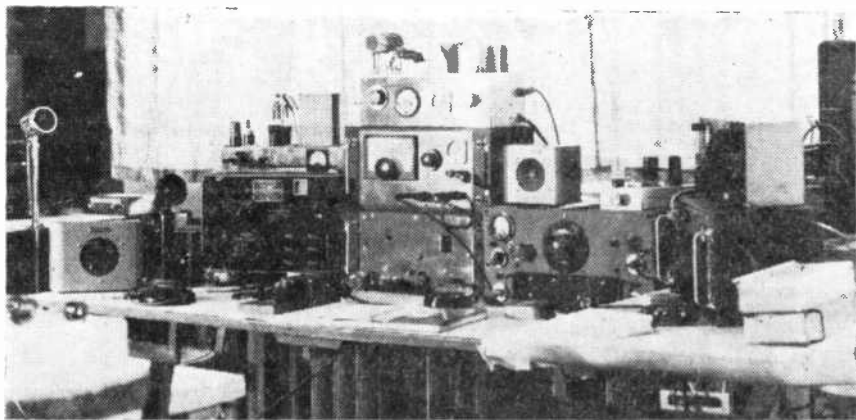
Meetings are held every Wednesday at 7.30 p.m. in Unity House, Hillside Crescent. Classes for the RAE are being held. New members are welcome. Particulars from the Secretary.

**Romford and District Amateur Radio Society.** Hon. Sec. : Douglas L. Coppendale, G3BNI, 9, Morden Road, Chadwell Heath, Romford.

Programme for December:—2nd, Junk Sale. 9th, Mystery Talk by G3BBL. 16th, Electric Circuitry by G3FNL. 23rd, Christmas Talk by G3CRR. 30th, Rag-Chew Evening.

**Derby and District Amateur Radio Society.** Hon. Sec. : F. C. Ward, G2CVV, 5, Uplands Avenue, Little-over, Derby.





*A view of the 160/80 metre station operated by members of the Slade and Midland Amateur Radio Societies at the Sutton Coldfield and North Birmingham Model Engineering Societies' Annual Exhibition.*

The Society has started a new Club activity by producing its magazine during one of the Open Evenings. Duplicating, folding and stapling were carried out by members. Meetings commencing at 7.30 are held regularly on Wednesdays. Permanent installation of the Club transmitter is nearing completion. A programme of events can be obtained from the Hon. Sec. New members and visitors are especially welcome at any of the Society's functions.

Kingston and District Amateur Radio Society. Hon. Sec.: R. S. Babbs, G3GVU, 28, Grove Lane, Kingston-on-Thames.

At the AGM on 22nd October all the officers were re-elected and there was only one change in the Committee. The financial position is good and the Society are trying to purchase a site on which to erect a shack and run a transmitting station.

On December 3rd, there will be a Junk Sale and a Social is planned for Saturday, January 3rd. Morse classes are held every Friday and all meetings take place at Penrhyn House, 5, Penrhyn Road at 7.45 p.m. with an interval for refreshments at 9 p.m. Visitors are always welcome.

West Lancs Radio Society. Hon. Sec.: B. J. Whitty, G3HWX, 46, Argo Road, Waterloo, Liverpool, 22.

The winter programme is now well in hand and includes projected visits to the BBC and GPO with a comprehensive series of lectures already arranged. Six of our present members will shortly be licenced and we also have a couple of very keen YL's on the books. We hope they will become two YL ops within the next twelve months or so. A successful Junk sale was held recently. A lecture on HiFi sound reproduction by Mr. Collings Wells of Goodman's Industries, Ltd., was greatly appreciated.

Morse classes are held weekly and a main lecture once a month. Plans for a grand Christmas party are under way, which it is hoped will include dancing, the usual Christmas games and a recorded Twenty Questions Session. Meetings are at 8 p.m. Tuesdays, at the room over Gordon's Sweet Shop, St. John's Road, Waterloo.

Southeast and District Radio Society. Hon. Sec.: G. Chapman, BEM, 20, Leigh Hill, Leigh-on-Sea, Essex.

Difficulty is still being encountered in regard to a meeting place for the Society, though it is hoped that a room and use of the electrical laboratory in the Municipal College will be made available. The best wishes of the Society are extended to the Chairman, Mr. E. H. Bridges, for a speedy recovery from his recent eye operation. He is at present in Moorfields Eye Hospital, London.

Midland Amateur Radio Society. Hon. Sec.: G. L. C. Smith, G3HDK, 84, Woodlands Road, Birmingham, 11.

The success of the Joint Jubilee Dinner of the M.A.R.S. and Slade Radio Society, held on Saturday, October 25th, was assured when the Guests of Honour were the Lord Mayor and Lady Mayoress of Birmingham, Alderman and Mrs. W. T. Bowen. The Lord Mayor responded to the toast of the City of Birmingham, which was proposed by Mr. E. C. Naylor-Strong. Other notable guests included Mr. H. J. Dunkerley, Regional Controller of the BBC, who responded to the toast of Guests and Visitors.

The Christmas meeting of the M.A.R.S. will include a Mock Auction together with other activities in keeping with the festive season. There will be no lecture at this meeting.

Ravensbourne Amateur Radio Club. G3HEV. Hon. Sec.: W. H. J. Wilshaw, 4, Station Road, Bromley, Kent.

This Club, which is associated with the Downham Men's Evening Institute, meets every Wednesday evening at 8 to 10 p.m. The Club transmitter G3HEV is in operation occasionally. Members are building their own gear and a prize is being presented to the best exhibit of home constructed gear at the Club's exhibition next March. They also hope to enter into M.C.C. and N.F.D. contests. Various visits to firms and places of interest are being arranged. A Basic Radio and TV Theory course is being run together with Morse instruction. This year's Chairman is G2DHV and Hon. Sec. is W. H. J. Wilshaw. Committee includes BSWL3982, 801. BR518532 and ISWL G2314. Two "QRP" Research Society members are also on the Committee. New members are always welcomed especially SWL's and beginners.

British Two Call Club. Hon. Sec.: G. V. Haylock, G2DHV, 63, Lewisham Hill, London, S.E.13.

The six call section of the Club now consists of GM3AFG, G5KW, GW3BUX, G8DK, G2DC, G3AQZ and G8SC. Membership is now 104 in many areas and countries. No applications so far have been received from members for WTC/WCTC certificates. Four members have been awarded the Club's diploma of service and the membership of the Club includes many famous ex-overseas callsigns. If you have two callsigns in two countries then apply for application forms from the Hon. Sec. Annual sub. 2/6 including "QTC" Newsletter.

*(Contd. on p. 468)*

FROM OUR MAILBAG

The Editor,  
*Radio Amateur.*

Sir,  
I have been very interested in some of the articles that have appeared in *Radio Amateur* of late. Such things as the "Selectoject," "Economy RF Line-up," "S-9'er" and a little thing by Govier under the heading "A Useful Operating Aid." This latter I built and was quite surprised at the results for so simple a unit. With QRN like we get here it is extremely useful and is much superior to such surplus filters as the FL8A which I also have.

You and your readers may be interested to know that last month on several occasions while on night watch and not being very busy, I heard quite a few "G's" on 3.5 Mcs around 2100 GMT, though the QRN was terrific and I couldn't read them 100%. Still one mentioned that he was using 10 watts and two more said they were running about 25 watts, so they were doing pretty well to be heard here. Not very likely that they would find any VS7 amateurs active at that time though as it is 3 a.m. here!

I should like to hear of someone who has added a Selectoject to a TRF Rx and to know whether they obtained selectivity equal to a superhet. I intend to build a TRF with the line-up "Tuned RF stage, untuned RF stage, regenerative pentode detector, feeding into a Selectoject when I get the time and I don't see why sensitivity and selectivity shouldn't be equal to a superhet." Will be interesting to see, anyway.

Wishing your very excellent magazine continued success.

73 ES GUD DX.  
A. A. Edmonds.  
H.M. W/T Stn. Anderson,  
P.O. Box 985,  
Colombo, Ceylon.

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**Club Notes (Contd. from p. 467)**

**Willesden Radio Club.** G3BFZ. Hon. Sec.: M. W. Newell, 51, Dudden Hill Lane, Willesden, N.W.10.

The Club meets at 51, Dudden Hill Lane every Wednesday from 8 to 10 p.m. A welcome is extended to anyone interested. Proposed list of lectures for December is as follows: 3rd, Basic Receivers by G3GZW. 10th, Advanced Receivers, also by G3GZW. 17th, Valves and their use. 31st, Oscillators.

**Pontefract Area Transmitting Group.** T. R. W. Farrar, G3ESP, Stanton, Hemsworth Road, Ackworth, Pontefract, Yorks.

Morse practice transmissions have been started. These are given each Sunday at 1030 hrs, on 1990 kcs and are taken in turn by G3HNC, G3US, G3ID1, G3HCX and G3CYS. It is known that there are a lot of listeners in the neighbourhood to these transmissions and it is hoped they will soon qualify as transmitting radio amateurs.

**East Surrey Radio Club.** Hon. Sec.: L. Knight, "Radiohme," Madeira Walk, Reigate, Surrey.

Owing to the Council requiring the use of the existing Club room, for other purposes, it has been necessary to find other premises. We are fortunate in securing a permanent QTH at the Ex-Service Men's Club, British Legion HQ, Redhill, where the Club will meet from November 6th. New members will be most welcome.

**Slade Radio Society.** Church House, High St., Erdington, Birmingham, 23. The Silver Jubilee Dinner on October 25th, held at the Imperial Hotel, Birmingham, was the climax of the Jubilee Celebrations. It was combined with the Midland Amateur Radio Society who were celebrating their 21st birthday this year. The Lord Mayor of Birmingham and the Lady Mayoress were present. Other distinguished guests were Mr. F. J. Charman, B.E.M., G6CJ and Mr. Clarricoate, G6CL. After the dinner, the Lord Mayor presented trophies to both Societies.

On December 19th, there will be a social evening at the Church House, Erdington. Visitors will be very welcome. Further details from the Hon. Sec., Mr. C. N. Smart, 110 Woolmore Road, Erdington.

**BACK NUMBERS**

Back numbers containing the following constructional articles are available at 1s. 6d. per copy, from A.S.W.P., 57 Maida Vale, W.9.

**The Selectoject**, by Evert Kaleveld, PA0XE. January, 1952.

**Some Ideas on Power Supplies**, by J. N. Walker, G5JU. February, 1952.

**A High Sensitivity Preamplifier**, by J. H. Evans. February and March, 1952.

**Crystal Converter for 145 Mcs**, by F. W. Hattermore. March, 1952.

**Notes on the Design of a VFO**, by J. N. Walker. March and April, 1952.

**Matching the Aerial to the Receiver**, by J. N. Walker. May, 1952.

**End-Fire Radiation**, by F. C. Judd, G2BCX. June, 1952.

**A Simple Receiver Tester**, by J. H. Evans. June, 1952.

**A VHF Grid Dip Meter**, by J. G. Taylor. July, 1952.

**The "S-9'er"** by Evert Kaleveld, PA0XE. August, 1952.

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**FOR SALE.** Qualtape Magnetic Recorder Desk, fitted in case, with Tamsa high impedance record/playback head and reel tape, £10. Vidor Personal Portable receiver, £10. Rotary converter, 12 v 10 a. in.; 450 v, 50 Ma, 250 v, 150 Ma out., £1. Black crackle metal cabinet 19 in. long, 10 in. back to front, 11 in. deep, with lift up lid. Ideal for table top Tx., £2. "East Keal," Romney Road, Oulton Broad, Suffolk.

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**FOR SALE.** Eddystone Model 680, 15 valves, new condition. Today's price £106, will sell for £55, bargain. Heaveysege, 45 Broadway Avenue, Wallasey, Cheshire. Phone 6780.

**WANTED.** Radio Constructor all to Vol. 3 No. 7. Vol. 3—Nos. 9, 12. Vol. 4—Nos. 1, 3, 4. Littlewood, 129, Standhill Road, Nottingham.

**FOR SALE.** Set of four Lagbear PA Coils, 150 watt, 10-80 metres, complete with split stator condenser and swinging links. Offers. Box B219.

**FOR SALE.** R1155 receiver, in excellent condition, recently realigned, complete with power pack £8 or offer, also No. 18 receiver, good condition, 15/-, Model Diesel engine 15/-. C. Boucher, Delce Grange, Rochester, Kent.

**FOR SALE.** Class C Wavemeter in good condition, original price 18/- unmodified. Also 1154B Tx, new valves, £3, write F. Smallwood, 7 Reservoir Road, Southgate, London, N.14.

**WANTED.** Instruction book or blue print for Telefunken 10 valve Kriegsmarine SW Receiver, Type E5175 1/38. Any "gen" on this set appreciated. Naylor, The Bungalow, Dudley Street, Morecambe, Lancs.

**WANTED URGENTLY.** R107 receiver in good condition. Box No. B217.

**WANTED.** O-V-1 receiver, must cover 20 metres. ISWL/G5201, 5 Burn's Street, Nelson, Lancs.

**WANTED.** Three valve battery short wave receiver for invalid, complete with plug in coils if possible. D. Wright, 358 Worting Road, Basingstoke, Hants.

**FOR SALE.** Ham giving up. Transmitter for sale consisting of 6L6-807 R.F. Unit, three stage amplifier-modulator, 500v, 350v, 250v power packs. With valves, £20 the lot. Matthews, 14 Emmanuel Road, Sutton Coldfield, Warwks.

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**"GLOBE-KING"** (Regd.) Miniature Single Valve Receiver gets real DX—Amateur Radio enthusiasts should send for free copy of interesting literature and catalogue (enclose stamp for postage). Write to makers: Johnson (Radio), 46 Friar Street, Worcester.

**BOOKBINDING.** Volumes of Radio Constructor and Radio Amateur fully bound, imitation leather, gold lettering. 7s. 6d. post free. Prices for other publications on application. Jerome Alcock, CHEADLE, Stoke-on-Trent.

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**VIEWMASTER,** exact specified parts at list price by return of post, also Valves and CRT's, stamp for list. James H. Martin and Co., Dept. R.A., BCM/EDHWA, London, W.C.1.

**BLUEPRINTS.** High Gain 10 Metre Converter, with a de-luxe circuit comprising EF91 RF stage, ECC91 double triode mixer and oscillator, EF92 IF amplifier, with stabilised voltage supply via a 7475. 1s. 8d. post free with full instructions.

**REPRINT.** Converting the TR1196 Receiver. Full details on converting this unit, which may be purchased quite cheaply, into a very sensitive all-wave receiver. 6d. post free. All the above from A.S.W.P., 57 Maida Vale, London, W.9.

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