

# The SHORT WAVE Magazine

VOL. XVIII

JULY, 1960

*Lively*

NUMBER 5

WORLD WIDE COMMUNICATION

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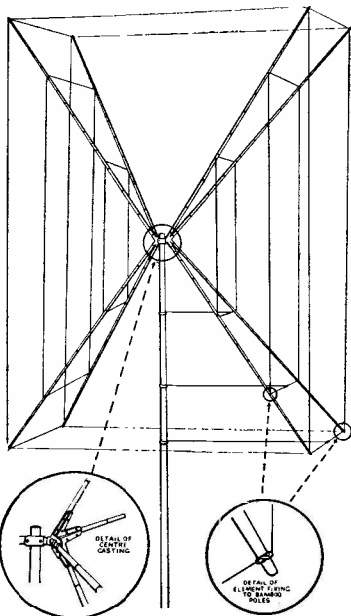
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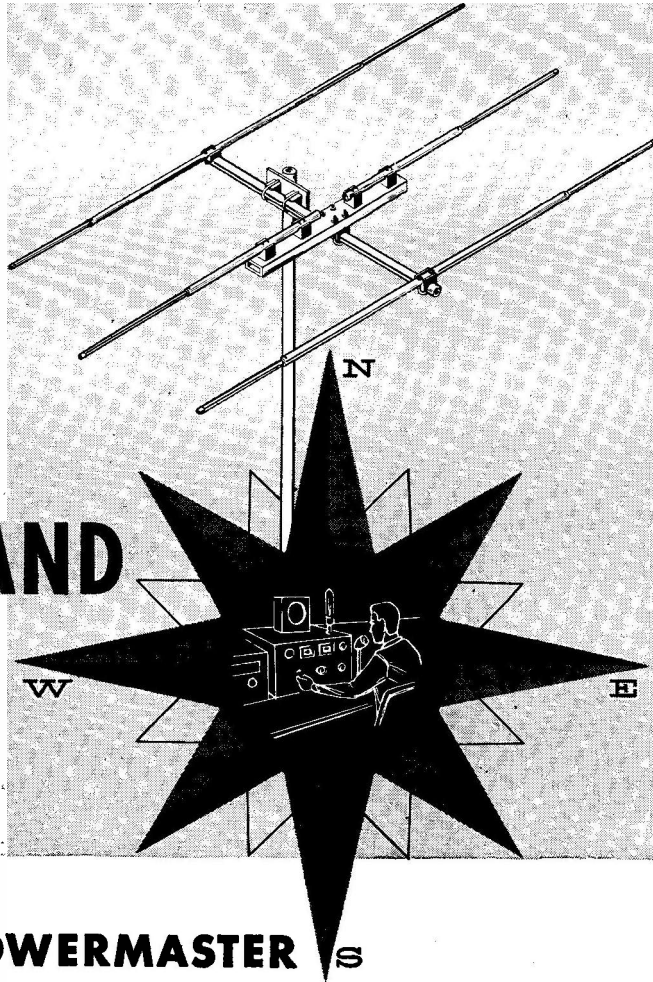
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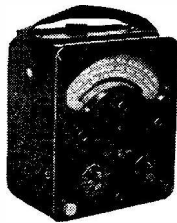
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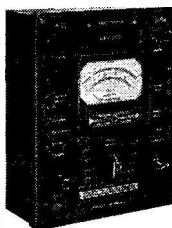
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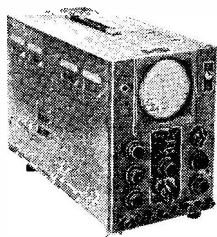


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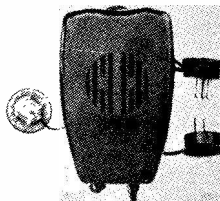


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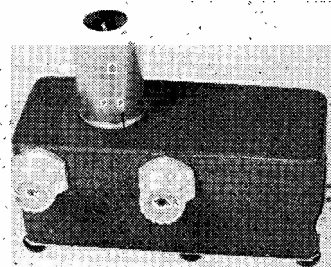
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**INDEX TO  
ADVERTISERS**

	PAGE
Anglin ... ..	279
Avo, Ltd. ... ..	279
B.I.E.T. ... ..	230
Brookes Crystals ... ..	227
Candler System ... ..	277
Dale Electronics ... ..	275
Daystrom, Ltd. ... ..	<i>cover iv</i>
Dependable Relay Co., Ltd.	230
Forth Motor Co. ... ..	280
G3HSC ... ..	280
G.W.M. Radio ... ..	275
Harris, P. ... ..	278
Home Radio ... ..	278
James Scott & Co., Ltd. ...	228
K.W. Electronics ... ..	276
Labgear ... ..	<i>cover ii</i>
Minimitter ... ..	227
Mosley Electronics ... ..	225
Multicore ... ..	276
Norman Birkett, Ltd. ...	276
Peter Seymour ... ..	277
Samson's ... ..	275
Small Advertisements	277-280
Smith & Co. (Radio), Ltd.	227
Southern Radio ... ..	<i>cover iii</i>
Southern Radio & Elec. ...	280
S.W.M. Publications ... ..	226
Tiger Radio, Ltd. ... ..	<i>cover iii</i>
Whitaker ... ..	<i>cover ii</i>
Young ... ..	<i>cover iii</i>

# SHORT WAVE MAGAZINE

Vol. XVIII

JULY, 1960

No. 201

**CONTENTS**

	Page
<b>Editorial</b> ... ..	231
<b>Three-Watt Transistor Transmitter</b> , by C. Hubbard (G3CSZ) ... ..	232
<b>Use of Silicon Rectifiers</b> , by S. E. Janes (G2FWA) ... ..	235
<b>A Magic-Eye GDO</b> , by D. Pratt (G3KEP) and D. Noble (G3MAW) ...	237
<b>Another DX-40U Modification</b> , by J. M. Hern (G3NAC) ... ..	239
<b>More Power for the Panda Cub</b> , by C. R. Plant (G5CP) ... ..	241
<b>DX Commentary</b> , by L. H. Thomas, M.B.E. (G6QB) ... ..	245
<b>More Watts at Less Cost</b> , by A. D. Taylor (GW8PG) ... ..	253
<b>SWL</b> ... ..	255
<b>VHF Bands</b> , by A. J. Devon ... ..	261
<b>Cascode Converter for Two Metres</b> , by J. Juleff ... ..	266
<b>The Mobile Scene</b> ... ..	268
<b>New QTH's</b> ... ..	270
<b>The Other Man's Station</b> — G3NPB ... ..	271
<b>The Month with the Clubs</b> — <i>From Reports</i> ... ..	272

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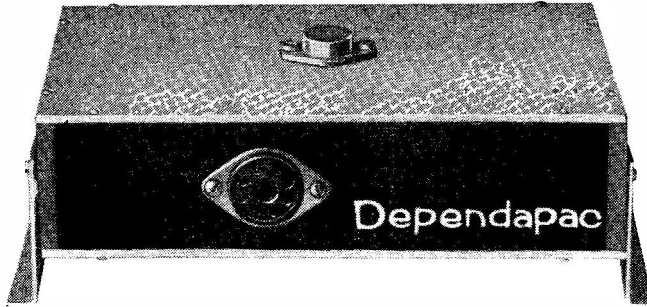
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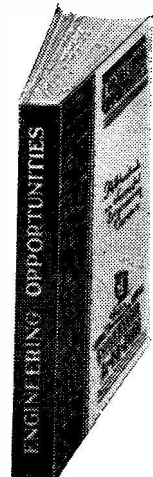
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## E D I T O R I A L

**807** *Given that the intention and the chief purpose of the radio amateur is to get into communication with his fellows — either across the town or over the ocean — it does not really much matter how the RF is actually generated, so long as he has a good aerial system and an effective receiver. A superlatively good RF generator, or transmitter, is of little practical use without an aerial capable of radiating at the maximum effectiveness the site conditions allow, while without a reasonable receiver the AT station operator is at a disadvantage under present-day conditions on the amateur bands. A small amount of RF into a good aerial system will go very much further than a high-power transmitter with an inefficient aerial.*

*Which brings us back to the transmitter. Given the aerial and the receiver and disregarding for the moment the more advanced techniques and the use of high power, in looking at this matter of getting the RF, immediately we are confronted with the 807 — used for years at AT stations throughout the world because it is at once the cheapest while being one of the most versatile and efficient valves of its rating yet produced. It is still a standard fit in much commercial and Service communications equipment and is therefore in manufacturers' current lists. So far as the AT station is concerned, the 807 will function in all RF stages of the transmitter, and in drive and output positions in the modulator; it will work well at any input from 5 to 50 watts, and it can also be pressed into service as a half-wave HV rectifier. In fact, at its price on the amateur market, it is difficult to find anything to bracket with the 807 when one starts to add up all that it can do. Of course, there are other valves that go higher in frequency, or give more output for less drive, or are rated more favourably, or are smaller in size — but none of these can compete for price.*

*Since it is of no material importance how or using what valves we generate our RF so long as it is under control, the question could now be: Can we at long last dispense with the ubiquitous 807? — Well, can we?*

*Austin Fobyl  
G6FO.*



# Three-Watt Transistor Transmitter

USING THE OC24  
ON TOP BAND

C. HUBBARD (G3CSZ)

*Our contributor has been doing practical work with transistor transmitters ever since the original articles on the subject, by G3HMO, appeared in SHORT WAVE MAGAZINE more than six years ago. Until recently, the author has had to be content with inputs in the milliwatt range. With the advent of the Mullard OC24 HF power transistor, he is able to radiate a much more effective signal on Top Band, using the circuit discussed in this article.—Editor.*

**A**FTER several years of using very low power home-made transistors (sometimes five in parallel!) in various experimental transistor transmitters on the 1.8-2.8 mc bands, the Mullard OC24 germanium alloy HF power transistor fulfilled several ambitions for the writer—who was never purely “QRP minded.” This transistor has a frequency cut-off of 2.5 mc, which for Top Band RF purposes limits its usefulness to earthed base circuits. The manufacturer, who willingly supplied provisional data (principally earthed emitter circuitry) was unable to give any assistance for its earthed base use at Top Band frequencies. The OC24 at least points the way to future completely transistorised /M and /P transmitters, as inputs up to 3 watts or so can be obtained.

Knowing the interest in TTx that has long existed in amateur circles, the circuit and notes herewith are offered solely as experimental experience of the writer's own with his one and only OC24 tested.

## Circuit Requirements

With the *alpha* cut-off (and price factor) in mind something in the nature of a “one-man band” was indicated for 1.8-1.9 mc, *i.e.*, a single-stage earthed-base crystal oscillator transmitter. This type of circuit, which depends largely for its efficiency on accurate matching by tapping points—a very tedious process—proved worthwhile.

The main difference between the present circuit and the earlier types suggested by G3HMO (*see* SHORT WAVE MAGAZINE, March, 1954) is in the provision of a tuned emitter coil, L1, in addition to a tapped collector coil, L2. This is necessitated by the extremely low impedances of the OC24. At these low levels the crystal functioned very sluggishly, if at all, but the use of the emitter coil, L1, allowed the series crystal feedback impedance level to be raised above the collector impedance level. Then, the crystal worked quite normally, at the cost of an extra tuning control and tapping point, provided the emitter was not tapped down too low on the emitter coil. If this was done the crystal lost control and a fairly stable “TGTP” type of oscillation occurred. (A noted VFO possibility here.)

## Heat Sink

For a heat sink a handy piece of 16-gauge aluminium, 13 ins. by 7 ins., was pressed into service, although 7 ins. by 7 ins. would have been adequate. This aluminium sheet was mechanically and electrically isolated from the rest of the circuit, as the directly mounted OC24 casing is connected to the collector for heat dissipation reasons.

In accordance with the manufacturer's data, the recommended care was taken to leave no burrs on the mounting holes after drilling and the connecting surfaces were lightly smeared with grease. No other special precautions were taken beyond keeping the heat sink away from direct sources of heat.

## RF Chokes

The usual four section, pie-wound RF chokes had to be of less than 10 ohms total DC resistance in order to minimise voltage drop, while also being suitable for the current.

No form of collector current limiting was used—but the fact remembered when making adjustments. A ¼-amp. fuse in the collector supply is adequate in case of thermal runaway, and should be provided.

Both emitter and collector circuits are metered with (shunted) ¼-amp. m/c meters, and the RF output side includes the usual ½-amp. RF thermo ammeter.

As a key filter, the 150  $\mu$ F condenser, C1, though not strictly necessary, “evens out” the radiated make-and-break characteristic by removing a slight hardness from the “break” and adding it to the “make,” which was very slightly soft. The effect is of clean, sharp keying.

**Coils**

The collector coil, L2, is 39 turns (about 1/2 lb.) of 16g. enamelled wire wound on a 4-in. diameter former over a length of 4 1/2 inches. With the improved loading more turns have had to be shorted out.

The emitter coil consists of 36 turns of 18g. on a 2 3/4-in. former over a length of 3 inches.

**Battery Precautions**

The OC24's DC Vce absolute limit is -24 volts, i.e., the collector plus emitter voltages. Precautions were taken to prevent the unloaded collector voltage exceeding -20/21 volts, leaving a 1 1/2-volt safety margin, so that no damage resulted when the circuit ceased to oscillate during loading experiments or the emitter current was reduced or keyed. As no additional RF was gained by using higher emitter voltages, the emitter was kept at +1 1/2 volts, which allowed the collector voltage to be raised to the -20/21 volts level, extra attention being paid to the reverse emitter voltage under key down conditions.

**Matching**

Starting with unknown quantities and arriving at the optimum matching tapping points on the coils took some time as six variables are involved. The internal emitter resistance is dependent on the emitter current and is given as 25 ohms ÷ Ie in mA. The matching point for the emitter coil was found to be 45 ohms and for the collector on the collector coil,

180 ohms.

**Tuning**

The TTx is tuned up using a field strength indicator as this is considerably more sensitive than the reading given on the RF ammeter. Once the matching points are established the set-up becomes simply a matter of tuning the emitter and collector coils and the ATU, L3, in the usual way for maximum FS reading, and readjusting the feedback/phasing condenser, C4, to produce just on maximum FS reading.

**Flexibility**

The circuit as shown in the diagram with the tapping points given in the coil table is now so docile that a crystal 20 kc off the optimum frequency may be substituted and the transmitter will oscillate without retrimming the controls. The circuit oscillates quite normally

**Table of Values**

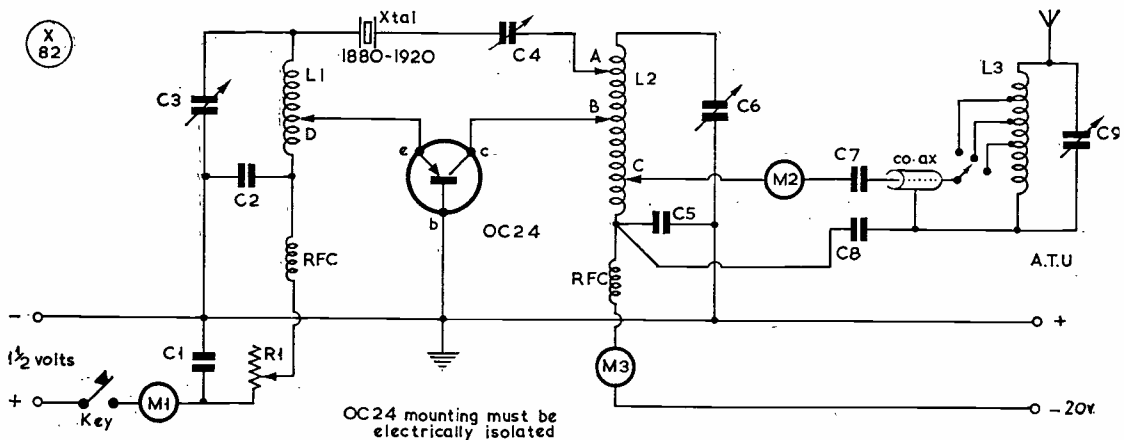
Circuit of the OC24 Top Band TTx

C1 = 150 μF	R1 = 500 ohms,
C2, C5, C7, C8 = .01 μF	w/wound
C3 = 500 μμF	M1, M3 = 0-250 mA m/c
C4 = 100 μμF	M2 = 1/2-amp RF meter
C6 = 250 μμF	RFC = 2.5 mH low DC
C9, L3 = ATU circuit	resistance (9 ohms)

**COIL TABLE**

- L1 = 36 turns 18g. enamelled on 2 1/2-in. diameter former, over 3-in. winding length, tap D at 12 turns from C2 end.
- L2 = 39 turns 16g. enamelled on 4-in. diameter former, over 4 1/2-in. winding length. Tap A at 18 turns, tap B at 12 turns and tap C at 6 turns from C5 end.

Note: Tap positions are critical and may require adjustment with different transistors.



Circuit of the 160-metre transistor transmitter now being used by G3CSZ, who has been on Top Band TTx for several years. With the Mullard OC24 transistor, a bigger input is possible, with more effective RF output. In this circuit, developed by G3CSZ and fully described in the text, the adjustment of the tap points A, B, C, D, is very important. Once these are found correctly, the oscillator is quite docile and sure-fire, and will go off with any active crystal within about 20 kc of the set frequency. The tapping points given in the table can be taken as the starting values for any other transistorised CO for 160 metres built from this design.

down to emitter/collector currents of about 3 mA. First tests were made at this level and the input increased step by step as experience was gained and the circuit efficiency increased. First air tests were made locally at an input of one watt with G3AKW, who supplied most helpful reports. With the circuit operating normally the collector current is approximately equal to the emitter current.

### Aerial Tuning Unit

Due to the low circuit impedances involved the output is taken *via* coax to the main transmitter ATU. This also permits adjustments to the ATU tuning to off-set (weather) impedance changes in the aerial (which at G3CSZ is still a very much bent-and-twisted half wave).

### Reverse Emitter Voltage

As the emitter current is increased, so the emitter voltage drops and reverses polarity, consequently care must be taken with the polarity of electrolytics in the emitter circuit. The reverse emitter voltage limit of -12 volts DC must not be exceeded. Up-to-date it has

not been more than -1 volt.

### Results

At an input of  $2\frac{1}{2}$  or 3 watts, depending on the condition of the battery of U2 cells, *i.e.*, -17½/19 volts under load at 145/165 mA, the efficiency is estimated to be 50% for a measured 35% overall efficiency.\* Stations have expressed surprise, particularly locals, at the strength of the signal.

Reports and calculations show the TTx signal to be not more than one S-point down on the main 9/10 watt phone valve transmitter (overall PA efficiency 43%), the note to be good with the odd T9x report, the keying good and free from clicks. Tests have shown that the circuit keys normally at 35 w.p.m. and is stable in every respect.

In fact, it looks too good to be true—so, if you “have a go”—take it gently!


\* At this stage individual transistors are still likely to differ in efficiency and characteristics due to production spread, but at even half the attained efficiency a very useful signal should be radiated.

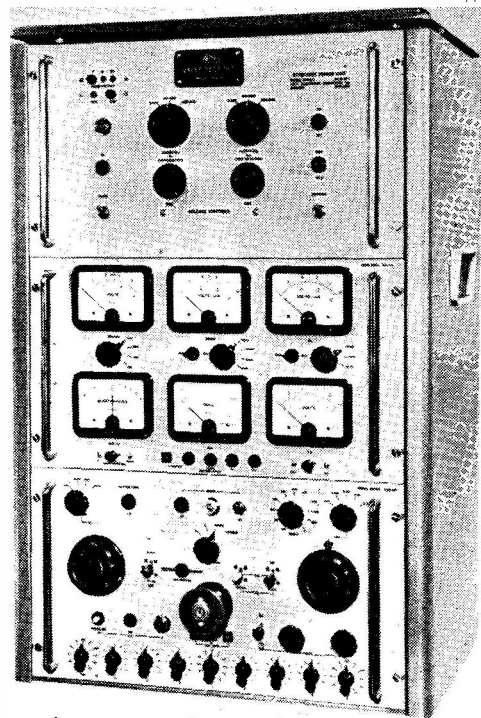
### VISIT TO AMERICA

Richard Thurlow, G3WW, of Wimblington, Cambs., who is Clerk of the Peace for Ely and an Under-Sheriff for the counties of Cambridge and Huntingdon, will with his wife be a member of the large legal party from the U.K. visiting the States during August 29 to September 2, as guests of the American Bar Association. This will be by way of reciprocation for the American visit over here, and the U.K. representatives will include, as well as many barristers and solicitors, the Lord Chancellor, the Master of the Rolls, and several Judges of the High Court. While in Washington, G3WW and Mrs. Thurlow will stay with W3FMC, himself at attorney. As a keen Sideband operator on the DX bands, G3WW hopes to meet many of the Sideband fraternity in New York and New Jersey while staying with their married daughter after the Washington visit.

### THE “NEW QTH” PAGE

Readers are reminded that, immediately on the issue of a new licence, or a change of address, they should send in a slip for our regular “New QTH” page — this also ensures the quickest possible appearance in the *Radio Amateur Call Book*.

This more than usually elaborate Valve Test Set is a general purpose tester produced by APT Electronic Instruments, Ltd., and designed for the high order of accuracy required to test valves to British and American Service specifications. An interesting feature is an AC bridge which enables direct readings of mutual conductance to be taken. 



# Use of Silicon Rectifiers

## TRANSISTORISED DC CONVERTER APPLICATION

S. E. JANES (G2FWA)

The use of Silicon Diode Rectifiers has, until recently, been considered a luxury so far as U.K. amateurs are concerned. Hitherto, any thought of our use of them has not survived the delivery delay or the price. Silicon diodes are very small, they have little voltage drop (about one volt) and owing to the exceptionally high efficiency of the type mentioned in these notes, require no heat sink to dissipate wasted energy. Furthermore, no filament transformer is required.

Fortunately for the radio amateur there is now a use for these devices in the automobile electrical accessories industry. One large company, Joseph Lucas, Ltd., has directed attention to this new field. Apparently, there is now a future for AC generators and rectifiers instead of the conventional dynamo as the source for DC in car electrical systems.

The particular diodes which have a number of Amateur Radio applications are in the DD000-006 series produced by this company, and priced in the range DD000 3s. 7d. to DD006 7s. 10d. They are all capable of a mean forward

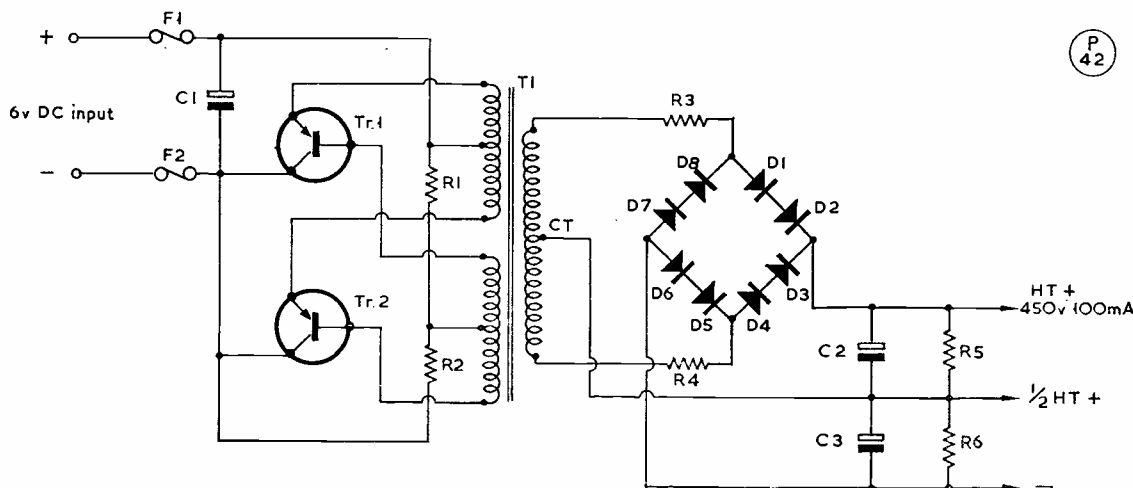
current of 250 mA but with different peak inverse voltage ratings. The most suitable version for general use is the DD006 which has the highest p.i.v. (400 volts) and costs 7s. 10d. The diagram shows two in series in each arm of the bridge rectifier. This gives a p.i.v. of 800v. which keeps well within the safety limits of the 450 volts DC output. (P.i.v. is the potential which appears across the rectifying device at the peak of the non-conducting cycle. This is 1.4 times the voltage indicated by your AC meter, which reads the r.m.s. value.)

The photograph shows a 6-volt transistorised DC converter using eight of these silicon diodes and capable of producing 450 volts at 100 mA, continuous rating. In order to limit dangerous surges a 33-ohm resistor has been wired in series with each end of the secondary winding.

The use of silicon diode rectifiers need not be restricted to small mobile installations. They can be substituted for any valve rectifier, the connector coloured red, or marked "+" or "cathode," corresponding to the filament or heater connection. If your receiver mains transformer goes u/s it is possible to replace it with a smaller version suitable for use with silicon

Table of Values

Transistor Power Pack with Silicon Rectifiers	
C1 = 500 $\mu$ F, 12v.	D1-D8 = Silicon rectifiers, Lucas type DD006
C2, C3 = 8 $\mu$ F, 450v.	T1 = Toroid transformer
R1 = 2 ohms, 5w.	Tr1, Tr2 = Power transistors
R2 = 100 ohms, 2w.	F1, F2 = Fuses, 35A
R3, R4 = 33 ohms, 1w.	
R5, R6 = 220,000 ohms, 1w.	

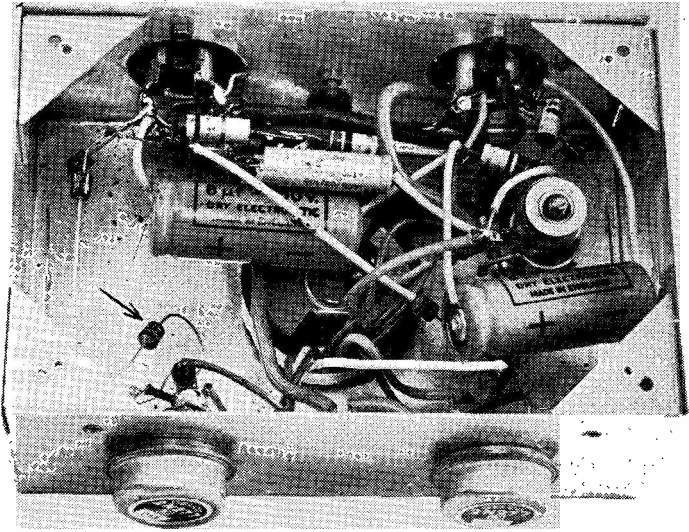


P 42

The transistorised DC-to-DC converter used by G2FWA for HT supply. Suitable silicon diodes, under the Lucas brand name in their DD000-DD006 series, are quite cheap and readily available, rated for peak inverse voltages up to 400v., as used in the design shown here. This particular HT unit gives 45 watts output, and the rectifier circuit would be suitable as the secondary side for the transistorised DC converter described in the May issue of "Short Wave Magazine."

diodes (*i.e.*, without rectifier heater winding) thus giving the possibility of more years of trouble-free service. At the same time a separate heater transformer for the remaining valves could be installed, to make the power supply more efficient.

*(Editorial Note:* The silicon rectifiers mentioned in this article are obtainable from G. Bradley, Ltd., Electral House, Neasden Lane, London, N.W.10. Circuitry for the primary side of the transistorised DC converter can be as given on p.125 of the May issue of SHORT WAVE MAGAZINE. Toroidal wound transformers suitable for these circuits can be obtained from Transipack, 29 Burnt Ash Hill, London, S.E.12. American products in this category, *i.e.* power transistors, toroid transformers and silicon rectifiers, are available through Dale Electronics, Ltd., 109 Jermyn Street, London, S.W.1.)



Showing under-chassis construction of the DC-to-DC converter built by G2FWA. One of the Lucas DD006 silicon rectifiers is arrowed; they cost 7s. 10d. each and are rated at 400v. p.i.v. In this application, one of the advantages of silicon rectifiers is that no LT supply is required and, of course, they last virtually for ever if not overloaded. The switching, or oscillating, transistors for the primary side (American type 2N277 in this particular case) are in the foreground, mounted on the chassis drop.

### LABGEAR E.5050 THREE-BAND QUAD AERIAL KIT

The acknowledged efficiency of the Quad aerial and the growing popularity of the compromise 3 Band beam aerial were the main reasons for the introduction of the Labgear E.5050 Three-Band Quad aerial kit.

When assembled in accordance with the detailed instructions supplied, the beam consists of three separate Quad aerials for 14, 21 and 28 mc, mounted concentrically on one assembly. The fact that the sections are thus mounted has been taken into account when computing the element lengths, so that no tuning is required after assembly. By virtue of the special alloy castings employed, the bamboo supports are splayed outwards from the 12 inch long boom; thus, the driven elements are correctly spaced from their respective reflectors, so ensuring maximum electrical performance. It is intended that each Quad shall be fed with a separate 75 ohm co-axial cable (not supplied with the kit) and by so doing the losses and mismatch occurring when all three aerials are fed with one feeder, are overcome. It will be seen, therefore, that on each band one will have the equivalent of a Quad aerial-with-reflector operating with not less than 9 dB forward gain and 30 dB minimum front-to-back ratio on each band. The standing-wave ratio is less than 2 : 1 over the amateur bands in question.

With the use of U-bolts and non-corroding alloy castings, a mechanically sound array may be built. The whole assembles up into a cube about 17 feet

each side and is held in cubical formation by means of the nylon cord supplied for bracing the tips of the 15 feet bamboo poles. A mast head fitting is supplied to accommodate up to 2-inch diameter masts and a locating pin ensures that the whole array cannot twist on the mast. The price of the kit with instructions, but less feeder, is £17, and the general mechanical layout is as illustrated in the Labgear advertisement on p.174 of the June issue of SHORT WAVE MAGAZINE.

The need to make the most of propagation conditions on the HF bands, while improving gain and directivity and reducing interference from unwanted directions, all combine to make the use of beam systems very desirable on the DX bands.

### INTERESTING CATALOGUE ISSUE

For the price of 9d., credited on the first order given, you can get an excellent and most useful catalogue, which is also interesting reading, covering all the requirements of the radio amateur constructor. It is a 48-page illustrated price list, and this issue introduces a new form of construction for radio equipment, called "Radstrip," with which a useful range of kits is offered, of special interest to the beginner. The catalogue is Issue No. 12 by Southern Radio & Electrical Supplies, Sorad Works, Redlynch, near Salisbury. This firm, of which the principal is G2ACC, has built up over the years a solid reputation for a prompt and efficient mail-order service in radio and electrical apparatus.



# A Magic-Eye GDO

NEAT TEST INSTRUMENT  
GIVING VISUAL DISPLAY

D. PRATT (G3KEP) & D. NOBLE (G3MAW)

If an AC voltage is applied to the deflector electrode of a "magic-eye" tuning indicator, the edges of the trace will appear fuzzy. In several of the older types of tuning indicator, the deflector electrode is connected internally to the triode DC amplifier anode, thus making the triode section unsuitable for AC circuits. The recent introduction of tuning indicators with separate deflector electrode connection has made possible the use of the triode section in amplifier or oscillator circuits without causing any detrimental effect to the indicator display.

A practical circuit employing this principle is a Grid Dip Oscillator using one of these valves alone as both oscillator and "meter." By experiment, it has been found that the Mullard EM84 will oscillate quite readily up to Band I frequencies with a suitable L/C ratio, but this may be subject to variation between individual specimens. (The manufacturers will not give any working conditions for the EM84 triode section in such applications.)

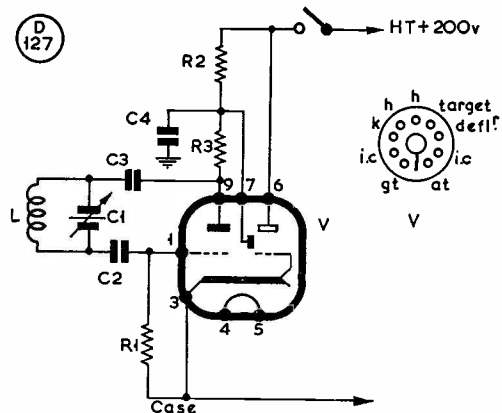
The circuit design consists of a Colpitts oscillator, thus eliminating the need for a tapped or double-winding coil. The triode anode is connected through a suitable load impedance to the deflector electrode. An RF choke can be used as the anode load, but a 22,000-ohm resistor was found to suffice. The deflector electrode is suitably decoupled and fed through the usual DC anode load resistor of 1 megohm; the cathode is connected direct to chassis, and the target to the HT rail. A high value of grid leak is used not only to avoid the loss of RF voltage applied, but also so that the variation of grid current will cause as large as possible a variation of grid voltage. Thus, the mean triode anode current will change, so causing the deflector volts to vary, and hence the shadow length.

The prototype was constructed in a case that was, perhaps, larger than necessary. The size



General view of the Grid Dip Oscillator described in the article. The dial is calibrated for the ranges covered, and the coil in use plugs in at the top of the box. The magic-eye looks out from beneath the dial.

of case was mainly dictated by the size of tuning condenser available; this was a (fairly small) normal broadcast 2-gang 500  $\mu\mu\text{F}$  per section stripped to one-fifth the number of plates. By using a smaller condenser, however, the size of the unit can be reduced considerably. The coils were wound on Denco octal-based plug-in formers without cores. Suggested winding data for ranges up to 13 mc



Circuit of the magic-eye GDO described by G3KEP/G3MAW. The values for L are given in the table. C1 is 100+100  $\mu\mu\text{F}$  connected series-gap; C2, C3 are 82  $\mu\mu\text{F}$ ; C4 is .002  $\mu\text{F}$ ; R1, R2 are 1 megohm each; R3 is 22,000 ohms; and the valve is an EM84, which has the deflector connection brought out separately.

### COIL DATA

Coil One: 1800-4900 kc approx., 160 turns No. 39 enam. close-spaced on  $\frac{1}{2}$ -in. dia. former.

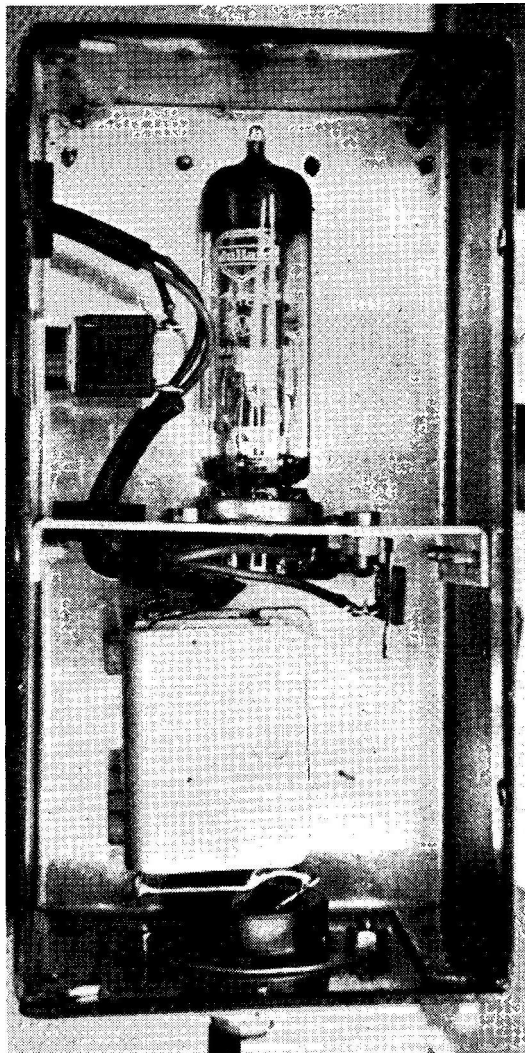
Coil Two: 4800-13000 kc approx., 55 turns No. 29 enam. close-spaced on  $\frac{1}{2}$ -in. dia. former.

Note: Use Denco 0.5in. plug-in formers in polystyrene, type Yellow for Coil One and White for Coil Two.

is given in the Table. Coverage for higher frequencies really needs a smaller tuning capacity and is a matter of experiment.

### Power Requirements

An HT supply of from 150 to 250 volts at about 2 mA, and 6.3 volts at about 0.3 amps., is required and can be tapped off the power supply of almost any piece of equipment. A power supply for such low loading can, of course, be easily built into the case of the Grid Dip Oscillator itself provided the mains transformer is not mounted too close to the EM84, as this might cause defects in the display due to distorting magnetic fields.



Inside the GDO discussed in the text, showing how the EM84 magic-eye valve is placed — see text.

### BRITISH TV SHOULD CHANGE TO 625-LINE

The Television Advisory Committee expresses the view that the 405-line standard with 5 mc channel spacing now used in the U.K. will not be adequate for all purposes and that 625-line standards using 8 mc channel spacing would give a worthwhile improvement in picture quality. If this were decided upon, it would need to be phased over a number of years; the 405-line services would need to be continued for a long time so that there would be no question of 405-line receivers becoming prematurely obsolescent. With 8 mc channelling Bands I and III would give two 625-line programmes with 95 per cent population coverage, which might be increased to 98 per cent, and on the same basis Bands IV and V would give two programmes each with over 98 per cent coverage or three with about 95 per cent coverage.

United Kingdom television is now using Bands I and III. The report points out that it would be impracticable to adopt the 625-line standards if for any reason U.K. television is to be confined to Bands I and III only. In such circumstances, sufficient frequency space would be left in Band III to accommodate a third 405-line programme with at least 95 per cent population coverage.

#### Last Chance for Change

If more than three television programmes are envisaged for the future, Bands IV and V will have to be used, because there is no possibility of making more frequencies available for television in the VHF Bands I and III. The report finds, on the evidence of a large-scale field trial, that an acceptable television service could be provided in Bands IV and V.

The Committee says that if television is to be introduced into Bands IV and V (470-585 mc and 610-960 mc respectively), then this will be the last opportunity of changing to 625-line standards and in such circumstances recommends that this should be done.

Television in Bands IV and V would, however, be more expensive in terms of capital cost, since use of these Bands would need *four or five times* the number of transmitter stations required in Bands I and III to give comparable coverage. Sets capable of receiving all four television bands would also cost more.

#### Colour Television

The report finds that colour television is not yet ready for introduction. It recommends that a decision on future monochrome line standards should precede the start of a colour service and that, if 625-line standards are adopted, colour when introduced should use the new line standards.

### PROGRESS

It is now possible to buy an automatic record player which will work in a car under mobile conditions—the idea is that on late-night journeys, when the last BC station has closed down, you can regale yourself with recorded music. The thing plays 7in. 45 r.p.m. records, feeds out through the car radio, and the design mechanically is such that the needle will stay on the record no matter how bumpy the road, or how sharp the turn.

# Another DX-40U Modification

FOR SINGLE-SWITCH  
CONTROL AND HIGH-LEVEL  
MODULATION

J. M. HERN (G3NAC)

*The Heathkit DX-40U was described in detail in our issue for November, 1959, as a constructional kit. An article, by a contributor, in the May, 1960, issue suggested some circuit improvements on the modulator side. Here, the theme is single-switch control and the modifications for high-level modulation using an external modulator.—Editor.*

ORIGINALLY, the writer bought the Heathkit DX-40U in anticipation of going overseas to some choice DX location! It is very light and packs a punch on CW. However, it has since come to be used as the main station transmitter at G3NAC. For this, some modifications were found desirable, as explained in this article.

## One-Switch Control

The function switch is fine in theory, but not in practice. It has to be turned from "CW" through "Phone" to "Stand-by," which is a nuisance. To enable one-switch station control and VOX working to be used, a DPDT Leach aerial change-over relay is mounted on the right of the front panel, behind the "HT on" light. A length of coax is run out to the back panel to a plug; 12 volts DC from the station control unit is fed to the relay through this plug. In order to over-ride the relay, a DPST switch, S1, is mounted just to the right of the "HT on" light. The relay is wired as follows:

Break the HT where it leaves R26 and pass it *via* the relay so that the latter closes the circuit when activated. Then, when it is desired to tune up, set the function switch to "Tune," activate the relay, and the transmitter is then as the original, electrically. The DPST switch is wired in parallel with the relay for convenience.

If the alteration is left like this, it will be found that the PA will draw current when no drive is on the grid in the CW condition if the cathode is closed, because the screen HT is connected *via* SW3a. Therefore, it is necessary to break the HT between R26 and R23 and to pass this through the other contact on the relay.

The over-ride switch is also wired in parallel in this circuit as well.

Now one-switch control is practicable and if it is desired to return to individual control, the over-ride switch is closed.

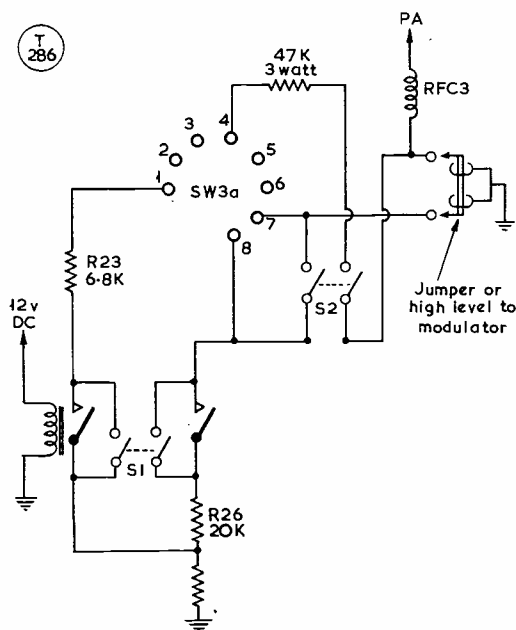
## High Level Modulation

The control-carrier system of modulation leaves something to be desired on the HF bands. In order to be able to use high-level plate-and-screen modulation at will, the following modifications were carried out:

A coax socket is mounted on each side of the aerial "out" connector on the rear panel; the coax lead to the aerial plug is earthed at both ends. The HT feed to the PA is taken from SW3a, tag 7, to one coax socket and from the other, back to RFC3.

A coax jumper is prepared and inserted into the back panel for normal DX-40U phone operation. When it is desired to apply external modulation, the HT is fed to the modulator (in the writer's case 6146's in Class-AB1 and a Woden UM3) and then back to the transmitter, using coax leads in place of the jumper.

In order to enable plate-and-screen modulation to be effective, it is necessary to add a



Circuit of the DX-40U modification for single-switch control and external high-level modulation. The detail here refers to the early version of the DX-40U. Later models have not got quite the same mode switch connection; therefore, on SW3A it will be necessary to take the lead to the modulation switch directly from tag 3, and not tag 4; there is no tag 4 on SW3A, but there is one on SW3B, which is at earth potential.

screen dropper, which was made 47K at G3NAC, to feed the screen of the 6146. This is done as follows: Tag 4 of SW3a is utilised and a 47,000-ohm 3-watt resistor is connected between this tag and the modulated side of the HT. Then the normal screen feed is not used when the function switch is on "Tune"—but HT is applied to the screen. In order to feed HT to the modulator in the "Tune" position, it is necessary to insert a DPST switch which will join tag 8 to tag 7 of SW3a when "on" for high-level modulation. This switch is also used to close the circuit from tag 4 to the 47K resistor, so that when it is "off," tune-up in the ordinary way is possible. (This switch is mounted to the left of the green "on" light on the front panel.)

To use the transmitter as modified above: Set the modulation switch to "Off," the function switch to "Tune," and close the relay (or over-ride it). Tune normally, then open the relay, and turn the modulation switch to "On." Now, when the relay is closed, the transmitter is all set for high-level modulation on one-switch control.

The external modulator HT is also controlled through a relay; it also has a switch to short the UM3 for CW, or normal operation.

To revert to normal DX-40U operation, short the UM3, open the modulation switch, and switch off the modulator.

The function switch remains in the "Tune" position for high-level modulation. It is necessary that the HL modulation switch is *always off* whenever the function switch is in any other position but "Tune."

The PA anode meter is in the cathode of the 6146. It is therefore suggested that it be set to read 110 mA, and no more, for high-level modulation. For the writer's DX-40U, with 500 volts on the plate, this is 50 watts input. But the majority should have 600 volts on the plate so it equals 60 watts or more.

For convenience in carrying out these modifications, the reader should refer to the Heathkit DX-40U manual for the full circuit, but a sketch of the sections of the circuit as modified is given herewith.

### Drive on 15

The manufacturers suggest that one adjusts for maximum drive on 10 metres. If, however, drive is low on 21 mc, tune for maximum on this band. It will be found that there is more than enough on Ten and sufficient on 15 metres—2.4 mA at G3NAC.

### AUTO-MORSE SENDER

A Swedish firm is offering an interesting piece of telegraphic equipment, which amounts to a Morse code sender operated like a typewriter. In other words, if you can type a bit, you can send perfect Morse without even knowing the code, as the machine transmits the dot-dash configuration for the characters on the key-board. An apparatus of this sort has obvious applications in military and commercial communication systems, as it eliminates the need for operator-training. The radio amateur application, also obvious, is likely to be somewhat limited, however, as the one-off price of this new machine is £375.

### POLICE COMMUNICATIONS EQUIPMENT

The first of a series of new miniature communications equipments, designed for individual police use, is announced by Campbell-Bruce Electronics, Ltd. The series is intended to enable foot police to play a more effective role in an integrated mobile and foot patrol radio network.

The equipment, CB4, comprises a "personal" receiving system providing full range coverage from existing central control stations, within certain limitations, and is designed to receive AM phone over 70-180 mc. A transistor front end works into associated demodulation and amplifying circuits with an IF tunable over 1 or 2 mc. Up to three switched frequencies within this bandwidth can be provided as standard, with up to six possible. Alternatively, the

CB4 is available as a tunable version for monitoring purposes. The equipment is normally mounted on a shoulder plate, complete with harness, for use with  $\frac{1}{4}$ - or  $\frac{1}{2}$ -wave aerials, according to range and reliability requirements; small aerials can be used under certain circumstances. Provision can be made for plugging into a standard  $\frac{1}{4}$ -wave car aerial for mobile working.

This basic equipment is intended to provide an immediately available and economical receiving system for use in areas where existing and projected frequencies present no image problem, for pilot schemes and for operational development, where full interference suppression is not essential.

### SOMERTON RADIO AERIAL FARM

The big radio station which many will have seen near Yeovil, Somerset, is a Post Office receiving point for overseas traffic on CW. Somerton Radio was opened in 1929, has some 50 receivers regularly in operation and, since large aerial systems are used, is on a 600-acre site. This antenna layout, involving 65 directional arrays, is now being rebuilt to a new plan, in connection with which 27 steel masts, many of them 280 ft. high, are being dismantled piecemeal, to be replaced by 93 lightweight stayed masts 180 ft. high. The new aerial system at Somerton Radio will require, in addition to these masts, 133 miles of wire and 510 telegraph poles for carrying the transmission lines from the antennæ into the receiving building. About 70 acres of land will be released, as the new aerial farm will cover 530 acres.

# More Power for the Panda Cub

## AND SOME CIRCUIT MODIFICATIONS

C. R. PLANT, A.M.Inst.E., Assoc.I.E.E.,  
M.Inst.Pl.E. (G5CP)

*There are many Cubs in use—it was one of the first all-band transmitters produced commercially—and the basic design has been adapted for numerous medium-power AT station transmitters. Readers will remember that in the September, 1959, issue of SHORT WAVE MAGAZINE there appeared an article on improving the performance of the Cub. Here some further modifications are suggested.—Editor.*

**T**HIS versatile transmitter has proved to be very popular with the British amateur. It is designed to operate on all bands 1.8-28 mc inclusive, with a power input on telephony of 25 watts, and 40 watts on CW. Provision to reduce power on Top Band is by the simple expedient of changing the power supply smoothing circuit from condenser to choke input.

Two years ago the writer moved his main station to a site at the top of Bole Hill, Wingerworth, two miles south of the home address. The new QTH, situated in wooded surroundings 850 feet above sea level, has proved to be an excellent radio location. It has one disadvantage, however—its remoteness, particularly for early morning working. In order to overcome this drawback a Panda Cub was installed as a bedside unit at the home QTH so that morning schedules could be maintained. It quickly became apparent that, to compete successfully with the teleprinter and other noises heard in the early morning on 80 metres, an increase in power would be necessary. The object of this article is to show how this was done.

Reference to the main circuit diagram, Fig. 1, shows that in the Panda Cub all the power supplies are taken from one transformer and power pack. Voltage variation under different operating conditions are considerable, as would be expected. The obvious solution to this problem was to instal an additional power pack to carry a portion of the load. A quick check showed that there was no space available inside

the transmitter case and an external unit was therefore decided upon. This is shown diagrammatically in Fig. 2 and is a conventional full-wave rectification circuit.

The smoothing capacities (electrolytic condensers in series) were chosen because of low cost and availability, but these may be replaced by two single 8 to 16  $\mu$ F 1,000 volt working paper insulated condensers if these are available. The output from this pack is brought into the transmitter *via* the louvres in the cabinet side, the negative lead being shorted to the chassis and the positive lead taken to terminal No. 3. The 3-terminal strip, Fig. 3, is mounted on the VFO box and secured in position by the normal lid screws.

Circuit modifications to allow the external supply to be used are as shown in Fig. 4 and the terminal connections for various operations are as given in Fig. 5, using the 3-terminal strip.

At this point a word of warning must be given—before touching any of the change-over connections be sure that the AC supply to the transmitter is switched off. This is vitally important because immediately power is supplied to the transmitter, HT at 500-600 volts appears on the PA anode circuit. This potential is also present at the terminals of the PA milliammeter (as many amateurs have discovered when changing a modulator valve!). The milliammeter terminals should be insulated, preferably by a small bakelite box or at least by several layers of polythene tape.

In order to prevent the external pack high tension from appearing at terminal No. 3 when the transmitter is quiescent, a relay under the control of the main Send/Receive switch is used, as shown in Fig. 6. The supply to operate this relay and the coaxial change-over switch, both wired in parallel, is obtained from a simple 12 volt DC metal rectifier unit.

### Modulation

In order to provide more modulation for the bigger RF envelope produced by the power increase, the 6V6 valves in the output stage are changed to the 6L6 type. No circuit modifications appeared to be necessary in the writer's case, but had a Woden UM1 been available, impedance matching changes would have been made. The 6L6 valves have to be either the small glass or metal enclosed type because of the limited amount of available space.

In the original, the Panda Cub does not meter the grid drive and it was felt that an indication of the drive would be an advantage. It was found that a 0-15 mA meter of similar



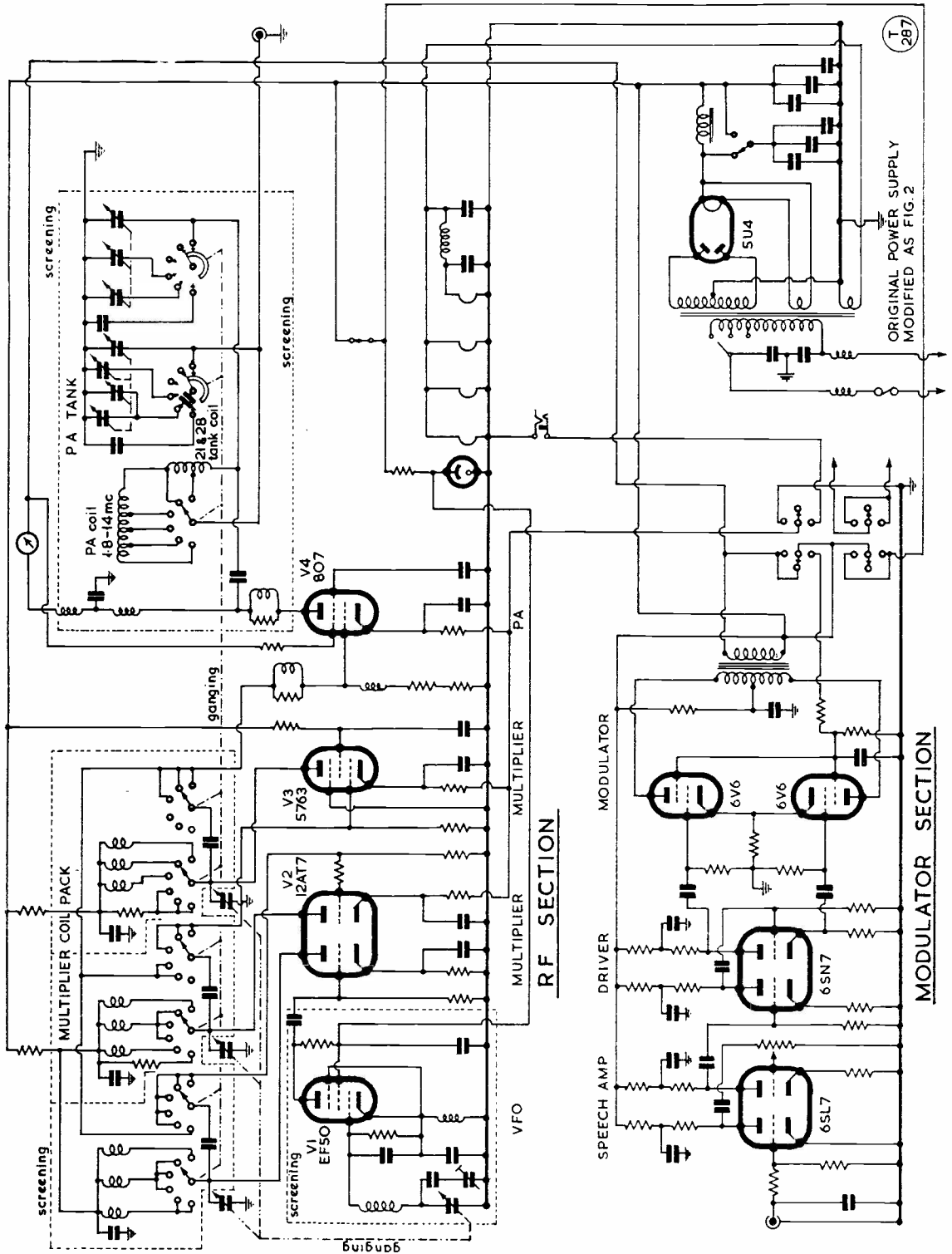


Fig. 1. Circuit arrangement of the Panda Cub CW/Phone all-band transmitter, showing sectional layout. With the modifications suggested by G5CP, the input on phone can be boosted to 46 watts, and the CW input to 75 watts.

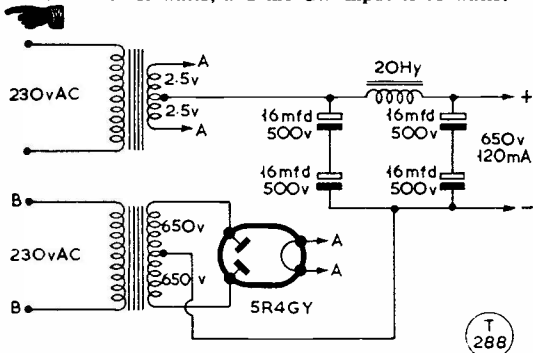


Fig. 2. The external power supply for increasing Cub input. The series'd 16  $\mu$ F electrolytics could be replaced by single 8  $\mu$ F condensers rated for the voltage. A refinement would be 100K resistors across each electrolytic, to balance the voltage on them.

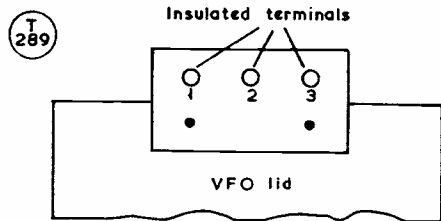
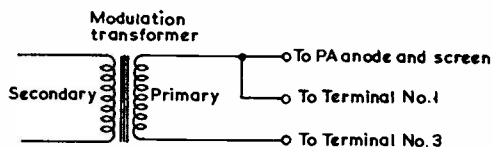


Fig. 3



Remove primary feed connections and connect existing primary HT feed to terminal No.2

Fig. 4

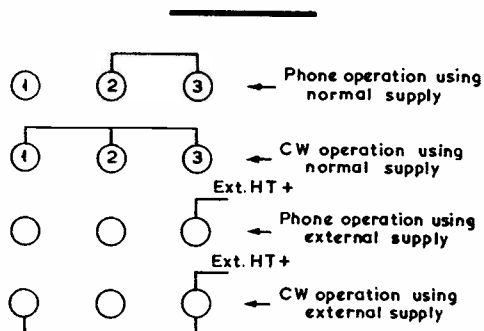


Fig. 5

Fig. 3 shows the power connections from the new pack. Fig. 4 gives the alterations for the modulation transformer. Fig. 5 indicates the terminal connections for various modes of operation.

size to the PA meter would fit centrally above the tuning dial; this was connected in circuit as shown in Fig. 7.

**General Points**

By tuning the slugs on the wide-band couplers an average drive of 6 mA was obtained on all bands. The slug positions are as shown in Fig. 8, with the adjustment sequence given in the table. The comparable power inputs between the transmitter as originally supplied and as used at present are from 25w. to 46w. on phone, and from 40w. to 75w. on CW.

Some early models of the Cub gave a poor CW note on the higher frequencies, particularly on 28 mc. In the writer's case, this was cor-

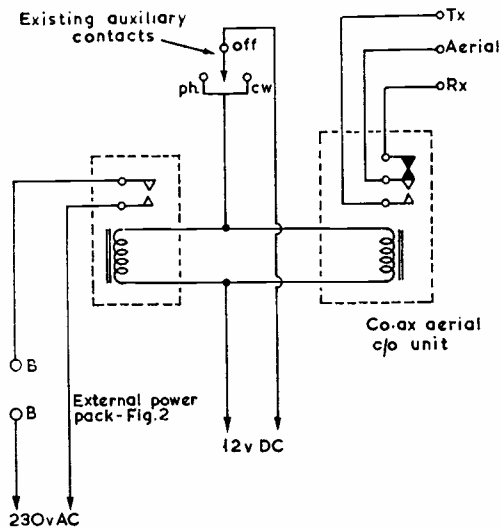


Fig. 6

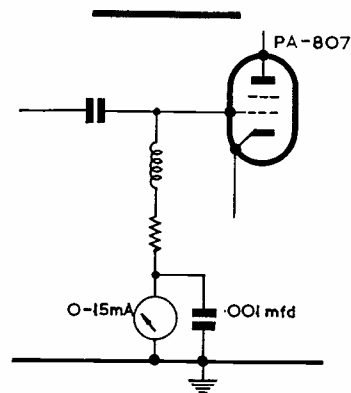
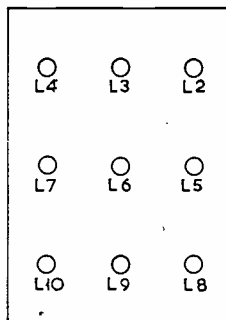


Fig. 7

Fig. 6. Main control send-receive on the transmitter, showing wiring to bring in the external HT supply unit. Fig. 7. Connecting the PA grid meter, mounted on the panel.

T 290



Front panel of transmitter

T  
291

Fig. 8. Layout of coupler adjustment points in the Cub. This diagram should be read with the accompanying table.

BAND	V.F.O.	B.A. 1st MULT.	2nd MULT.	3rd MULT.	PA
1.8	1.8	L2 1.75			1.8
3.5	1.75	L2 1.75	L5 3.5		3.5
7.0	1.75	L3 3.5	L6 7.0		7.0
14.0	1.75	L3 3.5	L6 7.0	L8 14.0	14.0
21.0	1.75	L3 3.5	L6 7.0	L9 21.0	21.0
28.0	1.75	L4 7.0	L7 14.0	L10 28.0	28.0

rected by the inclusion of a heavy gauge aluminium sheet, 9 ins.  $\times$  4½ ins., bolted solidly to the chassis, fitted between the VFO and power pack.

Results obtained, particularly on 21 and 28 mc, have exceeded expectations, many W and VE stations having been worked on phone and CW. The modifications described here have not greatly changed the basic design and it is only the work of a few moments to disconnect the external supply and operate the transmitter in its original form.

A final word—do be careful of the HT which is present at the terminals wherever AC is applied to the mains transformer—it's better to be safe than sorry.

The writer is indebted to G6AB for assistance in the preparation of drawings.

### MORSE IN EMERGENCY

An interesting comment in the current issue of *QTC*, journal of the Radio Society of East Africa, discloses that when VQ4 amateurs were called upon to help with communications during the Kenya Emergency, an immediate difficulty was found to be that in some cases their Morse was just not good enough, and they were unable to play their full part on CW nets. To remedy this most regrettable state of affairs, there is a proposal that the VQ4 Sunday morning bulletin should be sent in Morse on alternate Sundays, even if only to help the beginners working up to their 12-15 w.p.m.

### SOME CITY & GUILDS FIGURES

The City & Guilds of London Institute is, of course, responsible for setting the examination in many other subjects besides Subject No. 55—indeed, practically the whole field of technology is covered, and a City & Guilds diploma or certificate is a recognised qualification not only throughout Britain and the Commonwealth, but in many other countries as well. It is therefore interesting to see, from their Annual Report for last year, that the total of students examined by the Institute was no less than 138,476, an all-time high. That it is not just a matter of taking the examination to get the qualification is shown by the fact that, of this total, the figure given as “not passed” is 55,741. In the previous year it was 51,693 out of 128,814 candidates taking the various examinations.

### TELEVISION SYSTEM FOR “ORIANA”

Passengers in the Orient Line's new 40,000-ton ship *Oriana* will be able to enjoy local television programmes at ports of call throughout the world, and closed-circuit telecine and live television programmes while the ship is on the high seas. *Oriana* will be the first passenger vessel in the world to be equipped with a completely co-ordinated internal and off-air television service. The order for the entire system has been negotiated by The Marconi International Marine Communication Co., Ltd., acting on behalf of Marconi's Wireless Telegraph Co., Ltd., who have designed and engineered a unique marine television installation, enabling standard and unmodified television broadcast receivers to be used for reception of local transmissions anywhere in the world. The installation provides for the reception of television broadcasts employing the 405-line system used in Britain, the 625-line system used in Australia and the greater part of Europe, and the 525-line system used in the United States, Canada, Japan and some South American countries.

Initially, some sixty receivers will be installed in public rooms and first-class cabins and provision is being made for increasing the number up to a maximum of nearly 400 at a later date, without any alteration to the basic installation.

*Among licensed British amateurs, Short Wave Magazine has  
a Circulation larger than any similar periodical*

# DX COMMENTARY

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

NO sign of summer depression among our correspondents, who appear to be able to find the DX most of the time, even if the digging is a little more strenuous. There doesn't seem to be anything very exotic around, with the exception of the odd expedition, but good solid DX from all six continents is still available on at least three bands, and one can't ask for much more than that.

Top Band is becoming badly affected by summer static, except for its daylight use over short hauls, and we don't expect much from it until later in the year. (On one particular night we couldn't even copy S9 phones from semi-local stations—there were no gaps between the crashes—but it's not often as bad as that.)

At the other end of the scale, *Ten* is, of course, beginning to fade away, and by next year it might well be quite poor. However, the North-South path opens wide at quite unexpected times, and a look round the band is seldom a complete waste of time.

We haven't yet had *Fifteen* in use for a complete 11-year cycle, but when it was first opened the general propagation conditions were quite poor. Even so, the band proved worth while, and so we can assume that it will never be closed completely.

## New Layout

With the thinning out of DX on *Ten* and *Fifteen*, however, it was felt that there might no longer be much point in segregating the three HF bands for the purposes of this "Commentary," and so, from this issue onwards, we are trying a new method of dividing it up.



WIACC

## CALLS HEARD, WORKED and QSL'd

As you will see, the various sections now cover *CW DX*, *AM phone DX*, and *SSB DX* (all on the three HF bands). Then there are separate sections for *Forty/Eighty*, *Top Band*, and after that the usual headings of *DX Gossip*, *Miscellany*, *Overseas News* and so on.

So—in future it would be appreciated if you would divide your letters up to correspond with those headings. In particular, please state clearly whether the DX you record is on *CW*, *AM* or *SSB*—with, of course, an indication of the band as well.

We expect to see the SSB DX section becoming quite a prominent feature of this Commentary from now on; SSB will in itself probably do quite a lot towards off-setting the deteriorating bands. More and more rigs are in course of building; others are already on the air but still in the testing, rather than the DX-working stage. Let's hear from

the owners of all of them, so that the SSB side can be adequately covered.

## DX Gossip

G3LOE (Clitheroe) has taken out a Somaliland licence, and will be signing VQ6RS; he expects to be on CW on the HF bands shortly, and will be looking for G's. Incidentally, the licence was free, and the "formalities" consisted of checking his U.K. call (which he gave them) against the *Call Book!* (Thanks to G3GKQ for the above.)

W6NTR (Van Nuys) reminds us that the Marathon DX-pedition of W4BPD is due to start in August, and activity is possible from such rare or new spots as Agalega, Farquhar Is., Glorieuses Is., Aldabra and Kamarin; if permitted he will also go to Yemen.

VR2DO is proposing a VR6 expedition, leaving N.Z. on September 30 and arriving at Pitcairn on October 7, where he will

remain until October 31; he is there on business, but will radiate 14 mc AM phone as spare time alls.

DL9PF and DL7AH hope to be operating from Andorra (as PX1PF) for ten days or so during July. Then, from August 10 onwards, ON4RC and F9XM will be signing PX1RC (AM and CW, unless someone with SSB gear would like to join them!)

CR6CA is said to be thinking of operation from Sao Thome (CR5). CR5AR is stated to be on still from the same spot—21 mc CW.

Danny Weil and his crew are also said to be awaiting a licence to operate from Baja Nuevo Island (licensed from HK-land); latest news was that the call would be HK0AA, around mid-June. This location is about 140 miles S/W of Jamaica . . . The Malpelo trip projected by them is also still on; the last one met with misadventure and was able to do little more than land the generator and get it off again, on account of rough seas and a very difficult landing place; they had to wait some days even to get a boat in.

Someone described as "a prominent Persian Gulf station" is due to operate from the Yemen, with SSB from a KWM-1, which is on the way to him . . . JT1AB is now said to come up on Mondays, 14060 kc, around 0700 GMT . . . W3ZA/EP is expected to be on SSB early in July.

Some time ago ZL1ABZ (of Kermadecs fame) promised operation from Funafuti Atoll, in the central Ellice group; the recent appearance of VR1B (14076 kc CW) seems to tie up with this, but no definite news as yet.

KC6JB is active from Koror Island, Western Carolines . . . FB8XX (Kerguelen) and FB8ZZ (New Amsterdam) are both very active, usually 0700-1100 GMT, 14 mc CW; note that both are usually QRT between the three-quarters and the hour, probably having commercial skeds at those times.

Ludvik of JT1AA fame is said to be preparing to do some operating from "a very interesting country," but we haven't an idea where it is . . . KJ6BV

(Johnston Is.) is active, mostly week-ends, 0500-0800 GMT on 14 mc phone.

G2DC mentions that Iran is now well established, with the calls EP3RO, EP3HS and EP1AA already issued, the latter being a club in Teheran. Also that JA1ACB has not dropped his plans for Marcus Is., but won't attempt it until the winter; meanwhile, he may have a crack at Hiro Island.

Other snippets from G2DC: YA1AO is on leave in Germany, but will be returning, fully equipped for a year's tour. Meanwhile, YA1BW keeps the gear going . . . W2AIS, now signing /KV4, is going to make his permanent home there . . . FB8CD (Comoros) is returning to France

soon, leaving the islands devoid of activity . . . VU2RM and others plan a trip to the Laccadive Is. . . ZL4JF on Campbell Is. has been on 14120 kc, AM, 0400-0500 GMT, mainly for skeds handled by ZL2GX.

5A5TR is ex-YA1IW . . . 9N1CJ active on Wednesdays and Saturdays, 1200 GMT, 14312 kc SSB . . . OK1PD handles 7G1A's QSL's . . . ZS2MI (Marion Is.) active 1800 GMT, 14150 kc AM . . . OD5CT (Box 341, Beirut) is W3ZA, and hopes to operate from JY, ST and 4W1. (Thanks to G3NOF for these items.)

VSSPM active on 21 mc CW (1645) and VSSGS on 21 mc AM (same time) . . . 9N1MM joining the gang in Nepal, 21 mc AM . . . KH6DLE/VR3 on 14 mc phone

FIVE BAND DX TABLE  
(POST WAR)

Station	Points	3.5 mc	7 mc	14 mc	21 mc	28 mc	Countries	Station	Points	3.5 mc	7 mc	14 mc	21 mc	28 mc	Countries
G3FXB	838	77	133	226	231	171	268	G8VG	341	37	79	132	54	39	153
G2DC	824	88	119	242	208	167	269	G3NOF (Phone)	331	8	15	55	132	121	164
G3FPQ	803	74	116	225	224	164	253	G3DNR	319	11	30	93	100	85	136
G5BZ	795	66	121	270	206	132	278	GB2SM	301	20	33	73	80	95	180
G3DO	695	25	51	251	188	180	278	G3MCN (Phone)	297	4	9	63	146	75	182
GW3A HN	675	16	55	204	250	150	267	VO2NA	295	19	39	122	74	41	131
G3BHW	657	15	45	210	218	169	253	G3BHJ	291	8	29	43	138	73	162
GI3IVJ	651	41	70	183	194	163	234	G3WP	288	17	34	90	35	112	151
G3ABG	606	56	90	191	141	128	215	G2DHV	274	22	30	133	64	25	153
W6AM	568	40	68	298	96	67	298	G2CWL	265	21	29	70	114	31	150
G2YS	541	73	93	171	120	84	190	G3LKJ	259	8	19	36	83	113	146
G3LET	521	40	119	189	120	53	208	G3JSN	257	32	48	56	64	57	103
UR2BU	512	25	57	154	150	126	192	W3HQO	246	4	9	84	119	34	200
G3IGW	489	51	80	117	123	118	175	G3JFF	236	20	55	109	43	9	116
G6VC	469	40	60	159	121	89	191	G3GHE (Phone)	231	13	28	33	79	78	135
GI3NPP	463	25	46	114	159	119	191	G3NAC	214	12	35	58	74	35	101
GM2DBX (Phone)	433	34	31	162	105	101	178	G4JA	210	36	43	73	42	16	114
W6AM (Phone)	429	23	62	284	49	31	284	G3MMP	209	6	27	45	65	66	95
UR2BU (Phone)	410	12	33	112	134	119	169	G3NFV	204	12	23	26	56	87	120
MP4BBW (Phone)	405	1	5	188	131	80	201	G3LAS	197	11	27	55	70	34	106
G3DQO	400	21	53	183	102	41	192	G3LZF	176	11	19	53	45	48	114
G3LHJ	369	18	39	108	137	67	173	G3IDG	162	15	16	41	46	44	74
G2BLA	342	36	63	80	84	79	131	G3MGL	98	4	25	38	9	22	57
G8DI	342	36	67	101	75	63	133								

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



(thanks to SWL Peter Day).

From MP4BBW we get it that VU2NR hopes to expedition to the Laccadive Is. (Arabian Sea) later this year; that MP4BDA will be on from 4W1; and that OD5CT may be VS9ARF for a time, as well as the projects already mentioned . . . Ian also says that the globe-trotting Ted Henry "Argonaut" is still held up in Madagascar with filter trouble; FR7ZD is due to have it next.

### Short Wave Magazine DX CERTIFICATES

*The following have been issued since the publication of our last list, in the April, 1960 issue:*

#### FBA

- No. 176 F3DM (Toulouse)
- 177 SP9EU (Katowice)
- 178 OK1MP (Prague)
- 179 UR2KAE (Tartu)
- 180 DL9OH (Trier)
- 181 VE3BWY (Toronto)
- 182 OH3SO (Kaleva)
- 183 G3HHT (Henlow)
- 184 EA4GA (Madrid)

#### PRA

- No. 7 W6AM (Long Beach, Calif.)
- 8 G6XL (Pudsey, Yorks.)
- 9 W0MLY (Perry, Iowa)

#### WABC (Top Band only)

- No. 209 G3MWD (Chelmsford)
- 210 G3NBT (Sidcup, Kent —  
Phone No. 9)
- 211 G3MXJ (Gravesend)
- 212 G3MYI (Leicester)
- 213 G3NPB (Malton, Yorks.—  
Phone No. 10)

#### WBC (Overseas only)

- No. 167 W0MCX (Rock Hill, Miss.)
- 168 HA5BW (Budapest)
- 169 SM5MN (Linköping)
- 170 HA5DG (Budapest)
- 171 OH5PG (Kotka)
- 172 IT1AGA (Palermo)
- 173 OH5OV (Karhula)
- 174 EA3LA (Cornella)

#### WFE

- No. 45 VE2WW (Montreal)

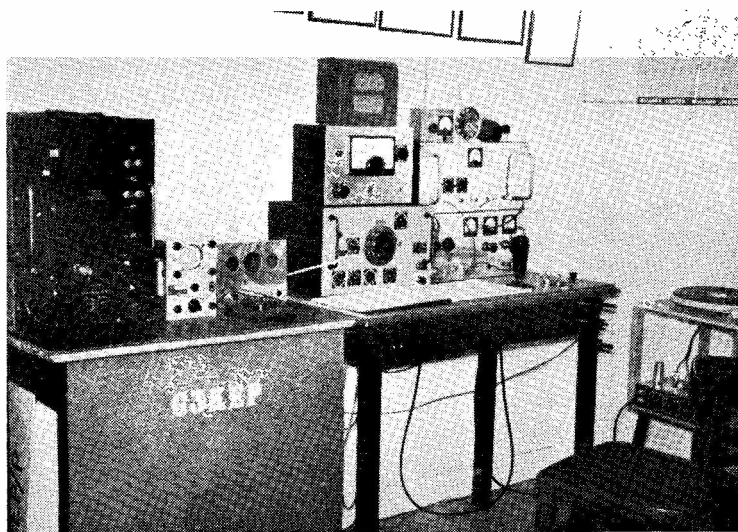
#### WNACA

- No. 238 G3KDE (Freshwater,  
I.o.W.)
- 239 G3AGN (Felixstowe)
- 240 ZL3OB (Burnham)
- 241 YU1AG (Belgrade)
- 242 ZE2JA (Borrowdale)
- 243 OX3DL (Pr. Christian)
- 244 OH3SE (Tampere)
- 245 UA9CL (Sverdlovsk)
- 246 UR2KAE (Tartu)

—Details of MAGAZINE DX AWARDS and CERTIFICATES and the claims required for them appeared in full on p. 26 of the March, 1960 issue.

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

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



Neat station of G3KEP, Bingley, Yorkshire, who, in collaboration with G3MAW, has contributed several practical articles to "Short Wave Magazine."

### The DX Bands on CW

For the purposes of our new layout, this section will include 14, 21 and 28 mc DX only, the other bands having their own headings.

VO2NA (Goose Bay) added a few new ones with DL7AH/Lux, 7G1A and VQ3HZ on 14; PY4ZG on 21. GI3NPP (Dungannon) raised VS5PM, KG6AJT, W2AIS/KV4, ST2AR, 7G1A, XZ2TH, VS9MB, XE1PJ and VP5VB on 21; 4S7EC, VS9MB, XZ2TH, HC1JU, YN4AB. PZ1AR, LA3SG/P on 14.

G2FFO (Burnley) stuck to 14 mc with his ZL Special, and raised 29 new countries after a long absence from the band. Among them: LA8FG/P, ZK1AK, DU1OR and 7SV, YA1BW, OR4TX, 9M2GU, PJ2CQ, FG7XG and 7G1A.

G6VC (Northfleet) had a quick look on 21 and worked 7G1A, VE6AAE/SU and his first PA on that band! G3JVL (London, W.5) collected some new ones for WPX, including CN2BK, FF8BF, ISIZUI; and also worked ZK1AK, FQ8HK, OY1R, VQ3HV and 7G1A.

GW3AHN (Cardiff) sends the usual interesting list, 21 mc only, as follows: CE, WH6DJV, KL7, KR6KF and 6ZG, TI2LA, VP3RW, VP5VB, VS5PM,

VS9MB, VU2XG, YV5ADP, ZK1AU, 4X4IE and 7G1A.

G3WL (Chelmsford) stuck to 14 mc, early mornings only, and collected LA9TG/U (QTH?), 3A2CX, EA8BW, VK's, ZL's, YV4BE and 5HT, TI2CMF, KL7 and FY7YF. Gotaways were VK0IT (Macquarie), HC1FG and 4IE, VP5VB, HP1SB and some VE8's. G3WL comments on the new Russian prefixes, as mentioned here last month—there are some UW's now on!

G3JZL (Market Drayton) collected VS5PM, OR4TX and a W6 on 21 mc; on 14 he raised JA, KR6, FF8BF, KV4AA, UA0, UJ8, SU and ZE. G3KOR (Liverpool) went on 14, a new venture for him, and worked CR4AX, HC1JU, LU, KV4, OX3AY, PY, SU, VS9ARB, VU2AZ, ZD2, ZL and ZP5LS and 5OG.

G3LHJ (Newton Abbot) connected with VU2XG, YA1BW and ZK1AU (all 21); also CX2BT, JA1BK and JA1CSB on 28 mc, which, he says, is still hanging on by a thread.

G3LPS (Blackburn) stuck to 14 and collected quite a few new ones; he found Central and South America very good; among those worked: OR4TX, CE1AD, YV's, CX's, XZ2TH, VP5VB, VP2KD,

KV4CI, CO7NR, VS9APS, OQ5, FQ8, EL3B, MP4BCR/MM (off ZD3). G3LPS asks whether there are any genuine ZA's, but the situation there seems so confused that we can only say it's still wrapped in mystery.

G3JSN (Watford) collected VP5VB, and LU and a W6 on 14; KL7, VP9 and UAØ on 21; and he, too, ventured on 28 mc and emerged with RAØWAB, KG6AJT and JA1, 4, 5 and Ø, making the trip well worth while.

G3DNR (Broadstairs) raised OD5LX and YV5ACM on 21,

both new; also KP4, LU and 9M2. UM8KAB and FG7XF were all-time new ones on 14.

G3NAC (Bourton-on-the-Water) raised TA1DB on 14, just after the coup in Turkey. He is trying to work him on all bands. G3BHI (Norwich) raised W2AYN/EP on 21.

G2DC (Ringwood) says 21 mc is still his favourite band, often as dead as mutton up to 1700 and then, by 1730, it is "reeking with good DX from all directions." To prove it, he quotes EAØAC, HP1SB, CE's, ET2VB, HV1CN, KG6AJT, OR4TX, OD5, HC, JA's, OA3D and 4FM, TI2CMF and 2LA, VP5VB, VU2XG, VS1's, VS9MB, WH6DJV, XZ2TH, 9M2DW and 2EB, ZS1-7 and VQ2-5. On 28 mc he noted a sad decline, but nevertheless raised 7G1A, JA1ACB, UA's and ZD1AW. Finally, on 14 he worked three new ones for the band — VP5VB, YV5HT and ZP5AY, as well as CX2BT, OA4FM, ST2AR, KH6BLX and 6BXU, and ZK1AK.

#### The DX on AM Phone

G3BHI, on 21 mc, worked OD5SCL, K6JMG/HG6, TF5TP, W2AYN/EP, VE2AIG/SU, VP6WR, VQ4GJ and 9M2EB. G3NOF (Yeovil) used AM on 28 mc only and worked CR6's, CX2AZ, EL4A, HH2RY, LU's, OQØPD, OR4TX, VQ2's, VQ3PBD and 4GT, ZD2ATU, ZE, ZS7 and 4X4.

G3DNR booked in HK4BQ on 21, giving him his first century on any band. G3JSN worked OX3KW on 14; MP4BCV and BCZ, JA1CEY on 28; and on 21 mc he heard K6CQV/KS6, R5S7 and in the clear, but rag-chewing with an FK8 and impervious to DX calls. Hard luck!

G3MCN (Liverpool) stayed on 21 and raised VS9MB, TG9TI, FB8CM, W2AYN/EP and VQ1HX, who was only in Zanzibar for 24 hours. G3NFV (Ashted) got XZ2KN, OR4TX and VS9MB, all on 21. GM2DBX (Methil) raised I5TUF, XZ2KN and ZS3D, also on 21.

GW3AHN, on 21 mc (naturally!) collected JA1ACB, KA2GI, VQ1HX, VQ4AQ, VR2BC, VS9MB, YV1DV, 9M2DW and

2GA, and 9N1MM. G3NWT (Sandiacre) persevered with 28 mc and raised CR6, VQ3's, OR4TX, CN2BN, ZS7L, FQ8, VQ4, ZD2 and the like; an FE8 was heard calling CQ but not going back to anyone; on 21 mc the catch included VQ1HX, VE6AAE/SU, VE8TX, VS9AE, CP5EL, XE1JP, HP1SB, LX1DC, OA, PJ2CO and VP3, 4, 6 and 9. GW3ITD/MM reported that his ZD9 call came through when he was on his way back from there; but ZD9AM is active on 21. 9M2EZ was worked twice, via long path, at 0600, by G3QD.

G3LHI, on 21, winkled out CX1BY, LU8, KW6DA, PY's, VP3MC, VP7ND and VS9MB. On 28 he caught up with CR4AV and 6AT. JA5GS, ZE's and ZS.

G3JZL sends a long list of AM phone DX, from which we select the following: 14 mc, ET2US, ZE7JD, EA6AR; 21 mc, VS1GZ, VQ2JS, 3FQ, 4CW, OQ5UH and 5KY, ZP5CF and 5OO, VP3RW, EL4A and HK4AQ; 28 mc, VQ3PBD and 3HH, ZE2JA, ZS1AB and 4CX, 4X4AU.

GI3NPP worked the 21 mc band and found VQ1HX, VS9MB, I5TUF, XW8AL, VP2KD, VP3MC and 3RW, KG4AO, HE9LAA and a KL7/VE8.

Despite natural screening by the surrounding hills, GW3LSB (Betws-y-Coed, Caerns.) knocked off CE1BD, JA1ACB, VK3AHO and numerous EU's on 21 during the first fortnight in June. He says he's "getting on in years, and can't stand the din on Forty any longer."

#### The DX on SSB

In the very month when we have started giving SSB a section all to itself, we find that there are fewer reports than usual concerning this mode. However, the new heading will doubtless encourage more of the Sideband devotees to write in future.

Meanwhile, we have the following: G2CWL (Fareham) raised ST2AR and KG4AP on 21 mc; XZ2SY and TA3GI on 14; he also worked CR6CA (21 mc) on his very first day on SSB; CR6BW also uses it, but on QRP. VE7ALE is visiting Europe in July, and hopes to be able to use

### TOP BAND COUNTIES LADDER

(Starting Jan. 1, 1952)

Station	Confirmed	Worked
G2NJ	98	98
G3JEQ	97	97
G6VC	96	96
G3JHH	94	94
G3KOR	90	94
G3APA	82	87
G3JJZ	77	80
G3MCY	71	73
G3FS (Phone)	68	72
G2CZU (Phone)	67	68
G3NFV	64	67
G3MXJ	63	70
G3MWD	63	66
G3NBP (Phone)	60	62
G8VG	58	67
G3NBT (Phone)	58	60
GM2HIK	56	63
GW3NAM	55	69
G3NMF	50	52
G3NNO	47	65
G3KOE	45	53
GI3NPP	44	51
G3JFF	41	53
G3NVO	36	45
G3LZF	32	43
G3OAG	29	37
G3NJQ	29	37
G3NAA	27	39
G3NTU	26	38
G3MXJ (Phone)	16	33

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

a KWM-1 from GD-land, if his licence comes through in time.

G3DO (Sutton Coldfield) raised GW3EHN, HS1B and UA9CM, all new ones for his WPX; last month TI9SB was an all-time new one for him.

G3NOF was very active and raised EL2V, HZ1AB, KG1BX, KP4AIS, LU, MP4, OD5CT, PY's, SV0WH, VK3HG and lots of W's on 14 mc; he missed out on BVIUSC, OY7ML, VQ3GX, VU2NR and 9K2AM. On 21 mc he succeeded with OD5CL and 5CT, PZ1AX, VP5VB, VQ4RF, YN1TAT, and 5A2TZ, but failed to attract FS7RT, KV4CG, 7G1A.

As usual, MP4BBW turns in good lists for both 14 and 21 mc. 14 gave him YA1AC, FB8CP, ZS3ES, TA3GI, CX2AX, PY7AGC, CR6CA, UA9KOG, UA9CM, as well as JA, CR9, KV4, VP5 and OY—to mention only a selection. For 21, he gives JA1ACB, VS9MB, 4S7YL, XW8AL, several 9NI's and some Europeans. And see where he is in the WPX Marathon, on SSB phone only.

#### Eighty and Forty

These two bands, particularly *Eighty*, are much better for DX than one realises. When one has cleared away all the miscellaneous sea-weed there is a very good chance of finding something interesting. G6QB recently fixed a sked with VQ4HT for *Forty* (1800 GMT), and having had a 589 contact without the slightest trouble, arranged a further sked for *Eighty*. There, at 1900 GMT, while we were scraping around for a weak signal from the VQ4, he suddenly hit us at 579 and was easier to copy than many of the Europeans. With broad daylight this end, we were quite surprised; but he has a rhombic, which helps!

G2DC worked VP5VB on *Eighty* (on a sked), and heard "the usual W and VE gang"; he worked him on *Forty*, too, together with all W districts (except 7), VE1, 2 and 3, VO, ZD1, ZD2 and VQ3, 4 and 5. G2DC is trying also to get SV0WZ (Crete) to come on the band, but apparently he can't get a permit.

G4JA didn't work anything on *Forty*, but he heard VQ9BC "very QRL" on 7010 kc at midnight on June 8. Running 5 watts, G3LNR (Nottingham) had thirteen QSO's with SM stations in SM3, 4, 5, 6 and 7. UA9BE gave him a new country (all this on *Forty*).

G2FQW (Worthing) describes *Forty* as "a very pleasant band to work on when conditions are right—and an excellent murky stream to fish in when conditions are changeable." He's putting up a two-element beam for the band, with halyards of nylon fishing line! 4X4BU got away after coming back to a call; but the more unusual calls seem to appear after midnight. TF5TP produced quite a pile-up on phone, as did UR2KAE.

SWL Peter Day (Sheffield) found the band variable, but logged VP3YG (0245) and UL7LA (2200), both on CW. Also heard, many W's on SSB around 7200

kc; VE1IE (7220 kc AM); KP4PZ (7200 kc SSB); and PY1, 2, 3, 4, 5, 6 and 7, all on AM.

#### Top Band Topics

G3NBT (Sidcup) is now the proud owner of a Phone WABC (No. 9), and is at present working Top Band only. On June 5 he was surprised to hear, on a Continental portable transistor radio, GW3NAM and G3ERN giving route directions to a mobile station. The receiver was simply tuned to the trawler band, with no aerial!

GM3FSV (Kirkwall, Orkney) sends us confirmation of the fact that he is on most nights with SSB on 1864 kc. He really only wants to work phone, but will swap reports with CW stations who are after WABC. He uses a filter rig with a modified bridge-type filter on 450 kc, and a grounded-grid final (6Y7). The station is entirely home-built, including the receiver



An old friend — VE3BWY, ex-G6WY, now of Toronto, who is well known on the DX bands, on which he has been very active for many years. He says "I now have the best station I have ever possessed; a Viking Valiant transmitter, Hallicrafters SX-101 receiver, Central Electronics 10B SSB exciter, and a Mosley TA-33 beam, 60 ft. up." VE3BWY works CW as well as phone on the HF bands. A very fine operator, he has just gained our FBA Certificate No. 181.

(14-valve double-conversion), and GM3FSV has a 100-watt AM rig for the other bands. A double-Quad for 28 and 21 mc, a tri-band ground-plane for 14, 21 and 28 mc, and an 80-metre Windom for all bands, including 160, complete the picture. GM3FSV adds that he seldom hears a queue waiting for him, and often, when he raises a station, that station cuts short "to leave room for the others," but the others just aren't there. Reports from SWL's will be appreciated, but he would like a bit more than RST. Finally, he asks us to say that he listens every Saturday, 1100-1300 GMT, for OY stations on 80-metre phone.

G3KAD (Port Carlisle) passes on the welcome news that he puts Cumberland on the band most nights between 2200 and 2300, but at present only on CW, around

1850 kc.

G3FS (Sidcup) has pushed up his total with GM6RI, GW3JGA, G3MDA/A and some other GW's. The present conditions, though, are only "fair," and he doesn't hear GI or GM any more. He is chasing the WALT award and not finding it easy, even from so near London.

G3MXJ (Gravesend) is now trying for his phone WABC, and joins the ladder accordingly. He found band conditions poor, and static sometimes so bad that S8 signals were hard to copy; despite this, he raised one new one (GW3FPF, Flint).

G3JHH (Hounslow) has been hearing GM3FSV, but can't get through. He is also hoping for some more /A or /P activity, preferably from Dumfries, Sark or Scillies!

G3KOR (Liverpool) comments on summer static, but he did manage to work EI3AE, GM3NMA (Dunbarton) and GW2AVC (Brecon) on CW; also GM3FSV on SSB. Now looking for Carmarthen, Kinross, Selkirk and Sark before retiring to take up basket-making...

G3NVO (Middlesbrough) raised Brecon, Dunbarton, Caithness and Orkney for four new ones, three already confirmed. G3OAG (Prestwich) has the "youngest" call-sign on our Ladder, with his 37 worked and 29 confirmed. (He might also be literally our youngest climber after WABC, being 16 and still at school.) He, too, recently worked GM3FSV and GM3EFS, as well as G3CKC (Co. Durham).

#### News from Overseas

VO1FD (Buchans) is now a regular reader and tells us that he is also G3LMD when in the U.K. From VO-land he works mainly on CW, 14 mc, with 150 watts to a DX-100U; he finds it much easier to work into Europe when the band is open at 1900-2100 GMT than ever he did from G3LMD! Recent DX includes EA8CP, EA9AP, KV4AA, OX3SL, OY1R, SVØWR, PY, UO5, UP2, VP7NS and ZS6DM. The Society of Newfoundland Radio Amateurs holds a daily net on 3785 kc, 2130 GMT, covering a wide area from

Pointe Amour (Northern Labrador) to Ramea Island (south coast of Newfoundland) — over 700 miles. *DX Note:* VO1FD will be operating FP8BD between August 20 and 30, looking especially for G stations; 75 watts on 7, 14 and 21 mc, phone and CW.

And another from FP8-land: Charlie O'Brien (W2EQS) will once more be operating FP8AS from those parts, in the first two weeks of August; all bands, One-Sixty to Ten; QSL's via ARRL or W2EQS, *QTHR*.

VU2RG is at present on leave in this country, but will be returning in September. Any G contacts still wanting a card should drop him a line — Norman Henry, 61 Moss Lane, Pinner, Middx.

Licensed just 28 years ago, VK4EL (Townsville) mentions that (up to June 5) he had had 19,714 QSO's, using CW and phone on the 7-28 mc bands, on which he is still regularly active. Oddly enough, W1EFN (Pittsfield, Mass.) writes on the same theme, his total being 42,286 contacts on all amateur bands from 160 down — but he was licensed in 1924, eight years before VK4EL.

#### Miscellany

G3BID (London, N.W.3) underlines our remarks in last month's Commentary concerning the increasing QRM, and in answer to our query, "Any Solutions?" suggests that the number of contests be cut down to about one-eighth of last year's figure, and that those that are organised should be restricted to less than half of each band. If it be true that Contests "stimulate activity," he says, then that condemns them, for the present activity needs no stimulating.

G3JHH puts up a new point of view; he is chasing sundry sheepskins, and says he calls only those stations likely to give him a point for a needed certificate. If hundreds of other ops. are working on similar lines, they are helping to keep the QRM down, as they certainly don't waste time and space by calling CQ all the time.

Joe Poole of G3MRC is returning to Singapore in August, and

#### WPX MARATHON

Starting January 1, 1960

	CW Only	Phone Only	
G6VC	257	MP4BBW (SSB)	240
G8DI	250	G3GHE	192
G3JVL	235	G3DO (SSB)	186
VU2XG	213	G3LAS	164
G3LAS	162	G3LHJ	131
G4JA	159	G3MCN	101
G8VG	157	GM3NQB	100
G3LZF	153	GM2DBX	92
G3JSN	141	G3BHJ	87
G3DQO	127	G3NFV	82
G3NWF	122	UR2BU	80
G3WP	110	G8VG	70
G3JVU	109	G3JSN	67
G3MXJ	97	G2FQW	66
G3MGL	94	VO2NA	54
VO2NA	90	G3DNR	47
G2BLA	90	G6VC	40
G3JFF	84	G4JA	33
UR2BU	79	G3MGL	13
G3DNR	72		
G3GMK	71		
G2BP	62		
G3NTU	61		
GM3LYI	58		

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

his previous call (VS1FW) will be re-allocated; he promises operation on all bands from Eighty to Ten with a K.W. Vanguard and various aerials. There is also a chance of 9M2, VS4, VS5 and ZC5 operation. Further information later.

If you are a wall-paper collector in a big way, you probably qualify for membership of the Award Hunters' Club (AHC). To join this august body you must hold 25 Certificates, representing at least four continents—not certificates given for contests. Full details, and rules, as from May 1, 1960, from John Velamo, OA2YV, Isokaari 4-B-30, Lauttasaari, Finland.

We have had frequent suggestions that UAØYA is located in Tannu Tuva, Zone 23; EI4A (Co. Kildare) has received his card, just giving the city as Kyzyl, but nothing else. The biggest atlas that we know shows the following: a town named Kyzyl Khoto is in a region known as Tannu Tuva, and it is about 60 miles north of the boundary of Mongolia. Tannu Tuva seems to be just a regional name, since no boundaries appear (except the above-mentioned one with Mongolia on the south side).

Add to this that (a) Tannu Tuva always was listed as Zone 23, by the originators of the Zone plan, and it still appears to be, on the Zone Map; and (b) that Tannu Tuva no longer appears as a country in the ARRL list. So it looks as though EI4A has got himself a new Zone but not a new country!

He also asks whether the new 9M2 stations count separately from the previous VS2's (as in the case of ZD4 and 9G1). They don't—there was no change of status at the time the prefix was changed, as there was in Ghana. Lastly, SU's (United Arab Republic) presumably count as — well, just SU's.

G3NAC was told by a French friend that two Frenchmen are pirating G calls. One of them speaks perfect French and doesn't understand English! Marvellous, isn't it!

And the Belgian Congo now having achieved the blessed state

of independence, the OQ boys have had their prefix changed to 9Q—incidentally, this was decreed as one of the first administrative acts for the new authority!

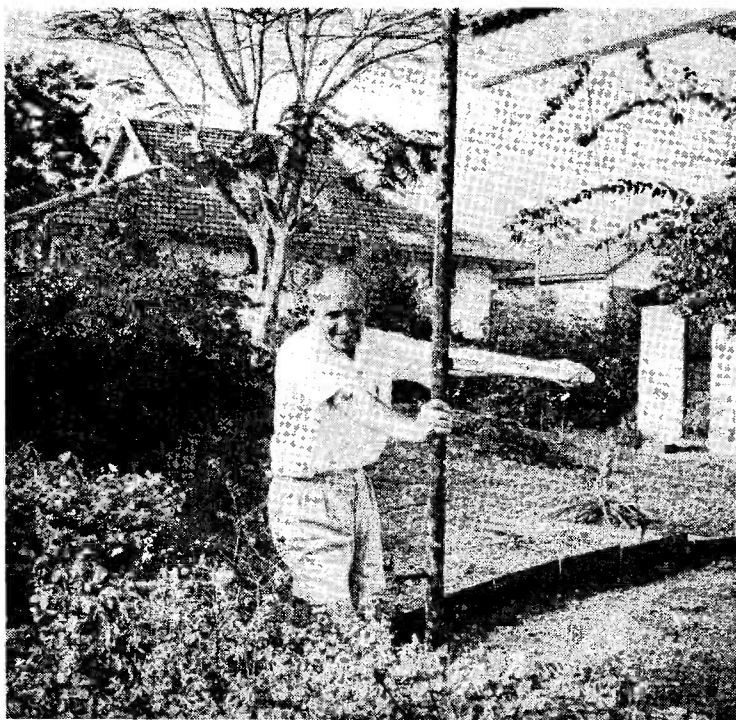
*Correction:* Last month we quoted a report that Ted Henry (VQ9TED/MM) was testing a KWM-1 and KWM-2 “and also a KWM-4, if available in time.” The Collins Radio Co. Ltd. ask us to state categorically that there is no such thing as a KWM-4 — even on the drawing board.

#### Certificate Issues

The latest list of SHORT WAVE MAGAZINE DX Awards successfully claimed appears herewith—and we must ask all claimants, home and overseas, strictly to observe the rules and conditions governing the issue of these Certificates, as laid down on p.26 of the March 1960 *Magazine*; a few reprint leaflets are available on request, with s.a.e. or IRC, to “DX Awards,” c/o The Editor.

We are receiving bundles of cards where not required (from overseas), inaccurate claims and check lists and, in many cases, insufficient return postage. The list shown on p.247 is in respect only of claims where the rules and conditions have been properly observed.

Also rather exasperating is the fact that certain keen types who publish what purport to be “Lists of DX Certificates” either leave out essential information or print it incorrectly—this applies not only to our own but to many other awards as well. For the information of those who may be interested in this particular facet of Amateur Radio activity, there are now over 600 (yes, 600!) certificates of one sort or another, though many such are in the category of “worked three out of the five licensed YL's in Snooksville, Pa.” And there's no use anyone sending in an s.a.e. for a list of that lot! (*Editor.*) [over



Out in Ghana, 9G1CT of Sekondi, turns his beam by handraulic power. And lower right in the photograph, near the fixing point for the two wires, you may be able to see a pineapple growing in its natural state. This photograph was taken by GW3ITD/MM, when visiting 9G1CT, who is at present on leave in the U.K.

### Some New Ones

While we had the big atlas out for the Tannu Tuva research, we proceeded along another line of thought. Since everyone is falling over backwards to make it possible to work 300 countries or more, and inventing new ones madly all over the place, how about the following? Call it a Quiz if you like. Five points for giving (a) the prefix and (b) the Zone of each one. Five hundred points for getting up a DX-pedition and actually going to the darned place! Each one *could*, under the rules as at present applied by the ARRL, be a new country:—

Discovery Reefs; Paracel Is.; Pratus; Gribb Bank; Providence Is.; Hornet Is.; San Felix. Now, then, where are they?

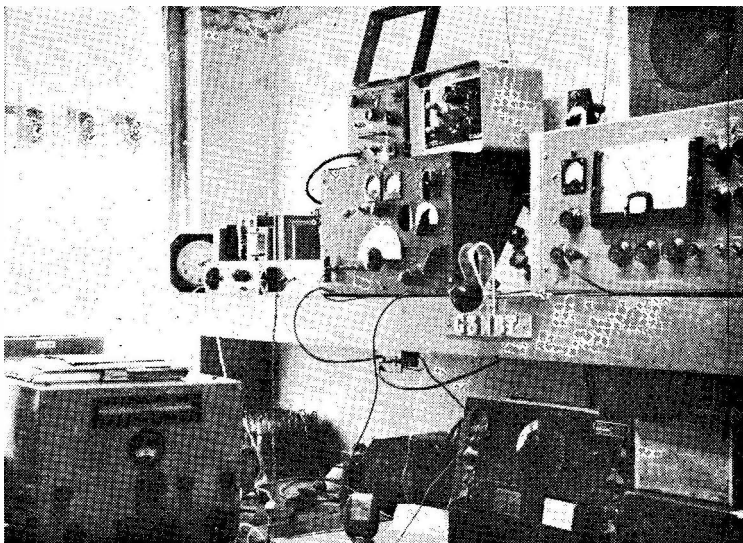
### Operating Notes

GM3FFQ (Edinburgh) pleads for all stations to sign off with a clue to whether they are looking for DX or not, e.g. "G3XYZ DX AR" or "G3XYZ G AR." At least you know that they were calling CQ, if you come in just at the signing, and if you "have a go" you won't be unwittingly busting into a QSO. Incidentally, most experienced pre-war DX operators do just this.

G2FFO enquires what good it can possibly do to call a DX station while he is actually transmitting, yet one hears it time and time again. After being off the bands for nearly five years, he finds manners no better (but no worse) than they always were, and suggests that patience is a virtue seldom found in amateur DX-hunters. (It *is*, among the really successful ones!)

### RTTY Corner

From the B.A.R.T.G. *News Sheet* we glean the following: G2UK, G3CQE and PAØFB having 100 per cent RTTY QSO's on 3.7 mc . . . G3BST, G3IAO



G3NBT of Sidcup, Kent, has our WABC Certificate No. 210, endorsed "Phone only No. 9," and has always been keen on Top Band. The gear is on the shelf above the HRO receiver, a CR-100 also being available. G3NBT is now starting on the HF bands, using a K.W. Vanguard transmitter.

and GM8FM also active . . . G3HKT and G2FGD have a two-metre teleprinter circuit working.

G3CQE, now with a Type 7B page printer, finds his DX work (mostly with USA) much easier. VE7KX recently returned some of his copy, absolutely solid and looking as though it had been typed. New DX'ers will shortly be VQ6GM and ZK1BS. And we shall shortly be starting a regular Amateur Radio Teleprinter feature.

### SWL Note

Two members of Kings Norton Grammar School Radio Society (Birmingham) are hitch-hiking to Cumberland and hoping to operate receivers from Scafell (3210 ft. a.s.l.). Top Band to Twenty will be covered, and QSL's will be sent. They would appreciate replies, as they hope to give a talk on the expedition on their return, and some confirmation would be a help! Listening from

1400 GMT on July 7 for twenty-four hours or so. And they would like to meet any SWL's or amateurs who happen to be at the top of Scafell at the time!

And so we sign off once more, with acknowledgments and thanks to our friends of the *West Gulf DX Club*, W4KVX's "DX," the *Western Radio Amateur*, the *FEARL (M) News*, and our many correspondents, including the SWL's. Please let us have all the news again for next month—remembering, if you will, to sort your news items out under the separate headings, making it quite clear whether you refer to CW, AM phone or SSB, and on what band—and post it to arrive on or before the deadline, **first post on Friday, July 15**. Address everything, as always to "DX Commentary," *Short Wave Magazine*, 55 Victoria Street, London, S.W.1. Meanwhile, we wish you another good month. Good Hunting, 73 and — BCNU.

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*Short Wave Magazine can be obtained to order  
through all newsagents*

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# More Watts at Less Cost

## ECONOMICAL 600-VOLT HT SUPPLY

A. D. TAYLOR (GW8PG)

The writer describes how, for the price of a cheap transformer and a rectifier valve, an existing 300-volt HT supply can be converted to give either 300v. or 600v. at will, thus allowing the PA input to be increased by roughly five times merely by flicking a switch.—Editor.

**A**N 807 PA will handle an input of 75 watts comfortably on CW. Many operators run them at much lower inputs, however, due to lack of suitable power supplies. This problem recently cropped up at GW8PG/A. The 807 PA in use was running at 15 watts off a 300-volt supply, but it was felt that the extra 6 or 7 dB gained by increasing the power to 75 watts would be well worth while in increased contacts. Of course, the snag was the provision of a suitable power supply. Transformers capable of delivering 300 volts at 120 mA can be bought for a few shillings on the surplus

market, and suitable rectifiers and smoothing condensers are equally cheap. With 600-volt transformers, on the other hand, prices rise sharply and the need to provide smoothing condensers for 750-volt working to give an adequate safety margin still further increases cost. In actual fact a quick look through the *Magazine* advertisement pages soon showed that building a new 600-volt power pack would leave no change out of £4. Now, despite his Cymraeg call sign, GW8PG has 100% good Scottish blood flowing in his veins. So, after the initial shock, it was decided to apply a little of the engineering ability for which Scotland has long been famous. This was duly done, the result being a 600-volt, 120 mA power supply for an outlay of £1!

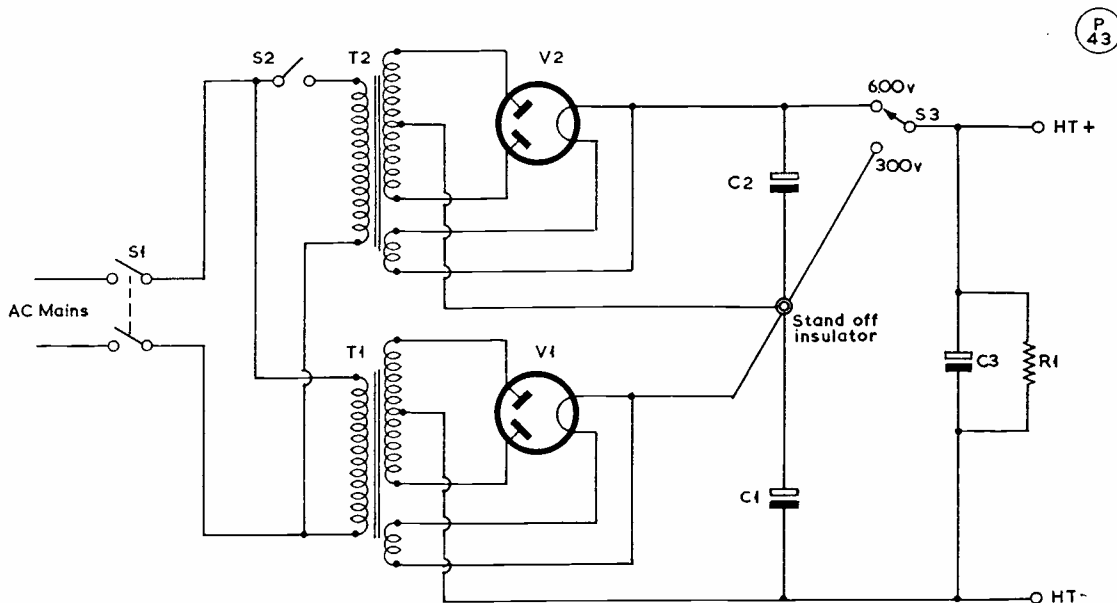
The circuit is shown in Fig. 1. As will be seen, it consists of two 300-volt, 120 mA full wave rectifier supplies connected permanently

### Table of Values

Circuit of the Switched HT Supply Unit

- |                                 |  |
|---------------------------------|--|
| C1, C2 = 8 $\mu$ F, 450v. wkng. | S3 = DPST toggle, mains type               |
| C3 = 2 $\mu$ F, 750v. wkng.     | Si = S/O insulator, point conn.            |
| R1 = 120,000 ohms, 3w.          | T1, T2 = 300-0-300v., 120 mA, with 5v. 3A. |
| S1 = DPDT toggle, mains type    | V1, V2 = 5U4G rectifier, or similar        |
| S2 = SP toggle on-off, mains    |  |

Note: Fuses of 3A. in the mains L-lead and 250 mA in each transformer centre-tap should be included.



P 43

Circuit of the 300/600 volt power supply suggested by GW8PG, with the two DC outputs series connected. It should be noted that the upper of the two 300-volt transformers, T2, is being subjected to a voltage stress that may be beyond its designed insulation rating between primary and secondary, and secondary to core. With good transformers, which would normally be tested for insulation at 1,000 volts or more, this would not matter but in any event both input and output sides should be adequately fused; the primaries should have 3 amp. fuses, with 250 mA fuses in each centre tap.



in series, thus furnishing 600 volts at 120 mA. As it is specifically designed to supply a Class-C RF power amplifier the smoothing requirements are considerably less than usual, so smoothing chokes have been omitted. During construction it was realised that the addition of two toggle switches would allow outputs of either 600 volts or 300 volts to be obtained at will, so S2 and S3 were incorporated. Where only the higher power operation is required they can be omitted, but in the writer's case they proved most useful, as will be shown later.

C1 and C2 are the 8  $\mu$ F 450-volt working condensers from the original 300-volt power pack and C3, of 2  $\mu$ F, a 750-volt working paper condenser, while probably not strictly necessary, was included because it happened to be in the junk box. T1 and V1 are also from the original power pack, also S1—so, for 600-volt output the only new components required are a 300-volt, 120 mA transformer and a 5U4G valve with base. As already stated, these were bought for a pound.

### Constructional Points

While the circuit is simple, there are certain constructional points which must be watched. The junction of the two supplies must be carefully isolated from chassis, a stand-off insulator being shown on the diagram at this point. (If desired, a tagboard may be used instead.) The negative side of electrolytic condenser C2 must also be isolated from ground, so if a condenser of the "can negative" type is used, it must be mounted on a panel of insulating material. As the can will be 300 volts above chassis when the power is on, it should be covered with a wrapping of insulating tape to prevent shock if it is touched. Switches S2 and S3 could at first sight be replaced by a DPDT toggle switch, but it was felt that the voltages involved asked too much of the insulation used in this type of switch. Instead, separate switches are used with the toggles ganged by connecting them together with a length of ebonite rod. For the sake of simplicity fusing is not shown, but a 3A fuse can be placed in each mains lead and a 250 mA fuse in series with the centre-tap lead of each transformer.

One or both of the transformers is almost certain to have a 6.3 volt heater winding. As the whole idea is to be able to take the maximum HT power from the pack, it is not recommended that these be used, other than possibly to light an "HT-on" pilot lamp. Heater supplies should be drawn from the exciter power pack or from a separate small transformer.

### Practical Operation

With the HF band PA used by the writer, the low voltage output provides an input of 15 watts (320v. at 45 mA) and the high voltage side an input of 72 watts (600v. at 120 mA). The practical advantages of the low voltage output provision have proved to be:

- (1) TVI reduction; with 72 watts input there is considerable patterning on the BBC picture, due purely to proximity swamping. With 15 watts there is no trouble, so QRP is used during TV hours.
- (2) Power can be reduced for local and semi-local contacts, thus minimising QRM and also complying with a clause in the International Telecommunications Convention which most operators (and not only amateurs) conveniently ignore.
- (3) The same PA HT supply can be used for either 10-watt Top Band working or high-power HF band working.

### Conclusion

The circuit has proved very satisfactory, and while the writer has not tried it, it seems that a version using two of the ex-Admiralty 500-volt transformers might be an idea for anyone wishing to run an 813 PA without having to spend large sums on power supply equipment.

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### ROYAL NAVY AMATEUR RADIO SOCIETY

This is now in process of formation, membership being open to all ranks and ratings serving, or who at any time have served, in the Royal Navy. Those interested should write for details to: R/S M. J. Matthews, G3JFF, P.O.'s Mess. H.M.S. *Ganges*, Shotley, Suffolk, enclosing s.a.e.

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### THE CONSTRUCTION COMPETITION

With reference to the Competition announced in our January issue, and which closed on April 15, after careful consideration the judges have declared the overall winner to be:

*Mr. A. W. Fawcett, G2HQ, of Sheffield*

for his entirely home-built SSB station, including Sideband transmitter and receiver, frequency meter and beam aerial system. Details of G2HQ's equipment will appear in "Short Wave Magazine" in due course.

Several other competitors entered designs which are of interest for publication, and all who sent in these manuscripts are being communicated with direct.

As the only complete entries in accordance with the Rules (see p.485, January issue) were made for Category A, it has, regrettably, not been possible to make awards in any other category.

SWL • • • • •

**SOME FUNDAMENTAL PRINCIPLES OF AERIALS — READER TOPICS — THE HPX LADDER — MORE SWL STATION DETAILS**

ONE of the good things about our SWL readers is that they are not in the least backward about saying what they want; and what they want, at present, is undoubtedly a simply-worded article on Aerials. They have been telling us so for some little time, but the demand has swollen to a full chorus this month, and so — Aerials it is.

Many beginners do not trouble to read up the fundamentals of a subject (they often expect them to be much more difficult than they really are) and so the result is an almost complete ignorance of some of the simplest facts. This results in the making of ghastly mistakes and failures, and they still do not realise what has gone wrong.

If you do this sort of thing with aerials, then your results will be about one-tenth as good as they might be; and to get them right involves no expensive components, no difficult "mods"—just the use of common-sense.

**Dipoles**

We start with the simple dipole. This is an aerial cut to a total length of one half-wavelength (in terms of the band required) and it is suitable for *one band only*. We so often hear of someone using a 14-mc dipole on 7 mc, and so on, that we despair of this simple truth ever being universally known! The simplest way of arriving at the proper length for a dipole is to divide the frequency required (in megacycles) into 468. The resulting figure gives the length in feet. This formula gives you roughly 33 ft. 6 in. for 14 mc, 67 feet for 7 mc, and so on. This is, of course, the *total* length.

The correct way to feed a dipole is to cut it at the exact centre and to connect the two conductors of a length of co-ax cable to the two "legs" (Fig. 1A). Use 72-ohm co-ax, which gives an almost perfect match, and your feeder is of the untuned, or non-resonant, variety. Its length doesn't matter; it does not need tuning or adjustment of any sort; it will probably match straight in to the average receiver. And it will work efficiently on one band only.

Another misconception about a dipole is that it is highly directional. Not so, at all! Its radiation pattern looks like a pretty bulbous figure 8, drawn at right-angles to the plane of the wire. True, its maximum directivity is at right-angles; but out at 45 degrees, or even as far round as 30 degrees to the plane of the wire, it is still a very good radiator (for the transmitter) or collector (for the receiver). Only directly off the ends is it really poor.

If your receiver is of the type that requires a 300-ohm input, you can solve the problem at once by using a *Folded Dipole* (Fig. 1B). This consists of two parallel wires, close together; but only one of

them is broken at the centre, and to either side of the break is attached the feeder, of 300-ohm ribbon. In fact, the entire dipole can be made of 300-ohm ribbon, the two conductors being shorted together at its extreme ends. This will match into most receivers, and is also somewhat less frequency-sensitive than the ordinary dipole; but in all other respects it works in the same way.

You can put up dipoles for several different bands, if you have the space. Even without too much space, it is feasible to put up two dipoles with their centres pretty close together, preferably with the wires at right-angles to each other, and, of course, with separate feeders.

**Long Wires**

A "long wire" is, by definition, an aerial at least one full wavelength long, and usually much longer. Thus, it follows that those many SWL's who talk about using a "67-ft. long-wire" for listening on 3.5 and even 1.8 mc are somewhat off the beam! A long wire is simply a number of dipoles strung end to end, and it may be fed in a variety of ways.

Fig. 2A shows the easiest—your long wire is cut to some convenient length (the whole of it, horizontal and vertical portions) and brought down to your ATU. If it is 270 feet long it will work on all bands, including the Top Band. If 135 feet, it will work from Eighty downwards. If 67 feet, it will be useful from Forty downwards, and so on. The three cases quoted are those in which it isn't truly a long wire any more, but just an end-fed dipole for the bands mentioned. However, on all bands of higher frequency than the one mentioned, that aerial will be a long wire.

Fig. 2B shows a better way of feeding it; you now have the aerial itself horizontal and in the clear, the rest of it being feeder. An open-wire feeder may be made with polythene spacers about three inches long—one good way is to cut up a length of old co-ax and use the polythene insulation only. Drill the three-inch lengths to take the two wires, and mount the spacers at every two feet or so. You now have the popular "Zepp" aerial.

This type of feeder needs tuning at the bottom end, and an ATU is essential. Whether it is parallel-tuned or series-tuned depends upon the length of the feeder. Suppose you have a 67-ft. top

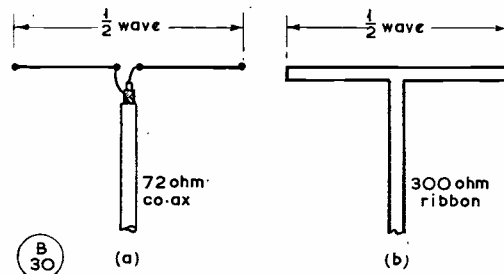


Fig. 1. Illustrating the dipole principle. That at (A) is fed with standard 72-ohm coax, and the folded dipole at (B) with 300-ohm ribbon, of which it is constructed throughout. The total length of the horizontal section of the aerial is an electrical half-wave in each case — see text.

## SWL STATION DETAILS

QTH	RECEIVER(s)	AERIAL (s)	OTHER APPARATUS	QTH	RECEIVER(s)	AERIAL(s)	OTHER APPARATUS
B. M. Crook (Abingdon)	AR88D	67-ft. Windom, 28 mc Dipole	Q-Multiplier	J. Forsyth (Alvaston)	4-valve battery super, 2-valve home-built	Dipoles for 3.5, 7, 21 mc Long wire	
David Coy (Cheltenham)	Pye Rees-Mace Marine Converter for 14 and 28 mc	120-ft. wire, 21 mc Dipole		Frank C. Anyon (Wirral)	R.107, R.1155A, R.1392, R.1132, R.1224, Pye P93U, 18-Set, 48-Set	300-ft. wire 12-ft. whip 18-el. beam for 144 mc Ground-plane Dipoles	Pre-selector, 'scope and 4-watt amplifier
Alan Mellor (Knutsford)	R.107 and R.208, R.1382	14 mc Dipole 144mcDipole	19-Set Variometer	A. Ray (Sheffield)	HRO, R.109, RF-25 mod., RF-27	96-ft. wire, 21 mc dipole	
A. Heath (Swindon)	2-valve straight, Crystal and transistor	7 mc Dipole Windom	1134 Amplifier, Freq. meter, ATU	Douglas Bell (Woodthorpe)	R.1155A, one-valve, RF-24 and 26 mod.	28-mc dipole, 120-ft. wire	ATU, Tape Recorder
Chris Smith (Shepley)	358X*	66-ft. wire		William Stewart (Stranraer)	R.208, R.1155, R.1132A, 19-Set	30-ft. wire VHF dipole	
C. D. Barr (Harrow Weald)	Modified R.1155A and RF-24	66-ft. wire V-beam		R. Harrison (London, S.W.15)	RA-10 modified, 19-Set	33-ft. wire modified, 45-ft. wire 20-ft. vertical	
L. F. Nicholas (Wimborne)	R.107, Trophy 8, and RF-24	67-ft. wire	ATU	P. J. Smith (Basingstoke)	CR-100, O-V-1, No. 8-Set	75-ft. wire 28 mc dipole	ATU
R. M. Nixon (Liverpool)	R.1155	45-ft. wire		V. E. Batchelor (Sutton)	R.1155 and RF-27, R.208, O-V-O and 38-Sets	66-ft. wire	
D. Cheesman (Mirehouse West)	Converted "Sound Sales" 9-valver	12-ft. Vee (indoor)	'Scope and 8-watt amplifier	John O. Challis (Leigh-on-Sea)	Philco A.3782, Ekco B/C Set, 1-V-1 for 1.8 mc	67-ft. wire	
D. Hanson (Mirehouse East)	S.640* modified	134-ft. wire, 60-ft. wire, 30 mc rotary dipole	Pre-selector and amplifier	H. G. Shaw (Heswall)	888A* and P94MBQ, Globe King O-V-O	14, 21 and 28 mc Dipoles Helical Whip	
G. V. Moss (Greenhithe)	Geloso 207, CR.100	Mosley V-3 Jr. and 12-ft. whip		Dave Ward (Burton-on-Trent)	R.208, O-V-O Battery	67-ft. L	
B. Chadderton (Derby)	R.107, RF-24 mod.	Dipole	ATU	J. Wooden (Kingston)	R.107, RF-24 and RF-26	68-ft. Windom, 4-metre Dipole	
T. B. Langford (Totnes)	R.1155A and National NC-81X	100-ft. Vee	19-Set variometer, wave-meter	R. I. Buckley (Corby)	HRO, R.1155A, O-V-O	75-ft. wire, 28 mc dipole	RF-24, Vibrotor Pack, Noise limiter
F. W. Bettis (London, S.E.4)	4-valve Super, 9-valve double Super, 4-valve battery portable, 28 and 21 mc converter	33-ft. wire		T. J. Eyre (Sheffield)	R.1155A	67-ft. wire	
M. Higgs (Sutton Coldfield)	R.1155 and converter	66-ft. wire		M. H. Davies (Narberth)	O-V-1 battery	25-ft. indoor, 3-wire	
W. F. Hahn (Coventry)	R.109, R.208, Modified 19 Set	132-ft. wire	ATU	J. H. Roskell (Harrogate)	Geloso 209	14, 21, 28 mc indoor dipoles	
D. Bowers (Saltash)	CR.100, PCR-2	78-ft. wire		S. Smith (Kenilworth)	CR.100, two and three-valve home-made, P.104 (VHF)	132-ft. wire VHF rotary dipole	
J. C. Ferguson (Errol)	CR.100	Mosley Tri-Band, 33-ft. Windom, 90-ft. wire		B. Otter (Lincoln)	HRO	14, 21 and 28 mc dipoles and 21 mc vertical	
Graham Gaunt (Middlesbrough)	CR.100, R.1155	60-ft. wire, 28 and 21 mc dipoles, 15-ft. tank aerial	ATU	T. R. Clancy (Sale)	R.1155 modified with RF-24, ex-RAF and R.1124	100-ft. wire and dipoles	
Keith Walden (Cheltenham)	CR.100, 2-valve straight (mobile)	30-ft. wire and loading	ATU				
William Gilroy (Stoke-on-Trent)	CR.100, 78 Set, National VHF receiver	14 mc dipole					

\*Eddystone Receiver Types

Note: This list is additional to those published in January and March. Further such lists will appear from time to time.

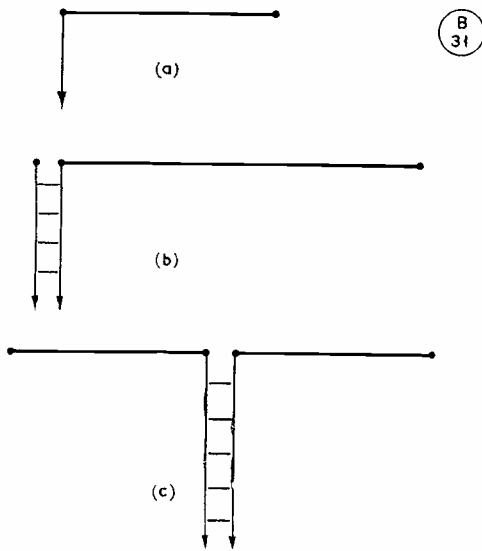


Fig. 2. The much-misquoted "long wire" must be an aerial at least one full-wave long for the frequency band involved — that is, for Top Band or 160 metres it would have to be about 550 feet! It would then be long-wire on all amateur bands. An aerial 150 ft. in length could be described as long-wire only on 7 mc (40 metres) and all bands down to 10 metres; on Top Band it would be just over a quarter-wave long; the half-wave length for 3600 kc in the 80m. band is 136 ft., near enough. These aerials can be connected to the receiver either directly at one end, as in (A); or by open-wire tuned feeders, (B); or at the centre, (C).

and want to cover all bands from Forty downwards. If your feeder is 33 ft. long, you will have the condition giving it a *low* impedance (and therefore series tuning) at the bottom end on Forty, but a high impedance (parallel tuning) on all the other bands.

The layout of the garden, or whatever space is available, may make it more convenient to feed the aerial at the centre instead of the end (Fig. 2C). In this case, the length of the top is not even critical, provided that both halves are the same length. But a nice clean length for the HF bands is a total of 67 feet. The aerial then behaves as a simple dipole (but with a tuned feeder) for Forty; two dipoles in phase (firing in the same direction, that is) on Twenty; three half-waves on Fifteen; four half-waves on Ten. And now you will need parallel tuning on all bands, if your feeder length is 33 ft.—but there is no reason why you should aim at any particular length of feeder, if you use an ATU.

**Beam Aerials**

And so, briefly to beams. The simplest and the most frequently-used are the Parasitic Beams, consisting of a dipole and one or more extra elements, which are not connected to the dipole, or externally fed, in any way. Fig. 3A shows what would be called a two-element beam, with a dipole and reflector.

In Fig 3A, the dipole (b) is fed with co-ax in the normal way. The reflector (c) is merely spaced a certain distance behind it, and is slightly longer. The spacing (a) between the two elements can be varied

SWL • • • • •

*continued*

over very wide limits, but maximum gain is obtained when it is of the order of 0.15 wavelength. The length of the reflector element may be found by experiment, but is usually about 5 per cent greater than that of the dipole.

Fig. 3B shows a three-element beam, in which another element has been introduced *in front of* the dipole. This is shorter than the dipole itself and is known as a director. Referring to the lettering in Fig. 3B, (b) is the director, with a length of 5 to 10 per cent *less* than that of the dipole; (c) is the dipole of the normal length; and (d) is the reflector, as in the first diagram. Spacing between dipole and director is also critical (for gain) and is usually around 0.1 wavelength. For every figure chosen for the spacing of the reflector and director, there is a correct figure for their *length*. And there is a combination of length and spacing which gives the highest possible forward gain, though this does not always coincide with the best back-front ratio. 72-ohm co-ax no longer gives a match, but the 52-ohm type is tolerable.

Thus, there is plenty of scope for some experimentation in this matter of parasitic beams. Those shown are suitable for one band only. There are, of course, more complex types which work on two, or even three, bands, but the scope of this article was meant to be elementary and we cannot venture into that territory at the moment.

The Vee-Beam, however, is worth mentioning, and Fig. 3C shows an example. You are meant to



SWL Mark Marment of 116 Boyne Road, Sheldon, Birmingham 26, has an HRO-MX, modified to take modern valve types, used with a home built two-stage preselector. Other equipment includes a converter for the 144 mc band, with a 10-15-20 metre ATU for the main receiver. The aerial is a 67 ft. wire, 30 ft. high.

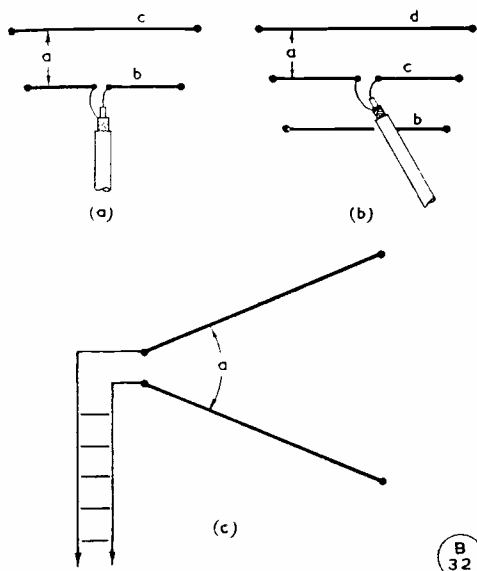


Fig. 3. The simple parasitic beam consists of two elements (A), or three elements (B), the dipole or half-wave section itself being connected by coax. A vee-beam (C) has to be very long in the arms relative to the frequency to give high gain, but small ones are useful and give a fair measure of directivity along the centre-line of the vee, in both directions. A good vee-beam for the 40-metre band would have about 430 ft. in each arm, with a 35° angle. However, worthwhile results on 20 metres would be obtained with 85 ft. in each arm, at an angle of 50°.

be looking down on this one (plan view), which consists of two horizontal wires inclined to each other at an angle of 60 degrees or so. The directivity of a long wire is fairly great, when it is long enough. Whereas a dipole shows a maximum at right-angles to its plane, a full-wave wire has four maxima, each at about 54 degrees to the plane of the aerial. A wire twice as long again has four maxima, 36 degrees to the plane of the wire. As long wires get longer and longer, their maximum directivity comes round more and more towards the *ends* of the wire.

The Vee-Beam combines two long wires in such a way that their lobes are made to coincide, the inner ones adding up and the outer ones cancelling out. The beam shown, if the wires are not less than about 135 feet long, will have pretty good directivity along the line bisecting the angle between the two wires. Of course, to design one for *maximum* efficiency, there is only one permissible length of wire and only one optimum angle between the wires—and it will then only give that maximum efficiency on one band.

But compromises work, and if you are terribly interested in signals coming from, say, the North-West and the South-East, you can put up two wires of almost any reasonable length, pointing on either side of a line facing North-West, and you'll probably get your best reception, thereafter, from the North-West, with the South-East running it a close second. (Vee-beams are always best in the direction of the open end, but they *are* bi-directional, with a slight

drop in efficiency in the reverse direction.)

The method of feeding is identical with that of the centre-fed long wire—in fact, you can regard the Vee-Beam as a centre-fed long wire with the legs bent round towards each other. Even if they have to be at right-angles, there will still be a worth-while gain in the direction which bisects the angle between them.

We shall return to this subject yet again, but we have intentionally kept the matter very simple in this instalment, in the hope of dispelling a few completely wrong impressions that obviously exist concerning the whole vast subject of Aerials.

#### READERS' VIEWS IN BRIEF

*Peter A. Roberts (Parkstone)* is one of those who staunchly disapprove of the view that SWL'ing is an apprenticeship to amateur transmission. It is an end in itself, he says, and adds, in brackets, that the SWL has to be an artist in guile—otherwise how would he ever get his QSL's? He plans a trip to Gibraltar, and hopes to take a portable receiver along.

*B. Otter (Lincoln)* says he gets a thrill from the Old Timer contributions, and wonders how to recapture the same excitement; DX on the LF or VHF bands is the nearest thing to it, he thinks.

*T. J. Eyre (Sheffield)* wonders how many SWL's have monitored the latest Sputnik (we logged it on about its second day of flight, on 19.994 mc). At present he is at school at Cambridge, where all the clubs are putting on an exhibition on speech day. The Wireless Club and the C.C.F. (Royal Signals) are combining to monitor all bands, Ten to One-Sixty, and to give a display of SWL work to the visitors.

*R. Buckby (Corby)* asks about RAEM. It is the call-sign of an individual Russian amateur with rather a long story behind it (actually it was the call of a ship on which he was operator). Also, whether Muscat (MP4M) counts as Oman—it does. And, finally, whether UA1-6 count as a different country from UA9-0—the answer is yes, again.

#### Another Old-Timer

*H. G. Shaw (Heswall)* started listening in 1918! Ship-to-Shore spark, then 2MT (Writtle), then 2LO and the early Trans-Atlantic experiments. He was the third SWL to report reception across the Pond, and in his archives is a letter from the Westinghouse Electric Co. congratulating him on this. The receiver at the time was a 0-V-0 Reinartz—somewhat different from his present Eddystone 888A. Now, after all these years, the urge to acquire a transmitting licence is growing!

In sharp contrast is *Frank Malone (Dublin)*, who wonders if he is our most junior SWL reader at the age of thirteen! He would like to correspond with SWL's of about the same age, his main interests being DX-chasing on 80 and 40 metres. (Frank Malone, 136 Mt. Prospect Avenue, Clontarf, Dublin.)

*C. N. Rafarel (Poole)* bemoans the number of



# SWL • • • • •

*continued*

HRO-type dial, black box 11 in. by 7 in. x 7 in. (Sounds to us like the old National "One-Ten"—range 1 metre to 10 metres.)

### Mechanical S-Meter

*C. M. Parry (Rhondda)* has calibrated his S.840A by fitting plain white discs on the RF and AF gain-control knobs. For phone he chose a very strong signal, and with RF gain at maximum, turned down the audio gain until it was just audible, and called that S9. He repeated the treatment on weaker signals and then finished dividing the disc up into nine S-divisions. For CW he left the audio gain at maximum and treated the RF gain in a similar way. Excellent scheme for quick estimates of comparative strength; and most S-meters that are supposed to be calibrated in dB give readings that vary widely from each other, anyway.

*F. W. Bettis (London, S.E.4)* has recently built his own receiver, although he only started in radio about three years ago. He now has a nice nine-valve double-conversion job with the first IF at 1.6 mc and the second at 465 kc. Selectivity is not all it might be, and he is now thinking in terms of a much lower second IF. (And the right line, too—85 kc or thereabouts should do the trick, using BC-453 components.)

Having been ill for some time, *D. Bowers (Saltash)* found that it has increased his interest in radio, and he now does quite a bit of constructional work, as he can manage this by sitting down and taking it easy. He would like to see some detailed designs of not-too-complex sets—we will see what can be done.

### Yet Another OT

*Bernard Blake (London, E.8)* is another whose memories go back to KDKA, PCJJ, VK3ME and the real old-stagers of the short-wave world; and another claim-to-fame is that he has every issue of the *Magazine* since No. 1 appeared in March, 1937! He now has a whole battery of receivers and converters, and several aerials including a 3-over-3 beam and a trap-type multi-band aerial. He listens on all bands, including 50-54 mc. Good listening, Old-Timer!

As always, we invite Old-Timers, New-Timers and all our SWL readers to send us their news and views for the next instalment of "SWL," which will appear in the September issue. But please do *not* send lists

**Correspondence from short wave listeners is welcomed for this feature, the next appearance of which is in the Sept. issue. The closing date is July 30 and all mail should be addressed: "SWL," c/o The Editor, Short Wave Magazine, 55 Victoria Street, London, S.W.1.**

of Calls Heard—they mean so little these days. Details of unusual or especially interesting DX transmissions are, of course, always welcome as part of the news service.

### VISIT TO SWEDEN

It is probably not much known in this country that the SM's run an annual Radio Amateur Summer Camp, in the SM4 district of Sweden. This amounts to a week's holiday of swimming, sun-bathing and dancing—YL's and XYL's are included—with plenty of radio activity, as there will be several rigs on the air, signing SM4XA, the Camp call-sign. Activity will be on 80-40-20 metres, and probably on 15-10-2 as well, with the 20-metre station the most active and powerful, running 500w, to a 3-ele beam. G3JUB, of Seaforth, Liverpool, will again be joining the Camp; he has been to three of them in the last six years, and has always found himself the only G present. Dates are July 10-17. It is too late now for any bookings, but those interested for next year might like to get in touch with G3JUB (*QTHR*) on his return.

### MORE MONEY FOR RADIO ASTRONOMY

It is announced that the Department of Scientific and Industrial Research, a Government body under Lord Hailsham as Minister for Science and Technology, having allotted a total of £187,000 for work at Jodrell Bank, has also awarded nearly £40,000 to Prof. M. Ryle of Cambridge University. Professor Ryle who, incidentally, is licensed as G3CY—uses the interferometer method of observation, and the grant is to further his work aimed at new methods of constructing radio telescopes, systems of data-recording for automatic computation, and problems arising in the use of receivers for radio astronomy.

### LATE ON THE BOOKSTALL

We continue to receive complaints that the *Magazine* cannot be obtained locally until some days after the first Friday in the month. We can only say again that all bulk orders for wholesalers and retailers are sent out in time for it to be on bookstalls by Saturday morning at the latest—the proof of this lies in the fact that in many parts of the country it is available on the day of publication. In the event of difficulty or delay locally, the retailer should be asked to check with his wholesaler; it can be assumed that if we have had an order, it has been sent out. In some instances, of course, traders do not particularly welcome small orders—four copies of the *Magazine* entail just as much ledger work as 400 copies of some woman's journal. However, most newsagents will always be glad to take an order for a regular copy each month, and it should be there on time. If there is any local difficulty, the remedy is to take out a subscription direct with us; this costs 33s. post free for a year of 12 issues, delivered (in the U.K.) on the day of publication.



THIS is being knocked out during that spell of fine, warm weather that covered most of the U.K. during the latter part of June, with the glass steady and well up, and the temperature high until late in the evening. The night sky was relatively clear, and what cloud there was formed thin stratified layers. That was the general picture for the Channel Area, and it extended far enough to produce good tropospheric conditions for working GI/GM and the nearer EU's from the middle of England.

But, at the moment of writing, we have not yet had anything like a big opening, such as would develop with a really wide area of fine and settled weather, covering the whole of the U.K., Northern Europe, the North Sea and Scandinavia—oh, yes, it has happened often enough, with SM's and OZ's loud and steady, the more distant DL's workable from most parts of the British Isles, and the DX QRM terrific. (And as your A.J.D. is off on a spot of leave as soon as this has been turned in, it's a fair bet that something in the way of an opening will have occurred by the time this is in print; that has happened often enough before, too!)

Actually, the weather has been mainly good for most of the period, with a few breaks of wind-and-rain, and conditions have been such as to produce GDX of some sort most evenings. There were also suggestions of Aurora, but nothing of a spectacular nature transpired.

Taking it all-in-all, the general picture is of improving summer conditions, with quite a lot of EDX and GDX working, though activity generally has not been very high. On the other hand, there have always been enough stations about to keep the two-metre band interesting. This feeling has not extended to 70 centimetres, on which the band activity remains disappointingly low. And the same could be said of four metres, though conditions on that band also have been very good at times; as it lies between the BBC's Bands I and II, one can get a line on what may be

# VHF BANDS

A. J. DEVON

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## Trend of Conditions—

## More GDX Worked—

## Operating Notes, News and Views—

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## The Tabular Matter in Full—

happening on 70 mc by checking the BBC channels.

## Some of the Gleanings

The fine, clear evening of 29/5 produced a contact for G3HBW/GM3EGW, with Arnold paddling away on his speed key; G6NB also worked PA0FB, though Bill would probably say that that is a QSO he can make almost any time . . . On 31/5, with the glass high over a wide area, and a cool evening after a warm day, the northerly G's were coming into the south of England; notable contacts were G3KDG (Edgware) with G3PD (Oldham), and G3HBW with G3ILD for Co. Durham . . . on June 1st, the ON's and PA's were good signals in southern England . . . On 2/6, G6NB worked SM6ANR at 2215, and was able to give him 589! . . . On the HF bands, there was a Dellinger fade-out on June 1st, and it was thought that this might presage an Aurora appearance

during the following day or two, but nothing like that happened . . . The evenings of June 3-6 were good again for GDX, and on 5/6, G3KEQ was getting a signal from G1GXP; G6ZP (Malvern) was a loud signal across the country . . . For the period June 10-15, it was said that SP5PRG, the Warsaw club station, would be on 144.9 mc from near Stettin, looking for U.K. contacts; unfortunately, this just about coincided with the worst weather we had during June, and there is no report of anyone having heard or worked SP5PRG . . . With the change back to better conditions, the evening of 19/6 was particularly good; GM3EGW worked both G3LTF and G5MA, and signals were also strong in the east-west direction across the U.K. . . . Evenings 20/6 to 22/6 again produced GDX and the nearer EU's . . . G5TZ is back on Two again after about five years, putting out a colossal signal from his Isle of Wight vantage point, though running QRP only at the moment.

## G6NB on TTx

As many VHF operators will know, G6NB now has a transistor transmitter running very successfully on the two-metre band; using OC170's, the multiplication is 8-24-48-144 mc, with a total input of about 50 milliwatts only; as the OC170 in the final is tripling, there can hardly be more than a milliwatt or two in the aerial; nevertheless, in 14 days with this transmitter Bill worked 17 counties, QSO's being effected by making the initial contact on the big Tx, and then getting the other end to listen for the TTx. G6NB has a transistor straight PA and a transistorised modulator in hand, and will be in the TTx business in a big way ere long. Congratulations to him on a most enterprising effort, and on its success. (And, though it has nothing to do with VHF, we might mention here that Bill is also transistorised on Top Band, both Rx and Tx, with which he has worked GD3UB.—*Editor.*) Recent two-metre TTx contacts have included G6GN in Bristol and G3ENY near Bridgnorth. *lover*

## TWO-METRE FIRSTS

G/DL	G3DIV/A-DL4XS/3KE	5/6/50
G/EI	G8SB-EI8G	23/4/51
G/F	G6DH-F8OL	10/11/48
G/GC	G8IL-GC2CNC	24/5/51
G/GD	G3GMX-GD3DA/P	29/7/51
G/GI	G3DA-GI2HML	29/6/49
G/GM	G3BW-GM3OL	13/2/49
G/GW	G5MQ-GW5UO	22/10/48
G/HB	G6OU-HB1IV	12/9/53
G/LA	G6NB-LA8RB	29/6/53
G/LX	G5MR-LX1AS	23/7/55
G/OE	G3HBW-OE1WJ	4/1/60
G/OK	G5YV-OK1VR/P	27/10/58
G/ON	G6DH-ON4FG	25/9/48
G/OZ	G3WW-OZ2FR	1/6/51
G/PA	G6DH-PA0PN	14/9/48
G/SM	G5YV-SM7BE	1/6/51
G/SP	G5YV-SP6CT/P	28/10/58
GC/DL	GC3EBK-DL3VJ/P	22/3/53
GC/EI	GC2CNC-EI2W	8/10/51
GC/F	GC2CNC-F9OK	17/11/53
GC/GI	GC3EBK-GI3GXP	14/9/56
GC/GW	GC2FZC-GW8SU	16/6/54
GC/ON	GC3EBK-ON4BZ	4/3/53
GC/OZ	GC3EBK-OZ2FR	2/3/53
GC/PA	GC3EBK-PA0HA	16/7/55
GD/EI	GD3DA/P-EI2W	30/7/51
GD/GM	GD3DA/P-GM3DA/P	29/7/51
GD/GW	GD3DA/P-GW5MQ	28/7/51
GI/DL	G13GXP-DL1SE	5/1/56
GI/EI	G13GQB-EI2W	13/6/51
GI/GD	G12FHN-GD3DA/P	29/7/51
GI/GM	G12FHN-GM3OL	1/7/49
GI/GW	G12FHN-GW3ELM	8/7/49
GI/OK	G13GXP-OK1VR/P	27/10/58
GI/ON	G13GXP-ON4BZ	5/1/56
GM/DL	GM2FHH-DJ1XX	29/5/55
GM/EI	GM3BDA-EI2W	12/6/51
GM/HB	GM3HLH-HB1RG	4/8/57
GM/ON	GM3EGW-ON4BZ	21/11/53
GM/OZ	GM2FHH-OZ2IZ	18/6/57
GM/PA	GM3EGW-PE1PL	22/4/53
GM/SM	GM2FHH-SM6ANR	22/7/55
GW/DL	GW5MQ-DL4XS	22/9/51
GW/EI	GW2ADZ-EI8G	19/4/51
GW/F	GW2ADZ-F3LQ	14/5/50
GW/HB	GW2ADZ-HB1IV	14/9/53
GW/ON	GW2ADZ-ON4YV	13/5/50
GW/OZ	GW2HIY-OZ5AB	14/6/59
GW/PA	GW2ADZ-PA0HA	13/5/50
GW/SM	GW2ADZ-SM6QP	1/7/53
CN2/CN8	CN2AO-CN8MB	26/6/55
DL/OZ	DL6SW-OZ2FR	4/3/51

## New-Station Activity

It is very interesting, while auguring well for the future of VHF in the U.K., to hear so many new stations coming up on two metres—that is, call-signs not only new to the band, but new on the air. For those looking for additions to their total of different stations worked, the time has never been better in your A.J.D.'s experience. We very much hope that all these operators will write in to let us know who they are, where they are, and what they are doing.

## Identify Yourself

A common complaint running through the mail recently—confirmed by A.J.D.'s own observations—is the failure of many phone stations to identify clearly, particularly when in comfortable QSO with signals strong both ways. Because you work old Joe most evenings, and he knows perfectly well who you are, it does not absolve you from the responsibility of enunciating your call-sign clearly and distinctly at the beginning and end of each over—indeed, clear and unambiguous identification is required by the licence.

Something like “*gee - fwee - blobble - blow - blub,*” said once only and too fast, is not a clear and unambiguous identification; it may be all right for Joe, but for someone who has been hanging on to find out who you are and where you might be, it is positively infuriating. Yet it can be heard happening any evening

DL/SM	DL2DV-SM7BE	10/3/51
EI/DL	EI2W-DL3VJ/P	29/8/52
EI/F	EI2W-F8MX	9/8/56
EI/ON	EI2W-ON4BZ	21/9/51
EI/OZ	EI2W-OZ5AB	14/6/59
EI/PA	EI2W-PA0FC	10/10/53
ON/LA	ON4BZ-LA1KB	4/7/53
ON/LX	ON4TR-LX1MS	? ?
ON/OZ	ON4BZ-OZ2FR	3/6/51
ON/SM	ON4BZ-SM7BE	2/3/53
ON/SP	ON4BZ-SP6CT/P	28/10/58
ON/9S4	ON4UD-9S4BS	19/8/56

on two-metre phone, and much is lost thereby. In case somebody may say, or feel, “What business is it of anyone else's who I am working?” the answer is that there is not, and never has been, anything private about an amateur transmission; anyone who can hear it can listen to it (*see* your ordinary Sound/TV licence) and in the Tx licence the rules about identification are clear so far as the originator of the transmission is concerned.

This mild criticism about signing does not, in general, apply to the experienced old-timer operators, meaning mainly the two-lettered, about whose identity there is hardly ever any doubt, no matter who they may be working—and often they give location and beam heading as well.

It would indeed improve VHF operating efficiency considerably if everyone made it a point always to identify clearly, with location and beam heading, at the beginning and end of each over, even when working Joe (who should be doing the same).

## News, Views and Comment

G3NBQ (Coventry) reports a good month, with G3FYR (St. Ives, Cornwall, 144.5 mc), G13GXP, G15AJ and GW2HIY featured in an excellent list of stations worked, which includes two mobiles, G3ARS/M and G4LU/M; G3NBQ also copied G6NB's TTx at 429, over about 55 miles.

From Birmingham, G2CIW got two new ones for the two-metre Tables in G3FYR and GW3MFY; during the 70 cm. contest some weeks back, Jack succeeded in working 23 out of the 24 stations he heard on that band, with G3LTF at 120 miles as best DX. G3GSO (Derby) reports up in both Tables, one of his contacts being with GW4LU/M for Montgomery.

G5ZT (Plymouth) now runs schedules daily with GC2FZC, 1330, and G3JGJ, 1345, clock time, without a miss so far; he also worked about eight other stations during the month, and heard half-a-dozen more—either

long ragchewers, whose attention it was impossible to catch, or those who do not identify; G5ZT says he does his reading while keying a CQ, and his radio time off the air is being spent in getting a 150-watt PA ready.

G3JAM (Woodford, Essex) worked 22 stations new to him during the period, and is now at 32 counties and 10 countries in the Tables, with a total of 311 different stations QSO'd. He has had an R3 report from GM3EGW on his AM phone during one of the earlier Aurora openings and, anent the SSB recording mentioned here last month, says that the signal he heard from G3CCH at the time was unreadable.

Both G3OBB (Christchurch) and G3OBD (Poole), who hunt

together, report an active month, with many F's heard but not yet worked; G3OBB has got his foot on the first rung of the Counties ladder, but G3OBD has one or two more to work yet for his 14C to start.

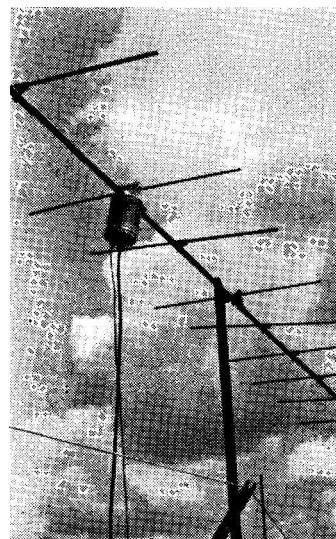
From Leamington Spa, G6XA is maintaining activity, and on both VHF bands, too. For 70 cm., he has about 8w. RF output from a G3HAZ Tripler (see SHORT WAVE MAGAZINE, May, 1954) into a slot-fed 6/6, with a 12-ele job in hand; so far, he has worked 10 stations in 4 counties on Seventycems. On two metres, G6XA has had a good share of the recent GDY, including G3FYR and G3ILD for Co. Durham. He gives the spell between May 30 and June 4 as the best during the period.

G3HWR (London, N.W.3) also quotes May 29-June 5 as a week of good conditions, during which he had some nice contacts, including G2HOP, G3FYR, G5BQ, G5QA, G5TZ and G6GN, with GW8SU heard. On the subject of identification, already mentioned, G3HWR says he is "trying to get into the habit of using phonetics at the beginning and end of every over, even when working locals." Well, your A.J.D. will listen and see that he does it!

**Special-Activity Station**

From July 7 until July 13, a station signing GB3UHF will be operating on 145.304, 145.416 or 145.488 mc, from 6.00 to 10.00 p.m. daily, and all day on the Sunday, while day-time schedules can be arranged through: J. G. Barnes, G3AOS, 5 Prospect Drive, Hale Barns, Cheshire, who is also handling the QSL side; special cards are being done for GB3UHF.

This station is being installed and operated in conjunction with the exhibition of the Institute of Electronics, at Manchester. While they will have plenty of stations to work in that area, we hope that conditions will give them a break so that they get some real VHF DX for the edification of visitors. The site of the exhibition is the College of Science & Technology, Manchester, 1, and tickets for it



G3CGQ of Luton now has a unity-coupled RF amplifier built right on to the driven element of a two-metre 9-ele Yagi. Power supply and RF drive at low impedance are piped up to the can containing the RF stage. According to Bill "this contrivance worked beyond expectations, surprisingly enough." It ensures getting all the available RF power into the beam.

can be obtained on application, with s.a.e., to: W. Birtwistle, Inst. of Electronics, 78 Shaw Road, Rochdale, Lancs. There is also a lecture programme.

**In the Eye of the Beam**

Some years ago, in this space, we used to talk about the desirability of getting the PA—or an RF pre-amplifier for the receiver—right at the feed-point of the beam itself, coupled back into the station through low-impedance line, with power fed up through cabling.

There are certain snags and difficulties, but the advantages are obvious; one gets all the available RF into the beam, for the price of a little more drive up the PA feeder and, applied fully to reception, one visualises a good deal more in the way of signal coming down the feeder.

Now we have a report from G3CGQ, of Luton, who has done just this—see photograph. The PA is unity-coupled and fitted right at

**TWO METRES**

**COUNTRIES WORKED**

Starting Figure, 8

- 18 G3HBW (DL, EI, F, G, GC, GD, GI, GM, GW, LA, LX, OE, OK, ON, OZ, PA, SM, SP)
- 18 G5YV (DL, EI, F, G, GC, GD, GI, GM, GW, HB, LA, LX, OK, ON, OZ, PA, SM, SP)
- 17 ON4BZ (DL, EI, F, G, GC, GI, GM, GW, HB, LA, LX, ON, OZ, PA, SM, SP, 9S4)
- 17 G6NB (DL, EI, F, G, GC, GD, GI, GM, GW, HB, LA, LX, ON, OZ, PA, SM, SP)
- 16 G3CCH, G3GHO, G3KEQ, G5MA
- 15 G2XV, G3FZL, G4MW, G6XM, PA0FB
- 14 G2FJR, G2HDZ, G3AYC, G3FAN, G3HAZ, G3IOO, G3JWQ, G3WS, G5BD, G6LI, G8OU
- 13 G3BLP, G3DMU, G3DVK, G3PPT, G3KPT, G5DS, G6XX, GM3EGW
- 12 EI2W, F8MX, G2HIF, G3EHY, G3GFD, G3GHI, G3LTF, G3WW, G5CP, G5ML, G6RH, G8VZ
- 11 G2AJ, G2CIW, G2CZS, G3ABA, G3CO, G3JZN, G3KUH, G3LHA, G4RO, G4SA, G5UD, OK1VR
- 10 G2AHP, G2FQP, G2HOP, G3BDQ, G3BK, G3BNC, G3DLU, G3GSE, G3GSO, G3JAM, G3KQF, G3MED, G5MR, G8IC, GW5MQ
- 9 G2DVD, G2FCL, G3DKF, G3FIJ, G3FUR, G3IUD, G4LX, G8DR, G8GP, GC3EBK, GM3DIQ
- 8 G2DDD, G2XC, G3AEP, G3AGS, G3BOC, G3EKX, G3GBO, G3HCU, G3HWJ, G3KHA, G3MPS, G3VM, G5BM, G5BY, G8SB, GC2FZC, GW3ATM

the feed-point of the 9-element Yagi, and Bill says the improvement in results is well worth while, "even on two metres." (The pundits have hitherto held that it is only for higher frequencies that the idea has merit, presumably because in commercial installations much more power can be used, tending to cancel out any losses there may be on a long feeder.) So far as your A.J.D. can remember, it was G5BY who first suggested this arrangement—and that must have been about 12 years ago!

### Guard Frequencies

Though our two-metre band will (or should, or ought to) become an exclusive allocation next year under the terms of the Geneva Agreement, it is in the meantime a shared band, and we have definite obligations to avoid certain frequencies, reserved for aircraft safety purposes and liable to be suddenly in use in an emergency.

We have been asked to draw attention once again to these channels, which are: 144.00, 144.09, 144.18, 144.27, 144.36, 144.45, 144.63, 144.72, 144.81 and 144.90 mc. If you have a crystal which knocks out on or very near any of these frequencies, either grind it clear—or, better still, put it away until next year. (If you try altering it, you may either break it or rub it into the next zone.)

### The Tabular Matter

As you can see, we have gone all the way with the Tables this month, the last such showing, with everything in, having been in April—last year! The details are as up-to-date as we can make them, but if you are not in the right place, it is because either (a) You haven't written in for some time, or (b) You missed the deadline for this issue, even if quoted in the text. (There are what the BBC would call "technical reasons" for this, which would take too long to explain here.)

As we anticipate, and hope for, a large number of claims for the

Tables during the next two or three months, would all who make claims kindly send them in on a sheet, headed with call-sign and location, *separate* from the report; this not only enormously eases the labours of your A.J.D., but ensures that the data are taken in accurately. Some correspondents are exemplary in this respect, but others mention a claim *en passant*, and these are easy to miss when the Tables are being prepared, which has to be done before the text is written. This month, we had a piece of paper from someone, making claims, not only without a call-sign on the sheet, but no accompanying letter either; even detective work with hand-writing has failed to solve that mystery!

### Some Quick Points

G3ILD (Darlington, Co. Durham) runs 150w. and is on SSB, with a 6/6 at 32 ft. G3MED has a /P outfit with an EF91 PA; input 2 watts. G3FYR has 50w. input to a 3E29, with a 4-ele flat top. GW3MFY is on 144.345 mc, and GW8SU on 145.315 mc; G2HOP is on 145.61 mc. Nowadays, one of the most consistent stations on the two-metre band is Louis, G3EHY, of Banwell, Somerset. G2XV, on both VHF bands, is also a regular, and one of the real old timers. G5UF (Dorchester), another OT, can be a very good signal across the Midlands when conditions are right. According to G3MEO, small items like coils can be silver-plated by immersion in "hypo" photographic fixing solution, if the solution itself has already been well used for its ordinary purpose; this results in the deposition of a fair proportion of silver salts, given up to the metal on immersion, which incidentally lengthens the life of the solution for photographic purposes. And on yet another tack, it is reported that Prof. Lovell's Radio Telescope is successfully holding *Pioneer V* in two-way contact at a range of 20 million miles . . . here are we getting excited about working EU's by tropospheric propagation. (Yet each of these two problems has its

## SEVENTY CENTIMETRES

### ALL-TIME COUNTIES WORKED

Starting Figure, 4

Worked	Station
32	G2XV
28	G3HBW
27	G3JWQ, G3KEQ, G5YV
26	G6NF, GW2ADZ
23	G3BKQ, G6NB
20	G3HAZ
19	G2CIW
18	G3IOO
17	G2CIW*
16	G2DDD, G3LHA, G3MED
15	G4RO
14	G2HDZ, G3FAN, G3KPT
13	G3MPS
12	G5BD
10	G2OI, G3AYC, G3IRW
9	G5DS
7	G2HDY, G3JHM, G3LTF
6	G3JMA, G3KHA, G3WW
5	G3FUL, G3IRA, G3IUD, G5ML
4	G3JGY, G6XA

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

\* New QTH

own particular difficulties.)

### In Conclusion

And so, *mes amis*, that seems to be about all we can tell you for this month. Deadline for our next is **July 20**, and the address is "VHF Bands," *Short Wave Magazine*, 55 Victoria Street, London, S.W.1. Send it all to A. J. Devon, who hopes to be with you again on August 5—so till then, 73, and in the meantime it's A.J.D. for the Portsmouth Road and a 9-tonner in the Hamble.

**TWO METRES**

**ALL-TIME COUNTIES WORKED LIST**

Starting Figure, 14

From Fixed QTH Only

Worked	Station
78	G5YV (787)
76	G3CCH
73	EI2W
76	G6NB
70	G5MA, G6XM
68	G3BW, G3GHO, G3HBW
66	G3IUD (302), G3KEQ, G5BD
64	G3BLP
63	G2FJR (542)
62	G3EHY, G3FAN (760)
61	GM3EGW (232)
60	G2OI (402), G3DMU
59	G4SA
58	G3IOO, G8OU
57	G8SB, G3HAZ (535)
56	G3WW (770), G5DS (654)
55	G2HDZ (495), G2HIF, G5BM, GW5MQ
54	G8VZ
53	G2AJ (519), G3JWQ (461), G3LHA (387), G4CI
52	G2NH, G3FZL, G6RH, G6XX, GW2ADZ
51	G5ML
50	G2CIW (192), G3ABA, G3GSE (518)
48	G3FIH, G6TA (487)
47	G3DKF, G5WP
46	G4HT (476), G5BY, G6YU
45	G2AHP (647), G2DVD (362), G2XC, G3BJQ, G3GFD, G5JU, G6XA
44	G3BK, G3DVK (282), G8DA
43	G2CIW (164), G2DDD, G2FCL (322), G3BA, G3COJ, G3DLU*, G3HWJ, G3KHA (262), G3KUH, G3WS, G4RO, G5DF
42	G2HOP, G3BNC, G3DO, G3IER, G3KPT*, G6CI (220)
41	G2CZS (282), G2FQP
40	G3CGQ, G5MR (366), G8KL
39	G2IQ, G3GBO (434), G3LTF, G3NBQ, G3VM, G8IL (325)
38	G3APY, G3CKQ, G3HTY, G3KQF, G8VN (190)
37	G3AYC, G3FNW, G2FZU (180), G3DLU, G3GSO, G3LAR (435), G3MAX, GC3EBK (260)

Worked	Station
36	G2DCI (155), G3CXD, G3DLU*, G3IIT, G6CB (312), G8DR (354), G8IP
35	G3FYY (235), G3HCU (224), G4LX
34	G3AEP, G8IC, GM3DIQ, GW3ATM
33	G3CO (303), G3FUR, G3HHY (125)
32	G3HIL, G3JAM (311), G8QY, G8VR, GC2FZC
31	G3HXO, G3KPT (180), G5RP
30	G2AHY, G3FRY, G3GOP (208), G3GVF (129), G3IRA, G3KEF (110), G5NF, GW8UH
29	G3AGS, G3AKU, G3FIJ (194), G3IOE
28	G3ICO, G3ITF, G4JJ/A, G8DL, GM3BDA
27	G3CVO (231), G3DAH, G3ISA (160), G3LTF/A, G6GR, G13GQB, G W 3 G W A, GW3MFY
26	G2BRR, G3CFR (125), G3MED, G3SM (211), G3YH, G4MR (189)
25	G3JHM, G3JMA, G3JXN (220), G3MPS, G5SK, G6PJ
24	G3FD, G3FEX (226), G3FXG, G3FXR, G3HWR (213)
23	G3CWW (260), G3HSD, G5PY
22	G2DRA, G3AGR (135), G3ASG (150), G3BPM, G5AM, G8NM
21	G2AOL (110), G3BDQ, G3DVG, G3IWJ, G6XY
20	G3EYV
19	G2HDR, G3GCX, G5LQ (176)
18	G3DBP, G3JGY, GC2CNC
17	G3EGG
16	G3FRE, G3MLS
15	G3IWA
14	G2DHV, G3CYY, G3MHD

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

\* New QTH

**TWO METRES**

**COUNTIES WORKED SINCE SEPTEMBER 1, 1959**

Starting Figure, 14

From Home QTH Only

Worked	Station
52	G3HBW
46	G2CIW
42	G5MA
39	G3NBQ, G6XA
36	G3LTF
34	G3JWQ, G3KPT, G3LAR
30	G3AYC, G5ML
29	G3GSO, GW3ATM
24	G3HWR
19	GW3MFY
18	G3CO, G3ICO
14	G3DLU, G3IOE, G3OBB

This Annual Counties Worked Table opened on September 1st, 1959, and will run till August 31st, 1960. All operators who work 14 or more Counties on Two Metres are eligible for entry in the Table. The first claim should be a list of counties with the stations worked for them. The list can be added to as additional counties accrue.

**BRITISH ISLES**

**TWO-METRE ZONE PLAN**

Revision, March 1959.

<b>Zone A:</b> 144.0 to 144.1 mc.	Cornwall, Devon, Somerset.
<b>Zone B:</b> 144.1 to 144.25 mc.	Berks., Dorset, Hants., Wiltshire, Channel Islands.
<b>Zone C:</b> 144.25 to 144.5 mc.	Brecknock, Cardigan, Carmarthen, Glam., Gloucester, Hereford, Monmouth, Pembroke, Radnor, Worcester.
<b>Zone D:</b> 144.5 to 144.7 mc.	Kent, Surrey, Sussex.
<b>Zone E:</b> 144.7 to 145.1 mc.	Bedford, Buckingham, Essex, Herts., London, Middlesex.
<b>Zone F:</b> 145.1 to 145.3 mc.	Cambridge, Hunts., Leicester, Norfolk, Northampton, Oxford, Rutland, Suffolk, Warwick.
<b>Zone G:</b> 145.3 to 145.5 mc.	Anglesey, Caernarvon, Cheshire, Denbigh, Flint, Merioneth, Montgomery, Shropshire, Stafford.
<b>Zone H:</b> 145.5 to 145.8 mc.	Derby, Lancs., Lincoln, Nottingham, Yorkshire.
<b>Zone J:</b> 145.8 to 146.0 mc.	All Scotland, Northern Ireland, Isle of Man, Cumberland, Durham, Northumberland, Westmorland.

# Cascode Converter for Two Metres

USING THE E88CC  
DOUBLE-TRIODE

J. JULEFF

*This article describes an effective two-metre converter, the principal feature of which is the use of an E88CC, a particularly good type for the purpose, as a cascode RF amplifier. As our contributor suggests, the RF section could be built up separately as the front-end or pre-amplifier for an existing converter.—Editor.*

SOME time ago Mullard introduced a high-slope double triode, designed primarily for computer service. As this valve has a slope of 12.5 mA/V it was thought it would be very suitable for use as a cascode amplifier at 145 mc; the design shown here was finally evolved, as being simple and giving a very good performance.

The circuit consists of the E88CC cascode RF stage, a pentode mixer using a 6AK5, and an oscillator-multiplier employing a 12AT7 or 6J6. It can be seen that the design uses no difficult-to-obtain components, but the converter is capable of a very good performance, having a measured noise figure of 3.5-4 dB, and a phone signal of 25 dB down on 1  $\mu$ V is fully readable.

## Circuit Arrangement

The oscillator is in the normal Squier over-tone circuit, using one half of a 12AT7, the other half being the multiplier. The crystal chosen was 7.225 mc, which can be easily obtained. The output of the local oscillator chain, V3, is thus 130.040 mc, which gives an IF of about 14-16 mc. This range was decided upon somewhat reluctantly at first, as it was thought that break-through from BC stations might be troublesome, but this has not been so proved in practice. The big advantage of having the IF tunable in this region is that most receivers have adequate gain and selectivity—and, in the case of the BC-342 and BC-348 series, very good bandspread.

If, however, IF break-through at the main receiver is troublesome, one stage of IF amplification may be built on the converter chassis. This will, of course, have no effect on signals in the IF range which are getting right through

the converter from the 2-metre aerial; in the prototypes no trouble was experienced from this source, as inductive coupling is used throughout.

The mixer, V2, follows the conventional design, using a 6AK5 pentode. This was decided upon as a pentode mixer is more sensitive than the triode, thus enabling the oscillator chain to be kept simple. Although a little noisier than the triode, in practice this was found no drawback as the RF stage has ample gain to overcome this extra noise.

## RF End

Several circuits were tried in the RF stage but that presented here was evolved as being the best and most repeatable version. This circuit also has the advantage that it may easily be duplicated for any frequency with no tendency to regeneration, despite the lack of neutralisation—in fact, the writer is using it in the RF stage of his vintage HRO.

As with any VHF gear, great care must be taken with layout and construction, so the following notes may be helpful to the less-experienced constructors. The coaxial socket for the input must be mounted close to the first tuned circuit, in order that the maximum of coupling may be achieved. The input coil, L1, is resonated by C1 and the C<sub>gk</sub> of the first section of V1, hence C1 needs to be kept as low as possible and L1 made high-Q.

The screen across the RF stage valve base should be mounted as shown in the sketch, soldered to pins 4, 9, and the central spigot; this earths one side of the heaters, leaving the other in the grid compartment, fed *via* an RF choke and feed-through capacitor; the axis of the choke should be perpendicular to that of L1.

A small hole is drilled in the screen between pins 6 and 3 for a short length of 18g. tinned copper wire with a piece of insulated sleeving slipped on to it; this is soldered to pin 6 and allowed to protrude into the anode compartment; C3 and R3 are connected between this and pin 3.

The cascode anode coil, L2, is tuned by the valve capacitance, thus enabling a higher value of inductance to be used; this coil is coupled inductively to the mixer grid coil, L3—in fact, the grid coil is interwound with that of the anode circuit. The grid inductance is tuned by a 3-8  $\mu$ F Philips trimmer, C6. The IF is taken to the main receiver *via* a screened lead from the link winding on the mixer anode inductance, L4.

As stated, the oscillator-multiplier follows

the normal pattern, producing output on three times the crystal frequency. This type of circuit seems to work very well with the surplus FT.243 series crystals in the range 7-8 mc, the position of the tap on L6 being not unduly critical. No trouble should be experienced in tuning the multiplier anode to the correct frequency, as only one peak can be found in the tuning range with the values specified; it should be noted, however, that adjustment of the mixer grid will affect the multiplier as it is closely coupled.

**Setting Up**

When all the constructional work has been finished, the chassis should be examined for dry joints, wrong connections and so on, and power applied; a stabilised power supply is not essential, but is very desirable for any VHF converter. The main receiver should be set to 21.675 mc and C13 adjusted until the oscillator is clearly crystal controlled at or near this frequency (or three times that of the funda-

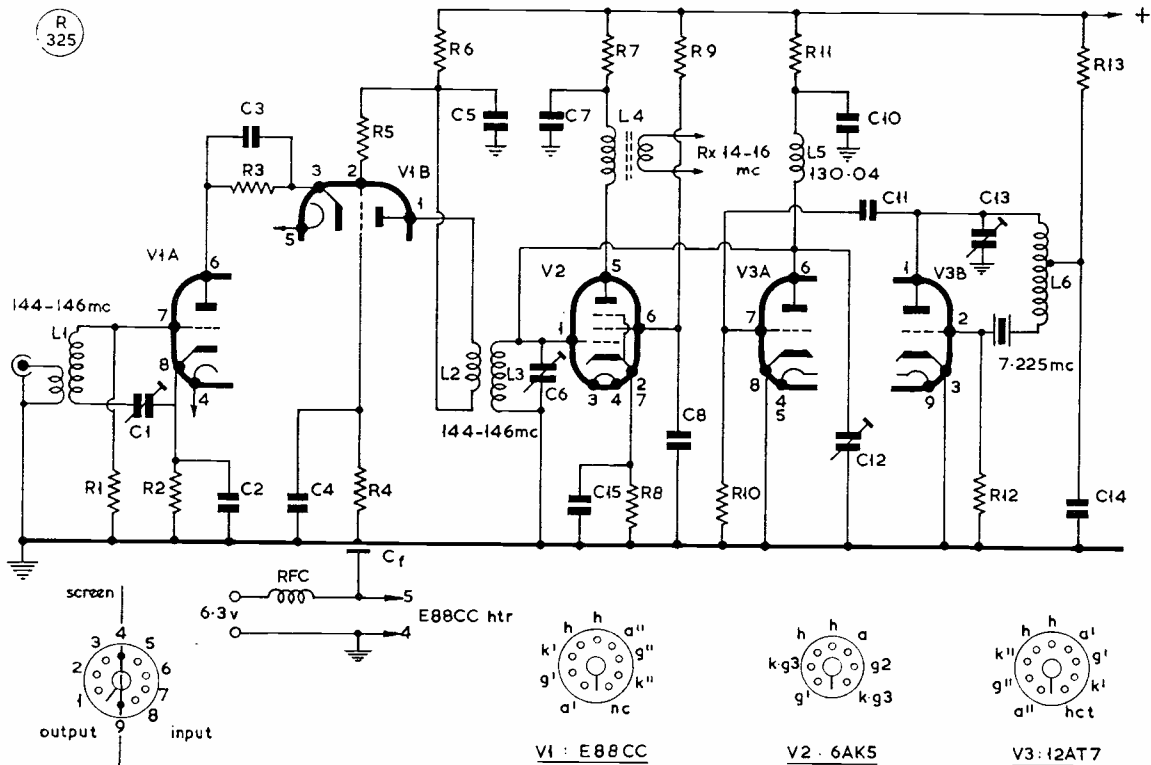
mental crystal used).

The receiver should then be tuned to 15 mc and L4 adjusted for maximum "sharsh" from the mixer; then, when the multiplier anode is

**Table of Values**

**Cascode Two-Metre Converter**

C1, C6,	R3 = 100 ohms
C12 = 3-8 $\mu\mu\text{F}$ Philips	R4 = 330,000 ohms
trimmer	R5 = 220,000 ohms
C2, C3,	R6 = 10,000 ohms
C4 = .001 $\mu\text{F}$	R7, R11 = 47,000 ohms
C5, C7,	R8 = 220 ohms
C8, C10,	R9 = 1 megohm
C14, C15 = .01 $\mu\text{F}$	R10, R13 = 3,000 ohms
C9 = 4.7 $\mu\mu\text{F}$	R12 = 22,000 ohms
C11 = 15 $\mu\mu\text{F}$	RFC = RF choke, 13 ins.
C13 = 3-30 $\mu\mu\text{F}$ Philips	26g. on $\frac{1}{4}$ in. ceramic resistor former
trimmer	V1 = Mullard E88CC
Cf = .001 $\mu\text{F}$ feed-through	V2 = Brimar 6AK5
R1 = 100,000 ohms	V3 = Brimar 12AT7
R2 = 68 ohms	
L1 = 5 turns 18g. enamelled, $\frac{3}{8}$ -in. diameter, air spaced.	
L2, L3 = 4 turns 18g. enamelled, $\frac{3}{8}$ -in. diameter, air spaced.	
L4 = IF output coil: For 15 mc, 20 turns 22g enamelled, on $\frac{1}{4}$ -in. diameter Alladin former, in can.	
L5 = 3 turns 18g. enamelled, $\frac{3}{8}$ -in. diameter, air spaced.	
L6 = CO coil: For 7 mc third harmonic crystal, 18 turns 20g. enamelled, on $\frac{3}{8}$ -in. diameter Alladin former, tapped at 6t.	



Circuit of the Cascode two-metre converter described in the article, using an E88CC twin-triode in the RF stages. This is a particularly useful valve at VHF, and the RF section as shown here could well be built up as a separate pre-amplifier for an existing converter. Though the 7 mc frequency chosen produces a tunable IF range of 14-16 mc, other IF's could be used by change of crystal frequency and values for the inductances L4, L5 and L6. Mixer injection can be partially controlled by C12 and, with the values given, the RF end is sufficiently broad-band over the signal frequency range. The use of inductive coupling throughout ensures minimum break-through interference.



tuned by C12, a further increase in noise should be observed.

At this stage it should be possible to hear signals from the aerial, as the RF circuits are relatively broadband; when a signal is found, L1, L2 and L3 should be adjusted for maximum throughput on that signal.

In order to obtain the best noise-figure a noise generator and some form of output meter are essential. The best noise figure will be found with C1 slightly *detuned capacitively*; the coupling of the aerial may also be varied

for a good noise figure, which in the prototypes was between 3.5 and 4 dB, little adjustment being needed. When the converter is operating properly, shorting the grid of V1 to chassis should result in a marked decrease in noise.

The RF portion might conveniently be made up as a pre-amplifier by those constructors wishing to improve their two-metre receivers at minimum cost and trouble.

The writer would like to thank the Director, Radio Research Station, for permission to publish this article.

## • • • The Mobile Scene • • •

**T**HIS month we have details of two more Rallies— at *South Shields, Co. Durham*, on July 10, and at *Buxton, Derbyshire*, on August 28, starting from Stockport for those taking part in the motoring events (see details p.269)—with a report on the very successful Rally organised by Spen Valley Amateur Radio Society on May 22.

\* \* \* \*

We would particularly ask Rally organisers to let us have (or depute somebody to write) a full report on their meeting immediately after it takes place, so that it can be included in this feature. What we particularly want to know is number of vehicles actually fitted /M; bands mainly used, with number of mobiles worked by the controls for each band; organised competitions and winners; an estimate of the total attendance; and any happenings of special interest during the Rally, with the call signs of any distinguished visitors. Good photographs that we can use will, of course, always be welcomed.

\* \* \* \*

The third Northern Mobile Rally was held at Harewood House (residence of H.R.H. The Princess Royal) on May 22, and once again the weather helped to attract a record attendance of more than 800 visitors to this now well-established event, laid on by the Spen Valley group with G3IJC as organiser. On arrival each visitor received a numbered folder-guide, with a sketch of the grounds. There were the usual raffles, with over 120 prizes, and also a free draw for the juniors, "each child a certain winner," incidentally. The distance-traveller prize was picked up by G3LZR/M from Romford, Essex, who made the long double journey on the day, riding a well-equipped motor-cycle combination; an unusual competition in the form of an Amateur Radio crossword, devised by G3KNA, was won by G3DTA/M, G3FWL and G2HAP/M. The mobile competition—in which G3ESP/M was first, with G3GWR/M and G3DMK/M as runners-up—was a novel affair and caused great amusement. On the word "go," each competitor had to find his own QSL card among all the rest spread face downwards on the ground,

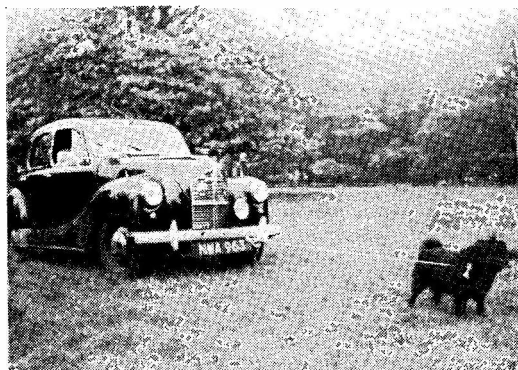
double back to his vehicle, switch on the /M gear, and transmit his call sign and code number; the first three calls identified by the control station were the winners. Of the hundred or so cars in the park, the great majority were equipped /M for Top Band; a prominent 160m. mobile was G3LDJ/M, on a scooter fitted with a 19 Set, rotary power supply, ATU, 12v. aircraft battery and 16-foot whip!

\* \* \* \*

Following are the Mobile Rally meetings arranged for the next two months:

**July 3:** At *Harlow and Hunstanton*—for details see p.210 June issue.

**July 10:** Organised by the South Shields & District Amateur Radio Club, at Bents Park Recreation Ground, South Foreshore, South Shields, Co. Durham. Reserved car park 11.0 a.m. to 6.0 p.m., and refreshments available on the ground; talk-in by G3KZZ/A on 1980 kc. North-bound A1 traffic turn off at Birtley by-pass, 10m. north of Durham; south-bound traffic through Newcastle and pick up A184 in Gateshead; Tees-side traffic take coast road from Sunderland. Prizes will be given for the greatest distance travelled to and from home



At the Northern Mobile Rally on May 22, G2DYY/M found he had a flat battery — so he had to organise a tow to get started!

on the day of the Rally, and the longest distance worked /M to the control station; other events include equipment judging and raffles. Any further details from: R. Ray, G3NCL, 16 Holystone Avenue, Gosforth, Newcastle-on-Tyne, 3.

**July 17:** Southern Counties Mobile Rally at Beaulieu, Lymington, New Forest, Hants. (B.3056, Lyndhurst-Beaulieu). Talk-in on Top Band by G3IVP/A on 1980 kc and G2HIF/A on 144.14 mc, opening at 10.30 a.m. Attractions will include mobile treasure hunt, visit to Lord Montagu's Vintage Car Museum and, if weather permits, trips on the river. Lunch at 6s. 6d. and tea at 3s. 6d. must be booked in advance, by not later than July 9. Programme of events available at 6d. Write, with s.a.e., to: R. Bassett, 42 Norham Avenue, Shirley, Southampton 76123.

**August 9-12:** Mobile-Marine Rally in connection with the National Rally of Boats at Stoke-on-Trent—see p.210 June issue for details. Further information next month. In the meantime, U.K. amateurs operating /MM in canal craft should get in touch with: V. J. Reynolds, G3COY, hon. secretary, Stoke-on-Trent Amateur Radio Society, 90 Prince's Road, Hartshill, S-o-T, Staffs.

**August 20:** Mobile Rally held in connection with Hetton Show, Co. Durham, and organised by Houghton-le-Spring & District Radio Club; for details, see p.210 June issue. Further information next month. For bookings and car window stickers, write, with s.a.e., to: S. L. McAteer, G3CKC, 20 Kirkdale Street, Low Moorsley, Hetton-le-Hole, Co. Durham.

**August 28:** Organised by the South Manchester Radio Club, in collaboration with the Stockport Radio Society, this Rally will be held in the Pavilion Gardens at Buxton, the Peak District beauty spot and health resort, with competitors in the treasure hunts (one for /M's and the other for non-mobiles) making their starts from the Davenport Cinema Car Park, Stockport. Thus, the Rally will be on the same lines as the successful event last year. Talk-in will be provided on Top Band and two metres, and further details will be given in the next issue. For advance information write, with s.a.e., to: C. M. Denny, G6DN, 18 Willoughby Avenue, Didsbury, Manchester.

\* \* \* \*

And that makes it a total of no less than 16 major Rally events organised for the period April to August this year; there have also been quite a number of local Club /M affairs, not intended to attract visitors from outside the neighbourhood. As we forecast in the March issue of SHORT WAVE MAGAZINE, this has



How they organise things up North—G3DMK/M receives his greeting on arrival at Harewood House for the Northern Mobile Rally on May 22, at which the total attendance was over 800, in glorious weather.

certainly turned out to be the busiest and most interesting season yet on the /M front—and some of the big meetings have still to take place. By the end of this year, we might well see 1,000 mobile licences out in the U.K.; the total is around the 900-mark now.

There are no immediate additions to be made to the Mobile Register, the last entries for which appeared on pp.210-211 of our June issue; and in that list, for "G3JNZ" read G3NJZ.

#### ARMY W.R. AMATEUR RADIO SOCIETY

The Army Wireless Reserve Amateur Radio Society, associated with 404 Signal Squadron, A.E.R., is already in being, and has been an active body for several years. There is now a move afoot to affiliate with it, on a national basis, all Amateur Radio clubs and societies having Army connections, such as R.Sigs. and R.E.M.E. formations at present operating only as local units. In brief, the idea is a national organisation somewhat on the lines of that developed so successfully by the R.A.F. through the Royal Air Force Amateur Radio Society. Secretaries of Army radio clubs interested in this proposal are invited to get in touch with: P. J. Crosbie, R.Sigs. (GW3NMQ), 21 Med. Regt., R.A., Rhyl, North Wales. The hon. secretary of the A.W.R.A.R.S. is Major D. W. Haylock, R.Sigs. (G3ADZ), 3 Norris Gardens, Grange Estate, Havant, Hants.

#### SEND THEM ALONG

We are always glad to see good photographs of Amateur Radio interest for possible publication in SHORT WAVE MAGAZINE—those we can use are paid for on appearance. Prints should be clear and sharp, and can be any size; they should be accompanied by descriptive notes. If callsigns are involved, be sure to give them correctly.

# NEW QTH's

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

**G3NSX**, W. Pearson, Timpson Cottage, 9 Long Lane, Limbrick, Nr. Chorley, Lancs.

**G30AA**, P. Welch, Whetstone, Somerset Road, Edgbaston, Birmingham, 15.

**G30AA/A**, P. Welch, West End Cottage, Yarpole, Leominster, Herefordshire.

**G30CG**, E. H. Lewis (*ex-MD7EL/MD5EL/ST2AM*), 4 Bobbys Lane, Eccleston, St. Helens, Lancs.

**G30CG/A**, E. H. Lewis, Electrical Engineering Dept., St. Helens Technical College, Brook Street, St. Helens, Lancs.

**G3OCK**, L. W. Hodgetts, 164 Probert Road, Oxley, Wolverhampton, Staffs.

**G3OCS**, O. Kennedy, Kenholme, New Park Gardens, Brightlingsea, Essex.

**G3ODC**, D. A. Martin, 11 Tregelles Close, Highbridge, Somerset.

**G3ODL**, B. Everard, 7 Lord Roberts Street, Walney Island, Barrow-in-Furness, Lancs.

**GM3ODN**, D. A. Fyfe, 25 Ava Street, Kirkcaldy, Fife.

**G3ODX**, S. C. Clarke, 17 Linden Avenue, Coulsdon, Surrey.

**G3ODY**, R. L. Field, 15 Burntwood Close, Caterham, Surrey. (*Tel.: Caterham 4859.*)

**G3OEC**, C. J. Isham, 10 Rokeby Road, Harrow, Middlesex.

**G130EN**, G. Nixon, 19 Slievenamaddy Avenue, Newcastle, Co. Down.

**G3OET**, R. V. H. Tunstill, 21 Chaucer Road, Chelmsford, Essex. (*Tel.: Chelmsford 4967.*)

**G3OEZ**, G. Passmore, Dartmouth, Bridge Road, Bursledon, nr. Southampton, Hants.

## CHANGE OF ADDRESS

**G2FCL**, A. R. Thompson, 20 Brendjean Road, Morecambe, Lancs.

**G2FSP**, J. E. Forde, Harrock View, Barmskin Lane, Heskin, Chorley, Lancs.

**G2HJT**, E. J. Wellman, 30 Bake-well Avenue, Hazelhurst, Ashton-under-Lyne, Lancs.

**G3BVG**, N. Caws, 51 Grosvenor Street, London, W.1. (*Tel.: MAYfair 4044.*)

**G3DUV**, J. J. Parker (*ex-D2FR*), 28 Kempson Avenue, Wylde Green, Sutton Coldfield, Warks. (*Tel.: Sutton Coldfield 7240.*)

**G3EFD**, M. A. Thompson, Hillcrest, Leazes Lane, Hexham, Northumberland. (*Tel.: Hexham 269.*)

**G3FKH**, D. Roberts, 23 Pine Drive, Ingatestone, Essex. (*Tel.: Ingatestone 442.*)

**G3IZA**, D. S. Allison, 46 Craster Road, Brixton Hill, London, S.W.2.

**G3JCC**, J. C. Cunningham (*ex-GM3JCC*), 15 Cranwell Road, Greasby, Wirral, Cheshire.

**G3JDT**, B. J. Read, 97 Oxford Road, Waterloo, Liverpool 22, Lancs.

**G3JSW**, D. K. Clarke, 25 Main Avenue, Ashfield, Ashby, Scunthorpe, Lincs.

**G3JSW/A**, D. K. Clarke, 188 East Common Lane, Scunthorpe, Lincs.

**G3JXE**, R. S. Wilkinson, 195 Edinburgh Street, Hessle Road, Hull, Yorkshire.

**G3KQZ**, P. F. Bernal, A.R.I.C.S., 423a Kingsbury Road, London, N.W.9.

**G3KXF**, D. S. Roden, 65 Ullswater Road, Seadown, Sompting, Sussex.

**GM3LHV**, J. Ellerby, 6 Clackmae Grove, Edinburgh, 9.

**G3LJG**, H. Anderson, 4 Beech Road, Croston Road, Garstang, Nr. Preston, Lancs.

**G3MPN**, D. E. Johnson, 5 Hill Road, New Costessey, Norwich, Norfolk.

**G3MYF**, W. H. Walton, 74 Holmefield Road, Ripon, Yorkshire.

**G3NUP**, J. L. D. Targett (*ex-GM3NUP*), 1 Rectory Terrace, Pulham Market, Nr. Diss, Norfolk.

## AMERICAN AMATEUR RADIO MAGAZINES

Every now and again, we are asked "What is *QST*" or "Who is *CQ*"? While the quick answer will be known to many readers, it does need to be said that *QST*, one of the world's oldest Amateur Radio periodicals, is the official organ of the American Radio Relay League, the national amateur organisation in the U.S., while *CQ Magazine* (as it likes to be known) is a contemporary Amateur Radio periodical published from New York. Both are monthlies, and are obtainable through us, by subscription only. Each issue of both carries several technical and constructional articles of specifically amateur interest, with regular news features, including VHF and DX, and sections devoted to such interests as novice, RTTY and SSB.

*CQ Magazine* costs 44s. for a year of 12 issues.

and *QST* 43s., post free by surface mail from the U.S. Subscription orders, with remittance, should be sent to: Publications Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1. We regret that we are unable to supply single copies or back numbers of these publications, though they can sometimes be obtained to order.

## V.o.A. AMATEUR RADIO BROADCASTS

Further to the note on p.520 of the February 1960 issue of *SHORT WAVE MAGAZINE*, we are now informed that the transmission periods are 2115-2130 GMT and 2215-2230 GMT on Sundays, through a number of "Voice of America" outlets in the long-, medium- and short-wave bands. The programme is specifically Amateur Radio in content, and is conducted by W2SKE.

# THE OTHER MAN'S STATION

**G3NPB**



HERE we have the station of G3NPB—owned and operated by D. W. Blackford, Kinfair, Broughton, Malton, Yorks.—who was licensed in August, 1959. His introduction to Amateur Radio came about by the hearing of G3MWQ (50 yards away) on a BC receiver; he undertook the responsibility of getting David Blackford, a complete novice, on the air, giving him both R.A.E. tuition and Morse practice.

The equipment shown in the photograph consists essentially of the Canadian Marconi CNY/2 Transceiver assembly, running about 12 watts input on the transmitter side. A crystal calibrator is available for frequency setting, and the station receiver is an R.107, as the CNY/2 is operated mainly as a transmitter and not as a transceiver. The CNY/2 transmitter is a shunt-fed Hartley using an 807 into an 807 as PA, the frequency coverage being from 1.5 to 9.0 mc, thus giving the three LF amateur bands; in the original, modulation is by choke-control, using another 807, with a double-button carbon microphone; this has been modified for a crystal microphone. The aerial at present used is end-fed, and half wave for Top Band.

As soon as the licence was received, operation was started on the 80- and 40-metre bands; good coverage of the British Isles was obtained on 80m. phone, and on 40m. all European countries were worked, with UA1 as the best phone DX. In October last, a move was made to 160 metres, and the aerial (which had started as an 80-metre Windom) was given a counterpoise; using this system, 36 U.K. counties were raised on Top Band. Since the 160m.

half-wave wire went up, 62 counties have been worked, with eight countries, including EI and OK. G3NPB is now the holder of WABC Certificate No. 213, with Phone endorsement No. 10—nice going in but six months on Top Band, and less than a year on the air.

In offering his photograph and notes for this feature, G3NPB says he was “encouraged by the fact that SHORT WAVE MAGAZINE is just as interested in New Timers as in the OT’s, and in small and simple rigs as well as the large and elaborate.” Quite right—and we hope to hear from many more new timers, with photographs and descriptions of their stations, results achieved since date of licensing and any other details they care to give.

## PIRATE PROSECUTIONS

There have recently been several G.P.O. prosecutions for piracy on the amateur bands. At Wood Green, London, a youth called Huxtable was fined £15, with three guineas costs; and at Newport, I.O.W., another named Cole had to pay £7, and £3 costs, with forfeiture of his gear. At Whitley Bay, Northumberland, a station signing “G3KQS” was causing interference — by modulating an electronic organ in a church! There were also complaints of TVI. The real G3KQS, also of Whitley Bay, had been inactive for some years, and had wisely taken the precaution of reporting the arrival of QSL cards to the Post Office. The G.P.O. traced “G3KQS,” and one J. H. Newton found himself in the local Magistrates’ Court; he was fined £5, with three guineas costs, and had his equipment confiscated.

# THE MONTH WITH THE CLUBS

By "Club Secretary"

(Deadline for August issue : July 15)

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

**F**IELD Days, D/F Hunts, Mobile Rallies, Visits and Outings—all these make up the bulk of the summer programme, keeping Club officials busy. But all the time there must be in the background an awareness that a winter's programme must be prepared to keep the Club together and the members happy.

We would like to see some suggestions from the better-organised and larger Clubs concerning new ideas. These we will then willingly pass on for the benefit of the others. The run-of-the-mill events—talks by a member, discussions, Junk Sales—all these have been worked to death. Just once a month something novel should be introduced.

Most Clubs can produce one or more tape recorders from among their membership. One idea, thrown out here and now, is to record the questions of a Quiz Programme, to inflict them on your own Club first, and then to exchange the tape with another Club willing to organise a similar Quiz. (Comments on the correct answers could be given at the end of the tape.) We might even arrive at an Inter-Club Quiz Programme carried out by this means, with tapes circulating in all directions for the whole season!

Think it over, try it out, and let us know.

**Bridlington**, having formed themselves only about six weeks ago, already have 27 members and an interesting programme. They meet in the B.R. Social Club Room, Station Approach, at 7.30 p.m. on Mondays. Lined up already are lectures, a Quiz, junk sales, discussions, Morse classes and instructional classes for R.A.E. We are glad to welcome them to these columns.

**British Timken** (Northampton), after some inactivity, have started building a full-power transmitter, with an 813; they have lost two Tri-Band Quads in winter gales, and their third (permanent,

they hope) is under way. SM5BMN will shortly be showing them some films; a visit to the College of Aeronautics (Cranfield) is arranged; and they will be airing the new Tx at the British Timken Show, August 26 and 27.

**Cornish** met in Falmouth for a discussion on Aerial Masts and Rotating Beams, followed by a talk on conditions in Liverpool by G3LIS, a visitor from that area. There were 26 members at this meeting, which closed with a demonstration of G3HZV's home-made insulation tester.

**Crystal Palace** meet on July 9 (an informal meeting) and on the 26th, when there will be a Morse class and some practical work. **East Kent** tell us that they have been very active, despite the absence of reports, and that four of their members sat for R.A.E.;



On May 22 last, the founder of the International Ham Hop Club, G3CED of Broadstairs, Kent (far right), was visited by W0GDH (holding microphone), president of the I.H.H.C. Others in the photograph are ZS1IR, seated left, who is the I.H.H.C. representative for South Africa, and his XYL. The rig at G3CED consists of a DX-40U, CR-100 and three different aerial arrays.

their Williams Trophy, for construction, was won by Mr. R. Dale, one of the R.A.E. aspirants himself; future events include a talk on RAEN by G6NU, and a Bring-and-Buy sale. Meetings every Tuesday, 7 a.m. at Canterbury Technical College.

**Flintshire** meet on July 4 for a talk on Subscriber Trunk Dialling, by a GPO Area Engineer; on the 25th they have arranged a 160-metre D/F Hunt, with GW2CCU/M as the hidden station. **Guildford**, at a recent meeting, heard a talk by G3NFA on Home Construction of Radio Equipment, with tips on usable materials available at scrap prices, and suitable tools. The July meeting will be on the 22nd, at The Cannon, Portsmouth Road.

**Hull** will be hearing about Grip Dip Meters (Mr.

#### NOTICE TO ALL HONORARY SECRETARIES

Appearance in this space is free to those Clubs who care to make use of it for publicity and the reporting of their activities. Hon. secretaries are asked to ensure that their reports, addressed "Club Secretary," Short Wave Magazine, 55 Victoria Street, London, S.W.1, reach us by the due date—given each month at the head of the "Clubs" article—all through the year. It is impossible to write in late reports, received after we close for press. All reports must include the name and QTH of the hon. secretary, for publication in the address panel. Photographs to illustrate the feature will be welcomed, and payment is made for those we can use.

#### Names and Addresses of Club Secretaries reporting in this issue:

**ABERDEEN:** W. K. Heggie, GM3NHW, 80 Leslie Terrace, Aberdeen.  
**ACTON, BRENTFORD & CHISWICK:** W. G. Dyer, G3GEH, 188 Gunnersbury Avenue, London, W.3.  
**BARNET:** D. K. Robinson, 3 Castle Road, London, N.12.  
**BRADFORD:** M. Powell, G3NNO, 28 Gledhow Avenue, Roundhay, Leeds 8.  
**BRIDLINGTON:** J. H. Jones, G3GBH, Flat 2, 18 Vernon Road, Bridlington.  
**BRITISH TIMKEN:** D. G. Chatfield, G3JXU, 55 Bush Hill, Weston Favell, Northampton.  
**CANNOCK CHASE:** P. J. Davis, G3NTU, 45 Broad Street, Bridgtown, Cannock.  
**CHELTENHAM:** J. H. Moxey, G3MOE, 11 Westbury Road, Leckhampton, Cheltenham.  
**CORNISH:** W. J. Gilbert, 7 Poltair Road, Penryn, Cornwall.  
**CRAY VALLEY:** H. Miles, G2NK, 59 Amherst Drive, St. Mary Cray, Kent.  
**CRYSTAL PALACE:** G. M. C. Stone, G3FZL, 10 Liphook Crescent, London, S.E.23.  
**DERBY:** F. C. Ward, G2CVV, 5 Uplands Avenue, Littleover, Derby.  
**EAST KENT:** D. Williams, G3MDO, Llandogo, Bridge, near Canterbury.  
**FLINTSHIRE:** J. Thornton Lawrence, GW3JGA, Perranporth, East Avenue, Prestatyn.  
**GRAVESEND:** D. Andrews, G3MXJ, 42 The Fairway, Gravesend.  
**GUILDFORD:** S. W. Saddington, G2FXQ, 59 Hamilton Avenue, Pyrford, Working.  
**HASTINGS:** W. E. Thompson, G3MQT, 8 Coventry Road, St. Leonards-on-Sea.  
**HULL:** G. G. Wray, G3MVO, 93 Wolfreton Lane, Willerby, Hull.  
**INTERNATIONAL HAM HOP CLUB:** M. Allenden, G3LTZ, 16 Grovefields Avenue, Frimley, Aldershot.  
**LIVERPOOL:** H. James, G3MCN, 448 East Prescott Road, Liverpool 14.  
**LOTHIANS:** L. Lumsden, 33 Hillview Drive, Edinburgh 12.  
**MITCHAM:** M. Pharoah, G3LCH, 1 Madeira Road, Mitcham.  
**NEWBURY:** J. A. Gale, G3LLK, Wild Hedges, Crookham Common, Newbury.  
**NORTH KENT:** D. W. Wooderson, G3HKX, 75 Mount Road, Bexleyheath.  
**PURLEY:** E. R. Honeywood, G3GKF, 105 Whytecliffe Road, Purley.  
**R.A.I.B.C.:** W. E. Harris, G3DPH, 4 Glanville Place, Kesgrave, Ipswich.  
**SILVERTHORN:** B. Lea, 9 Balgonie Road, Chingford, London, E.4.  
**SLADE:** C. N. Smart, 110 Woolmore Road, Birmingham 23.  
**SOUTH BIRMINGHAM:** G. E. Simonite, G3JAO, 19 Wistaria Close, Northfield, Birmingham 31.  
**SOUTHGATE:** A. G. Edwards, G3MBL, 244 Ballards Lane, North Finchley, London, N.12.  
**SOUTH YORKSHIRE:** W. Farrar, G3ESP, 2a Highbury Avenue, Bessabarr, Doncaster.  
**SPEN VALLEY:** N. Pride, 100 Raikes Lane, Birstall, Leeds.  
**SURREY (CROYDON):** S. A. Morley, G3FWR, 22 Old Farleigh Road, Selsdon, South Croydon.  
**TORBAY:** G. Western, G3LFL, 118 Salisbury Avenue, Barton, Torquay.  
**WIRRAL:** A. Seed, G3FOO, 31 Withert Avenue, Bebington, Cheshire.

D. Cocking) on July 12, and about Two-Metre Converters (G3AGX) on the 26th. On each Monday night there are short sessions with the Club Tx, Junk Sales, Raffles and Morse Practice if required.

**Liverpool** held four meetings in June, concluding with a D/F Contest, and also operated GB2LS from Prescott Carnival. **Silverthorn** have now acquired new premises at the South Chingford Community Centre, Hall Lane, Chingford, E.4, and meet there on alternate Fridays, 7.45 p.m. New members will be welcomed—for secretary's QTH see panel.

**South Birmingham** will be appearing at the Exhibition Station at Highbury Park, King's Heath, on July 2, and will hold a normal Club meeting on July 21. **Wirral** have a Junk Sale on July 1, a lecture-demonstration on mobile working (G2AMV) on July 15 and a D/F Contest on the 17th.

**Torbay** have recently heard a lecture on Modern Valve Technique (G3CMT), who showed many examples of S.T.C. valves to the 30 members present; G3BBF, home on leave from 5A2CV, also gave them a talk; on June 18 G3IEA described his VHF experiences.

**Acton, Brentford & Chiswick** will meet on July 19 to hear from G6RC about his SSB rig; on August 16 there will be a general discussion on members' problems. Both meetings at 66 High Road, Chiswick, W.4.

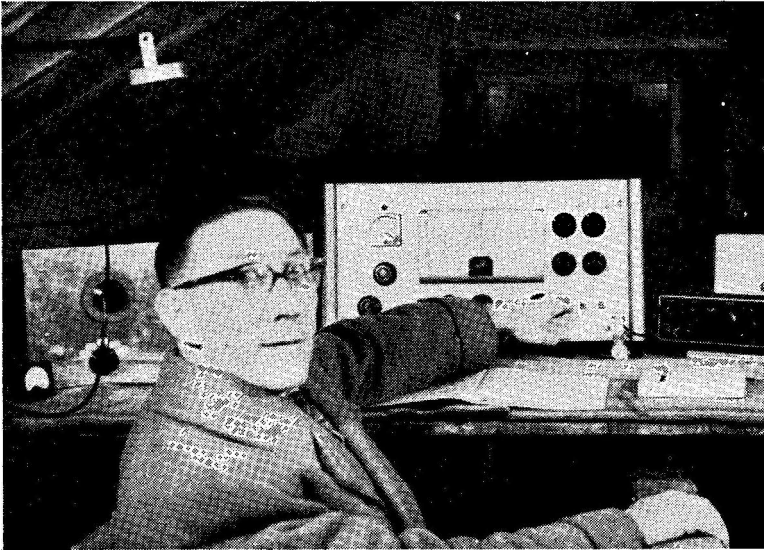
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#### CLUB PUBLICATIONS

We acknowledge, with thanks, the following Club publications: **Crystal Palace** (Newsletter No. 52); **Mitcham** (Newsletter, June); **Newbury** (NADARS Newsletter No. 19); **Hastings** (Natter-Net Notes, No. 8); **Purley** (Newsletters, May and June); **R.A.I.B.C.** (Radial, Vol. 6, No. 3); **South Birmingham** (Vol. 1, No. 4); **Surrey** (SRCC Monthly News, June); **Southgate** (Newsletter, June); **North Kent** (Newsletter No. 35).

#### CLUB CALENDAR IN BRIEF

**Barnet:** Informal Discussion on Receivers, July 26.  
**Bradford:** Visit to Broadcasting House, Leeds, July 12.  
**Derby:** Third Annual Mobile Rally, Rykneld Schools, August 14.  
**Spen Valley:** AGM, July 6.  
**Hastings:** CW Operating and Procedure (G3FXA), July 12; Film Show, July 26.



We have heard of portable stations installed in hen roosts — but here is one in a cowshed! When G3MOT went into Wales for a holiday, signing GW3MOT/A, he found a site at a hillside farm overlooking Aberdovey. The equipment included a K.W. Vanguard transmitter and Eddystone S.640 receiver. The aerial was a multi-band dipole and all bands were worked.

**Cheltenham** organised their series of D/F Hunts, to finish on June 5, but this was postponed because of Whitsun; final arrangements not yet made. The second series will proceed as planned; other Clubs are invited to go along and join in the fun. (Full details from G3MOE, G3CGD or G3HCB, *QTHR*.) Top Band nets are mostly confined to Sunday-morning ragchews, starting around 1000 BST and involving stations as far out as Malvern and Swindon.

**Gravesend** now meet at the R.A.F. Club, Overcliffe, on Thursday evenings—except the first Thursday of the month—at 8 p.m. G3FST recently gave a talk on Modulation Checking, and a Film Show was held. A receiver is already installed in the Clubroom, and it is hoped shortly to put a station on the air, using the Club call G3GRS.

**Aberdeen** have a Junk Sale on July 1, after which they are on holiday for two weeks—but the Clubroom will still be open, and the station on the air. On July 9 they will be holding two-metre tests round the town, and on the 29th GM3FKS will talk about TVI.

**Cannock Chase** recently heard a talk on SSB from G3DII; at their next meeting G3BA will be lecturing on VHF. **Cray Valley** will be having a “practical talk” on Transmitter Design by their chairman, G3FBA, on July 26. Meet Station Hotel, Sidcup, 8 p.m.

Members of the **International Ham-Hop Club** met their president, W0GDH, on May 20; and also ZS1IR and his XYL; after lunch they visited GB2SM at the Science Museum. W0GDH now continues his Ham-Hop with a Continental tour, the first phase being arranged by DJ2SY.

**Southgate** meet at Arnos School, Wilmer Way, N.14,

on July 14 for a talk on Microphones and Pick-Ups (Cosmocord). There will be no August meeting. **South Yorkshire** report that their membership now totals 39, including about 12 with licences. Several others recently sat for the R.A.E. G3HNJ is their new chairman, G8BA having retired. On July 12 there will be a general discussion on society activities; on July 28 a talk on SSB by G3KPW.

**Surrey** (Croydon) meet on July 12 for a talk by G2M1; during June they held a Car Rally and Treasure Hunt—possibly a bright idea for other Clubs? **Purley** operated a station from the Summer Fair, as usual, during June; on July 15 they will be holding a field day inquest, and on August 12 the subject of the talk will be Radio Control—with a demonstration.

**Derby** held an Open Evening in June and welcomed W6QWX, who was in the town on a business trip; his talk was recorded for the society's archives. On July 6 they have a Junk Sale, and on the 13th another Open Night.

#### F.O.C. MEMBERSHIP

The latest membership list of the First Class Operators Club shows that it now has 318 members in 42 different countries. The Club publishes its own monthly *Circular Letter*, the current issue being No. 151, and its main objective is to encourage, by example, good operating procedures and behaviour on the air “in the spirit of Amateur Radio.” The hon. secretary is L. Belger, G3JLB, 103 Whitehill Road, Gravesend, Kent.

#### CONTRACTS FOR INTERNATIONAL AERADIO, LTD.

The function of this organisation is to provide communication services for civil aviation, on a worldwide basis. It has recently been awarded contracts in Aden, Cyprus and Ghana, bringing the number of countries in which International Aeradio, Limited, now operates up to 30. The managing director is Gp/Capt. G. R. Scott-Farnie, C.B.E., who is also G5F1; he can be heard working the DX on the HF bands.

#### SOLDIERING ON

First licensed in 1919, having started with receivers in '09, G2ML, of Macclesfield, says that, having reached the age of 72, he may be slackening off a bit, but is still actively interested in Amateur Radio. And on the very day that his letter was received, we heard of a 15-year-old schoolboy getting his licence after passing the R.A.E. and the Morse Test. These two between them could span 100 years of Amateur Radio.



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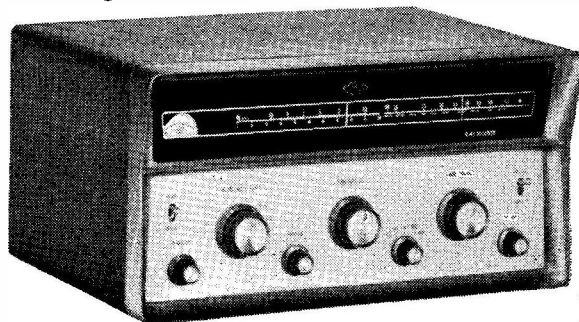
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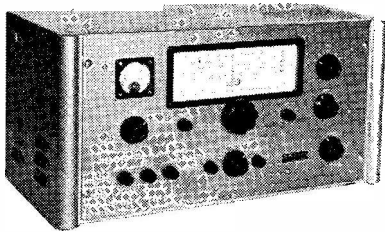
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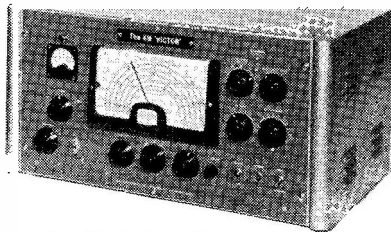
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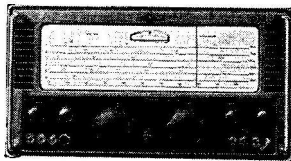
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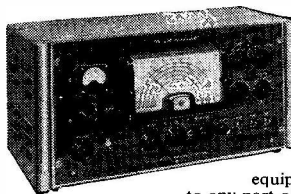
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Patent 25132/57

Regd. Design 885769

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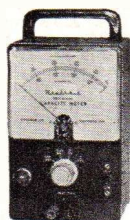
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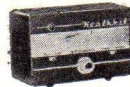
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