

The

SHORT WAVE

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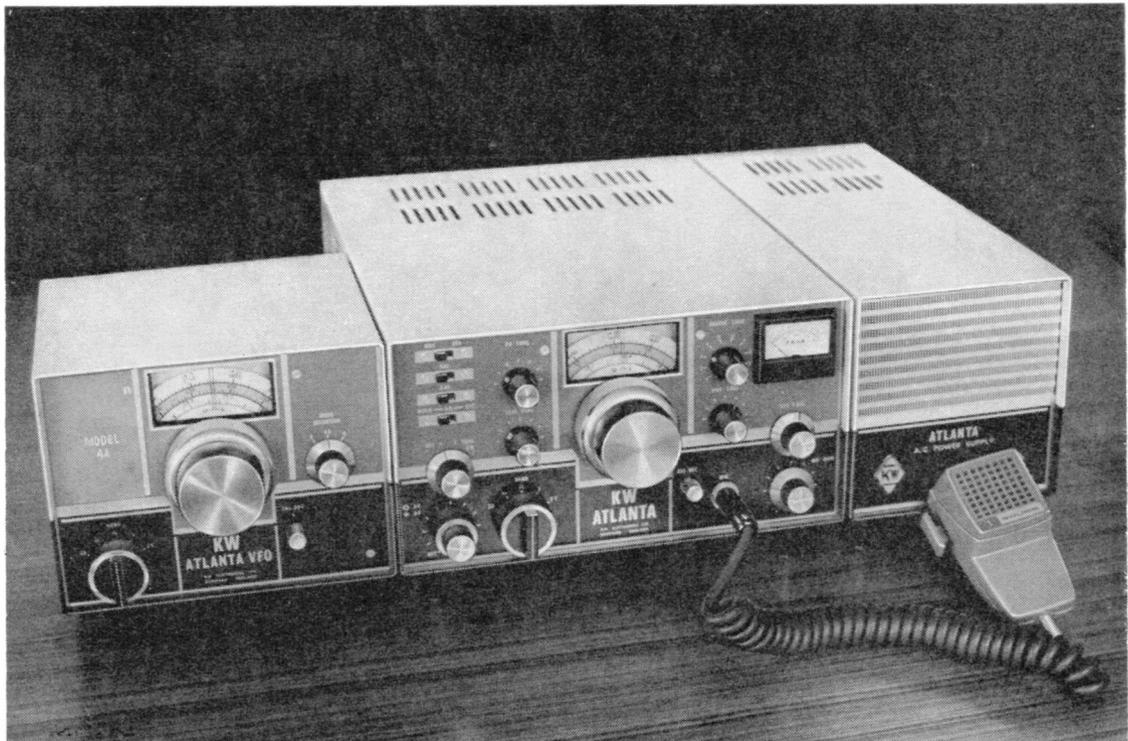
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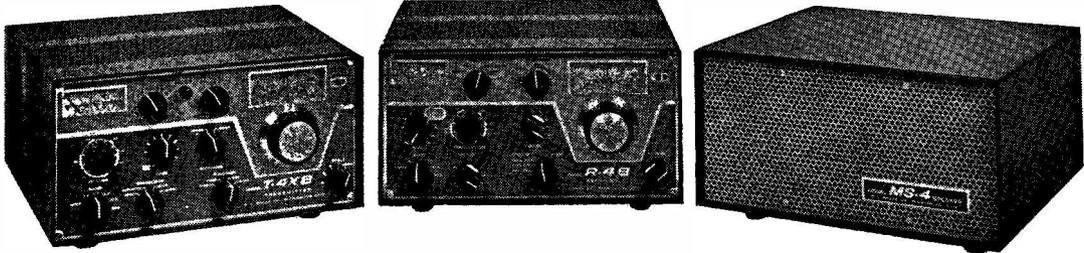


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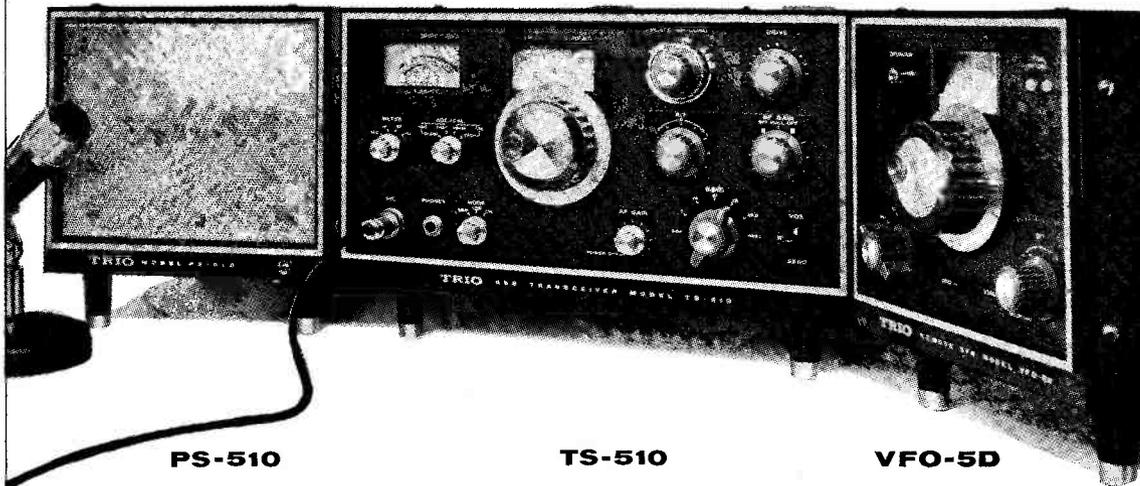
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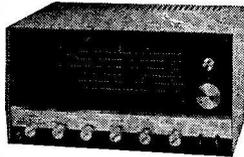
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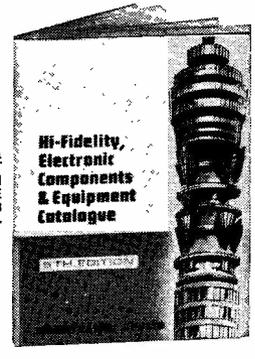
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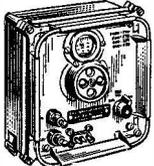
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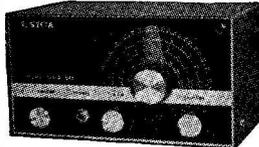
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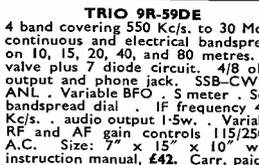
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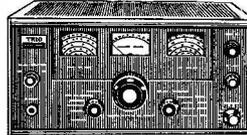
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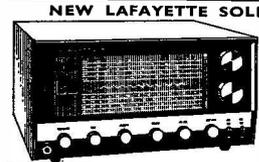


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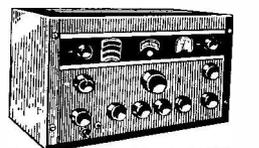
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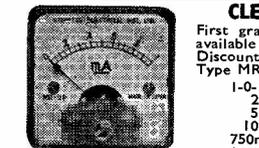
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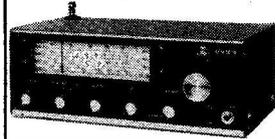
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750mA	27/6	3v DC	27/6	300v AC	27/6
1 amp	27/6	10v DC	27/6	500v AC	27/6
2 amp	27/6	20v DC	27/6	S meter	1 mA
5 amp	27/6	100v DC	27/6		32/-
100-0-100μA	27/6	150v DC	27/6	VU meter	42/-
50μA	40/-	200μA	35/-		
50-0-50μA	37/6	500μA	30/-		
100μA	37/6	500-0-500μA	20mA		
100-0-100μA	27/6	5 amp	27/6	300v DC	27/6
	35/-	1mA	27/6	100mA	27/6
				500v DC	27/6

FULL RANGE OF OTHER SIZES IN STOCK. SEND S.A.E. FOR LEAFLET.

UR-1A SOLID STATE COMMUNICATION RECEIVER



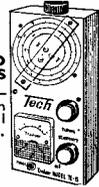
4 bands covering 550 Kc/s.-30 Mc/s. continuous. Special features are use of FET transistors, S Meter, built-in speaker and telescopic aerial, variable BFO for SSB reception, noise limiter, bandspread control, sensitivity control. Output for low impedance headphones. Operation 220-240v. A.C. or 12v. D.C. Size 12 1/2" x 4 1/2" x 7". Excellent value. Only £24. Carr. 7/6.

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CR.45 Kit from ...	10	10	0
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PR.30X (Built in P.S.U.)	8	10	0
RQ.10 Q Multiplier ...	7	5	0
RQ.10X (Built in P.S.U.)	9	17	6
CC.40 Control Unit ...	6	15	0
AT.5 Transmitter ...	17	0	0
T.28 Receiver ...	16	10	0
12/MS Mobile P.S.U. ...	11	10	0
12/RC Control Unit ...	2	10	0
AT5 Mains P.S.U. ...	9	0	0
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- Hallicrafters SX111, not mint but good performer, £50.
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- Sommerkamp FR-100B, £85.
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- SR-500, £35.
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- Inoue IC-700R, £70.
- Lafayette HE-80, £25.

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- Noise generators CT82, £3 10s. (£3.50).
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Write for lists of capacitors, disc, ceramic, electrolytics, feedthroughs, panel lampholders, valve holders, knobs, coils, chokes, zeners, jack plugs, sockets, U.H.F. connectors, 6/- (£0.30) "C" type, switches, resistors (try a bargain lot 1 lb. for 10/- post free—at least 200), etc., etc.

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We have in stock the best in filters—the Medco H.P., 30/- (£1.50) and L.P. 50 ohm £5 4s. (£5.20) and the different Kokusai mechanical filters for SSB, AM and CW, and of course the K.V.G. 9 MHz crystal filters XF-9A, B, C, and M. In addition, we have stocks of the filter used in the Inoue Tx—a very nice 9 MHz crystal filter complete with carrier xtals for £10.

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AMATEUR ELECTRONICS G3FIK

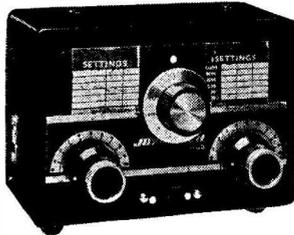
TRIO COMMUNICATIONS EQUIPMENT. We are able to supply the TRIO TS-510 TRANSCEIVER from stock all units being supplied against orders in a fully bench and air-checked condition. Every sale is backed by a full twelve months guarantee and excellent after-sales service is assured. Our apologies to those customers who are presently awaiting delivery of the new TRIO 9R59-DS general coverage receiver due to the fact, however, that the demand for this set has been exceptional but by the time that this appears in print we hope to be in a position to meet all outstanding orders. We list below a selection of quality used equipment in stock at the time of going to press and as we have a large turnover in top-grade used commercial gear URGENTLY require equipment of all types for outright cash purchase. Write, call or 'phone for a spot cash deal.

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KW 2000A TRANSCEIVER. Just in, not previously advertised	165	0	0
JR-310 RECEIVER. Absolutely as new. A bargain at	60	0	0
TRIO 9R-59 RECEIVER. This is the model with in-built Q Multiplier. Brilliant condition	30	0	0
HAMMARLUND HQ170 RECEIVER. Fitted extra half lattice filter	85	0	0
KW VANGUARD TRANSMITTER. Choice of two, both MKII's with 160 metres	39	0	0
EDDYSTONE EC10 Mk. II RECEIVERS. Choice of two both mint	65	0	0
HEATHKIT RA-1 RECEIVER. Very clean indeed	30	0	0
HEATHKIT RG-1 RECEIVER. Again, very good condition	30	0	0
HEATHKIT RG-1 RECEIVER. Fitted calibrator and as above	32	10	0
EDDYSTONE 888A RECEIVER. Grey wrinkle finish, unmarked	65	0	0
EDDYSTONE S640 RECEIVER. Good condition and performance	27	0	0
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AR88D RECEIVERS. Several excellent used sets in stock from	42	10	0
TW TOPMOBILE 160 METRE COMMUNICATOR. Complete with mains p.s.u.	38	0	0
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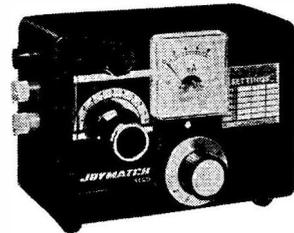
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MERRY CHRISTMAS AND HAPPY NEW YEAR FROM US TO YOU

Getting a bit sick of seeing those crummy pictures month after month. People tell me they don't do the equipment justice and I must agree it is better than it looks. Anyway, Sommerkamp equipment is so well known that I shouldn't have to keep pushing it. There are so many happy users I reckon I can ease off advertising and push some of my other gear. Needless to say, I have all Sommerkamp gear in stock for immediate delivery, checked, serviced and ready to go. I also have a huge stock of spares, including spare manuals (12/6 ea.), and we can carry out any future servicing very promptly. This of course is why the wise man gets his gear from me.

Anyway, enough of this—what about the FE-600 transceiver at £165 complete? Don't be fooled by the price—it's a darned good rig—200W. to a pair of 6146B's, 9 MHz xtal filter, VOX, PTT, calibrator, RIT—all the gubbins and a built-in p.s.u. for £165. The companion FE-3500 1500W linear at £100 with built-in S.W.R. and electronically regulated screen voltage is a pretty good buy too. And, from the same stable comes a new one—the Digital 500. A 500W transceiver with a built-in five figure digital frequency meter like the Signal One. Mind you, D.F.M.'s are not cheap and hence the price will be £300, but you can pay this money for the D.F.M. alone. To be honest, though, it'll take a month or so of thrashing it on the air before we can decide on its merits, but if we like it, you'll be hearing more of it. I must say it's nice to read off "28.572" just like that! Sorry we haven't any glossy brochures on this gear—just a spec. sheet, but glossy brochures will be forthcoming in due course.

I can't leave this section without mentioning the Inoue IC-700 series—a very nice all transistor Rx and transistors Tx to go with it. As a complete station £180, or the Rx by itself at £85. This is the only transistor Rx I know of which will compete with a good valve amateur band Rx. There is, however, one big snag. Delivery is about two months generally speaking, because the demand exceeds the supply (must be a reason!).

Finally, in the transceiver line I must mention the Inoue IC-2F. Doubtless you've heard 'em or heard the lads admiring 'em. It's a 20W all transistor xtal controlled FM transceiver for 2m. giving 10 or more watts output. The PA is automatically protected from damage by means of an SWR bridge and a couple of DC amps which bias off the driver and PA if it sees a high SWR. Other features include electronic switching to eliminate relay problems, DC input filter for alternator hash, a thermistor squelch circuit to eliminate temperature induced squelch drift, an L.P. filter in the output and all-in-all a beautifully designed little handful ready for

mobile or fixed station. By the time you've got 10W. of output, a Rx, mobile p.s.u.'s, coax relay and generally messed about, you'll wish you'd got an IC-2F at £80.

Well, that wraps up the expensive and beautiful new stuff—what about some lower priced items for Christmas presents POST FREE. Electronic keys—the EK-9X at £8.

Headsets. Low impedance padded £2 8s. (£2.40).

Digital clocks. 12 hour AC mains, red or blue, £5 14s. (£5.70).

Intercomms. Ideal for shack, baby alarm, etc. complete with cable and battery £3.

SWR Meter. Asahi Sangyo twin meter job 4½" x 3" x 2½". One meter reads SWR and the other relative output power, meter sensitivity control. 50 ohms standard but resistors for 75 ohms supplied if required £6 16s. (£6.80). PL259 plugs to fit 6/- each (£0.30).

Mikes. Either the very popular Teisco DM501 hand-held PTT 50K dynamic at £2 18s. (2.90) or the luxurious and beautiful YD844 desk mike at £10 4s. (£10.20). It has lift to talk, PTT and locking switch, high output 50K dynamic and sounds terrific.

Solid state p.s.u.'s. Electronically regulated. Anyone working with transistors should have one (Wot? You can build one? Not electronically regulated at these prices!!).

SE-700 switchable 3, 6, 9 and 12v. up to ½A £5 14s. (£5.70).

SE-101A as above to 1A £8 14s. (£8.70).

SE-800 variable, metered 0-15v. up to ½A £8 14s. (£8.70).

Tech TE-65 VTVM £16 14s. (£16.70).

The above prices are POST FREE.

Elsewhere in this issue are second-hand items, sundries and small components. If you'll drop me a line enclosing a large s.a.e. I'll send you loads of guff.

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The presence of Alan G3MME at Matlock means that the work load on poor John G3PCY has eased off a bit and we can now carry out servicing jobs on the spot. Speeds things up a bit, which does us both good.

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EDGE METER. 1 3/4" x 1/2" scale 1 amp. (Basic movement 50mA). 35/-, post 2/6.

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INDEX TO
ADVERTISERS

	PAGE
Amateur Electronics (G3FIK)	584
Amateur Radio (C. H. Young)	636
Belding & Bennett (Radar)	637
British Radio Corporation, Ltd.	634
J. Birkett	639
Derwent Radio	586
Echelford Communications	631
Eddystone Agents	580
Emsac	630, 632
Galleon Trading Co.	635
G. R. Grigg	632
G.W.M. Radio	638
Hamgear Electronics	637
Heath (Gloucester) Ltd. <i>inside</i>	
<i>back cover</i>	
Holdings Photo-Audio Centre	640
Imhofs	637
K.W. Electronics <i>inside front cover</i>	
Lowe Electronics	583, 585
May (Leicester) Ltd.	640
B. H. Morris (Radio) Ltd.	588
Mosley	578
N.A.T.C.S.	583
Newbury, Graham	639
N.W. Electrics	580
Partridge Electronics	584
Partridge (G3PRR)	638
Quayslade Electronics	586
Radio Constructor	639
Radio Shack	579
R.T. & I. Electronics, Ltd.	630
Senator Crystals	640
Small Advertisements	633-637
Smith, G. W. (Radio)	582
Solid State Modules	639
Spacemark, Ltd.	632
SSB Products	638
Stephens-James, Ltd.	638
N. H. Storey	632
S.W.M. Publications <i>back cover,</i>	
577, 631, 632, 637, 640	
Taurus Electrical Services	635
Telecomms (G3SED)	636
The Amateur Radio Shop	578
Trio Electronics	581
Western Electronics	631
Wolar (P. Wolfendale)	640

SHORT WAVE MAGAZINE

(GB3SWM)

Vol. XXVIII

DECEMBER, 1970

No. 326

CONTENTS

	<i>Page</i>
Editorial—Inevitable	589
Transistor Tx for Two , by J. R. Hey, G3TDZ	590
Running the Hy-Gain 14-AVQ , by E. P. Essery, G3KFE	594
Direct-Conversion Receiver for Top Band , by P. A. Lovell, G3YMP	597
What Are Thyristors?	598
Cloth Ears , by Revd. G. Dobbs, G3RJV	601
Transistor Power Supply Unit , by A. Choraffa, G3PKW	602
Report on J-O-T-A	605
Communication and DX News , by E. P. Essery, G3KFE	609
VHF Bands , by A. H. Dormer, G3DAH	616
The Month with The Clubs—From Reports	623
New QTH's	629

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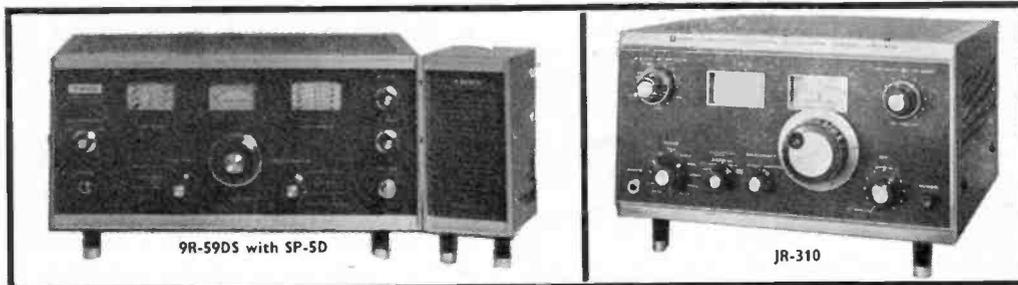
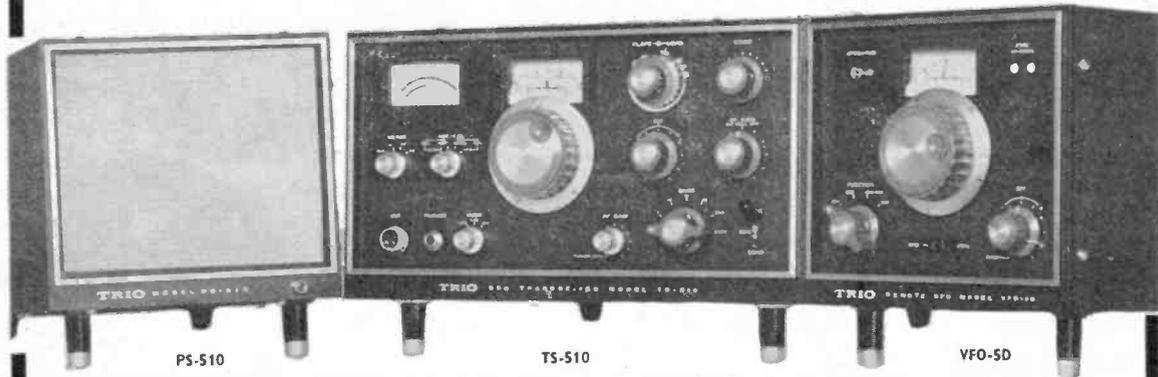
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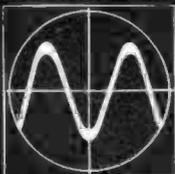
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FOR THE RADIO AMATEUR AND AMATEUR RADIO

The SHORT-WAVE Magazine

EDITORIAL

Inevitable *With effect from the January issue, appearing on January 1st next, our cover price has to go up to 4s. 6d. (22½p).*

This bald announcement cannot be regretted by anybody more than ourselves. The reason is that for the last two years the general business of publishing—in whatever field—has been severely punished not only by high wage increases within the printing trade but also by the steadily rising cost of the raw material, paper. Then there are the inflated postal charges, progressively pushed up, and now in a business like ours likely to cost another several £100's a year simply because the bulk of our retail-wholesale distribution has necessarily to be through the postal system.

The extra 6d. on the cover will show us of SHORT WAVE MAGAZINE no extra profit at all. We can only hope that it will enable us at least to keep level with these additional costs. Indeed, it has been shown that in the strict actuarial sense the increase ought to be 1s.—but we are resisting that for the time being.

* * * *

In line with this price change, the direct-subscriber rate will, with effect from January 1st, become 50s. for a year of 12 issues. All direct subscriptions now running will, of course, be honoured at the old rate until their expiry. In the meantime, till the end of this December new subscriptions taken out direct with us will be accepted at the existing rate of 45s.

* * * *

There are also adjustments affecting the Small Advertising—basically, the reader rate becomes 6d. a word—and details are given in the Small Adv. panels in the back pages of this issue. For anyone inclined to query the justification for an increase in this department, let it be said that we have held our Readers' Small Adv. rate for more than 20 years and for a long time now the charge for small advertisements has been totally uneconomic in the flat terms of "what they cost to print."

* * * *

It is on this rather dolorous note that the time has come, once more in the progress of SHORT WAVE MAGAZINE over these many years, to wish all who read this piece a Happy Christmas—with the hope that we shall continue to have their support.

Also we hope that our readers and our trade friends will understand that price increases are as worrying and unwelcome to us as they must be anathema to them.

*Austin Forth,
G6FO.*

WORLD-WIDE COMMUNICATION

TRANSISTOR Tx FOR TWO

STRAIGHTFORWARD QRP JOB

J. R. HEY (G3TDZ)

A CIRCUIT without frills, using easily obtainable or junk box parts, which will work the first time is what most home constructors want to see.

Some recently published VHF transistor transmitter designs, full of clever mathematics, whilst boosting the ego of the writer must surely put off all but the most advanced constructors. Once a few basics are understood, there is nothing quite like grabbing a soldering iron and having a bash, experience being a fine teacher.

The circuit described here evolved from experiment with the odd cloud of smoke along the way. A bird's nest was first lashed up and tested before a printed circuit could be planned.

Beginner's luck with a fairly successful 4m. Tx/Rx described in SHORT WAVE MAGAZINE some time ago prompted an attempt along similar lines for two metres. Only twice the frequency after all, so what could be the problem? The answer to that was an angry neighbour beating on the door—some 48 MHz "fall out" was doing nasty things to his BBC I. An aerial filter helped but it was decided that not to generate QRM was better than trying to prevent it being radiated.

The 72 MHz tripler was also generating a certain degree of 48 MHz RF; the best way found to prevent this from being passed on was to use double-tuned circuits, and perhaps an additional filter or trap.

Size and cost considerations demanded an alternative to the masses of trimmer capacitors seen in the interstage coupling of many designs. Fixed capacitors to produce the calculated L/C ratio and slug-tuned coils make inexpensive and effective circuitry.

Small 3/16in. coil formers, complete with suitable slugs, can be obtained from old TV tuner biscuits. One must always use slugs made from the right material otherwise losses are great; TV frequencies being at VHF mean tuner coils admirably suited to adaptation for Two Metres. Many TV dealers scrap old sets and a complete tuner full of coils can often be scrounged for little or nothing.

The Circuit

An overtone oscillator using a BC108 operating at 2 mA generates 24 MHz from an 8 MHz crystal with enough power to drive the tripler, another BC108, directly and without difficulty. It is at this point that the unwelcome 48 MHz creeps in. A critically coupled double-tuned circuit at 72 MHz removes most of the rubbish but the resulting 72 MHz drive, being now too low to operate the doubler, has to be amplified.

A cascode-connected Class-A amplifier using two BC109's lifts the signal to a level suitable for driving a further BC109 doubler. In both frequency multipliers, drive is obtained from a two-turn link round the previous tuned circuit. These thin p.v.c. link coils may be moved on or off the tuned winding in order to adjust the drive as required, but in practice the links are tightly coupled

and fixed in place. Emitter resistors R4, R9 control the multiplier current and compensate for variations in drive when crystals are changed.

Another link, L9, from the 145 MHz doubler circuit L8, C11 carrier the signal via a 48 MHz trap (L11, L10, C12) to the driver transistor.

As both driver and PA are modulated, it is convenient to employ a complementary circuit, cutting components and making coupling easy.

For the driver, a transistor from the 2N2904 family was chosen, an NKT0029 being used in practice due to availability and price. The PA is a 2N3553, found to be much superior to the BFS10 first tried.

A pi-tank Tc1, L13, Tc2 tunes and couples the PA

Table of Values

Circuit of the G3TDZ Transistor Tx for Two

C1, C3,	R17, R29 = 22 ohms
C8 = .01 μ F	R19 = 33,000 ohms
C2 = 75 μ μ F, cer.	R20 = 220 ohms
C4, C5,	R23, R24 = 2/2 ohms
C9 = 33 μ μ F, cer.	R25, R35 = 2,700 ohms
C6, C7,	R27 = 120,000 ohms
C10, C14,	R30 = 1,500 ohms
C24 = .002 μ F, cer.	R32 = 1,000 ohms
C11, C13 = 10 μ μ F, cer.	R33 = 3,900 ohms
C12 = 47 μ μ F	R34 = 100 ohms
C15 = 0.1 μ F	VR1 = 25K log. pot.
C16, C17,	VR2,
C18, C26,	VR3 = 10K min. pre-set potentiometer
C27 = 4 μ F 10v. elect.	Tr1,
C19, C22,	Tr2 = BC108, or similar
C30 = 80 μ F 16v. elect.	Tr3,
C20, C28 = 200 μ F 10v. elect.	Tr4,
C21, C29 = 100 μ μ F, cer.	Tr5 = BC109
C23 = 500 μ μ F 25v. elect.	Tr6 = 2N2904
C25 = 2000 μ F 25v. can	Tr7 = 2N3553
Tc1,	Tr8 = BC209, or similar
Tc1,	Tr9,
Tc2 = 3-30 μ μ F trimmer	Tr15 = BC178
R1 = 75,000 ohms	Tr10,
R2, R13 = 27,000 ohms	Tr13,
R3, R18,	Tr16,
R21, R31 = 680 ohms	Tr17 = 2N697
R4 = 12 ohms	Tr11 = AC176
R5, R6 = 22,000 ohms	Tr12 = AC128
R7 = 12,000 ohms	Tr14,
R8, R22 = 1,200 ohms	Tr18 = 2N3054 or 2N3055
R9 = 10 ohms	(see text)
R10 = 470,000 ohms	D1 = NKT279A
R11 = 1 megohm	X1, X2 = BY132, 10D2, PL4003
R12 = 330,000 ohms	ZD1 = 15-16v. zener
R14 = 15,000 ohms	
R15, R16,	
R26, R28 = 82,000 ohms	

Notes: All resistors can be rated $\frac{1}{2}$ -watt. There are numerous suitable substitutes for Tr1, Tr2, Tr8 and Tr9, Tr15. Mains transformer can be 18-0-18v. on secondary. Modulation transformer should be ratio 1:2, and see text. Table above includes values for Fig. 2, p.592.

TABLE OF COIL DATA

L1	— 12 turns 24g. close-wound on dust-slug former.
L2, L3	— Two turns 22g. p.v.c. wound over L1.
L4, L6	— 5 turns 22g. spaced $\frac{3}{16}$ in. with dust slug.
L5	— 5 turns 22g. spaced $\frac{3}{16}$ in., tap 2 turns from cold end, with dust slug.
L7	— Two turns 22g. p.v.c. wound over L6.
L8	— 4 turns 22g., spaced $\frac{3}{16}$ in. with dust slug.
L9	— Two turns 22g. p.v.c. wound over L8.
L10	— Two turns 22g. p.v.c. wound over L11, continuous with L9.
L11	— 7 turns 24g. enam., close-wound, with dust slug.
L12	— 4 turns 22g., spaced over $\frac{3}{16}$ in., base tap at 2nd turn, collector tap at 2 $\frac{1}{2}$ turns, with brass slug.
L13	— Three turns 18g. copper, $\frac{3}{16}$ in. diameter, air-spaced, to $\frac{3}{16}$ in. length.
RFC	— Dust slug wound full of 24g. enam.

Note: Coils L1, L4, L5, L6, L8, L11, L12 all wound on $\frac{3}{16}$ in. diameter formers.

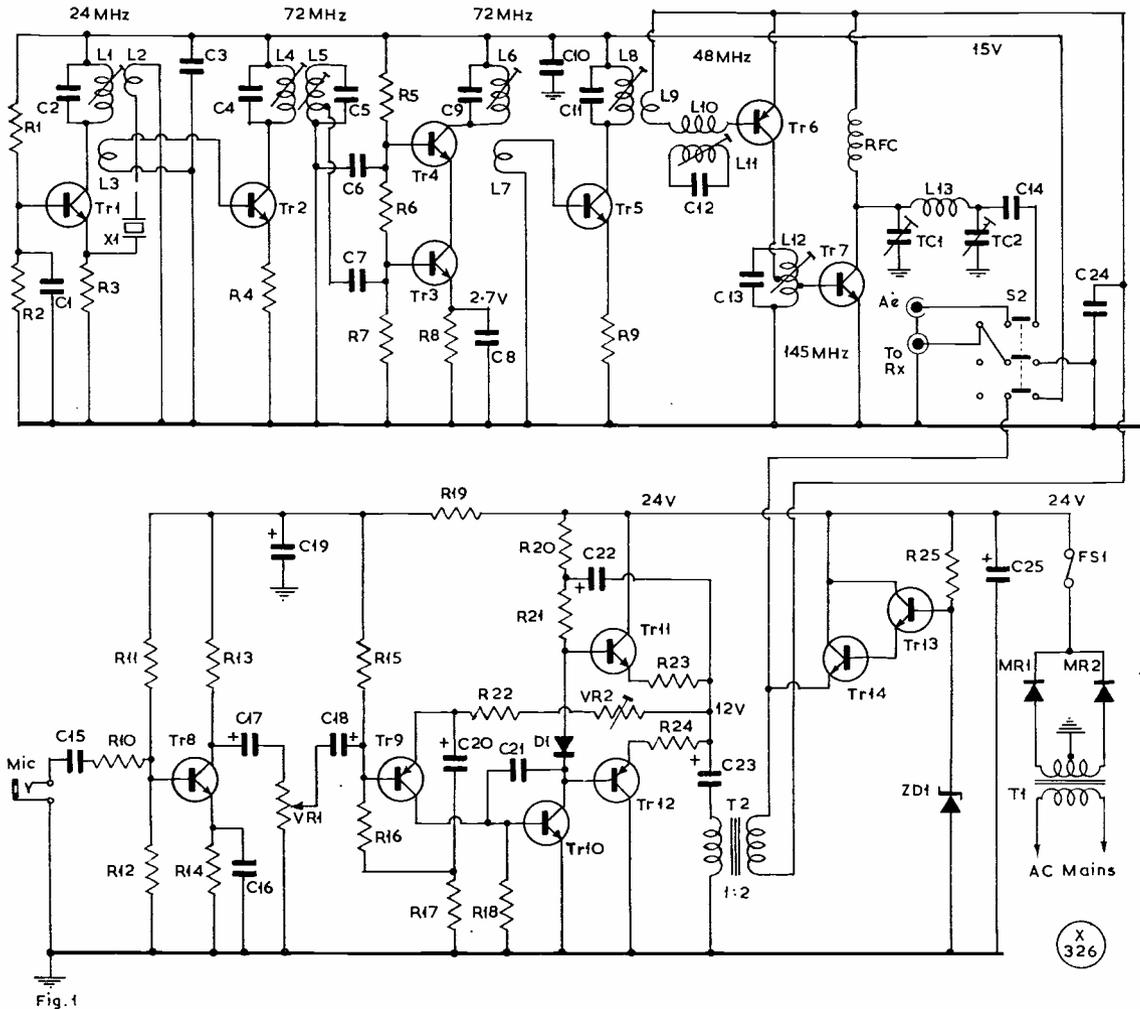


Fig. 1. Circuit of the G3TDZ Transistor Two-Metre Transmitter.

to the 75-ohm aerial outlet. The RFC (of unknown value) was removed from an old TV chassis. A three-pole slide switch acts as T/R and aerial changeover.

The modulator, originally designed as a record player amplifier, is a simple complementary Class-B transformerless circuit using four transistors, with a further single transistor running 200 μ A acting as microphone pre-amp. In practice a modulating transformer is used as one was to hand but series-gate modulation could easily be employed by adding an emitter follower (or Darlington emitter follower) from the junction of R23, R24, Vr2, omitting C23 — see Fig. 2, p.592.

The 1 : 2 modulation transformer can be wound by hand on an old miniature valve-type output transformer core. Taking three lengths of 26 or 28g. wire, put all three on together to form a 150-turn trifilar winding. At these low voltages, insulation is no problem; the

close nature of the windings ensures low leakage inductance, resulting in a most satisfactory mod. transformer. The number of turns is not critical—just fill up the winding space. Connect the start of one and the end of another together to form the secondary, the third winding being the primary.

The modulator is powered from the raw 24v. line; a simple series stabiliser fed from a zener diode provides the 15v. for the RF section.

Trimmers Tc1 and Tc2 are 3-30 pF chassis mounting vared type.

For safety, it was considered worth it to include a 500 mA fuse in the main HT line. Component values are not too critical; 10% resistors, all $\frac{1}{2}$ w. carbon are used. Electrolytic capacitors are much less accurate, being normally +80—20%, which that means sizeable variations from those listed are acceptable. Only the

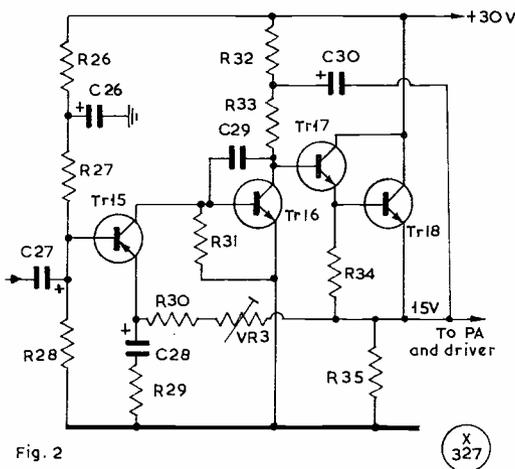


Fig. 2

Fig. 2. Circuit for a series modulator for the Transistor Tx. — values in Table p.590.

tuning capacitors C2, C4, C5, C9, C11, C12 and C13 must be as specified.

Construction

No thought went into the chassis as a 9 x 5½ x 2¾in. nicely shaped chunk of steel was rescued from the junk box. As this proved quite spacious, it would seem one 8 x 5 x 2½in. would be about right.

Double-sided printed wiring board is used for the RF section as this makes screening and earthing easy. The top side of the board remains a continuous earth plate with holes etched where component wires pass through to the lower conductors. Cut into a strip 1¼in. wide, the RF board is divided at intervals by half-inch screens between stages, made also from double-sided board. These are soldered to the top copper area.

The coils are fitted by drilling 3/16in. holes and pushing the formers up through the holes from below until the collars are flush with the board. As the coils make a tight fit, no extra gluing is necessary.

Push-on heat radiators are fitted on both driver and PA transistors and chassis mounting T01 heat clips are used on Tr11 and Tr12. A 2N3055 is perhaps going a little mad as Tr14 but again availability came before more sensible considerations. Almost any n.p.n. silicon type capable of 500 mA or more will do.

The previous casual reference to the critical coupling between L4 and L5 means nothing more than drilling

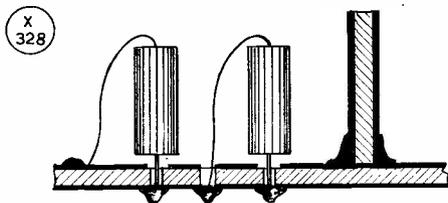


Fig. 3. Construction of RF section, using double-sided printed-circuit board.

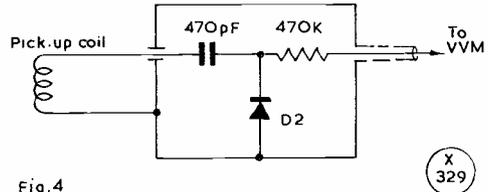


Fig.4

Fig. 4. RF test probe fitted with pick-up coil.

their mounting holes on 0.45in. centres. When winding the coils, don't panic if the exact gauge can not easily be obtained; use the next nearest.

Expected layout problems did not in fact materialise. Obviously aerial leads and microphone inputs should be adequately screened and other wiring kept short and neat.

A 15 to 16v. zener diode could not be conjured up so a 7v. and an 8v. were wired in series. This is quite in order and will not present any problems.

Testing and Setting Up

Check all wiring and using resistance meter, make sure there are no shorts on HT lines, etc. Apply mains and with the crystal removed, switch on. Measure voltage between negative line and C25 positive tag; a reading of 24-25v. should be noted. Now check to see if the regulated line at Tr14 emitter is reading 15v.

Apply + probe to pos. tag of C23, adjusting VR2 until a reading of 12v. is obtained. If an audio generator is available and an oscilloscope, inject a one kHz signal into the mic. jack, clip the 'scope across T2 primary and advance volume control VR1 until clipping is noted. If clipping is not equal top and bottom, readjust VR2. Return VR1 to zero.

An RF probe, loop, or some absorption device is required for setting up the RF circuits.

If a GDO is available, L1, L4, L5, L6, L8, should be checked and tuned to the approximate working frequencies before power is applied.

The home-made RF probe fitted with a two turn pick-up coil shown at Fig. 4 was used with a VVM to set up the prototype; any similar RF indicating device will of course be suitable.

With the crystal plugged in, switch to "transmit," and the pick-up coil over L1, L1 slug is adjusted until Tr1 bursts into oscillation. Switch on and off a few times adjusting the slug to make sure the crystal starts every time. FT-243 crystals were found to be much more "difficult" than 10XJ types which, like the modern miniature types, start easily every time.

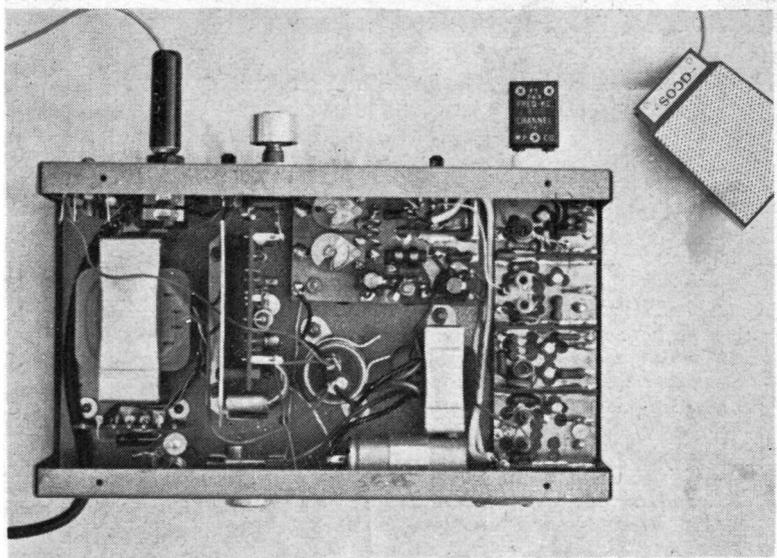
Now move the pick-up coil to L4 and adjust its slug for maximum reading. With the loop on L6, bring L5 and L6 to resonance, readjusting L4 to produce maximum reading.

If a milliammeter is connected across the fuse whilst alignment is carried out, an increase in current will be noted as each successive stage comes into activity. Place the pick-up coil over L8 and adjust as before. It is as well at this point to connect the dummy load to the aerial socket as RF will now be reaching the output circuits.

Set the loading capacitor Tc2 to half mesh, about

15 pF. The most favourable capacity for Tc1 is 12 pF so it is suggested this is set to just less than half mesh to start with. The pick-up coil is removed from the RF probe and the probe itself is connected across the 75-ohm dummy load. A slight output will be observed even before all circuits are brought into resonance. Tune L12 for maximum output; retune L8, then rotate Tc1 gently either way until highest reading is obtained.

As it is always comforting to "see" the RF, a small lamp such as an 8v. 0.1A pilot bulb may be connected across the aerial outlet. Retune all coils for brightest glow of the bulb. When the aerial is plugged in, it is perhaps easier to tune Tc1 and Tc2 for full output with the aid of a field-strength meter.



Transmitter as constructed by G3TDZ — underside view.

Against TVI

Before venturing with a CQ, it is advisable to see what is happening on TV. Switch on to your BBC I channel and inspect for patterning. It may be necessary to direct the beam hard at the television aerial or, if a portable dipole is handy this can be placed as close to the TV as necessary. Adjust L11 slug until patterning vanishes. If no QRM is noticeable anyway, adjustment using a GDO might just prevent an embarrassing encounter with a neighbour. Should trouble be severe and L11 not totally effective, the most likely fault is L4 and L5 resonating at 48 MHz rather than 72 MHz! Lengthy wiring and slugs too far in; it is all too easy to mistake the correct resonance point. This is why a GDO check before switching on is worth while.

Results with the G3TDZ model have been most encouraging, the modulation quality being remarked upon favourably—this using the circuit of Fig. 1. The alternative modulator shown in Fig. 2 is suggested for those who are doubtful about winding their own transformer. The 30v. supply line would require a 21v. r.m.s. mains transformer. Whilst a crystal microphone is used at G3TDZ, a dynamic mic. could be substituted if R10 is omitted.

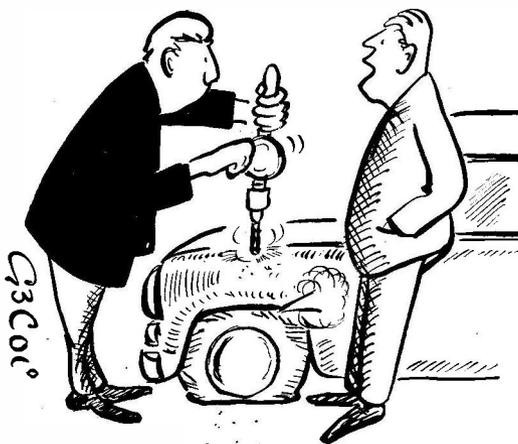
It is hoped these circuit ideas prove useful to would-be constructors. No hard and fast layout details are given as availability of components dictates size and shape. Most people have their own ideas about appearance, like to "do their own thing" anyway.

LATEST U.K. "CALL BOOK"

The 1970-'71 *G Call Book* is now available, listing amateur stations in the U.K. and Eire. The entries reach G3ZMY, G8DVZ, G5ARN and EIØRTS, with separate sections for each of the six U.K. call areas. The number of callsign/addresses given is a considerable advance on last year's issue. In a glossy semi-stiff wipable cover, the price is 10s. post free from: Publications Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SUBSCRIPTION AS A GIFT

This is the time of year when we suggest that one of the most acceptable presents you can give to radio amateur friends or an overseas contact is a subscription to SHORT WAVE MAGAZINE. Until the end December, these—and any other subscriptions entered—will be accepted at 45s. post free, to any address in the world. (From January 1, the sub. rate becomes 50s.). Orders, with remittance, to: Circulation Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.



"... wonder if anyone's ever drilled through to the tyre ..."

RUNNING THE HY-GAIN 14-AVQ

MULTI-BAND TRAP VERTICAL ANTENNA

E. P. ESSERY (G3KFE)

A trap vertical is a quarter-wave ground-plane system in which band selection is automatic by the presence of trap coils as resonant circuits to isolate the various sections of the aerial, thereby providing as nearly as possible a perfect electrical quarter-wave for each band covered. A prime requirement is either a good earth immediately beneath the vertical element or a layout of radials of the correct dimensions to produce the other half of the system. The 14-AVQ as it stands is designed for 10-40m. inclusive. It incorporates a capacity hat to improve broad-banding and reduce the overall height, which is less than 20 feet in this version. Coverage can be extended to 80m. by means of a base-loading coil. This article discusses the practicalities of the Hy-Gain 14-AVQ.—Editor.

QUITE apart from the fact that quite a few stations are heard on the bands with trap aerials of one sort and another for multi-band working, the trapped vertical offers a natural solution to the problem of putting up a reasonably efficient HF aerial system in a small space, such as the garden area offered with a modern house.

There are quite a few misconceptions about as to the capabilities and drawbacks of the vertical aerial, and so it would perhaps be as well to look at them before considering in more detail the subject of this review, the Hy-Gain 14-AVQ Trap Vertical.

A vertical antenna, usually quarter-wave, operates by virtue of its use of earth to make up the other half, by way of the "mirror image" effect—an analogy which can be taken a little further. Consider the quality of the image seen on a piece of first-grade mirror of a pin standing vertically on its surface, with the similar but much dimmer image as seen on, say, an unfinished sheet of aluminium. Let us go back to our mirror, with a pin standing vertically on its surface, so that the reflection of the pin in the mirror looks like the continuation of the pin below the surface. This is just the situation with our vertical, and either we must have a *very good* earth, equivalent to the shiny mirror, or in some way we must provide our own "shiny mirror" — for just as the mirror will not reflect a very bright image if it is tarnished, so also will our aerial not do very well with a poor earth. If we try to use a vertical Ae. with a poor or indifferent earth, the result will be a dearth of signals, and a complaint that "verticals just *won't* work at this location, OM."

Providing the Mirror

So—clearly the feed-point of our vertical must be near ground-level, with Hy-Gain saying a maximum of 24 inches from earth connection of the aerial itself to

the stake where it leaves the ground. As an alternative, one can hoist it on high and endow it with a collection of radials, enough to simulate a "shiny-mirror" earth.

Looking at it from a purely practical point of view this immediately disposes of any ideas about making an earth to the water system of the house, saving only the possibility of getting at it right where it dips under the ground—an impossibility in most instances. This leaves the ground-level garden mounting or, as an alternative, putting the array above the roof somewhere. This was the alternative the writer finally settled for, complete with the set of radials as recommended.

Getting It Up

Some of the silliest things can happen at aerial erection parties, as all the old hands know, so it is proposed to describe the process as far as the 14-AVQ was concerned.

The first part was to lay out all the bits, and to read the instructions carefully. One has two design decisions to make at the outset—which of the two plans recommended for the radials you will use, and whether you are biased in favour of Phone or CW. We chose CW, which gave us coverage of that part of Ten available on the K.W. Vespa Tx, the DX Phone end of Fifteen, ditto Twenty, and all Forty that is useful. The Phone coverage is, in most cases, such that at the CW end you are running a VSWR of over 2 : 1. You have to go for the CW end *or* the Phone end all the way—no question of full coverage—just one or t'other.

At this stage you find you have to assemble the aerial in accordance with one of four sets of dimensions, depending on whether you are roof or ground, CW or Phone. Assembly is very clear, and the clamps provided are quite ingenious, so that in a very few minutes you have a long snake-like thing laid on the ground the vital statistics of which you are double-checking to be within a 1/16th in. correct against the steel tape-measure. Now comes the moment of truth—raising the brute!

The method adopted here was to make up and fit the radials to the bottom of the aerial and roll them all up, with a marker around each roll to indicate which dimensioned radial was which. The writer then made his way up the ladder to the flat roof, and hauled up the aerial to him, laying it out with an end overhanging while the U-bolts and nuts were arranged in a row for easy location. It was a still day, and the aerial is in fact very light, so it was found possible to hold the aerial against the mast to which it was to be clamped with one hand and the weight of the body, leaving the other hand free to slip in the bolts, put on the washers and slip the nuts on a couple of turns before relaxing. It was then heaved up the stub mast to its final position and the nuts tightened fully home. This being done, the radials were unfolded one by one, fitted with their end-insulators, and passed to the assistant below, who fed them out to the make-off points already determined in the first survey. Once the radials were laid out, all that remained was to connect the SO-239 type (UHF) coax connector to the bottom of the aerial where its mating socket was, and to drop the cable down to the ground assistant to lead on to the shack. The outside of the cable and the connector (which is not claimed to be a waterproofed type) was then slathered liberally with a sealing com-

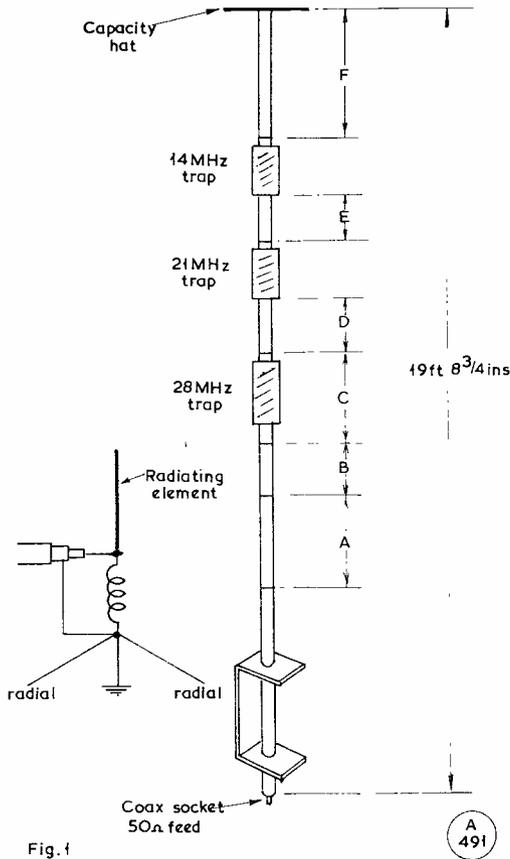


Fig. 1

Fig. 1. Showing the layout of the Hy-Gain 14-AVQ trap vertical, element dimensions as given in Table I. The inset shows how the base of the aerial is fed across a coil embodied in the base section. As an additional protection a DC earth lead, of stout wire, should be connected with the radials, as indicated. The maximum overall length of the 14-AVQ, from coax connector to capacity hat, would be 19ft. 18 3/4 inches.

found, in this case plastic insulating tape followed by a good dose of Holt's "Damp-Start."

Feeding

That ended the upstairs part of the exercise. It only remained to connect it to the transmitter. The ATU here has always had a straight-through position, taking coaxial cable in from the transmitter, through a switch and out either direct, as for dipoles or the 14-AVQ, to the ATU proper for the long-wire, or to a dummy load for checking purposes.

The VSWR performance is substantially as the Hy-Gain instruction sheet says it should be, on all bands covered (7-28 MHz), to within the accuracy of the station VSWR indicators. On all bands the transmitter loaded up and took power without a murmur to well outside the limits of 2 : 1 VSWR shown on the charts, as we had expected it would.

Table I
Dimensions for The 14-AVQ

	CW	A	B	C	D	E	F
<i>Ground Mounting</i>							
Phone	18 1/2	7 1/2	12 1/4	8 3/4	14 1/8	70 3/4	
CW	40	7 1/2	12	11	13 1/2	75	
<i>Roof Mounting</i>							
Phone	31 1/4	7 1/2	12	10	12 3/4	70 3/4	

All element dimensions in inches. Lettering to correspond to Fig. 1.

Results

Unfortunately, dipoles were not available to enable real checks to be made against the aerial, but it was checked *vis-à-vis* the long-wire on all bands. On Ten, it beat the long-wire hands down, mainly due to the fact that the LW is very difficult to load up on this band. On Forty there was not much to choose between them, but quick switch-over tests conducted on all the bands on weak DX signals demonstrated that it these signals were just copiable on the 14-AVQ, they almost invariably disappeared into the noise provided they were not "locals" in terms of distance. In other words the 14-AVQ was favouring the low-angle stuff, just as it is supposed to do. Signals from areas which had previously been difficult due to multi-lobes on the long-wire showed a spectacular improvement, in some cases from inaudible on a good band up to S9, due to the all-round radiation pattern.

TVI Angle

In terms of TVI, some trouble was expected—partly because of the increased risk of pick-up on the

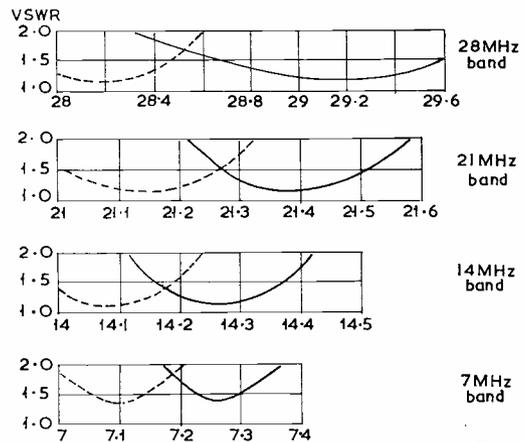


Fig. 2

Fig. 2. VSWR curves to be expected with a properly dimensioned and connected 14-AVQ. Dotted lines are for the CW area, and solid line for the Phone coverage. These readings show why the favourite operating mode must be selected for best antenna response—see text. As it happens the CW coverage is nicely placed for most U.K. CW/SSB operators.

A 492

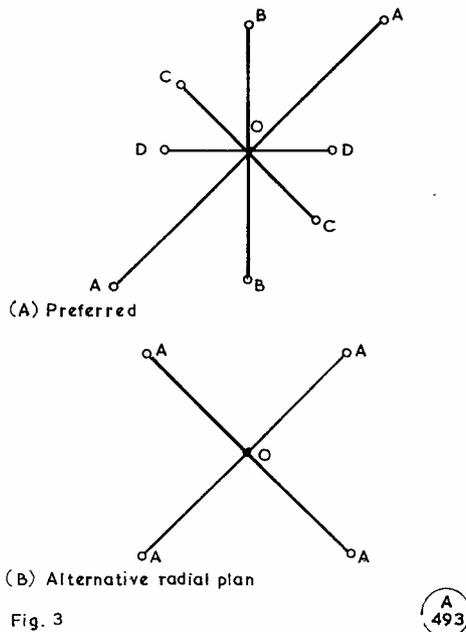


Fig. 3. Radial plans for the 14-AVQ. The 8-radial system at A is claimed to give superior results to the simpler arrangement at B. For both plans, dimensions are: 0-A, 33ft.; 0-B, 16ft. 6in.; 0-C, 11ft. 4in.; and 0-D, 8ft. 4in. All measurements are from the base of the aerial to the insulator.

TV feeder outer braid, and partly because it was felt that the aerial was now well and truly alerting the neighbours! In the event, some braid-pick-up TVI was not too hard to cure, but an unexpected bonus came when it was realised that in the main the neighbours thought the 14-AVQ to be a special type of aerial "to get rid of aircraft interference on TV" (which is rather a nuisance in this part of the world). Certainly, none of them raised a murmur of complaint at the appearance of this tall, very slim mast sticking high above the roof line, with just the three radial arms of the capacity hat, and three slight bulges where the traps are.

Dividends

What is the gain, as far as the station is concerned? First and foremost, the ability to go on five bands (160, 40, 20, 15, and 10) without any retuning of the ATU, which is left on the long-wire, preset to the middle of Top Band, and out of circuit on the others. The vertical radiates almost exactly as the book says, and seems to have the beating of the long-wire all round, reports received at DX being, by the looks of them, about an S-point down on beam stations, which puts them better than dipoles at the same height.

The disadvantages? Few and not important. In all such trapped aerials there is a penalty to be paid in terms of bandwidth. The penalty in terms of gain lost by the traps absorbing energy seems to be negligible in most cases, when the aerial is used in that part of the band for which it is set up, and what happens when the

VSWR is higher at the other end of the band is in the main a problem for the transmitter PA components to worry about, so long as you can resonate it.

On the receiving side, there are certain gains and some losses. First, the ability to do a rapid check of five bands without messing with the ATU is a godsend, particularly when, as with the writer, his operating spells, while fairly frequent, are usually rather brief.

Against this, one must set off the undoubted ability of the vertical to pick up terrestrial noises with which the horizontal is not so troubled. However, against this defect has to be set that the feeder is truly unbalanced and so can be led through the noisy area without too much pick-up from the house mains.

BCI was expected to be a bit of a problem, but to date none has been evident, and the home BC receiver in any case had already been rendered immune.

Finally, lest anyone gets the idea that the light weight and whippiness of the 14-AVQ assembled is such as to make it too weak to stand the elements, let us just comment that your reviewer felt the same at first—until a gale that had enough power to blow down several trees in the neighbourhood left it quite unmoved. This is probably due to the flexibility, if the truth were known; but whatever the reason, it is no cause for worry. The makers claim the aerial is tested to 80 m.p.h. winds, and what it received here was well up to that, so in most locations there should be no fear whatever of using unguyed 14-AVQ aerials on properly guyed poles or on the roof.

Conclusions

The Hy-Gain 14-AVQ is a very useful multi-band aerial, giving coverage of 7-28 MHz with quite good results. Even if this station were to become the proud possessor of a beam, the vertical would still find a place on the (aerial) farm here, because of its all-round coverage and tendency to favour the low-angle signals rather than the short-skip. To add to the technical facts, it is easy to put together and to erect in accordance with the instructions given, and is not an eyesore when erected, being regarded as an "odd type for TV" by most people who see it.

STATISTICS TO MENTION

At the latest count, the total of U.K. amateurs licensed comes to 15,700, in the "A" and "B" categories together. The number of licensed U.K. amateurs who are members of the RSGB at the relevant date is—as near as can be estimated—about 8,900 or 57% of the total of U.K. amateurs licensed. The RSGB membership overall is, of course, inflated by the fact that about 40% comes into the SWL, or non-transmitting, category. This SWL factor has always caused confusion when considering the balance of RSGB membership as between licensed transmitting members of the Society and the total of U.K. amateurs actually licensed. It is that 57% which is the real measure of what support the RSGB is getting among U.K. licensed amateurs. (It ought to be about 85%.) Naturally, from the point of view of the RSGB, what counts is total membership. But that leaves no less than 6,800 U.K. licensed amateurs who are standing out from being members of the Society!

DIRECT-CONVERSION RECEIVER FOR TOP BAND

INTERESTING EXPERIMENTAL CIRCUIT

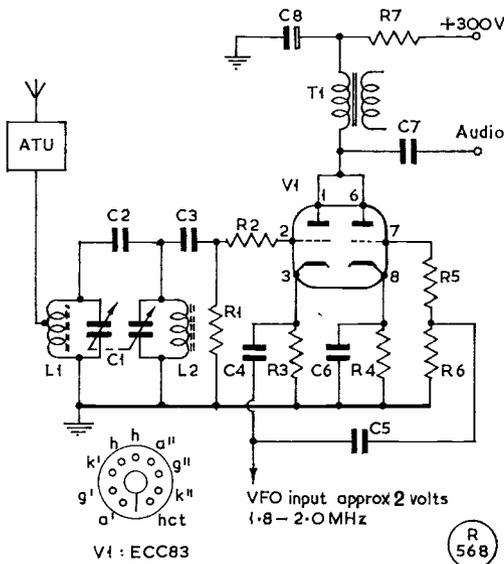
P. A. LOVELL (G3YMP)

WHILE modifications to the main amateur band superhet were in progress, a simple and easily built Top Band receiver was required, capable of reasonable SSB and CW performance. Results from the direct-conversion receiver to be described far exceeded the author's expectations for such a simple circuit.

Basically, it consists of a self-balancing double-triode, such as the ECC83. RF input and VFO drive are applied to the grid and cathode circuits, as shown in the diagram. Audio output is taken from the anode load T1, which can be almost any valve output transformer, to couple low impedance phones. Alternatively, high impedance phone output can be obtained between C7 and chassis.

High-Q input tuned circuits are practically essential, to eliminate interference from strong broadcast and coastal stations. An ATU is also recommended, depending upon the antenna used.

Any stable VFO with a fairly high output across Top Band—such as the Heathkit VF-1U—should be suitable, provided it has a very low harmonic output. In the original, any harmonics were easily suppressed by fitting a simple low-pass filter between VFO and detector. Since all tuning is carried out with the VFO, a good dial is as essential as with any other receiver.



Circuit of Self-Balancing Heterodyne Detector for Top Band.

Table of Values

Circuit of the Direct-Conversion Detector

- | | |
|--|--|
| C1 = 500+500 $\mu\mu\text{F}$,
BC type | C8 = 8 μF |
| C2 = 20 $\mu\mu\text{F}$ | R1, R6 = 100,000 ohms |
| C3 = 100 $\mu\mu\text{F}$ | R2, R5 = 47 ohms |
| C4, C5 = .001 μF | R3, R4 = 560 ohms |
| C6 = .005 μF | T1 = Small o/p xformer
for headphones |
| C7 = .01 μF | V1 = ECC83, or similar |

Coils: L1, 15 turns on ferrite pot core, tapped at 5th turn from earthy end. L2, as for L1, but without tap. Adjust both coils for simultaneous resonance at given setting of C1 gang. Tune on VFO, and resonate signal with C1. Use ATU for sharpening aerial tuning.

As it stands, audio output is rather low but can be increased to a more comfortable headphone or speaker level by connecting an audio amplifier at C7 in the circuit. At G3YMP, a transistorised 500 milliwatt type is employed, but there is no reason why valves should not be used. In fact, a valved unit would probably result in a better impedance match. An audio filter would give better CW reception, but as yet has not been incorporated.

This receiver is still in the experimental stages, and numerous improvements will no doubt suggest themselves to would-be constructors, e.g. audio AGC, or conversion for other bands.

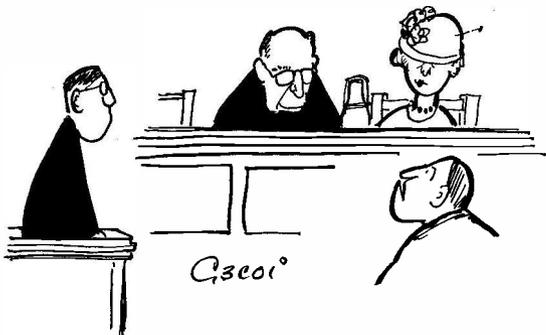
Originally, the circuit was built on rather a large aluminium chassis, but equally could be made quite compact. Layout was found to be non-critical, although screening would no doubt be a wise precaution against any instability or spurious that might occur. No trouble was experienced with the prototype, however.

Results

Performance proved to be excellent when compared with a commercial receiver in the £40-£50 price bracket.

From the writer's QTH in Kent, G1 and GM were heard at RS 5/8-9 on SSB. On CW, the problem of audio image was not as bad as had been feared, and about 30 stations were logged in an evening's listening, including OK3TOA and OE3HSA at 599. The following morning, K1PBW was peaking RST 449 on this simple receiver.

Further experiments are towards a direct-conversion transceiver for use during portable operations.



"... charges are exceeding the speed-limit and over-driving his transceiver ..."

WHAT ARE THYRISTORS ?

EXPLANATION OF BASIC PRINCIPLES

The rapid development of semiconductors—which are essentially electro-chemical structures having characteristics somewhat analogous to those of the thermionic valve—has led to an ever-increasing understanding of their potentialities. More ways are constantly being discovered in which they can be used or applied. Though it may not be immediately obvious what applications thyristors might have in the day-to-day techniques of Amateur Radio, this article—based upon the excellent technical data prepared by the Mullard Educational Service—will be of interest to all who look upon radio communication as being embraced within the field of electronics generally.—
Editor.

IN recent years electronics has become established in fields where electromechanics had hitherto reigned supreme. The speed control of rotating machinery, temperature control of electric furnaces, lamp dimming control and static switching are some of the functions which can be performed using thyristors.

Thyristors are small, solid-state switches that should never fail when used under their stipulated operation conditions. They consume virtually no power and therefore generate negligible heat. They smoothly govern electric current fed through them. Thyristors and other control components are compact and can be remote from the main power circuitry. Therefore, more freedom in the choice of location of the controls is available than with electromechanical systems. In addition, moving parts are not required in the control systems so that the attendant problems of wear are avoided.

Thyristors are already widely used in industry. For example they are employed in power stations handling megawatts of power. At the other end of the power scale they are used to control the speed of washing machine motors and they can be even found in television receivers.

The Thyristor Family

There are several types of thyristor. The most common is the *reverse blocking triode thyristor* sometimes called the *silicon controlled rectifier* (SCR) or just simply the *thyristor*. Some other members of the family are the *bidirectional diode thyristor* or DIAC, the *bidirectional triode thyristor* or TRIAC and the *silicon controlled switch* (SCS). The construction of a p-gate alloy diffused thyristor is illustrated in Fig. 1.

The ordinary (reverse blocking triode) thyristor is essentially a power diode the conduction periods of which can be controlled by an external signal. It is a three-terminal device with four layers of semiconductor material. The main power connections are made to the anode and cathode, as in a normal diode, and the control signal is applied to the gate electrode.

The basic semiconductor material used is n-type

silicon. Into this are diffused two layers of p-type material—the thicker, anode layer and the thinner, control layer. On to the control layer is alloyed n-type material to form the cathode. This n-type layer is bonded to the cathode lead and the anode layer is bonded to a base plate or stud assembly which forms the anode terminal. The gate terminal is bonded to the control layer. Silicon planar and all-diffused types are also available.

Operation of the Thyristor

The four-layer construction of the thyristor is shown schematically in Fig. 2A. This is redrawn in Fig. 2B to illustrate how the device is analogous to two complementary n-p-n/p-n-p transistors. The operation of a thyristor as a switch can be simply explained in terms of this analogy.

In Fig. 3 the anode is positive with respect to the cathode. If the gate is open-circuited (Fig. 3A), transistor Tr2 is cut off. Therefore no collector current flows in Tr2 and no base current out of Tr1. Thus Tr1 is also cut off and the complementary pair is non-conducting. The thyristor is in its off (forward blocking) state.

If the gate is made sufficiently positive with respect to the cathode (Fig. 3B), base current flows into the n-p-n transistor Tr2, and Tr2 conducts. Collector current therefore flows into Tr2 so that base current must be drawn from the p-n-p transistor Tr1, and Tr1 therefore also conducts. Current now flows from the collector of Tr1 into the base of Tr2, driving Tr2 harder into conduction. The consequent increase in the base current of Tr1 drawn by the collector of Tr2 drives Tr1 harder into conduction and ensures that conduction will be maintained until the anode current is reduced below its maintenance level. Because of the cumulative action around the transistor loop, the current flowing rises rapidly and reaches a value limited only by the load resistance in the external anode-cathode circuit. The thyristor is now in its on (forward conducting) state.

The thyristor can only be switched on by the positive voltage to the gate if the anode is adequately positive with respect to the cathode. Furthermore, it can only be switched off once it is conducting by reducing the anode current below its maintenance level, which is usually done by making the anode less positive than the cathode. Removal of the positive pulse from the gate has no effect on the thyristor once it is conducting. (Strictly speaking, the trigger pulse must be applied until the thyristor current reaches a specified—or “latching”—value.)

Thyristor Characteristic

The static characteristics of a thyristor are similar in some ways to those of a semiconductor diode. A typical thyristor characteristic is shown in Fig. 4.

With a negative voltage applied to the thyristor—that is, the anode is negative with respect to the cathode—virtually no current flows. As the negative voltage is increased, the reverse leakage current slowly increases until avalanche breakdown occurs. This part of the characteristic is similar to that of a reverse-biased semiconductor diode.

If a positive voltage is applied to the thyristor, the anode now being positive with respect to the cathode, and if the thyristor is not triggered and so is in the non-

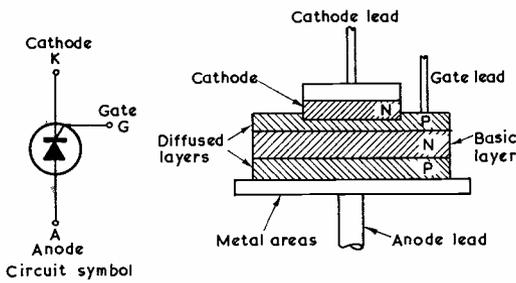


Fig. 1. SYMBOL AND CONSTRUCTION OF A THYRISTOR

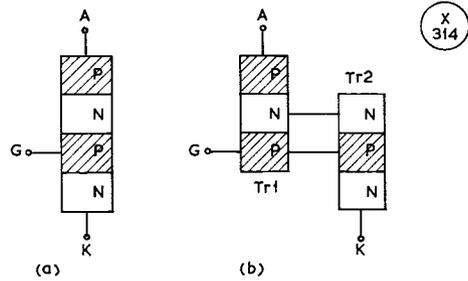


Fig. 2. TWO TRANSISTOR ANALOGY FOR A THYRISTOR

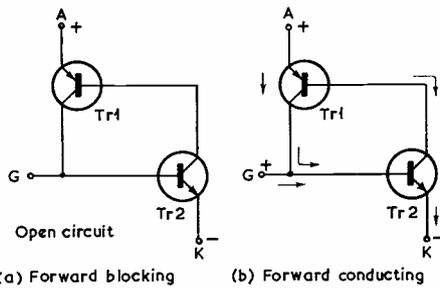


Fig. 3. THYRISTOR OPERATION

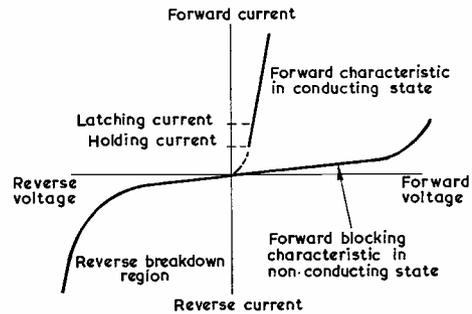


Fig. 4. TYPICAL STATIC CHARACTERISTIC OF THYRISTOR

conducting state, the characteristic is similar to that with a negative voltage. A small forward leakage current flows, increasing as the voltage across the thyristor increases until finally avalanche action occurs in the forward direction and the device switches to the conducting state.

When a positive voltage is applied to the thyristor anode and it is triggered to be in the conducting state, the characteristic is similar to that of a forward-biased semiconductor diode. The current flowing through the thyristor must exceed the latching current value before removing the trigger pulse. If for some reason the load current rises slowly (for example, with an inductive load), and the trigger pulse is removed before the latching current value has been reached, the thyristor will stop conducting.

Another current value is marked on the characteristics in Fig. 4—the holding current. This is the minimum current that can flow through the thyristor to maintain conduction. Thus, to turn the thyristor off, that is to change from the forward conducting to the non-conducting state, the load current must be decreased below the holding current value. One convenient way of doing this is to reduce the positive voltage across the thyristor to zero or below.

Basic Power Control Circuit

Fig. 5 is the basic circuit; we shall ignore the feedback network for the moment (see p.600).

The load and thyristor are in series across the AC mains and current can flow in the load only during those half-cycles that the anode is positive with respect to the cathode. The output from the trigger circuit controls the thyristor conducting period. This period can be varied in one of two ways: Either the thyristor can be switched on and off for whole numbers of consecutive positive half-cycles, or it can be made to conduct for a fraction of each positive half-cycle. The AC mains and gate voltages and the corresponding load currents for both methods of control are indicated in Fig. 6.

The method of control illustrated in Fig. 6 is known as Burst Triggering, Synchronous Triggering or Zero-voltage Triggering. It is directly comparable with traditional methods of control in which power is switched on and off for various intervals of time, and mechanical or thermal inertia is used to smooth the effects on the load.

The method of control illustrated in Fig. 6 is known as Phase Control. It differs from burst triggering in that periods of conduction occur during every positive half-cycle of the mains voltage. This method of control is thus ideally suited for applications where a smooth supply of controllable power is required, especially when no smoothing inertia is available in the load. Phase control is essential if filament lamps are to be controlled electronically, otherwise mains flicker will be troublesome. A disadvantage of phase control is that unless adequate precautions are taken, mains and RF interference occur. Smoother control may be achieved by using

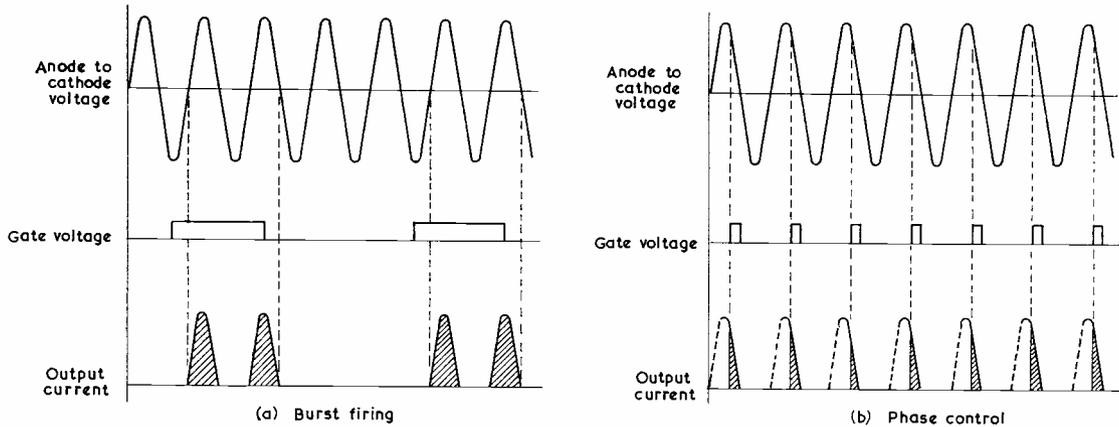


Fig. 6. TRIGGERING METHODS

X
315

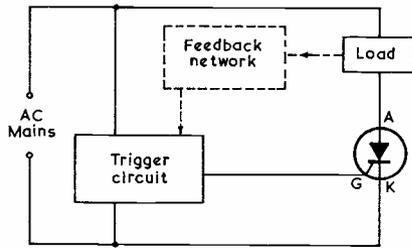


Fig.5. BASIC POWER CONTROL CIRCUIT

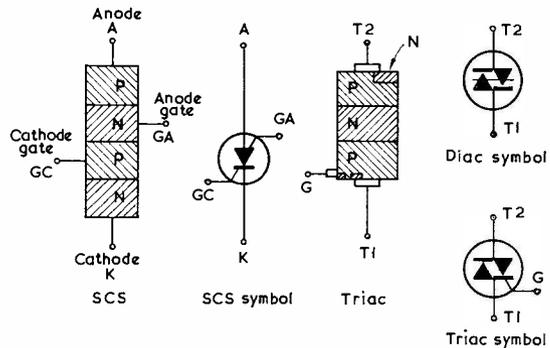


Fig.7. SILICON CONTROLLED SWITCH, THE DIAC & TRIAC

circuits with two thyristors connected in "inverse parallel" so that both positive and negative half-cycles of the mains are used.

Feedback Control

The most likely uses of thyristors can be divided into two categories—use in appliances in which the load is an electric motor, and use in appliances in which the load is static. In both categories the power supplied to the load needs to be directly controllable to allow speed selection or choice of oven temperature, for instance. However, systems designed to control motor speeds should also include a means of regulating the power to accommodate a varying load. Systems for this category of applications therefore usually incorporate feedback from the load to the control unit.

Feedback control can be illustrated by a simple example. Suppose that the load in Fig. 5 is a DC motor, comprising essentially a coil wound on an armature that rotates in a magnetic field. This magnetic field is produced by current passing through the field coils. When a voltage is applied to the motor, current flows in the field and armature coils, and the armature rotates. Current will only flow when the control thyristor is conducting,

but during negative half-cycles and before the thyristor conducts in positive half-cycles, a small amount of magnetism will remain in the core of the field windings. This remanent magnetism will induce a voltage across the rotating armature winding. This voltage is proportional to the speed of the motor. Since the speed of rotation will depend on the load imposed on the motor, the value of the induced voltage will be governed by the load and the voltage can thus be used as a measure of the load. Therefore by means of this induced voltage changes in load conditions can be fed back to the triggering circuit to advance or retard the instant that the thyristor is triggered in each positive half-cycle. In this way, the power supplied to the motor can be regulated to maintain a more constant speed despite the varying load.

Other Thyristors

Fig. 7 illustrates the silicon controlled switch, the diac and the triac. In some respects the SCS is very similar to an ordinary thyristor but, unlike a thyristor, it has an additional gate. There are various types of SCS, some of which can be turned both on and off using the gates.

We have seen that conduction can take place in a

thyristor by avalanche action, even with the gate open circuited, if a high enough anode voltage is applied. In fact, some devices are manufactured to work in a controlled avalanche mode; the voltage regulator diode is a well-known example of an avalanche device. The "bidirectional diode thyristor," or DIAC, is also an avalanche device. As the symbol suggests, it will conduct in either direction when the breakdown voltage is applied

across T1 and T2.

The bidirectional triode thyristor or TRIAC is a versatile device. It will conduct in either direction (T1 to T2, or T2 to T1) when the gate is either sufficiently negative or sufficiently positive with respect to T1. It can perform the same tasks as a pair of thyristors connected in inverse parallel. It can be seen to have many useful applications.

CLOTH EARS

THE PSYCHOLOGY OF CW RECEPTION

Rev. G. DOBBS (G3RJV)

SHORTLY after the G.P.O. let me loose on the Amateur bands, a well seasoned operator, catching sight of my battered old receiver, said, "You'll be struggling with *that* on today's bands, matey!" I suppose he was right. What can be done with an ancient receiver, selectivity as wide as a barn door, on crowded amateur bands? Perhaps it seems, not much. But how much depends upon the sophistication of the receiver and how much upon what rests between the phones? In the field of behavioural psychology, recent experimental work on human attention brings good news to those of us whose receivers seem to pick up half a band at any one time.

For many years work has been done on, what might be called, the "focus of attention." That is, the ability of humans to use a sense organ in a discriminatory manner. Our eyes don't usually view a whole scene at once, but choose certain focal points of interest. In a jazz concert, discerning fans may be able to follow the music of one instrument, amidst a welter of sounds. The ability, and limitations, of our control of attention is of great interest to psychologists, partly arising out of the increase in automation. In future the role of man, in relation to automated control systems, will rest upon his ability to receive and react upon information.

Some experimental work has been done on what is called "The Cocktail Party Problem." The brain is set a difficult task at a Cocktail Party. We usually only listen to one person at once, yet our ears are receiving an extremely complex series of sound waves in which all the conversations within earshot are jumbled. From this confusion of sounds our brains extract one voice, while the rest are checked for relevance and rejected. "I know the problem," sighs the amateur, but we might call it the "40-metre band problem!" How is this relevant to Amateur Radio?

Well, a researcher called Cherry did some practical experiments in 1953, which have led to further research and comment. He played two passages of prose separately into two headphones worn by the same subject. Then whilst listening to both passages the subject was asked to repeat one of the passages as he heard it. Then he was asked what he knew about the other passage, and the answer was usually very little. Most subjects could tell the sex of the voice, but some did not even notice when the passage was interspersed with gibberish or another language. This experiment suggests that we discriminate

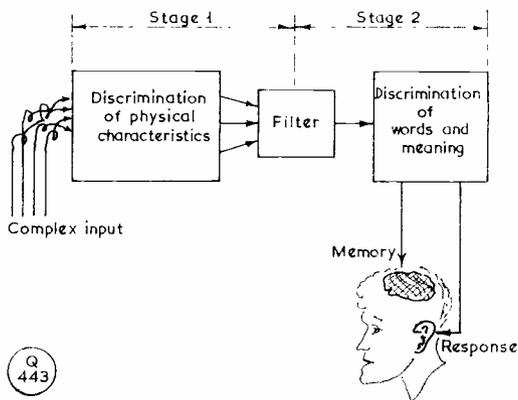
in two stages (at least) when faced with a complex sound input—first, general features then specific information. Broadbent in 1958 suggested a model in diagram form, to explain how this works. The drawing here looks strangely analogous to a radio receiver block diagram.

It suggests that the brain acts as a filter selecting between the various input channels. The sense organs are fed with the complex stimuli, and the first discrimination is mainly on the basis of physical characteristics. In terms of the spoken voice, things like: Is the voice male or female, loud or soft, intoned high or low, and so on. The next stage is concerned with discrimination on the basis of words and meaning, dealing only with one or perhaps two signals allowed to pass the first stage. The interesting fact which emerges from this model is that the human brain finds it difficult to discriminate between messages or signals on the basis of their meaning if they do not differ in physical characteristics.

Radio Analogy

This is good news for the CW operator with a wonky note—his signal stands more chance of being picked out when the rest of the band is full of T9 notes! This means that the characteristics of a CW note are important for its discrimination. The remedy can be within the receiver. A deliberately foul BFO beat can nicely mess up the signals produced by the most perfect transmitter, so perhaps make them easier to sort out. But the age-old remedy is the T5'er, an audio filter designed to *spoil* the quality of CW notes to make discrimination easier.

Further research has been done to show ways in which the brain distinguishes between certain signals at the first stage. The pitch of sounds reaching the ear as well as their volume aids discrimination. Although volume is an important characteristic enabling clear



discrimination, subjects under test were able to distinguish clearly soft signals which had definite physical characteristics in spite a much louder signals present. Experiments in 1957 with pulsating sounds (probably the nearest psychologists have come to using Morse) showed that both the pitch of the note and its pulse rate or modulation were recognisable characteristics. When two notes of differing frequency were subjected to the same rate of pulsation, the hearer could only tell one sound. This might suggest that the actual keying of a CW signal, both in speed and style, may help distinguish a signal, although the content of the information has little effect.

Conclusion

What does all this suggest to the Amateur Radio operator? Well, in the first place, our brains have quite good filters for incoming signals to our ears. If we could only realise it, we have crystal, rather than cloth, ears. So unless the mechanics or electronics of our receiver can select the signals we require, our brains must do the work. This research has given us a rough indication of how our brains do this. The first important fact is that information contained in the signal has practically no effect on our wilful discrimination of that signal. We distinguish between competing signals first and foremost by their *characteristics*, what the signal sounds like rather than what it is saying. So on a crowded band we naturally choose odd sounding, or very loud, or very fast or slow signals. Receiver-wise we can help ourselves by intro-

ducing physical characteristics to certain signals. This can be done expensively with crystal or mechanical filters, which improve not only the selectivity of the receiver but the quality of the signal note. But we could just as well employ a device which makes certain signals distinguishable because of the poor quality of the note, such as the inexpensive "T5'er." Thankfully, our own ears are quite sophisticated equipment when fed into a brain.

Editorial Note: Competent and experienced CW operators will readily confirm the ideas outlined in this interesting article. Years ago, when Rx selectivity was much worse than it would be even with G3RJV's "old banger" of today, it was common practice for wily DX operators to impress a "musical buzz," or slight tone modulation, on their note, usually by running the PA with virtually unsmoothed DC/HT. This signal could then be picked out comfortably against the T9x competition! Similarly, a competent operator will read the signal he wants by slight pitch variation, and will even ask for QRQ ("please send faster") in the face of heavy QRM, simply to make the wanted signal sound different. Subconsciously, the Rx is always adjusted, in one way or another, to obtain this "difference" characteristic. But you've got to be able really to read Morse to succeed at this sort of thing!

TRANSISTOR POWER SUPPLY UNIT

WITH OVERLOAD PROTECTION—
VALUES FOR TWO OUTPUT
RATINGS

A. CHORAFFA (G3PKW)

A SIMPLE, low-cost and reliable transistor power supply was required at the writer's QTH, because of increased experimentation with semiconductors. The unit described here gives a variable output of 6 to 18 volts DC with a 2% regulation from zero to full load. The arrangement provides for current overload and short circuit protection.

Circuit is as in Fig. 1. A transformer and bridge rectifier produce about 25 volts of unsmoothed DC. This is smoothed by C1 and fed to the collector of Tr1, the base of which is forward biased by R1. Tr1, known as the pass-transistor, acts as a series-regulating device and must be capable of withstanding the full load current. Tr1 functions as an emitter follower, the base of which is held at the correct voltage by Tr2, known as the voltage reference amplifier. It obtains forward base bias via ZD1, VR1 and R2, R3 and CR1 being supplementary to give current control.

Operation

The circuit operation is as follows: Fig. 2 shows simplified circuit with the assumption that VR1 is at the top end of its travel. When the supply is turned on Tr1 starts to conduct due to the forward base bias provided by R1. When Tr1 emitter reaches just over 6 volts (zener turn-on voltage), forward base bias is applied to Tr2 causing it to conduct, which starts to degrade the forward bias applied to Tr1 by R1, causing Tr1 to conduct less. This action continues until equilibrium is reached, at which point stabilisation occurs. In Fig. 1 VR1 provides, at the slider arm, a variable proportion of the total output voltage. The voltage at the slider always being the 6 volt reference. (For VR1 read RV1 in circuit.)

Current Control

Fig. 3 shows the current control elements. It must be stated here that all semiconductor diodes exhibit a forward volt drop (VF) when conducting. This is about 0.2 volts for germanium devices and about 0.5 volts for silicon. We will assume CR1 is a silicon device with a VF of 0.5v. As current is drawn from the emitter of Tr1 a volt drop occurs across R3. Tr1 requires a forward base/emitter junction voltage of 0.2 volts, therefore if the current through R3 exceeds 0.3 amps (a volt drop of 0.3v.) the base/emitter junction voltage of Tr1 will be limited. This action begins to cut off Tr1. If the output load tries to draw more current Tr1 is cut off completely and output voltage becomes zero. It must be emphasised that an overload should not be left connected for any length of time, as the possibility of thermal effects could allow current to flow. As the PSU was not intended to

Table of Values

For the Transistor Power Supply

LOW POWER SUPPLY	HIGH POWER SUPPLY
R1 = 2.7 Kohms, 1w.	R1 = 1 Kohm, 1w.
R2 = 250 ohms, 1w.	R2 = 250 ohms, 1w.
R3 = 1 ohm, 1w.	R3 = 1 ohm, 2w.
RV1 = 500 ohms, w/w.	RV1 = 500 ohms, w/w.
C1 = .005 μ F, 30v.	C1 = .01 μ F, 30v.
Tr1 = OC16	Tr1 = OC36
Tr2 = OC200	Tr2 = OC200
ZD1 = OAZ203	ZD1 = OAZ243
CR1 = AAY12 (see text)	CR1 = AAY11 (see text)
Bridge = 4-GJ5M's	Bridge = 4-GJ5M's
T1 = Secondary 22v., 1 amp	T1 = Secondary 22v., 2 amp.
SW = SP on/off	SW = SP on/off
Fuse = 1 amp.	Fuse = 2 amp.

run equipment which would be left on continuously it was considered unnecessary to couple CR1 and Tr1 thermally. As can be seen from the foregoing CR1 must be chosen to give the desired current limiting value. Conversely, R3 could be made variable and brought out on the front panel as a variable current limiting control. (CR1 could consist of several diodes in series if the VF of one is insufficient.)

Construction

The construction of the supply will depend upon component size and individual requirements. A chassis is most suitable as it provides a convenient heat sink arrangement for Tr1 and Tr2; Tr1 is mounted with a mica washer. It is advisable to use a little silicon grease on the heat sink mount, especially if the rated current limit of Tr1 is to be realised. Tr2 is held against the chassis or heat sink by means of a clip made from copper or tin plate. It is advisable to fit at least a voltmeter and if possible a current meter on the front panel of the supply for monitoring purposes.

Results

Component details are listed for two prototype supplies constructed by the writer, although the ratings and parameters of the circuit are easily adjusted to suit the constructor's own requirements. The low power supply delivers up to 250 mA and the current-limiting is such that a load requiring 300 mA brings the output volts to zero. The high power supply will deliver up to 1 amp, the no-volt output load condition occurring at 1.2 amp. It is possible for the zener diode to generate noise although the writer did not experience this in the prototypes; if this occurs a .001 μ F capacitor across the zener should cure it.

The writer has found this an excellent circuit which gives first-class results. One of the writer's own supplies has been powering a solid state SSB rig for several months, despite the fact that the rectifier bridge consists

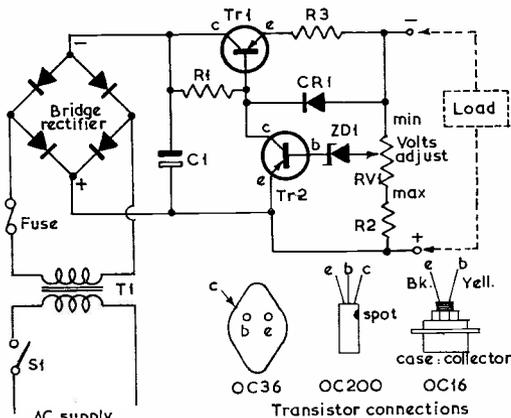


Fig. 1

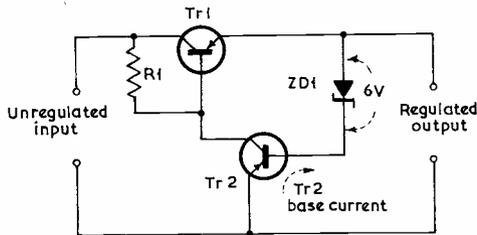


Fig. 2 : Voltage regulation

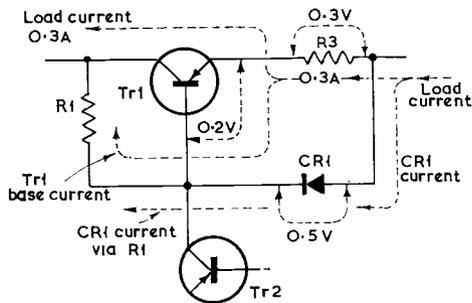


Fig. 3 : Current control

X 320

of GJ5M/GJ7M/BY100/BY127—just what happened to be at hand!

The January issue will be published on January 1st 1971, at the new cover price of 4s. 6d. (22½p).

STRAW IN THE AMERICAN WIND

A study of the U.S. literature in the field of Amateur Radio discloses a rather startling trend. For the last two decades American manufacturers have ruled the roost in the sense of pouring out components and custom-built equipment for the world's radio amateur markets. American ideas have been widely followed and it has rather been taken for granted that "anything with an American label must be good and up-to-date." But all that is now changing. Mergers and amalgamations are happening among firms who have been in the business for years. Some are dropping out altogether. Well-known names like E. F. Johnson (components and the Viking amateur-band gear); National Radio Company (the NC range of receivers and much good in the way of parts, known and used in Amateur Radio since long before Hitler's War); R.M.E. (who used to produce quality receivers); R.C.A., Gonsett, Elmac and others have simply passed out of the Amateur Radio market leaving hardly a trace. The current U.S. manufacturer advertising is mainly for antenna systems and ancillary apparatus, rather than for custom-built gear for the amateur station. It looks as if for the next few years the choice in the American market is going to be between Japanese equipment—now sweeping the U.S. field, with waiting lists of up to three months for the attractive items—and the products of a few specialist firms, one of which is the new American manufacturer Signal-One, turning out to be a junior off-shoot of the giant National Cash Register Co., having a dabble in electronics. And if that £1,000-transceiver doesn't sell, the much-publicised CX-7 will have disappeared from the market before next autumn's leaves fall.

BOOKS FOR CHRISTMAS

For any radio amateur or SWL, there can be no better Christmas present than a book on some subject connected with Amateur Radio. We list a great many titles covering all aspects of the art, as well as maps, charts and log books—see the advertising in any issue. There are the standard texts, like the *Radio Communication Handbook* (69s.), the latest, 47th, edition of the *Radio Amateur's Handbook* (55s.) and the *Radio Handbook* (a very complete reference running to over 800 pages in its new, 17th, edn. and costing £5 11s.). Then we have a wide range of manuals on antennae and aerial systems generally, such as the latest, 12th, edition *Antenna Handbook* (26s. 6d.) recognised as one of the standard guides.

For beginners, titles of interest are *Amateur Radio* (26s. 6d.), *Guide to Amateur Radio* (8s. 10d.), and the *Radio Amateur Examination Manual* (5s. 9d.).

For what might be called operating aids and useful embellishments for the average SWL or AT station, we have the four-colour *DX Zone Map* with latest *Prefix List* (16s. 9d.), embodying a wealth of DX detail and information; the *Amateur Radio Map of the World*, 12s., which is on the mercator (giving flat distances) projection; and the *Radio Amateur Map of U.S.A. and North America* (12s.), with information of interest to DX operators. All these are handsomely printed in colour and look well on the walls of any amateur station. A

very useful desk aid is the *Radio Amateur's World Atlas*, folding maps of convenient size giving country prefixes and zone areas, 17s. Other items worth keeping within reach of the operating position are the *Ham's Interpreter* (10s. 6d.), a remarkable 10-language guide to radio amateur conversation and a pronouncing dictionary for the commonly-used phrases; and the *Radio Amateur Operator's Handbook* (6s. 6d.), which gives much basic information, of the sort required for quick reference.

All prices quoted here are post free, delivery is from stock (while it lasts) and usually orders are despatched on the day of receipt. Orders, with remittance, to: Publications Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

NEW QTH PAGE

Readers becoming licensed, or changing their addresses, are reminded that they should let us know immediately—not only for publication in our regular "New QTH" page, but also for onward transmission to the American publishers of the *Radio Amateur Call Book*, which is the world directory, listing the callsign, name and address of every known licensed amateur. We are U.K. agents for the international *Call Book*, and the British Isles section appears in the quarterly "DX Listings" edition.



"... Oh, one more question — any hobbies? ..."

Report on J-O-T-A

The Thirteenth International Scout Jamboree-on-the-Air, October 17-18, 1970

IN terms of AT-station support and Scout activity world-wide, this year's J-O-T-A was an unqualified success. In our Region I area (U.K. and Europe) conditions on the DX bands were not too good for that particular weekend but nevertheless many interesting Scout contacts were made over considerable distances—from the U.K., some 200 J-O-T-A stations were worked in 41 countries overseas. The British Isles participation was probably a record, all parts of the country being represented.

The "Scout DX" available included 4S7AB, 5N2BSN, 9F3USA, PZ1BK, 9N1MM, SV1EM, 9H1BSJ, MP4BS, 5Z4KSA, ZC4BP, ZE1GPS and ZS6JAM (in Mafeking, at the siege of which Baden-Powell himself was present) and G3OBD/A on Brownsea Island, where subsequently the Scout movement was founded by Lord Baden-Powell.

Here is the gist of the many reports we have received, together with a representative selection of photographs. It is certain that there were many other U.K. stations on the air in the Scout interest.

GB3TOT, Tottenham District Scouts: With six operators working six bands, including two metres (with which they were very successful), their gear included a K.W. Vespa, Heathkit HW-32A, KW-160 and a K.W. Vanguard. Scout stations in 18 countries were worked, and the best DX heard was 9N1MM, operated by the Rev. M. Moran in Katmandu for local Nepalese Scouts.

GB3CUS, 8th Carlisle Scouts: Organised by the Carlisle & District Amateur Radio Society, out of 107 contacts

made, 36 were J-O-T-A stations, in as many countries.

MP4BS, Bahrein Scouts: A station was built in the desert at the camp of the 1st Manama Scout Group and the first test call on 20m. brought back an OZ7—and from then on it was pile-up all the way. In 33 hours of continuous operating by members of the recently-formed Bahrein Amateur Radio Association, some 400 contacts were made in 75 countries, of which QSO's 86 were with stations operated in the Scout interest—nice going. This MP4BS participation was a particularly creditable effort, because it involved getting together a load of gear and taking it out to a rocky hill-top site. In a high and hot wind ("dust filled eyes and sand-blasted bodies," the report says) the boys realised how practical is the Bedouin dress for desert conditions! You have to keep well wrapped up against the heat, the wind and the dust—only Englishmen go out in the desert clad just in shorts and a jungle hat!

G3ZDD/A, 1st Milford Scouts: Operated on 80m. phone using a K.W. Vespa and a CR-100, twenty Scout stations were worked from Godalming in Surrey.

G3CMH, St. Andrew's Scout Group, Yeovil: This station was put on the air by the Yeovil Amateur Radio Club, running a K.W. Viceroy Tx, Drake-2B receiver and a K.W. trap dipole. Some 23 Scout contacts were made.

EI2CBS, 2nd Cavan Troop: Operating on the 15-80m. bands, they worked no less than 78 J-O-T-A stations.

Keen members of the 2nd Troop, Cavan Scouts, at the station of EI2CBS, from which the handsome total of 78 J-O-T-A stations, worked on four bands, gave them VE1LC, St. Johns Scouts, as best DX in the Jamboree context.



Some serious chaps driving the gear provided at GB3RAC, Bracknell, for the October Jamboree-on-the-Air. Sixteen licensed members of the Racial Amateur Radio Club were on hand to conduct and supervise the J-O-T-A exercise.



Their DX included VE1LL, for St. John Scouts, also W2QZQ and W8MXW, representing local U.S. Scout groups. Other stations of particular Scout interest raised included GB3BPH, at U.K. Scout Hq., G4BP/A, HB9S (Scout World Headquarters) and three other stations in Eire representing the Scout movement.

GB3BPH, Baden-Powell House: At the permanent Scout headquarters in London the amateur-band station for J-O-T-A was organised by G3FXC and operated on all bands 10-80m. and two metres. Using K.W. and Heathkit gear, several bands were worked simultaneously for most of the time. GB3BPH turns in a very fine result—122 different Scout stations booked in, 32 being overseas in 17 countries. Best DX included AX3AMN, EL2BSL, 9N1MM, MP4BS and VU2MAH—all, of course, on the air for J-O-T-A.

G3AFT, 66th North London Scouts: Provided by Grafton Radio Society, with five operators, many J-O-T-A

stations were worked on all bands, including 4 metres. The station was kept on the air practically continuously and the Scouts as well as the Grafton boys felt that they had had a very successful weekend.

GB3RSS, Brighouse District Scout Council: Put on by the West Yorkshire Scout Radio Group, at Hipperholme Grammar School, Brighouse, Yorkshire, with twelve operators. Using K.W. gear throughout, into six different aerials—varying from a TA-33 beam to a dipole for Top Band—they had 453 contacts, some 110 of these being with Scout stations in 18 countries. This also was a fine effort, for which good planning paid off.

GB3ANT, Norfolk Ranger Guides: Two separate installations were provided by the East Anglia Contest Club and operated from the works of Mosley Electronics, Ltd., at Rackheath Airport, Norwich, using Sideband gear and five different antennae supplied and erected by the firm. Their result, with five operators, was most satisfying



Tottenham District Scouts put on GB3TOT for J-O-T-A, with six operators available, running two metres as well as Top Band and 10-80m. Scout stations were worked in 18 countries and 109 contacts made.

The boys visiting GB3RAC, Bracknell, Berks.—and there were about 200 of them—had a good time with the equipment made available by the Club. Rascal's made a considerable effort to ensure the success of the Jamboree for the Berkshire Scouts.



—375 different stations worked in 63 countries, the actual J-O-T-A count being 99/25, again showing the widespread support the event had this year.

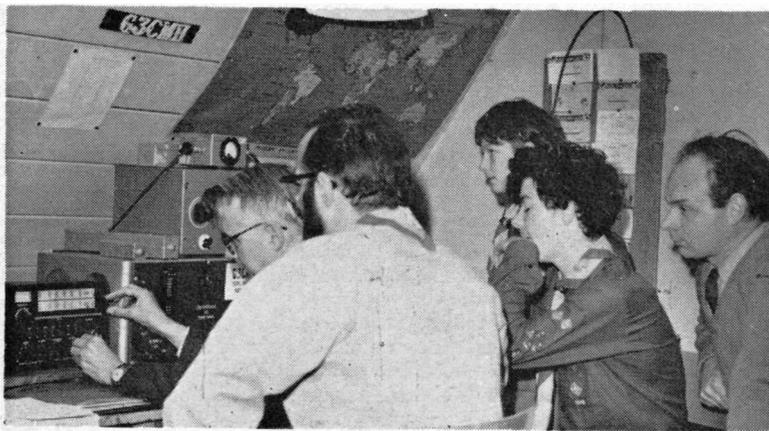
GB3RES, 1st Royal Eltham Scouts: In continuous operation on five bands, 40 J-O-T-A stations were worked out of 103 contacts made. Much interest was shown by the local Troop, members of which kept their own log and wrote out the QSL cards as contacts came.

GB3TJA, 11th Barton Sea Scouts: Arranged by the Torbay Amateur Radio Society, for the 10-80m. bands, 139 contacts were made in 32 countries, of which 63 were Scout stations, with 5Z4KSA (Kenya Scouts) and MP4BS (Bahrain Scouts, making QSO's in nine languages) as most interesting J-O-T-A DX. The Scouts made a fine job of the hard graft—like putting up the antennae—and did stout work with the logging

and other station chores. They had nearly 200 visitors over the weekend, many of them officials of the Scout movement.

G3KGB/A, 5th Taunton Group: This station was operated single-handed by G3KGB himself, at the home QTH of the Scoutmaster. Working non-stop on the Sunday only, some 20 Scout stations were accounted for in eight countries.

GB3RAC, Bracknell, Berks. Scouts: This represented a very large undertaking by the Rascal Amateur Radio Club in the J-O-T-A interest. Four complete Tx/Rx stations were provided, working all bands in all modes, kept continuously on the air and involving no less than 16 pieces of equipment with antennae to match; these latter included a wide-band dipole on a nearby church tower, feeding into the various receivers through a



A well-known Club callsign appears on the wall here—G3CMH, on the air during J-O-T-A for the local St. Andrew's Scout Group. Many interesting stations were worked during both afternoons that the station was on.

transistorised multi-coupler. The Scouts themselves had nine receivers on which they could tune around, listening to the QSO's and accumulating information on all J-O-T-A contacts made, to keep the wall maps flagged up to date. Though many Scout stations were worked, including DX to VK, ZS, MP4 and U.S.A., the total bag of QSO's was less than it might have been because much time was taken in explaining to the Scouts exactly what was going on. To widen the scope of the operation, with assistance from the Met. Office Hq. locally a news and weather bureau was established; this was equipped with a Racal RA.329 Rx and associated teleprinter, also a RA.117 receiver with facsimile read-out for news picture and weather chart interception. By the end of the exercise there was little in the way of current world and home news not posted on the wall and well illustrated with Mufax pictures! This magnificent Racal effort (for which there is space here to give only the barest details) was supported by no less than 16 licensed members of Racal Electronics, Ltd. and four of the staff from the Met. Office Hq. The 200 or so Scouts and Scout leaders attending were from S.E. Berks. and about another 200 interested spectators came in as well. Very much a worth-while effort, on which the Racal Club is to be congratulated.

G3AQR, 1st Evesham/1st Hampton Scouts: Using SSB on 15-20-80m., and operating on the Sunday only, 16 J-O-T-A stations were worked, including VE1ATM. It was through taking part in last year's J-O-T-A that G3AQR himself became interested in Scouting, and he is now an ASL.

G3WVP/A, 1st Welling Scouts: Using 20 and 80m. with two operators, 41 Scout stations were worked, mainly in the U.K. and Europe. Night-time conditions were found to be very poor on 20m. and a good deal of time was wasted on that band. The gear used included a K.W. Viceroy with linear PA and an Eddystone 888A receiver.

G3DOE/P, G3ZBF/P, 1st St. Lawrence Scout Troop, Ramsgate: Some 200 stations were worked on 20m./80m. SSB, a good proportion of which were participating in J-O-T-A. Their best DX was MP4BS and VU2MAH. The event was regarded as great fun by all concerned with the Thanet effort.

GB3CSM, County of Cornwall Scouts: Using equipment and antennae lent by Cornish Club members, the station was located at Ladock, near Truro. Working 4-20-80m. and Top Band, they had QSO's with no less than 102 Scout stations, mainly on 80m., best DX being AX/VK.

GB3SSS, Solihull School Scout Group: Two stations were mounted by the Solihull Amateur Radio Society at the School, to cover 10-160m. Some 23 J-O-T-A stations were worked in the U.K. and Europe, their most interesting Scout QSO being with 9H1BSJ and their best DX (non-Scout) AX4KU.

GM3POK/A, 21st West Lothian Scout Troop: Using a Swan-350 and a trap dipole, best Scout contacts were 9L2DT (10m.), many W's on 15m., and on 20m. they raised VE8RCS, one of the Canadian Hq. stations;

AX6SH, Scout Hq. in Perth, and numerous J-O-T-A stations in Europe. On 40/80m. many Scout stations were worked under the GB prefix. Over the two days of the event they had about 30 visitors. The whole effort was managed by GM3POK himself, who had the facilities of Hewlett-Packard, Ltd. (including a crane to hold up one end of his aerial!).

GB3DSC, Denton District Scout Council: Running a Heathkit HW-32 into a 5RV aerial on 20m. only, the six operators for this group put in 34 hours out of the 48 and made 88 contacts in 21 countries, a fair proportion of which were Scout stations.

GB3HBS, 1st Hale Barns Scout Group: With G3AOS in charge as in previous years, 40 hours' operating produced 250 contacts, all recorded on tape for local re-broadcasting and Scout records. Their outstanding DX (not mentioned in any other report) was a solid QSO with VU2JOA, the Indian Scout Jamboree station at Bangalore; another good one for them was 5R9AP, at the Madagascar site for space operations. Though Geoff Barnes, G3AOS, reports HF-band conditions not as good as last year, his group worked 50 countries, had many interesting J-O-T-A QSO's and a thoroughly enjoyable weekend—and that, of course, is one of the ideas and intentions behind the whole J-O-T-A concept.

G3UQA, 2nd Don & Dearne Scout Group, Mexborough: With 20 licensed operators, 18 of the local Scouts and 50+ visitors, this enterprising party managed 75 J-O-T-A contacts out of the 250 QSO's they made—mostly on 80m.; the other bands, for which they were fully equipped right up to the VHF's, were found to be not too good DX-wise. An interesting experience for them was to find that so many Scout stations remembered them from previous years. During the Sunday afternoon, their visitors were entertained to A/TV by G6AEW/T, using their own equipment and now fully operational for amateur TV transmission and reception, with E.M.I. cameras and home-built FET converters.

* * *

This year's Scout Jamboree-on-The-Air must surely have been the most successful and best supported yet. Here we have only been able to discuss the U.K. participation—and even though we have covered so many individual station activities, there must have been a lot more on the air for J-O-T-A who never thought of writing in with a report.

It was round about 1960—alone in the U.K. and almost alone in the world—that SHORT WAVE MAGAZINE started to give space to the idea of J-O-T-A as a radio amateur exercise to be fostered in the Scout interest. While within the Amateur Radio context world-wide, J-O-T-A is no more than a facet of weekend activity on the amateur bands, in the larger sense the Scout Movement itself—with all that it stands for—is probably one of the most important of the stabilising factors affecting our youth.

Of course, Scouts themselves don't look at it so seriously. They are just a bunch of keen and disciplined chaps who are finding that what we call Amateur Radio is not only exciting fun but also of extreme interest to the technically minded.

A.J.F.

COMMUNICATION and DX NEWS

E. P. Essery, G3KFE

THE month under review has seen the arrival of autumnal weather, and band, conditions. As to the former, those who took the trouble to do a bit of preventive maintenance on aerials, masts and guys are no doubt sleeping more soundly at night than those among us who neglected the chore and are now wondering what will give way first. Conditions, on the other hand have been pretty fair, with signals of interest available to all, no matter which band is considered, and, at times, some quite inspired moments. Summer QRN, though, seems to have been replaced for most of us by QRM from all the multitudes of labour-saving devices using thermostats or automatic switches!

Once again, there is so much news and comment that one hardly knows where to begin. Perhaps as good a start as any can be made by looking at the correspondence from W6AM (Rolling Hills, California) who has the mortifying experience for any DX-er of finding he has run out of countries to add to his score till some kind soul comes along and invents one to ARRL satisfaction! However, the time is not being wasted, by any means, and Don has been scratching around the "surplus" for improvements to his already superb aerial farm. The new rhombics are 140 feet high, and of 1000 feet length. As many readers will know, W6AM has one for each ten degrees of the compass by selection of ends and aerials. One would think that this is enough to call perfection, but in addition both receiver and transmitter are fed through separate ATU's. The surplus stock yielded a large batch of Globar non-inductive high-power 75-ohm resistors, which were made up into suitable series-parallel termination networks for the rhombics, fed through taper sections. (Previously, the rhombic terminations were wirewound, on 12 inch porcelain tubes, with the winding reversed in direction eight times.) The modification means not only a noticeably

quieter receiving set-up but also the ability to earth the aerials and operate quite safely at full power through static and thunder conditions bad enough to blow out a nearby 16 kV line while W6AM was actually listening, with no damage at all. All this just goes to show that most of the real top-flight DX operators, even in this day and age, can make significant improvements to their gear by doing a little home-brewing!

On a slightly different tack, Don enclosed a circular from the ARRL, which notes that the FCC is, at the moment, taking the line that all public-service activities—broadly similar to the RAEN set-up in U.K.—are in fact illegal under the strict terms of the licence. Another part of the note discusses the proposals filed with FCC for modifications to the licence conditions, one of which suggests that Advanced Class licensees have up to 1 kW, and Extras up to 1.5 kW output power. *Blimey!*

But, you know, QRO and aerial farms are not entirely necessary for fun on the bands chasing DX; CW from the mobile rig while on the way to club meetings or the golf-course has netted W6AM 169

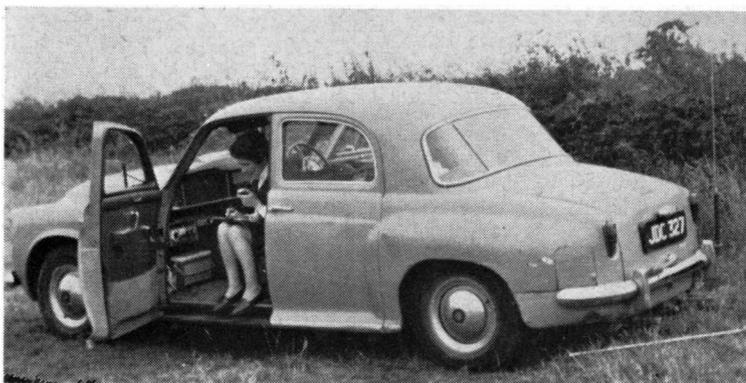
countries actually worked from the car while driving.

Contests

From W1WY (Stamford, Conn.) comes all the news on the contest front, at least as far as the big ones go. From 0001 January 30 to 1500 GMT January 31 is reserved for the CQ World-Wide 160-metre CW Contest. Rules will appear in CQ for December, and this time there is a plaque for the top-scorer in the Contest.

Another one to look out for is, of course, the ARRL DX Contest, a little further ahead. Dates are given as, for the CW leg, February 20-21 and March 20-21. Phone dates are February 6-7 and March 6-7. The times are from 0001 on the Saturdays to 2359z on Sundays. Rules are understood to be appearing in December QST.

Now for some others: BARTG have the Spring RTTY Contest on March 13 to March 15—the contest starts and ends on the dates quoted at 0200z. All bands 3.5-28 MHz, and the inner details can be obtained by dropping a line smartly to G8CDW, QTHR, BARTG, contest manager. over.



There cannot be many on the distaff side actually licensed /M in their own right—but here we see Gladys Crooks, G3XWE/M, of 4 Victoria Grove, Fairfield, Stockton-on-Tees, as she goes out and about in the Durham area with her A.T.5 mobile Tx and its ancillaries.

Of late years there has been something of an upsurge of interest in Slow-Scan TV working in our bands. *CQ Elettronica* magazine is sponsoring the first such contest. For this, the "message" for the contest QSO consists of an exchange of pictures and a message number which may be transmitted by voice. (There is also a prize for the best SWL collections of logged photographs.) Details can be obtained from IILCF, who is also the man to send the logs to: Prof. Franco Fanti, Via A. Dallolio 19, 40139 Bologna, Italy. Incidentally, the contest is down for the period 0700-1400z on February 7, and for 1600-2300z on the 13th. Suggested frequencies are 3740, 7050, 14230, 21100 and 28100 plus or minus 5 kHz.

Around the Bands

And about time, too, goes the whisper! A start could well be made by a look at *Ten*.

G3DNF (Leeds) used to write this piece ten years ago as GM3DNF up in Aberdeen, but when he moved from there went QRT, intending to have a rebuild. The rebuild is at last finished, to become a hybrid CW/SSB transmitter, comprising a transistorised exciter driving "something that looks like the back-end of a one-legged G2DAF" (!) which in its turn is driving thirty metres of wire from one end. Oddly enough, SSB has been a great disappointment, having given nothing on most bands, precious little on *Ten*, but quite reasonable answers on Eighty whenever a chink in the QRM could be found—so most of the operation so far has been CW.

To G3NOF (Yeovil) *Ten* has been very erratic, with some good openings but a dearth of JA, S.E. Asia, or the Pacific, although VK signals have sometimes been "in" from 1000 till as late as 1400z. SSB was the preferred mode to work CR4BV, CR6TP, HH9DL, MP4BHL, TA3HC, TZ2AB, all W call areas, ZS's, 5N2ABG, 9H1BL and 9H1CB.

G3DCS (Ipswich) continues to run his Joystick on all bands, and on *Ten* CW raised UY5SO, LX2XB, ZS5FC and ZS6CD.

Ten new ones for 28 MHz came the way of G3VPS (Hailsham), nine of them hooked on Sideband—EP2TW, CR6KT, EA8, MP4BBA, MP4BHL, MP4BFO, OA8V, RJ8,

TA3HC/1 and SV1, not to mention others like AX, CR7IZ, G3LZQ/ZS4, ZS6, OD5BA, UH8, UA9, W/VE, 9H1, 9J2DT and 4X4. A lone CW contact was 5R8AB, for an all-time new country.

It is rather amusing to read G3VPS's comments on the absence of news from 9H1BL, and then to read the next on the clip, which is from the latter and has a few comic things to say about G3VPS—clearly two old buddies! 9H1BL, from Paola, Malta GC, says that from where he sits *Ten* sounds rather like *Eighty* on a Sunday morning, with odd bursts to all over the place; 7Q7AA was hooked on CW, and on Phone FH8CG, ZB2BV, 3B8CV and ZE1QQS, which was a special station on for the Jamboree-on-the-Air event.

Still not enough activity on *Ten*, complains G2DC (Ringwood) who nevertheless managed to snare a few, including two new ones, FH8CG and HC8AA. To these were added lots of VK, CR7FM, EP2BQ, JA6PNA, MP4BIR, MP4TDO, VU2BEO, UK8HAB, UM8AG, dozens of UA9's, UA0, 5R8AB, 9H1CH (who is *ex-G2BW*, retired to Malta), 9C9DX, 9E3USA, LU, PY and all W call areas.

MP4BFO (Bahrein) comes in at this point, mentioning one day—October 10—as being specially good on *Ten*, with contacts all round. TA3HC definitely QSL's, Josh says, preferably *via* LA3UF, though they can go direct provided *no call sign is put on the envelope*. Others raised on that day included PJ9JR, LX1BW—DX to Josh, if not to us—3B8CC, CE3OE; and on other days EL2CB and KP4AOD came to his bait.

G3OJV (Hockley, Essex) excited his aerial on all the HF Bands and on *Ten* raised OA8V and VP9GE, which suggests it is getting a wee bit directional on 28 MHz.

The G3ZCC (Chingford) aerial for *Ten* should be captured alive and put on display; an inverted-Vee, with the apex at eight feet, which was nonetheless man enough to raise, in addition to LZ, European U's and such, W1, W2, W3, W4, and W8. In the end it had to go, and the

farm now consists of an L-aerial with 50ft. vertical and 82ft. top, trailing down to about 22 feet, which is fed against a radial mat under the lawn; also inverted-Vees for 14 and 21 MHz, with the apices at 22 feet; and a ground-plane for 28 MHz.

G3IDG (Basingstoke) comes back to G2HKU's suggestion, in an earlier CDXN, for rig details. Allan has an old Panda Cub, much modified to run 59 watts of CW only, and an HRO-MX which has been around for nineteen years and is completely "miniaturised," mainly to information contained in G2HKU's own articles on the subject. The aerial is 150 feet of wire, bent into a W-shape at 22 feet, and end-fed on all bands. Ancillaries include a Class-D wavemeter, SWR bridge, all-band ATU, and a home-built key, contrived around a micro-switch and so arranged that it can be used either in the normal way or as a side-swiper.

Fifteen Metres

The clutter of commercial stuff on *Fifteen* seems to be getting worse, and is allied with the "dead-spot effect," when lunch is past and tea-time still well in the future; a scan round the band as a way of passing this time seems invariably to find it dead, or nearly so. Mornings and evenings are good, though, so that anyone who can live with his TVI problem can get a fair crack at the DX. G2DC booked in A2CAK, lots of VK/AX's, SU1IM, VP9MI (with G2MI at the helm), K4SHB/VP9, XW8BP, 6W8GE (running QRP at 20 watts) ZL's, all W call areas, VE1-7 and all the JA areas.

Now to MP4-land and MP4BIR, who, incidentally, says he will be leaving there at Christmas and is trying to get some one to keep up the good work. Josh hooked CR7II, CR6OM and CR6JX, PJ2HZ, VU2FB on CW, HS4ACN, KP4BHW, again on CW, PY2PA, EA9AI (in Metilla, North Africa), LU5AQ, ZS2MI, KR8HS, FR7AI and OD5GP.

MP4BFO adds some more samples of the workable stuff from there with VS9MB/JY, AX9YR (Cocos),

Reporting the HF Bands

FR7ZW, FH8CG, 9N1MM, 9C9WB, 9E3USA, ZD8H, FL8RC and FR7AG.

While all this was going on, G3OJV quietly continued his familiarisation programme, and on *Fifteen* used SSB to raise JA's in quantity, plus WB6OPB/TF.

Only one is considered worth a mention by G3VPS, who was pleased to raise VP2MI for a new country, the latter having kindly chipped in to a contact with 9H1BL.

G3DCS was going great guns on 21 MHz but was brought low by an attack of the dreaded TVI, even though he has managed to get the home receiver clear, and the one in question has not before shown trouble. However, before the blow fell, Enver was in there battling, and CW yielded the scalps of VS6FX, VE3ERN, W's in all but the W7/0 districts, ZS, JA's, ZM, IR0WX, TA3AY and PZ1AV. On the SSB front it was a question of mainly EU but lots of JA's, ZL and EA9EA.

Mornings have been pretty good from the view point of G3NOF, although he was not able to listen during the evenings for a comparison. His SSB found frequent openings to JA, VK and ZL, with W's available from about 1100z onwards. Don worked JA1FRE, JA6HBC, JR1BEK, PJ9AF, TJ1AZ, VP2VY, ZL3JO and 3V8AL.

The GM3OQY (East Kilbride) nose has been rubbed on the grindstone, with a consequent reduction in the time available for an onslaught on the DX. In Oceania there were FK8AH, VR2FO, KJ6CF, KG6JAC, KH6COB, KH6IJ, an assortment of AX's and *ditto* ZM's; from Africa were CR6A1, CR6AL, CR7FM, EL2BY, TJ1AW, ZD9BM, a gaggle of ZS's, 3B7DA, 3B8CC, 5Z4DW, 7Q7AA, 7X3PC and 9J2GE. Asia was, of course, represented amongst the gathering, by EP2BQ, EP2ER, VS6AF, VS6BL, VU2FGA, VU2OLK, UI8IZ, XW8BP, and 9V1OJ, which leaves South America to be listed, in the shape of CO2BB, CX9BT, H18MMA, KV4CI, OA3Y, PZ1AV, YV and a ZP9BG. Of course, the W's and VE's were interspersed in all this, from all their call areas.

Now to G3ZAY (Petts Wood), who also concentrated much of his attention on 21 MHz. Martin found, as with many of our correspondents,



The very well-appointed and laid out station of G3NRS, Stanley Scales, 17 Westfield Avenue, Scarborough, Yorkshire, who runs the Collins S-Line-75S-3 Rx and 32S-3 Tx—with a KW-600 Linear and a Star SR-200 receiver (incorporating converter for Two). His antennae consist of a Tri-Band rotary Quad on a 40ft. tower and a K.W. trap dipole for general coverage.

plenty of DX in the mornings, but the period around 1800z most evenings was not devoid of activity either, with KH6 and ZL heard quite frequently. SSB it was, in the main, and contacts were made with KH6's, KG6's, lots of KR6's, KL7's, KC4CS, KA2AI, HL9KH, HM4FA, VR4EE, 4S7AB, 3B8CR, 5R8AX, EP2FB, 9C9DX, 7X2FO, DA1QP, (?), 5N5AAE, TU2CX, OY7JD, M1B, 5VZJS, JY1, JY1/B (a second operator), VP9DX, VP2EE, VP2VP, VP1WMU, FP8CS, HH9DL, HQ2GK, TI0RC, CO6RL, and G2MI/VP9.

G3IDG had a rather startling experience a few days ago when about his lawful CW occasions. He was in search of prefixes, and came across a UV4 just finishing with a DM. Wanting this prefix, Allan popped a smart one-by-one call to the U, who promptly came back with a tart "Only democratic stations, LZ, OK, HA, YO, YU, SP, 3Z de UV4 . . ." Not only was this reply arrant nonsense, but one strongly suspects the chap was out of the terms of his own U licence, since the USSR, as far as is known, subscribe to the same internationally agreed principles as the G's, W's or whoever. If that is indeed the case, one would hope the Russian authorities will jump on him, just as one hopes

the W's will jump on student protest nets on CB or our own bands. Politics, whether for or agin, is not, and never was, part of the structure of Amateur Radio in any country, at least in terms of actual operation on the air.

Comments

Not room for much here, with all the news still to be covered. A first one comes from G3ZTJ (Wallsend), who for long was a keen SWL and correspondent to the column of our J.C. '3ZTJ picks up the theme of the SWL report from Vladivostock mentioned by GM3IAA last time recalling that even surer evidence that it *can* be done, G-JA on Top Band, is in the hands of G2AAM, who, almost 11 years ago, received a Japanese SWL card on a CQ sent on 1875 kHz and promptly returned it, asking the J/SWL to name the station replying to the CQ (who happened to be OK1AEH). The SWL duly replied with the correct answer. G2AAM was using 3·8 watts at the time, and 132 feet slung between a couple of 30ft. masts at 500 feet a.s.l. So—you G-JA chasers—it *can* be done!

G3RFX, who is at present living in West Berlin, writes to mention that there is apparently a pirate making use of his call, *sometimes*

straight and sometimes as /P. Be warned, folks, and challenge the blighter!

Talking or pirates, 9H1BL seems to have one, too. This pest is responsible for a flood of JA cards for QSO's on 7 MHz; a pity he was not the genuine article, as the real 9H1BL has yet to work a JA on Forty.

Amateurs everywhere, not just the DX brigade, will be glad to hear that GI6TK has recently had a successful operation to restore his sight (with the aid of special glasses) so he can, after all these years, discard the white stick.

On a completely different tack, G2HKU (Sheppey) mentions that UA3KBD is using a 7 MHz Quad, 280ft. high on top of Moscow University—what price U.K. planning-permission and its petty restrictions?

Talking of aerials, G3SED (Portsmouth), who is now putting out (and getting in!) such colossal signals as to be more than equal to his old spot, tells us that when first he moved to his present place (where the firm's workshop has to be turned into the shack at weekends) he despaired of ever getting near the DX again. However, to Mike's amazement, he gets out better from *below* sea-level than he did from his place up on the hill! The actual

aerial is 300 feet long with the far end at 75ft. by permission of a local factory "for testing purposes," but the key is probably that the site, though below sea-level, is on a very damp clay soil which provides the good take-off for many wavelengths round which is so important for Top Band.

Nigerian ARS is, as remarked elsewhere in this issue, well on with the job of picking up the threads after the troubles; they have managed at least unofficially, to make contact with the P. & T. people, and persuade them that a distinctive prefix should be used to celebrate the tenth anniversary of independence. That *personal* contact, and its maintenance by the club, is the key to future Nigerian amateur radio development, quite apart from meaning that in the period of October 5N5 was the prefix they used.

Now Twenty

Conditions, in the view of G2DC, went through their peak in the early part of the period, tailing off into winter routine later as the nights drew in. Jack remarks on the ear-shattering strength of some of the EU QRM with T5 notes, which make listening so unpleasant. He feels the G's and others, are as much to blame for these as anyone, because of the consistent way in

which they dish out T9 to signals which are absolutely *awful*. We shall have to organise a "Hate T1 Month" on the bands, clearly! In the matter of QSO's, G2DC battled his way through to AX1-7, ZL1-4, W1-O, UA0ZS, 5N5ABG, LU, PY and such.

MP4BFO shows ZD9BO, 3B8CZ, JY1, AX2APX/Lord Howe Island, a complete set of the AX "Bay of Plenty" award picked up in the space of two hours (!), FL8LM, 9Q5CO and VS9MB. However, MP4BIR seems to have spent little time on 20m., working out to 9Q5CO, FR7AG, YB7UA, 4S7PB, ZM1TY and VS9MB.

The investigation of his wire on all bands and modes put G3OJV on the trail of ZL1ADN on CW, plus, with SSB, AX3AKP, AX3APM, ZM3UM, and G3LEO/MM, in the West Atlantic somewhere.

Activity from G3VPS has not been high, at least as far as 14 MHz is concerned, as Peter has been occupied in brewing up, putting up, and starting to evaluate, a ground-plane for Twenty and Fifteen. So far, indications are that it is good.

While G3DCS does use both modes with his Joystick there is not much doubt that he is heavily inclined to CW operation. Twenty CW, for instance, yielded contacts with UA9BX, SUIIM, PY4AKR, PY5AVV, PY4OD, KZ5EE, 9H1BM, W's 2, 3, 4 and 9, AX2APK, IR0NPN, HI3PC, EA7PX, VK3MR, IR1AF, K4SHP/VP9, and ZP5KA; but on Sideband only Europeans are noted.

The "band of the gotaways," would be a poet's summing up of the results of G3ZAY's work this month. However, KC6RK, VP2VP, and VP2MF were snapped up with SSB.

Gotaways also figure in the G3NOF list, but, nothing daunted, Don sorted out CR6BX, HT1VER/MM, KC6RK, KL7HDB, JA's, TZ2AB, VK's, VP9DX, VS6DR, ZL's, ZL4OL/A (Chatham Is.) and W2JLF/AM, who was over the South Atlantic from ZD8 to KP4-land.

Plenty of DX called, but nothing raised, says G3DNF, who finds it harder with 75 watts SSB than his 15 watts AM of old, and claims SSB is the easiest way, short of disconnecting the aerial, *not* to



A wedding of course—but not just another wedding. The Amateur Radio flavour here is so strong that one hopes Miss Suzanne Keys of Baldoyle, Dublin, knows what she is really letting herself in for—because her groom is Desmond Ryan, EI7DD, whose father (right) is Comdt. M. Ryan, EI7D, and the ceremony was performed by, on left, Fr. J. Stone, who is EI4Q. All we can say is good luck to Suzanne!

work 'em!

W6AM mentions in passing that DL7FT told him he was the only W6 to raise the ZA2RPS expedition on both CW and SSB. To Don's joy, the ZA2RPS card went direct to ARRL who have now accepted it for DXCC credit—which will set many people's minds at rest for sure.

A great long list of DX comes in a letter from G3ZEM (Hartlepool) as a first offering to this piece—so long in fact, that with the pressure on space this time we have had to prune it a little. Apart from the multitudes of W's and AX's, we notice JX2HK, OD5FV, 3B8CZ, CR7IC, ZS6OY, KV4BT, 3V8AL, HB0XSB, UL7, UG6, UF6, AP5HQ, VU2MQ, VU2RM, VU2DK, VU2ED, more ZS's, ZE1DL, 5Z4KL, KH6OT, 9N1MM, EP2FB, VE7SV, 4Z4HF, TA1TS, ZC4JW, VE8RX, VP2MF, 9B3AC, FP8CS, VP9DX, YV, TG9QF, ZD8H, CR6's, HK4DF, 5H3KG and KL7BLZ.

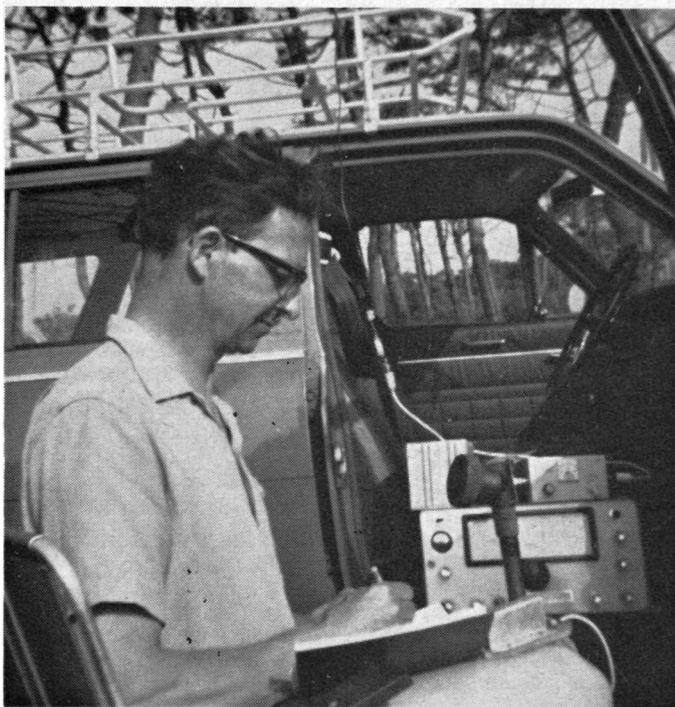
The report from G3VLX (Sidcup) is quite short, thanks to the pressures of work, but it includes a revised entry to the tables, and mentions SSB QSO's with TA1TS, 9V1OX, 4U1ITU, HG10OUN, G3LZQ/P /ZS4, CR6IK and WA6OPB/TF.

Looking at the letter from G2HKU (Sheppey) this time, one notes 14 MHz contacts are all confined to the early-morning; this gave SSB with KL7GIC/7, ZL3SE, ZM1LL, WA4LJP/KL7, plus CW which was used on KL7MF.

Top Band Doings

As so often seems to happen there is lots of news on this one, both in the domestic and DX senses. Perhaps the most important DX-wise is the news, by way of 9H1BL and others, that Top Band is "out" for the future from Malta, the authorities having at last decided officially that the band is withdrawn. Thus anyone who has not worked 9H1 on Top Band can say farewell to his chances of doing so in the foreseeable future.

Our note about the proposal to form a DX net on Top Band last month was a starter; but in the event it looks as though this net is going to boom; it receives steady support from PA0PN and DL9KRA, it is known that KV4FZ, 4U1ITU, ZC4AK, 5N2AAF, ZD9BM and



Deryck Buckley, G3VLX, 234 Halfway Street, Sidcup, Kent, has been away portable in France as F0RV. From Les Mathes on the Biscay coast, in spasmodic operation on 20m./80m., 34 contacts were made in 11 countries, using in the end a 20m. dipole contrived in the trees of the camping site. The Tx was a transceiver, with which much more might have been achieved had its PSU not blown a rectifier when there was still holiday time to go. G3VLX remarks on the co-operation he had not only from the French authorities but also from the locals.

others are operating to the net schedules, and W1BB also will be looking in as and when conditions prove favourable. As a result of experience they have decided to raise the speed a bit, to 12 w.p.m., and operating procedures have crystallised somewhat. One waits to see whether this one will really mushroom, as it makes life a little easier both for the EU's and the DX to know when G's are there for certain—see p.547 last time out.

G3IGW (Halifax) has been very busy indeed with his other activities, but made a special effort to give us the latest on the *VK DX Tests*. They transmit on 1802-1804 kHz, and the DX on 1825-1830 kHz, except for a few individual skeds. The peak time for VK3 in mid-December is 1900z, and for VK6 2045z. VK's lead off, calling on the hour or half-hour for *three* minutes, listening for three while the EU's are transmitting; then transmit for three more while EU's listen, and

so on. Fourteen VK/AX stations are known to be active on Top Band and enthusiasm is high. Several hot-shot SWL's will also be monitoring, in VK and ZS3.

Now for the more domestic stuff: G2HKU mentions CW with PA0BFN, and PA0ALW, plus SSB to PA0PN, all around 1100z. Evenings came up with the GM3SVK/P, GM3XTJ/P team, and GW3YUK/P.

Your scribe also had a go at working Fred and Edwin on their travels, apart from the Shetland stop, plus a shaky contact (at least at the G3KFE end) with GM3VCM for Caitheas.

Now for GI3WSS (Co. Down) who found his main interest for the month in chasing GM3SVK and GM3XTJ round their various stops; Cyril also made the "bonus" QSO with GM3VCM. Otherwise it was mainly occupied with preparation for, operating in, and clearing up after, the J-O-T-A effort.

over

G3SED reckons it will be one of the best Top Band seasons ever from the DX point of view; Mike has himself already managed to QSO W1HGT, K1PBW W2FJ, W3FE, WA4SGF and K2GNC—all raised on the morning of November 1—and W1HGT, W2FJ W9UCW, W8DB, W8KFX, W1BHQ, W3NNK and VE3CH active on November 8, the highlight being when W1HGT, having had some S9 reports, came on AM—yes, AM!—and worked G3SED G3OQT and G3MYI, all of whom were using SSB.

G3YXM seems to have joined the BBC, and will mainly be active from Evesham if he gets his transmitter finished in time; but being in Evesham will mean that the normal G3YXM activities have to go by the board for a while.

A note from GM3UKG (Buckie) advises that he is now clear on all QSL's for the Moray trip last April; also he is active most evenings from Banff, mainly early, rather than late. An interesting QSO in broad daylight, from 0925 to 0940 on November 25, was with G3NNS—a haul of around 500 miles, which must be a rarity on Top Band.

Apart from the counties trail, G3ZCC (Chingford) had a dabble in the CQ WW SSB Contest on 160, and for his reward raised DL0WW, DK0WA, G13VGZ, PA0PN, GM3YCB, EI8H, HB0XKZ.

Does anyone know anything about the "ON4TL" who was operating on October 5, and being challenged on every QSO as a pirate? G3XIV would like to know, even though he shares the opinion that this was some kind of practical joke. Others worked included 4U1ITU, HB9IN, OK, GM3XTJ/P in Roxburgh, GM8MJ, GW3RTR for Flints, and GM3ZOO in Perthshire. The gotaway list is headed by DJ3VC, with OK3TOA, OH1SJ and GD3FBS also figuring pretty prominently.

G3ZDY, like G3XIV, hails from Fareham, and kicks off his letter by bewailing the fact that he missed out on Nairn, because he thought they were on Shetland, which he had already got. The scores go into the ladder at this time, partly because of the better country and county score and partly because an "overlooked" one was found from

'way back. As a matter of interest, G3ZDY notes that he has worked W1HGT, and on the same morning was heard, along with G3RCE/A and G3RKJ, by K8UIA/KL7 though no QSO seems to have resulted.

From G3OJV comes more than adequate proof of the efficacy of his aerial, by way of GM3SVK/GM3XTJ/P on their stops at Clackmannan, Roxburgh, Stirling and Aberdeen; G13VGZ in Antrim; G13WSN of Co. Down; GM3FXM for Fife; and GW3YUK/P for Radnor. Outside U.K. CW came up with DJ0MR (Keith, G3OIT), while SSB produced DL0WW, DK0WA, OE9ZQJ, PA0PN and HB0XKZ.

Forty and Eighty

It seems a shame to lump Forty in with Eighty, since there is no doubt an increasing interest in the use of the former, and next to no reports on 3.5 MHz. However, space presses, and so we will just run down the pile for both bands.

MP4BFO says he is QRV on 3.5 and 7 MHz, particularly in the 3.5 MHz SSB DX Net on Thursdays and Saturdays at 1900z. His dipole for Eighty had only one half at the time of writing, but was to be repaired as soon as could be, even though it still was behaving quite usefully with one end missing. On

Forty there is again a dipole, and several QSO's have been made into "our neck of the woods" if not exactly into G, says John.

Things perking quite nicely is the opinion of 9H1BL, who cites as evidence UK8HAA and UK9AAN on both bands, plus UL7GW, VE8RX, ZL1AIR, and a dubious "ZA1ABK" (who gave his QSL address as P.O. Box 65, Tirana) all worked on Forty CW. As a side-issue, Alan says that the Ruskiies cannot work in the DX area of Eighty SSB, due to some limitations in their allocation on 3.5 MHz. Anybody who can clarify this point, please step forward!

G2DC found things had tailed off on Forty, and the nasty noises of the evenings have spread to the early mornings as well; however, he got some quite good QSO's: AX2VN, VK3MR, CM3LN, KH6IG, UD6AB, UD6FAL, UK9SAO, UV9C, VE6UZ, 4Z4IN, 9G1HM, all W call areas, and all the EU countries with the exception of HE, 3A, and M1. Eighty was in better shape and not so cluttered, so that most early mornings would show ZL, all W districts and other oddments of DX such as PY and LU. However, the list of actual QSO's made is blank for W6, simply because W6ANN was a gotaway.

For G3ZAY, Eighty was the means to a contact with ZL4JW and the



A happy chap is George Webster, G3VOT, of 27 Barkby Road, Sheffield, Yorkshire, who has the Heathkit SB-line, consisting of an SB-300 Rx and SB-400 transmitter, with matching speaker. His aerial is a TA-33Jr. at 33ft. This also is a nicely fitted-up station, with all the essentials within reach.

spark for a complaint about the small number of DX operators who work "split" these days—even a few kHz is enough to make a pile-up manageable.

Reflecting on his list this month, G3DNF says that his long lay-off probably accounts for the fact that he still has not fulfilled his ambition to work VK, as well as still being on his *first* logbook—which by now is getting a little dog-eared!

Our one-band merchant GM3JDR (Wick) complains that he has not heard any more of G3KFE—he's been too busy sending dits-and-dahs at DX. (GM3JDR, we mean, not G3KFE, who regards Cambridge as DX!) Lots of JA and JW, CR6AL, HBØXS, UK9AAN, UV9AI, UW9CO, UF6FAL, UL7LK, UD6SGV, UAØOI, a stack of JA's, CX8BBH, W7JLU/7, HI3PC, VK3MR at 1600z, AX6HD, AX2XB, AX2QL, VK2NS, VK5KO, AX5NO, VE8RX, PZ1AH, W6TSQ, K6RP, KH6RS, CR6AI, YV1AD, OY7ML, PYØAD, 9Q5QR, EA6BD, 4S7PB, VP9BO, ZC4CB, OY3PJ, CM3LN, OX3WQ, FB8XX, VU2OLK at 1600z, CO3BU, lots of W's, and VE1-3. Not satisfied with this, GM3JDR took mike in hand and sallied forth again, his Sideband bag being VP1WMU, HC2GG/1, YV1BI, 4Z4HF and 4X4UF. All this collection hooked on *Forty*.

Another addict of the band is your conductor, who has regretfully to add that most of the month has seen him QRT while sorting out the TVI, and the monitoring gear to prevent a recurrence; but G3XAP (Stowmarket) has had more time and less TVI, so reports on many things. His old wire G/P aerial has been torn down to make way for

one of tubing, at least in the vertical part, which has improved the bandwidth somewhat and is the first step to a phased array of verticals as a beam. No less than forty-two countries fell under the G3XAP spells this month.

Very little comment on the band from G2HKU, who has confined himself to working W1, 2, 3, 4, and 8 and 9H1BB. The aerial at the moment for *Forty* and *Eighty* is a much-bent dipole, cut for *Forty* and resonated as a Marconi with feeders all strapped against earth for *Eighty*. This unpromising radiator did well enough to put CT1 on the worked list on both *Forty* and *Eighty*, to give a new country on each band.

All CW from G3DCS, who fed his Joystick with it, and raised UQ2, UC2, an assortment of W's, HBØXS, GC2FMV, I1BDW and CT1GD, on *Forty*, while *Eighty* came across with most of the European countries on Sideband.

G2HKU tried AM on *Forty*, and hooked VU2LE, while SSB did similar service with PY8OL, HK6BRK, YV1BI, and CW HBØXS plus 9H1BP. Up on *Eighty* there was OH2BU/OHØ, VE8YL and an HP9AVQ/MM on, of all places, "Radio North Sea".

Odds and Ends

From N.A.R.S. news comes about the longest callsign ever—YV5EXFILCA70, at the 2nd International Philatelic Exhibition, Caracas, till December 5.

G3SED puts up a strong case for the abolition of the present all-time countries ladder, and its replacement by a countries-worked and confirmed list, for both Phone and CW, which he feels would be far

more popular. G3KFE would add to that the comment that the newcomers "First-Year-of-Operation" could also be phased out if the support is no better than at present. G3SED feels that county-chasing is for the newcomers anyway, in the main, and that the "men's league" is one of *countries* rather than mere counties; a position he could well take up from his own score of 42. Comments invited—it's drawing time for the annual review, and the axe is sharp!

From G2NJ (Peterborough) comes news of his continued search for the /MM stations; this month has yielded SL8DC/MM near Goteborg, and JA4FXB/MM near New York, both on Twenty, and a QSO with G3JFF (who has done his fair share of /MM operating) but this time while driving G3BZU. Another contact, of a different sort, was a note from G3RJS, on leave at the moment, who says he is hoping to get a /MM ticket issued for his next ship.

Conclusion

That's it once again; by the time the next one comes out, the festive season will be over once more, so let G3KFE take this opportunity to wish all his readers, and especially the correspondents to CDXN, a Very Happy Christmas and a Prosperous New Year.

The deadline for January's issue is rather tight, to allow for the vagaries of the Christmas mail rush, at **December 12 latest**, addressed as always to CDXN, SHORT WAVE MAGAZINE, BUCKINGHAM. 73 and take care.

Editorial Note: Heavy pressure on space has forced the holding out of the Tables for this issue.

CHESHIRE HOMES APPEAL

We are informed that the *CHARN* (Cheshire Homes Amateur Radio Network) Fund has accumulated £512, enabling eleven Homes to be fully equipped as amateur-band Rx stations—but there are still 35 Homes without gear. To raise further funds, a prize draw has been devised, with tickets costing 1s. minimum. In addition to a Trio 9R-59DS as the star attraction, there are numerous other prizes. To get into this, donations to the Fund, in multiples of one shilling, can be paid to: W. M. Clarke, G3VUC, Secretary-Treasurer, CHARN Fund, 66 Fillace Park, Horrbridge, Yelverton, Devon, when tickets for the draw will be issued accordingly. (To save admin. costs, include an s.a.e. with your donation.) The time of Christmas is when we all go in for draws of

one sort or another, this being a particularly worthy object. If you are writing a cheque for a sizeable amount, without any particular interest in whatever prize you might win, make it payable to *CHARN Fund*, address as given. This appeal is recognised by the Cheshire Foundation, which means that it has the personal support of Leonard Cheshire, VC, DSO**, DFC*.

HONG KONG AMATEUR RADIO SOCIETY

Though not a very large spot on our *DX Zone Map*, Hong Kong is pretty active in the Amateur Radio context. The licensed members of H.A.R.T.S. total no less than 48, and they also have 28 SWL's. From most parts of the world, the VS6's are still desirable and interesting DX.

COMMENTS on conditions during the last month are going to be a bit difficult, as your scribe was absent from his usual QTH for most of the time, but enough information has come to hand to indicate that the auroral opening on October 17 was not a particularly widespread or vigorous one, and that it was characterised by a curious admixture of extended tropo. and auroral signals. For example, G3BHW in Margate, Kent, worked SK6AB at 5 & 9++ at 2015z, presumably *via* a duct since no one else seems to have heard him at this strength, and then again at 2229z, when the Swedish station was RST569 and RS56A simultaneously depending upon the beam heading! No other Continentals were logged at the time, although the Scottish stations were very buzz-saw, the strongest being GM3DRD (does he ever miss?) and GM3JFG.

Comparative calm reigned until the end of the month, when there was a good opening to the South and South West of France. F9NL and EA1AB were both worked at good strength from Kent and elsewhere on October 31, and propagation was still good early on the following morning into Bordeaux and Le Mans. Best signals from the Paris area seemed to emanate from F1BF and F8TC.

Propagation was pretty poor during the 144 MHz CW contest over the weekend of November 7/8, and few scores over the 50 mark were logged, at least from this country—the Continentals were doing rather better it seemed, with the DL/DJ giving over 70 in quite a few cases. Little EU DX was available, although G2JF concluded QSO's with DJ/DL in QRA Locator EK and EL for two contacts at 550 Km, which wasn't bad. As so frequently happens, conditions were much better in the early morning than they were at night.

One cannot help feeling that for these contests which run in parallel with Continental events, the requirement to pass QRA and QTH is outmoded. The Continentals always work on QRA anyway, and don't bother with the QTH, and the Contest Committee does not knock off points in a G station log because no QTH has been passed in such a

VHF BANDS

A. H. DORMER, G3DAH

case. Anyway, the QRA Locator has now been adopted throughout Region 1 of the IARU as the official system for use in contests, and if it is considered accurate enough for the rest of Western Europe, one would have thought that it might be considered good enough for us without all the nausea of the "25 Km south-east of Llandrindod Wells" stuff. And that applies particularly to CW Contests. Even on four metres, where there is no EU activity, the QRA system would seem to be adequate, although it is presumably inevitable that some opposition will come from those operators who are QRV on no other band than 70 MHz, and who are possibly unfamiliar with QRA Locators and all their advantages.

One curious feature of recent openings to the East has been the almost complete absence of DM's. One seems to be able to work right up to the border, and indeed into West Berlin, but nary a DM to be heard. That they are still active and working stations in the West is certain, since one can hear PAØ's in QSO with them, but they seem extraordinarily elusive in this country.

The abrupt change in the weather situation after the glorious first few days of November has played havoc with the VHF bands, and at

the time of writing winter conditions seem to have set in, in more ways than one.

Operating Hints

From correspondence received, and from comments over the air, it seems that the operating hints given in this Column from time to time have been of some value. That being so, the following are offered as further ideas for making life just that little bit easier.

(a) If you are going to tune your own channel before looking further afield, say so early on in the CQ call. If you leave it until right at the end—well, the rest is obvious isn't it?

(b) Particularly if you are out portable, mobile or /A, announce your *location* when calling CQ. The licence requires this anyway, and it is much easier for the distant station operator to line up the beam on your, perhaps weaker-than-usual, signal.

(c) Always announce your location, early on in the CQ of course, if your call is not yet in the *Call Book*.

(d) If you are going to tune a restricted range of the band, say so, again early on in the call.

(e) If conditions have been good one evening, it is usually worth while having a look at the bands in the early *mornings*. Not only is tropo. propagation likely to be better than, but, as G3USF points out, Continentals are sometimes workable right up to midday, and, with the lower scale of daytime activity, quite a few operators in the Midlands and the North have been able to make contacts from poorish QTH's without having to get through the hectic clutter of the evening traffic to do so.

This is not an attempt to lay down the law, but observance of these principles is more likely to lead to a contact than non-observance.

VHF Century Club Awards

Quite a number of Awards this month, and we start with congratulations to John Tye, G8BYV of Dereham, Norfolk, who gains Award No. 10 for 70 cm. He has already made it on Two—he is the holder of Certificate No. 68 for his work on that band—and so he joins the "happy band of brothers" who hold more than one Award. He

came on 70cm. initially in September, 1968, with a BAY96 tripler running 6 watts input, but in March, 1969, this was changed for a QQV03-20A tripler and QQV03-20A PA. This runs 25 watts input and is modulated by a pair of EL84's. The driver for this set-up was the two-metre rig which terminated in a QQV03-10. The converter uses EC88's in the RF and mixer stages with a AF239 pre-amp, and has been giving good service since it was first used during John's SWL days. The Rx is an R.216 tuning 24-26 MHz to provide the IF. The antenna is an 8/8 slot at 50ft. and the QTH is 150ft. a.s.l. Plans are in hand for operating on 23 cm., and John reports that he already has half a QSL card out of the 100 required for VHFCC on that band, as he has had one cross-band contact!

Certificate No. 5 for operations on four metres goes to Stan Aspinall, G3VSA, now of Manchester, although he was operating as DL2MK and VS2DJ between 1948 and 1954. He was first licensed in this country in September, 1966, and after a short spell on the HF bands, came over to VHF. The converter in use is interesting in that it started as a G3HBW type, but has been modified by the addition of a cascode pre-amp and a cascode second stage with an RF gain control to decrease the chance of cross-modulation under contest conditions. The transistor complement is now 4/2N5248 in the cascode RF stages, 2N3823 mixer, and two bipolars in the oscillator/multiplier chain. The main Rx is a much modified HRO which now includes a 2.5 kHz mechanical filter, back-to-back IF transformers giving a 5 kHz selectivity position, product detector and switched xtals for SSB reception, and three speed, amplified AGC. The Tx runs a full 50 watts to a QQV06-40A, VXO controlled and modulated by a pair of KT88's. The antenna is a home-built, gamma matched, 5-ele Yagi at 23ft. The site is 180ft. a.s.l. and has a fine take-off to the North and North West, but is completely screened to the South by the 250ft. hill with the Ringway Airport on the top! What with that and the Pennines to the East, it is much to Stan's credit that he has made membership of the Century Club at all. It has taken 3½ years to

do so, with help from Ar and Es propagation, but one can imagine the "blood, sweat, toil and tears" which went into this fine effort.

Professor Martin Harrison, G3USF, of the Department of Politics at Keele University, gains his Award for operation on two metres from Staffordshire. He has been on Two since early 1966 and to date has worked 12 countries and 53 counties in QSO with about 500 different stations, but says that he is not a QSL chaser and so has had to wait for the cards. The station Martin describes as "classic" in that it consists of a QQV03-10 running ten watts to a 6-ele Yagi at 40ft., a 6CW4 converter of middle years and reliable, if undramatic, performance, and an NC-109 as the main Rx. Making DX contacts to the East over the Pennines is a really rugged task, as, apart from the terrain, many Continental operators tune from the low end up, and so pick up the comparatively easy contacts in the South of England. Although the top flight Continentals are well aware of the U.K. Band Plan, it might be a nice gesture for the well-placed Southerners, if they are hearing stations in the North, to indicate to some of the EU newcomers that a search above 145 MHz might be rewarding all round.

G8CFI is another Northerner (Chorley, Lancs.) who gains the two-metre Award this month. The gear consists of an HW-17, which is used for both portable and fixed station work, and either a 5-ele, home-built Yagi (the total cost of

which including the feeder, was 10s.) or, latterly a 10-ele Skybeam. The former is preferred as the side lobe suppression appears to be superior to that of the 10-ele job. A move of QTH is imminent, and this has curtailed operations for the time being, but Ken hopes to be on again soon with a VFO and SSB.

The third French operator to gain the two-metre VHFCC Award is Luc Houlé, F1AOY of Calais. He thus joins Jacques Rocourt, F1APQ, with whom he has been associated for so long in portable working from Cap Blanc-Nez. Without any doubt, these two operators must have the best known French call signs in the South of England, since they are very active, and can be heard from their coastal site under almost any conditions. Luc runs a QQE03-12 with 18 watts input, driven from a transistorised exciter and modulated by a pair of EL84's. The home-built Rx is all-transistor with Mosfet front end and the antenna is a 9-ele Yagi (Tonna?) at 60ft. a.s.l. Although the claim F1AOY has submitted is for fixed-station operation, it is for his portable work that he is best known in this country, so the following details of his /P station may be of interest. At present the Tx is all-transistor and has an output of 6 watts. The Rx and antenna are the same as those used from the fixed QTH. However, a transistorised SSB Tx is under construction and this will replace the existing AM job in due course. Incidentally, the list of 100 different stations worked by Luc in support



On that Welsh mountain in Flintshire from which G8AWS (standing) and G8APZ operate portable on 70 cm. most Monday evenings, and at other times when the going looks good in terms of band conditions. It is these two who have devised the 430 MHz cumulative contest, now being well supported. It runs till the end of the year.

of his claim consisted *entirely* of G's! Félicitations, mon ami Luc!

It is a pleasure to announce the Award of Certificate No. 82 to G8BRM, the first operator North of the Border to have submitted a claim. Iain Petrie operates from New Deer, Aberdeenshire, and gains his parchment for two-metre activity. His list of 100 stations worked includes 14 G and 5 GM, and if he had waited until he got all the cards in from the multitude of stations he worked on the Continent during the recent openings, he could have emulated F1AOY and sent in all oversea callsigns! Those who heard him working all the DX, may like to know that in the month of June he had QSO's with 205 continental European stations, and actually worked 101 of them on one day! Although he is out /P a great deal, Iain achieves membership by contacts from the home QTH only. This he has recently changed and the new address is:—Keig School House, Keig, Alford, Aberdeenshire. The new site is at 500ft. a.s.l., but until he gets the antenna up it is impossible to say how it compares with the old one. The portable site is at 560ft. a.s.l. between Methlick and New Deer, and when operating from there the Tx is a Pye base station running 10 watts, the Rx a converter into Heathkit Mohican and the antenna an 8-ele J-Beam about 12ft. off the ground. The fixed station rig comprises a Cossor CC40 Tx and AR88 Rx with a TW converter. The antenna is a 6/6 J-Beam. Iain is certainly a glutton for punishment, as your scribe remembers working him well after midnight during one of the openings this year and hearing him say that he had been at it since early morning with the XYL bringing up the beer and sandwiches at regular intervals. The rig was OK but the larynx was failing!

Finally, to G3YZS, ex-G8CRF. Roger Jackson gains Certificate No. 83 for two-metre operation from a QTH at Leigh-on-Sea, Essex. First licensed in June, 1969, the full ticket was obtained last December. The equipment in use is a QQV06-40A at 90 watts input modulated by a pair of 807's and for reception, a transistor converter and an AR88. The antenna is an 8-ele Yagi at 30ft. above ground which is at 100ft. a.s.l.

Roger is now QRV on 70 cm. also. The QRG is 433-545 MHz so tune up above the beacons for him. He has just worked his first PAØ on that band. Gear consists of a G3PYB-type tripler using a QQV06-40A, with a transistor converter into the AR88. The antenna is the 46-ele Multibeam.

* * *

The ratio of two-metre Awards to four-metre and 70 cm. Awards remains very high. With the increase of activity on the upper band engendered by the G8APZ/G8AWS contest it is to be hoped that a few more claims will come in shortly. And surely there must be many more four-metre operators who qualify? All right, so it's just another piece

of paper on the wall, but at least it records a solid and worthwhile achievement, and as such, is probably of rather more value than that given for working 45 members of the Binks family in Wagga-Wagga!

Seventy Centimetres

That traffic on 70 cm. has been given a new impetus by the contest organised by G8APZ and G8AWS cannot be denied. From many parts of the country come reports of increased activity on this frequency, not only by those who for long have been equipped for it, but also from newcomers. G8AWS himself has increased his score to 13 countries and 54 counties and 475 different stations, and asks

THREE BAND ANNUAL VHF TABLE
January to December, 1970

Station	FOUR METRES		TWO METRES		70 CENTIMETRES		TOTAL pts.
	Counties	Countries	Counties	Countries	Counties	Countries	
G3OHH	57	8	54	11	27	3	160
G3DAH	24	3	67	15	16	6	141
G2AXI	47	6	51	12	30	3	139
G3COJ	10	1	53	16	29	8	117
G8ATK	—	—	52	17	35	8	112
G8ATS	—	—	55	12	35	8	110
G2JF	—	—	53	11	29	8	101
G8APZ	—	—	46	9	31	4	90
EI6AS	13	8	51	10	—	—	82
G3EKP	23	6	35	8	6	4	82
GD2HDZ	—	—	51	9	17	3	80
G8BKR	—	—	55	10	11	2	78
G3IAR	35	4	30	7	—	—	76
G8CVD	—	—	48	11	2	1	62
G8BWW	—	—	45	7	—	—	52
G3BHD	—	—	42	9	—	—	51
G8AUN	—	—	35	8	2	2	47
G8AUE	—	—	—	—	40	7	47
G3FIJ	—	—	37	5	1	1	44
G3ZIG	—	—	37	7	—	—	44
G8CCH	—	—	29	5	—	—	34
G8DWV	—	—	24	5	—	—	29
G3OJY	—	—	21	5	—	—	26

Notes:

(a) G8AUE has 19 + 4 on 23 cm.!

(b) Don't forget the Tables go through to December 31, 1970, so final claims may be made after January 1, 1971. The Three Band Annual Tables show claims to date for the year commencing January, 1970. Readers are reminded that claims should be sent to "VHF Bands," SHORT WAVE MAGAZINE, BUCKINGHAM.

"Who said 70 cm. was a local band?" Incidentally, Arthur still goes to his Welsh mountain site on Monday evenings and whenever propagation warrants it, and is now VFO-controlled. Perhaps we can expect some work on 70 cm. as well as Two! G2AXI (Basingstoke) has made his first-ever contacts out of the U.K. on 70 cm. by QSO's with PA0DTL and DC9BY, both on September 22, and perhaps it is another measure of the increased activity that his score on that band has gone up from 6 counties and one country to 20 counties and 3 countries since the beginning of September. He is QRV most evenings between 2000z and 2100z with the beam to the East, endeavouring to stir up the activity. Nice going, Syd.

G8AUE is another stalwart supporter of 70 cm., and he comes into the Tables for the first time this month with a tidy score of 40 counties and 7 countries to head the list on that frequency. Incidentally, he had also got 19 counties and 4 countries on 23 cm., having made it with PA0WFO and DJ4ZU, both with reports around the RS57 mark. It was the DJ's second QSO on the band, the first being with DL9LU at 25 miles!

GD2HDZ is now QRV again on 70 cm. from Laxey, and has a Parabeam up which he energises most evenings in order to support the G8APZ/G8AWS effort. Contacts are rather few and far between, he says, but this may be due to the fact that his activity is unknown to many, so turning the beam towards the I.o.M. should not go unrewarded.

Mullards have introduced three new transistors which are of interest to users of the band. These are the 351BLY, 352BLY and 353BLY. They have been developed primarily for small, portable transmitters, and can be used either as drivers for the BLY53A and 266BLY to give an output of some 17 watts, or as output stages in their own right, since the construction is so robust that they can be used in circuits containing no protection against antenna mismatch or variation in supply voltage. Under these conditions, the output for the 351BLY and 352BLY with a 12.5v. supply and a drive signal of 0.5 watt is 2.5 watts. The 353BLY will give 2



The GB3LI crew for the Lundy Island expedition, all serving members of the R.A.F. Left to right: G8DPV, SWL White (who undertook the chores), G3YNX and G3YUN. This picture was taken while they were disporting themselves in the ruins of one of Lundy's original houses.

watts out for a drive of 0.4 watts and a supply voltage of 13.8v.

Scottish VHF Convention

Due to his enforced, and unexpected, horizontal polarisation at a /A QTH on the very morning that he was due to set off for Dundee, your scribe missed the VHF Convention held there on Sunday, October 11, but gratefully acknowledges the assistance given by Tom Douglas, G3BA, who sent along some notes on the event.

The venue was the Queens Hotel in Dundee, and for those who had to travel a long distance, the weather was very kind, and the sun shone on the beautiful countryside for most of the time. The arrangements for the Convention were in the hands of George Somerville, GM3KYI and his numerous helpers, and of GM3AEL, Sandy Smith of Aberdeen, the reward for their efforts being reflected in the excellent attendance of about 100 at both the afternoon session and the dinner in the evening. Lecturers were Geoff Stone, G3FZL, who gave a most capable explanation of the generation and reception of NBFM, a very timely contribution in view of the use of FM in some satellites to be launched next year, and the use of this method of modulation in VHF/UHF repeaters; GM3HAT, M. Hatley, who extolled the wonders

of the cascade and pointed to the merits of understanding how to do a little design work before launching into a new constructional project; and Sandy Smith, GM3AEL, who dealt with space communications and entertained his audience with some excellent slides of space vehicle radio equipment.

The dinner was a great success, and had been arranged with a minimum of formality, leading perhaps to the maximum of joviality. The Jock Kyle Award went this year to that stalwart of VHF in the North, GM3UAG, Jock Davidson, of Boyndie School House, Banff, who for many years has ploughed a lonely furrow from there, but who really comes into his own when an aurora strikes. The gathering was entertained after dinner by Tom Douglas, G3BA, who was welcomed back to his homeland by the kilted GM5NW, and who replied for the visitors, thus putting G3DAH still further in his debt!

This Convention must have been one of the most successful organised in the North, and all those concerned are to be congratulated on their efforts which augur so well for the 1971 Convention planned for the Stirling area.

Club and Group

The South East UHF/VHF Group had a very successful meeting at

Wye College on October 16 when Ron Ham, gave a talk on "Cause and Effect." This covered his considerable activities in the field of VHF radio and radio astronomy, and was lavishly illustrated both visually and aurally. The next meeting is at Keynes College, University of Kent, Canterbury, on November 27 at 7.30 p.m. when Geoff Stone, G3FZL, will be reviewing developments in the world of VHF.

The South Bucks. VHF Club have a "convivial evening" on the cards for their next meeting on December 1, and a film show on January 2. Venue is Bassetbury Manor, High Wycombe.

While on a visit to Hampshire recently, your scribe was called by G8CXH, who turned out to be G3KAC, the Bristol University Radio Club, under their new call. An invitation to come and have a look at them on the Saturday afternoon was taken up and resulted in a pleasant "eyeball" with several members led by G8ADP and G3WDG. Incidentally, G3DAH/M was talked in by G8ADP on a small home-built walkie-talkie which must be described as a Portable/Mobile contact since communication was established from the lift inside the building on the way down from the top floor where the shack is situated, some 100ft. above the street! The installation at G8CXH/G3KAC consists of a KW2000 for the HF bands, and a TW2 with 12 watts input on two metres. A BAY96, driven by this rig, produces 4 watts on 70 cm. Plans are afoot for 23 cm. operation with a 3CX100A5, and it is hoped that reception on 13 cm. will be possible by the end of the year. Although the site looks good—it is high and in the clear and on a fine day offers a view of the tower at G6GN—operation is hampered by the presence of the antennae for the local BC station, which are just a matter of a few yards away from the two metre and 70 cm. arrays, and the QRM has to be heard to be believed. The Club has a goodly number of licensed amateurs among the members, including G8CVS, G8DUI, G8CRP, G3WZK, G4XEF, G3XJO, G3YGA, G3YKM and G3ZOH.

VALE

Sadly, one must record the recent passing of Fred Lambeth, G2AIW. For many years VHF manager for the RSGB and a regular contributor to the old *Bulletin* on VHF matters, Fred perpetuated his connection with the higher frequency bands when he became secretary to the Region I IARU VHF Committee, a position which he held up to the time of his death. His one-watt NBFM signal on two metres from Whitton, near Twickenham, kept him in touch with his many friends, who will share our sorrow.

QRV

For the DX-ers: EA1AB is on CW qn 144-040 MHz every evening from about 1830z. F1BFV now has 300 watts of CW available at 2115z onwards every evening, from Paris, and is looking at U.K.; QRG is 144-030 MHz. DLØAK is now QRV on 1296.53 MHz and is looking for U.K. contacts. OH5NR/MM is on a regular run between London and Canada, and while in this area, operates on two metres. He has 25 watts of CW and is VFO controlled from the s.s. *Germundo*. He was 579 in Herne Bay on the morning of Saturday, November 7, while off Eastbourne; and he QSLs.

G2JF has located another German

two-metre beacon in addition to those reported last month. This is DLØBRA and is operated by the Bremen Club. The transmission is A2 modulated, and although the exact QRG is not known, it is at the top end of the band and was a 559 signal on October 17. As with the other new DL beacons, information is being sought from the German authorities on the characteristics of these transmissions.

Commenting on the excellent propagation on two metres during September and October, G3USF (Keele, Staffs.) reports hearing stations right round from OZ to Landes, South of Bordeaux, and including OE, HB and LX to the East, but says that at times, and frustratingly enough, the QRM from the EU DX inhibited signals from GM8BCP/P in the Scottish border counties. Almost literally, you can't have it all ways!

G2AXI (Basingstoke, Hants.) has been working some nice DX with GM3YRJ/P as his first ever GM on Four, and GI3CVH/P as his first-ever GI on the same band. The power input on 432 MHz is 6 watts, and the antenna is an 8-ele Yagi, made, Syd says, from bits or wire! Somewhat higher powers are used on the other bands—80 watts on 144 MHz and 50 watts on 70 MHz, the antennae being a 4/4 slot for the former and a 4-ele Yagi for the latter



Fortunately for all concerned and interested, the GB3LI expedition to Lundy Is. in September was deemed officially to come within the category of "a training exercise for personnel taking part!"—which meant that the boys had R.A.F. transport by helicopter provided both ways from Chivenor R.A.F., near Barnstaple, to Lundy. Their gear was assembled at the helicopter pad in two 600 lb. loads.

frequency. With his total for the Annual Tables standing at 139, the leaders will have to watch it!

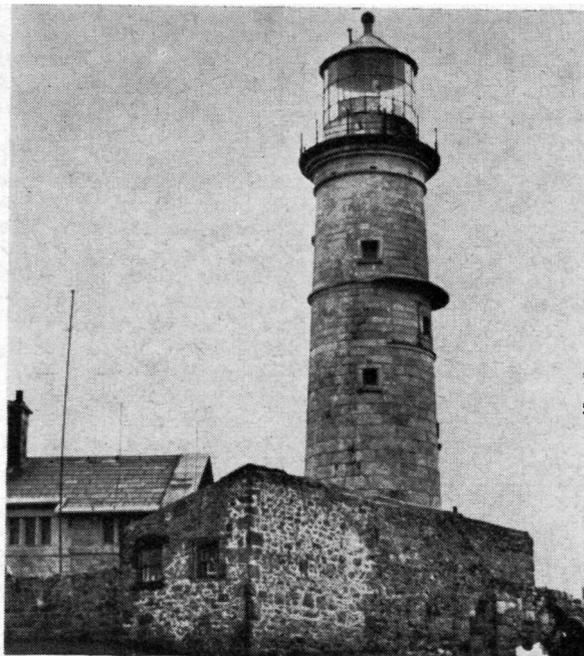
Unusually, G3COJ (High Wycombe, Bucks.) did not find anything very exciting to work during the mid-October opening although he was expecting some two-metre aurora contacts in view of the QRM to the TV on October 17, and the WWV warnings. This display was quite short-lived, though—it lasted only about 40 minutes—and was very local. Even so, two Berlin stations were worked on Two. The opening to the South of France, at the end of the month gave Brian the opportunity to raise F9NL in the Pyrenees, after, be it noted, he had zero'ed on to the Frenchman's QRG, but an attempt to make it on 70 cm. was frustrated by Madame F9NL, who could be heard calling Maurice to dinner! Brian also made it with EA1AB later in the evening, this on CW at RST 589. Questioned, Javier confirmed that he is not himself QRV on 70 cm. and said that the only Spanish station on the band is EA4FU in Madrid, although it is the writer's impression that EA4AO is also active. However, it is a long haul from Madrid to the U.K., and over some difficult terrain. During the forthcoming months, when one can expect conditions to be poorish, Brian will be pressing on with the new linear for two-metre SSB which will finish up with a pair of 4CX250B's, and should enhance the FB signal he now puts out with the QQV06-40A.

G8BQX in Hastings was another who worked F9NL during the opening at the end of October. Reports were 58 both ways over a distance of 850 Km. The gear at the Sussex end was a TR2002 with an output of *one watt*, which is what makes this contact remarkable. The antenna is a Parabeam at 30ft. above ground from a site 250ft. a.s.l. The QRA Locator for F9NL is AD71b.

GM8APX will be operating mobile near Glasgow just before Christmas, and on the South Wigtownshire coast just after. He will be visiting Brighton on December 29 to January 1, and will then be returning mobile to Rannoch on January 1 and 2.

News Items

GD2HDZ (Laxey) bemoans the fact that the September and October



The GB3LI camp was established in and around the Old Lighthouse on Lundy Island. It is said that, in the old days, if this light was extinguished in bad weather, ships could hardly miss Lundy, becoming wrecks for the islanders to plunder. What we know about GB3LI is that they worked, as well as all bands 10-80m., also two metres, the final tally on VHF being 352 contacts in 9 countries and 40 U.K. counties. For two metres, they were lucky to have been there during a period of superlatively good conditions.

openings on two metres did not appear to reach as far as the Isle of Man. The whole period produced little more than a 70 cm. contact with G3LTF in Essex (which isn't too bad). Arthur does not support the idea of a VFO and calling on frequency, and asks what the results would be if 20 or 30 G stations all called simultaneously on the channel of a piece of rare DX. He has experienced this himself when Continentals have called him on frequency during a good opening, and the result, he says, was chaos. Under these circumstances, one does not, of course, call on channel, but just off, as is the practice on the HF bands where QRM is even fiercer. Most DX operators announce that they will not answer calls on frequency, and ask calling stations to spread out a bit as, for example, G3BA/G3BHT do when on their free-for-all sessions and as G3DAH learned when he came on from Singapore in October 1945 as VS1BD during the ten-metre opening, and when he was one of the two stations operating from there.

The following passage from the *Wireless World & Radio Review* is quoted by GD2HDZ:—"General Ferrié . . . in describing the results . . . said that it had been found possible to communicate at a distance of 1½ miles with a two-metre wavelength, and the intensity of the oscillations did not exceed 80 milliamperes. By increasing this intensity and by other devices, said the General, it would be possible considerably to increase the distance at which messages could be heard." The date? December 12, 1923!

It is interesting to note from a recent issue of *QST* that reports are being received of Es propagation on 144 MHz over distances as short as 600 miles when strong Es is in evidence on 50 MHz. Have any operators in this country observed this phenomenon? During the good Es four-metre openings in July, for example?

* * *
G8DGR (Reading, Berks.) has managed to up his score of PAØ quite by chance. On October 16 he went into the shack to do some work on his new QQV06-40A linear for

two-metre SSB and decided to have just a quick gander at Two, where, to his surprise, he found the band full of Dutch stations, and he knocked off eight of them on the trot! He says that he is now building a VFO! Rodney is on the committee of the re-formed Newbury Radio Club, together with G2CPM, G3LLK, G3TEK and G3KJC, so anyone in that area interested in joining the Club should get in touch with one of these members, *QTHR*.

Contests

Only one more VHF contest before the end of the year, and that the 144 MHz Fixed Station event running from 0700z to 1500z on

Sunday, December 6. Don't overlook the 432 MHz activity contest, though—*any* night and *every* night from now until the end of 1970.

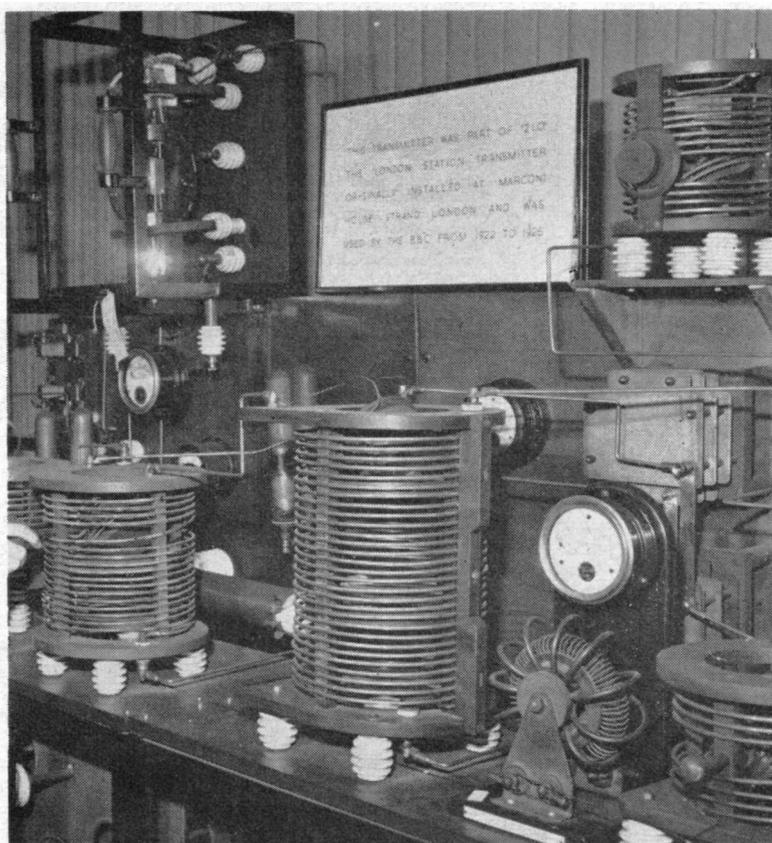
The SHORT WAVE MAGAZINE MCC Top Band contest was running concurrently with the 144 MHz CW event, and the opportunity was taken to monitor some of this activity. It must be admitted, "Grandad's band" or no, some of the finest operating inside or outside this country was to be heard, and one could only wish that CW on the VHF bands had reached the same high standard, and the VHF contest activity was always as high!

Congratulations go to G3PSH and G3FDW as winner and runner-up

respectively of the 70 MHz section of VHF NFD, to G8AWS and G3LTF as *ditto* for the 432 MHz section, and to G3LTF and G2RD as leaders in the 23 cm. section.

Deadline

Deadline for the next issue is **December 5**, to take account of the Christmas chaos. For this reason also, the Magazine will appear on January 1, 1971 and again on January 29 (February issue). The address for news, views and comment is: "VHF Bands," SHORT WAVE MAGAZINE, BUCKINGHAM. 73 de G3DAH—and a Very Happy Christmas.



This picture is of particular interest because it shows the output and aerial tuning circuits of the old 2LO transmitter, of the British Broadcasting Company (as it then was) when public entertainment by wireless started in 1922. This Tx was designed and built by the Marconi Company and for many years after the demise of 2LO was stowed away as junk, with the big bright-emitter triode transmitting valves of those days. The Tx complete, in its original rack-and-frame assembly about 20 feet long and six feet high, was rescued, faithfully restored and shown complete as one of the many historical pieces in the recent Mullard Exhibition to mark the firm's golden jubilee.

THE MONTH WITH THE CLUBS

By "Club Secretary"

(Deadline for February issue: January 8)

(Please address all reports for this feature to "Club Secretary," SHORT WAVE MAGAZINE, Buckingham.)

THIS piece was being cleared for press just as the 25th MCC was fading into a thing of the past. The intense CW activity at the LF end of Top Band had died away and once again we had had a well-supported Contest, with generally a high standard of operating and much keenness displayed by the Clubs participating. No particularly flagrant breaches were noted—though some Clubs were a bit loose with their time-keeping and at least three displayed signal characteristics which mean that the invigilators will have to go into conference.

As usual, there was far too much bunching and—monitoring on a receiver adjusted for maximum selectivity—the netting was found to be not so good; it was rare to find stations in QSO producing signals within audio tune, which is what accurate netting means on CW. It was also noticeable that many tail-end calls were missed, meaning that a station just finishing a QSO failed to listen on his frequency before going straight into "QRZ?" or another CQ, thereby losing a call from somebody who had been waiting for him to finish his contact. In competitive contest work, you just have to scrape up everything you can get—remembering that practically nobody is particularly interested in working you!

Conditions seemed better on Saturday than for the Sunday evening session. The GM's put up a brave show this year and GW was also well represented. Two EI's were making scoring Club contacts. Several OK's appeared at good workable strength in the course of the Contest but though they were trying hard to get in (and were, of course, worth 10 pts. apiece) they were largely ignored.

* * *

The MCC Logs have started to come in and the full story covering this year's event will appear in our January issue, publishing on January 1st (this is because the normal day of publication would otherwise have been December 25, a difficult day from all points of view!).

* * *

As in previous years at this period, no "Month with

SECRETARIES PSE NOTE!

No "Month with The Clubs" in January issue—space will be given over to the MCC Report. The regular Clubs feature will be resumed in February issue (publishing on January 29) for which the closing date is January 8 for all reports to "Club Secretary," Short Wave Magazine, Buckingham.

The Clubs" will appear in the January issue, because as usual the space will be taken for the MCC Report & Results. Next deadline for usual Club reports is January 8, for the February issue appearing on January 29.

* * *

Reports this time are again on a regional basis.

Scotland

An area which has been somewhat thin in the way of reports since ever your scribe started writing the piece, all the odder because we know of several groups who not only exist in Scotland but are thriving.

Glenrothes have an Hq. at the Old Nursery Buildings, Leslie, Fife, where they may be found from 1930 clock, any Sunday evening. In addition, it is understood that for Wednesday evenings R.A.E. and Morse classes have been set up. The lads extend a cordial invitation to anyone interested to come along, and every help will be forthcoming to aspirants to a ticket.

Mid-Lanark Group have been absent for a short while from this piece. It was because of the recent Scottish Mobile Rally as far as September was concerned, plus a good old "missed it!" in October. However, we can now tell you that the boys will be converging on the YMCA, Brandon Street, Motherwell, on December 18, at 1930 clock—and don't be late, for the Christmas offering is a non-technical film show from the files of GM3ULP/GM6ADR/T, which, if all goes well, should include some of the grave and gay events noted during the summer's NFD. Looking on to January 15, same time, same place, and again don't be late—this time it's the AGM.

A bit further North is **Moray Firth**, where the chaps have a Hq. at St. Andrews School, nr. Lhanbryde, Morayshire. Here they meet each Wednesday; for the early part of the period under review, they will be devoting all efforts to their candidates for the winter R.A.E., then there is a talk and demonstration of radio-controlled flying models, with other events to follow.

We are very glad to hear that the **West of Scotland** group is progressing steadily, membership now totalling no less than 50, holding weekly meetings on Fridays at 21 Jardine Street, Glasgow. They were enterprising enough to make an official multi-operator multi-transmitter entry for the recent CQ World-Wide Phone Contest—apparently, it was pandemonium, with three stations on different bands working together in the same room! We can imagine! Well tried, nevertheless, and it

will be interesting to see in due course how GM3SSB got on.

North of England

A pretty vague area, this, so we must hope we have not offended any susceptibilities!

The Grammar School, Heckmondwike, is the home of the **Spenn Valley** gang. They have December 3 for G3PXF to talk about Audio Amplifiers, and December 10 for a film show. Then there is a recess for Christmas, after which they reconvene on January 7 to hear Mr. Marsden of West Riding Electronics discussing Light-Beam Modulation. "Measurement of Analogue Quantities" will be covered by G3NXL on January 14, and on January 21 Prof. Marsden of Leeds University talks about the EROS project. This leaves January 28—and what better way of rounding-off than by way of a Junk Sale?

At **South Manchester** the chaps foregather on each Friday evening, the venue being the Conservative Divisional Office, 449 Palatine Road, Northenden. Wiping December 25 and January 1 from the slate for obvious reasons leaves December 4 for a "starting on Two" lecture by G8DMJ, while anyone fancying the Sommerkamp line of gear can see it in operation on the 11th. Apart from the Christmas Party on December 18, the attraction for that evening is to be G3EYD reminiscing on The Good Old Days.

Northern Heights had a successful J-O-T-A set-up in operation at Keighley, particularly in view of the fact that the Scouts' new building was only just ready in time. On the other side, the annual dinner has had to be pushed back from December 9—which is therefore, now "open"—to January 6. The next date is January 16, for a Ragchew, and on the 30th, there is a Morse exercise. As usual, to find the lads, look, on the appropriate date, in at the Peat Pitts Inn, Ogden, Halifax.

Now for a new formation, called the **Star Short Wave Club**; the name indicates where they are based, in the Star and Garter Hotel, Bramley Town Street, Leeds, 13. The booking is every Wednesday, and they are active on both Top Band and Two from Hq. There is Morse tuition for those who need it, and a large constructional programme of activities laid on. For details, either turn up, or contact G8BUU for information, address as Panel, p.626.

At their AGM recently **Carlisle** elected a new hon. Secretary and permanent Hq. have been located for the weekly get-togethers, at Currock House, Carlisle; equipment and books to furnish it with are being gathered in. Programme-wise, it looks rather like December 12, for a Junk Sale, the 14th for a talk by Laurie Quayle of Border TV on "Communication with a Difference," and on the 21st an Open Night.

On to **Bradford**, whose "home games" are played off at the Bradford Liberal Federation, 10 Southbrook Terrace, Great Horton Road. RAEN comes up for discussion on December 1, with G3VAP leading off, while December 15 is down for an informal supper. Looking forward a few months, the writer was amused to note that G3RXS has titled his share of the programme, in February, "Oscilloscopes and how to train them!"

Hull have a home place at 592 Hessle Road where they may be found on December 4 doing constructional

work. G8EAH will be discussing the trials and tribulations of getting his call on December 11, while on the 18th G3PQY takes Meteorology for his theme—a useful ancillary study for any radio amateur, particularly the VHF types.

A new Hon. Sec. takes over at **Eccles**, and his name and address therefore appear in the Panel; he should be contacted for more details about the gang and the welcome they have to offer to visitors or potential new members. Incidentally, the club Net has been moved to 2100 clock on Monday evenings.

The **Mexborough** crowd have been formally in existence since March this year, and have an impressive list of their activities over the intervening period. To find them, look for the Church Hall on a Friday evening, taking as a starting-point the Fire and Police stations. Kick-off around 1900 clock, until about 2130, when a QSY takes place to "the local" for a continuation informally.

The Midlands

Rather a nice idea is thrown out for the **Midland** December programme. On the 15th, when they get together at the Birmingham and Midland Institute, Margaret Street, they are going to have a good old ragchew, and are putting out a special invitation to all old-timers and ex-members of the club. Coffee and biscuits will be served, and the society trophies will be presented. Start time, 7.45 p.m.

December 25 falls on one of the normal **Coventry** evenings, but in view of the competition from the family on that date the meeting has been scrubbed. Not to worry, there is still December 4, when G3RIR talks about his South African trip, December 11, for a Night-on-the-Air with the club rig, and of course the annual dinner which falls on the 18th.

Tuesdays each week the **Lincoln** lads all polish their brasswork before heading for the meeting at No. 2 Guardroom, Sobraon Barracks, Burton Road. G3TSK has the squad on December 1, for a session on Transistors. A social evening comes up for the 8th, with a hint that they move out of Hq. during the evening. Operating Night is on December 22 this month, the intervening 15th being a Film Show. Finally, December 29, for an Open Night; for this, and indeed all dates, Lincoln welcome visitors, and the hon. sec., who should know, says they will find the lads "a great lot of chaps."

To call **Sheffield** the Midlands is pushing things a bit, but we have to draw a line somewhere. Every Thursday evening it is, at the Church Hall in Ampthill Road, albeit this time the 24th and 31st are "off" for Christmas festivities. December 3 is a business sort of meeting, when the annual dinner just gone is to be reviewed; a week later it is to be a review of Club films by G2DPQ, and on the 17th a series of short lectures on any subject.

Although we know the date for the **Stratford-on-Avon** December get-together, 11th, and the activity, which is to be a Christmas Party, we cannot tell you where to head for, as at the time of this going down the final details were not to hand. This being the case perhaps the best move would be to contact G3RPJ, address as Panel. He won't mind, as this is a group which makes a point of welcoming any visitors with open arms.

Another Christmas Party to be mentioned is that at **Spalding**, on December 11, coupled with a Surplus Sale—a *surplus sale* under the XYL's eyes, indeed . . . they must be an honest lot round Spalding way! The venue, incidentally is at a place called the "Ship Albion," which appropriately enough is at 37 Albion Street. A bar and a trade stall (by J. Birkett of Lincoln) are also promised. Visitors welcome and ample space to park the car.

At **Cannock**, they are to start a newsletter and ask for pieces from members—news, ideas, quotes, crystal exchange, items for sale, and such—which should be sent to the hon. secretary, or G4CP, *QTHR*.

Solihull meet on December 15 at the Manor House, High Street, when G3RPJ will talk on D/F, timed for 7.30 p.m. Informal get-togethers are held on the first Tuesday of the month, 9 p.m. at the Malt Shovel, next door to the Manor House—so remember December 1st if you are in those parts.

The schedule of meetings for **Leicester** is as follows: December 7, R.A.E. class; 14th, tape-and-slide lecture on Transistors; 21st, Christmas party; January 4, the AGM; and on the 11th, tape-and-slide lecture on Valves. Leicester report paid-up membership standing at 56, of whom 25 hold licences—they would be interested to know how this compares with other Clubs (and so would we).

Now an established foundation, the **North Bucks**. Amateur Radio Society holds regular meetings, next being on December 7 (venue not stated), with a well-supported R.A.E. class, Sunday nets on 1980 kHz at 1030 clock and on two metres at 11 a.m., also Slow Morse transmissions for those working for a full ticket. Chairman of the Club is G3LCS, well known in the North Bucks. area.

At **Melton Mowbray** they had the temerity, not to say the sauce, to hold a men-only dinner—but as it was the fourth annual event of its kind, they seem to get away with it all right! (This is not such an odd idea as it may seem—before the last War, all Amateur Radio events were invariably and strictly men-only, the only exception allowed being women holding a licence in their own right, and they were pretty thin on the ground!) Next meetings for Melton Mowbray are on December 18, with SWL Reeves, described as a "gen kiddy" on the subject, talking on Hi-Fi; and on January 15, lecture on Construction Techniques. Club nets also operate on Top Band.

Beyond Borders

The first in this category is the **Ex-G Club**, for those born in Britain and domiciled abroad. Their quarterly *Bulletin* is always good for a chuckle; and of course their regular nets are well worth checking in to, to give the chance of a QSO with "home," in spite of all the QRM.

On an entirely different theme we have **B.A.T.C.**, which is the organisation catering for the amateur TV addicts, both in the UHF field and in Slow-Scan TV on the HF allocations. The sub. is very reasonable indeed, and *CQ-TV* one of the best magazines over the years that this writer has seen. Details, of course, from the hon. Secretary, see Panel, p.626.

Now the **Nigerian** Amateur Radio Society; a national



This architectural lump is more than it seems—a Martello Tower (c.1778) on the extreme south coast of Jersey and now the Hq. of the Jersey Amateur Radio Society, GC3DVC, making J.A.R.S. the furthestest south of any Club in the British Isles. At high springs the sea reaches the foundations and there is always fishing to be had! Much internal work is having to be done to what was a derelict three-floor building—but they have the makings of a very fine Hq., to be topped by a flag polecum-vertical aerial from which will fly the Jersey flag when the Club is in session. In daylight the Tower serves as a navigation mark for vessels passing between Jersey and France. The Club hopes to welcome many visiting amateurs during the Island's 1971 summer season.

society in its own right, and now fast recovering from the problems which have of late bedevilled that vast country. In their *Newsletter*, they mention what must be quite the longest amateur call sign ever, leaving UB5ARTEK standing at the post—try sending YV5EXFILCA70 on CW! (The station is being put on from the Inter-American Philatelic Exhibition about the time this piece is being read.)

A different theme again in the mention of R.A.I.B.C., and their membership of handicapped and blind amateurs and SWL's. A rather nice gadget described by G3KQK in *Radial* is a movable platform to enable a handicapped person to swivel an AR-88D around on the operating table for such as servicing—to spin it at the touch of a finger on a table no bigger than 20 inches square even if it be located against a wall! (Many people could with a device of this sort.)

A.R.M.S. keep at it with their *Mobile News*, well produced and presented by Norman Fitch, G3FPK, honorary secretary-editor. Their AGM comes up on December 11, in London (7 p.m. at the Kingsley Hotel, Bloomsbury Way, W.C.1). A piece in the current issue of *Mobile News* discloses that Citizens' Band activity (on 27 MHz, or 11 metres) is developing in several European countries—Spain is a particularly surprising example, where apparently C.B. station call signs are suffixed "experimental station". *Ye Gods!*

Cover

Wales and the West

This is an area which has been relatively easy to define, so it covers pretty well the same parts of the country each month; which makes it all the more noticeable how the number of reporting groups has increased over the last year or two. All of them appear to be thriving and growing, some of them in quite out-of-the-way places from the amateur point of view.

Torbay seems to express a quiet confidence in the way things are looking for them. For December, we notice the 19th as being down for a Christmas Party and Quiz. Hq. is at Bath Lane, rear of 94 Belgrave Road, Torquay.

The Flint chaps are happy at the support they are getting from the local Council. Hq. has been changed from the Central Library to Hawarden Castle, Church Street, Flint, every Friday evening. What between doing up the clubroom, running show stations and port-

able expeditions to Merionethshire, and lectures, the past year has been a great success, with more to come—good.

Barry College of Further Education *Newsletter* has a most alarming picture on the front cover, depicting a VHF operator being cooked over a cannibal pot with a jungle drum being thumped in the foreground—they are clearly CW fiends! For details, contact GW3VBP at the address in the Panel.

The copy of Hereford's *Newsletter* which is to hand at the time of writing gives full details—but only of the programme through October and November; but it makes clear that the general plan is of weekly sessions—on Friday evenings—with various formal and informal entertainments organised. These are down for the Hq. site, Civil Defence Hq., Gaol Street, Hereford.

From Hereford we move on to Cornish, whose main meeting is on December 3, at the SWEB Clubroom,

Names and Addresses of Club Secretaries reporting in this issue:

- ACTON BRENTFORD & CHISWICK: W. G. Dyer, G3GEH, 188 Gunnersbury Avenue, Acton, London, W.3.
 A.R.M.S.: N. A. S. Fitch, G3FPK, 40 Eskdale Gardens, Purley, Surrey, CR2-1EZ.
 BARRY (College of Further Education): D. H. Adams, GW3VBP, 49 Colcot Road, Barry, Glam, CF6-8YJ.
 BASINGSTOKE: P. Sterry, G3CBU, Ashley, Orchard Road, Salisbury Gardens, Basingstoke, Hants.
 BISHOPS STORTFORD: A. Stanley, G3WUR, 43 Havers Lane, Bishops Stortford (57251), Herts.
 BRADFORD: H. F. F. Lobley, Stoneways, 37 Cullingworth Road, Cullingworth, Bradford, Yorks.
 B.A.T.C.: I. Lever, G8CJP, 65 Dyners Road, Kemsing, Sevenoaks, Kent (Oxford 2945).
 CANNOCK: B. Gallear, 67 Bentons Lane, Landywood, Nr. Walsall, Staffs.
 CARLISLE: G. R. Harper, 23 Roman Ways, Stanwix, Carlisle, CA3-9DL.
 CHIPPENHAM: P. Strand, G3UTO, 8 Brookwell Close, Chippenham (3723), Wilts.
 CLACTON: T. A. Mills, G3YAI, Millbrook, 122A Chilburn Road, Bursville Park, Clacton-on-Sea (22857), Essex.
 COLCHESTER: J. Morrison (*Address Wanted*).
 CORNISH: J. Farrar, G3UCQ, Elm Cottage, Ventonlex, Hayle, Cornwall.
 COVENTRY: C. G. Jaynes, 20 Belgrave Road, Wyken, Coventry.
 CRAY VALLEY: D. MacLennan, G3KGM, 52 Pinewood Avenue, Sidcup, Kent (01-300 0767).
 CRYSTAL PALACE: G. M. C. Stone, G3FZL, 11 Liphook Crescent, London, S.E.23 (01-699 6940).
 DORKING: R. Greenwood, G3LBA, 8 Deacon Close, Downside, Cobham (2628), Surrey.
 ECCLES: S. W. Redfern, 5 Pinfold Road, Worsley, Manchester, M28-5OZ.
 ECHELFORD: R. Hewes, G3TDR, 24 Brightside Avenue, Laleham-on-Thames, Middlesex (*Staines 56513*).
 EXETER: V. A. W. Eggleton, G3TXG, 13 Beacon Heath, Exeter.
 EX-G: F. W. Fletcher, G2FUX, 53 St. Ives Park, Ringwood (3561), Hants.
 FAREHAM: G. G. Bulleyment, G3XIV, 42 The Fairway, Portchester, Fareham, Hants.
 FARNBOROUGH: A. Stretton, G3BVM, 10 Sinhurst Road, Camberley (22887), Surrey.
 FLINT: P. M. Salomon, G3XQO, 15 Alyndale, Hope, Wrexham, Denbighshire.
 GEORGE KENT: J. Allen, G3DOT, 77 Rosslyn Crescent, Luton, Beds.
 GLENROTHES: E. H. Ross, GM3LWS, 24 Etrick Way, Glenrothes, Fife.
 GRAFTON: T. Coleman, G8EEI, 14 Norman Court, London, N.4.
 HARROW: R. H. Medcraft, G3JVM, 134 Dulverton Road, Ruislip Manor, Ruislip (38726), Middx. HA4-9AG.
 HAVERFORDWEST: A. Thomas, GW3YBB, 7 St. Martin's Park, Haverfordwest (2181), Pembro., West Wales.
 HEREFORD: S. Jesson, 181 Kings Acre Road, Hereford (3237).
 HULL: Mrs. M. Longson, 4 Chester Road, Wold Road, Hull, HU5-5QE.
 KINGSTON: R. Babbs, G3GVU, 28 Grove Lane, Kingston-on-Thames (2801).
 LEICESTER: F. D. Rawcliffe, G3UGM, 215 Glenfield Road, Leicester, LE3-6DL.
 LINCOLN: G. O'Connor, 61 Steep Hill, Lincoln (24113).
 MAIDENHEAD: E. C. Palmer, G3FVC, 37 Headington Road, Maidenhead (20107), Berks.
 MELTON MOWBRAY: R. Winters, G3NVK, 32 Redwood Avenue, Melton Mowbray, Leics., LE-13-ITZ.
 MEXBOROUGH: I. Abel, G3ZHI, 9 Grove Terrace, Maltby, Rotherham, Yorks.
 MID-HERTS: H. R. Thornton, G3PKV, 43 Fordwich Road, Welwyn Garden City (23136), Herts.
 MID-LANARKSHIRE: G. A. Hunter, GM3ULP, The Bungalow, Broomsire Braes, Camp Road, Motherwell (62335), Lanarkshire.
 MIDLAND: N. Gutteridge, G8BHE, 14 Metchley Drive, Harborne, Birmingham, 17.
 MID-SUSSEX: E. J. Letts, G3RXJ, 87 Meadow Lane, Burgess Hill (3552), Sussex.
 MORAY FIRTH: G. M. Grant, GM3UKG, Easterbogs, Buckie, Banffshire AB5-2EL (*Clochan 225*).
 NIGERIA: Hon. Sec., P.O. Box 2837, Lagos, Nigeria.
 NORTH DEVON: H. G. Hughes, G4CG, Crinnis, High Wall, Sticklepath, Barnstaple, Devon.
 NORTH BUCKS.: F. M. Frisby, G3ZNY, 11 Kingston Avenue, Stony Stratford, Wolverton, Bucks.
 NORTHERN HEIGHTS: A. Robinson, G3MDW, Candy Cabin, Ogden, Halifax (44329).
 NORTH KENT: A. Beaton, G3WRP, 373 Bellegrove Road, Welling, Kent.
 PLYMOUTH: I. Dawe, G3SPI, 345 Crownhill Road, Plymouth (31055), PL5-2LL.
 PURLEY: A. Frost, G3FTQ, 62 Gonville Road, Thornton Heath, Surrey, CR4-6DB.
 R.A.I.B.C.: Mrs. F. Woolley, G3LWY, 331 Wigan Lane, Wigan, Lancs.
 RHYL: T. Hewitt, GW3YFD, 15 Knights Green, Flint, CH6-5DE.
 SHEFFORD: C. W. Stedman, G3XWS, 10 Wychwood Avenue, Luton, Beds.
 SOLIHULL: J. Burnie, G8BYM, 12 Buryfield Road, Solihull, Warks. (021-705 4565).
 SOUTH MANCHESTER: D. Holland, G3WFT, 7 Alcester Road, Sale, Cheshire, M33-3GW.
 SPALDING: R. Harrison, G3VPR, 38 Park Avenue, Spalding, Lincs. PE11-1QX.
 SPEN VALLEY: N. Pride, G8BSC, 100 Raikes Lane, Birstall, Nr. Leeds (*Batley 3925*).
 STAR: D. Leeman, G8BUU, 115 Asket Drive, Seacroft, Leeds, LS14-1HX.
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 SUTTON & CHEAM: J. Brodzky, G3HQX, 2 Greenhill, Sutton, Surrey.
 TORBAY: Mrs. G. L. Western, G3NQD, 110 Truro Avenue, Hele, Torquay.
 VERULAM: W. C. Dennis, G3NCK, 129 Colney Heath Lane, St. Albans, Herts.
 WESSEX: G. A. Moore, G8BBN, 15 Stanfield Road, Winton, Bournemouth.
 WEST OF SCOTLAND: K. McDermott, GM3SSB, 22 Fettercairn Avenue, Glasgow, W.5.

The Skegness group held their twice-yearly surplus sale at Spilsby on October 16. The profits from the event were donated to R.A.I.B.C. as a tribute to the late Norman Hodgson, G2ABK, who was well known in the district as the originator of these popular and successful sales, always attracting a large attendance.



Pool, Camborne. Bill Locke talks about QSL Cards, and then the main talk follows—G3OCB discussing his receiver. Then there is the Newquay group, who are at Treviglas School on December 2 and 16 if they run true to form. Details on all these Cornish activities from G3UCQ, the hon. secretary.

December 1 is down for G3OIQ to do his thing—on Transistors and their Application to Transmitting—for Plymouth. December 15 is being left "open" quite deliberately, for a good old natter.

A cri de coeur from the hon. Secretary of Chippenham—he wants volunteers to come and lecture the Club, so any such should get in touch with him at the address shown in our Panel. Meantime, things go on as usual at Chippenham Boys High School, Hardenhuish Road each Tuesday evening.

Rhyl next; they are booked in regularly at the Mona Hotel in Market Street, Rhyl, the next one being on December 8, when GW3HGL will be talking about Transceivers. Incidentally, this lot seem to set a high standard—the October session was a demonstration and discussion of all aspects of Amateur TV by GW6JGA/T, including showing the gear with which he managed the GW-GD A/TV contact.

North Devon are always full of ideas, in a quiet sort of way. The latest is for those who are thinking about R.A.E. to arrive earlier, and have a discussion on any points which are troubling them. If the idea takes on, there is even a possibility that a weekly session at Hq. could be planned.

Wessex have two meetings in December, on the 4th and 21st, as usual at the Cricketers' Arms, Windham Road, Bournemouth. From 'way over in Haverfordwest, they report themselves as still in action, with a new club-room available locally, equipped with a Sideband rig signing GW3XOT, the club call. Meetings are every Tuesday evening at 7.30 p.m., with facilities for Morse instruction.

For Exeter, main meeting nights are the first Tuesday

each month, that on December 1st being a surplus sale and on January 5 it will be the AGM. *QTH*: Community Centre, 17 St. David's Hill, City. On the third Tuesday of the month the club-room will be open for operating a station on 80m.

Southern England

Top of the pile is a letter from Mid-Herts, to let us know they are still in being. For December they have G3NNG to do the talking, his theme being Transistors on VHF, transmitters and receivers. The date is December 10, and the Hq. the Civic Centre, Welwyn, as usual.

The third Wednesday is the regular date for Verulam, at the Council Chamber, St. Albans Town Hall. Just recently, they celebrated their tenth anniversary by giving all the remaining founder-members present a membership certificate specially made. We have no data on the next meeting—scheduled for December 16—but we would take a small bet it will be a grand entertainment if not much to do with Amateur Radio. If you simply *must* know what is on, get in touch with G3NCK, as Panel opposite.

Saturday, December 19 it is, if you want to get alongside the Crystal Palace crew, at their Grand Junk Sale and Christmas Party. More details from G3FZL, still their Secretary after many years.

It looks like the third Tuesday for the Sutton and Cheam chaps, who unlike the majority are so far on as to have just sent us their programme for January-June 1971—but not December, 1970. Nonetheless, to findout, the easiest way is just to nip round to the "Harrow," in Cheam.

Another new formation comes up for a mention now; this is a Works club, the George Kent Group Radio and Electronics Society. Interested George Kent people anywhere in the world are eligible, and it is hoped to be in contact with these overseas members of the firm regularly by way of lunchtime skeds from the shack at Luton. Anyone interested in this one and eligible to be

a member is invited to drop a line to G3DOT, the hon. secretary and driving force, address as Panel.

For **Echelford**, we cannot give details this time, as their *Newsletter* has dropped out the information in favour of a couple of very good pieces and some letters. However, it will be at St. Martin's Court, Kingston Crescent, Ashford, Middlesex, on December 14, if our reading of the *Newsletter* is correct. However, there is always the Secretary to fall back on.

Now to **Harrow**, where December 4 is down for a lecture on the Spectrum Analyser, entitled "How Clean is your Transmitter." As for December 11, practical work is billed, and on the 18th the Christmas Party. Looking ahead to January, we see the 1st slated for a Junk Sale—what, so soon after Christmas?—January 8 for practical work again, an open date on the 15th, and the Annual General Meeting on January 22.

North-East Essex Technical College and School of Art Amateur Radio Society is the resounding title of the **Colchester** mob. On December 9, they will be addressed by G5YK in the Lecture Theatre. On other Wednesday evenings facilities are available for constructional work in Room 41.

Acton, Brentford and Chiswick are in session on December 15, at 66 High Road, Chiswick, London, W.4. The entertainment is in the form of a slide lecture about the station set-up of VK2WX.

North Kent seem to have well and truly turned their backs on Amateur Radio activities this month; they have moved from their usual venue to the Earl Haig in Littleheath Road, Bexleyheath, just off Long Lane.

The form for **Dorking** is an informal at the usual Wheatsheaf venue on Tuesday, December 8, with a Christmas Dinner as the special entertainment the following Monday, December 14, the latter event being at the Stephen Langton in Friday Street, although final details were not complete at the time of writing.

The **Cray Valley** main meeting is on December 3, when G3DCS will be talking about his activities with the Joystick aerial and the results of his testing of it. The natter-session follows along on December 17, as usual. All the meetings are at the Congregational Church Hall, Court Road, Eltham, S.E.9. Incidentally, the current copy of their *QUA* has a rather thought-provoking article on the speed of propagation of radio waves around the world, in terms of the length of a dot or dash in Morse.

Another new Amateur Radio club comes next in the pile—we should have given them a separate section! This one is at **Clacton**, and the inaugural meeting was held last October. Hq. at the Martello Tower, Marine Parade West, and the dates to reserve the second and fourth Tuesdays in each month. The plans include talks, films, club projects, a club station, and R.A.E. course—naturally enough, the more support the better these things can be set up. So—go join up! To all these new Clubs go our best wishes for every success over the years.

Basingstoke get together at the Chineham House Hq. in Shakespeare Road, Popley, at 7 p.m. on the first and third Saturdays in each month. December 5 and January 2 are both informal; December 19 is a Film-show, and January 16 at the moment is open, albeit something will be fixed before the date comes round.

The AGM saw a reshuffle at **Kingston**, but the name in the Panel remains the same—he's too valuable to

throw overboard! The Penguin Lounge, 37 Brighton Road, Surbiton, is the place where these lads congregate; on December 9 to hear Mr. C. R. Cordwell of NPL discussing "Current Trends in Standard Frequency Transmissions." January 13 is on an equally important subject, and is called "Soldering by Numbers," which of course refers to kit building as an activity as well as how to avoid making too many dry joints.

How nice to hear from **Grafton** again after a long silence, during which they have been as active as ever. They now have their place at Archway School Annexe, Highgate Hill, London, N.9. and at the last AGM—a nice touch, this—added the R.A.E. course instructors to the list of Vice-Presidents. A fitting honour, when you think that between them they have probably netted the highest score of passes in the country. Friday evenings will see the revival of the Morse class, among other activities.

Farnborough are entertaining the Racial Club chaps on December 8, and it is understood the Racial lads have some goodies to dispose of, which should make for a good attendance! No meeting on December 22, so the next date will be January 12, for which no details are given. They can be obtained from the hon. sec.—see Panel p.626.

What is claimed to be the shortest newsletter on record has come in from **Mid-Sussex**, who seem to have plenty on their plate for November at least. The December programme has not been entered in this mini-edition, so try G3RXJ, *QTH* as the Address Panel.

There are so many things going on at **Fareham** the members must be getting dizzy! To pick out a few of the important ones: December 13, tape lecture called "World at your Fingertips," of special interest to the SWL's (both members and non-member SWL's are invited specially to this one); a film night on December 18; December 19, a "closed to members and invited guests" social; Sunday, January 3 sees a return to routine with a tape-and-slide lecture. On January 17 there is a final committee meeting before the AGM, which is on January 24. All the chaps to attend the AGM, *please*, says the hon. sec.

It only seems a few months since we were talking about **Grafton** coming-of-age—now it's the turn of **Purley** to receive the ceremonial door-key after 21 years of existence. December 4 is a Natter Nite, and on December 19, G3PAZ will be showing some of his collection of comedy films. For January, a start is made on New Year's Day with a natter-nite again, and on January 15 G8ASV will be talking about the elementary tricks of circuit design.

Signing Off

That's the end of the pile for this month. *No Club reports for next month please*—the MCC Report will take over this space in the January issue. As normal again in February's issue, for which the deadline is **January 8**, containing all the news of your February programmes. The address, as always, is Club Secretary, SHORT WAVE MAGAZINE, BUCKINGHAM.

Which leaves us only the pleasant task of wishing all the readers of and correspondents to this piece a very Happy Christmas, with all they could wish themselves in the Coming Year.

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.

EI6CB, C. J. Connolly, The Square, Skibbereen, Co. Cork. (Tel. *Skibbereen 146.*)

G3FWG, G. Tremelling, Finnartmore, Oakland Park, Falmouth, Cornwall. (*re-issue.*)

G3ZOS, A. R. J. Morrison, Weeley House, The Street, Weeley, Clacton-on-Sea, Essex. (Tel. *Weeley 216.*)

GW3ZQG, D. Isaac, 14 Tywern Road, Rhiwbina, Cardiff. (Tel. *Cardiff 63680.*)

GW3ZQN, S. Backer, 1 The Parade, Whitchurch, Cardiff. CF4-2EE. (Tel. *Cardiff 62636.*)

G3ZRB, H. Hill, 2 Lakeland Drive, Royton, Oldham, Lancs.

G1ZSC, K. A. McGonigal, Tielsa, Portglanone Road, Randalstown, Co. Antrim. (Tel. *Randalstown 378.*)

G3ZSQ, R. Dunham, 27 Hurst Way, Leagrave, Luton, Beds. LU3-2SG.

GW3ZSV, G. Maggs, 3 Thorley Close, Cyncoed, Cardiff.

G3ZSW, P. Sharples, 27 Claremont Drive, Widnes, Lancs.

GM3ZSX, K. H. Craig, 6 Holmes Crescent, Kilmarnock, Ayrshire.

G3ZTF, G. T. Sparkes, 127 Redford Avenue, Horsham, Sussex.

GW3ZTH, J. D. V. Ludlow, 32 Rhys Street, Dinas Isaf Farm Estate, Edmonstown, Tonypandy, Glam. (Tel. *Tonypandy 2768.*)

G5ATA, J. B. Knight (*W6YY*), c/o 28 Longlands Road, Sidcup, Kent. (Tel. *01-300 1649.*)

G8DWL, Grafton Radio Society, Archway School Annexe, Whittington School, Highgate Hill, London, N.19.

G8DYN, J. H. Postlethwaite, 94 Algernon Road, London, S.E.13.

G8DZQ, Dr. G. P. Sugden, 20 Red Hill, Stourbridge. (Tel. *Stourbridge 3319.*)

G8DZX, C. G. Mansfield, 44 Heideburg Road, Canvey Island, Essex. SS8 8HB.

G8EBV, D. J. Rumens, 7 Goddards Close, Cranbrook, Kent. (Tel. *Cranbrook 3493.*)

G8EDF, D. Pells, 6 Clarence Street, Stonebroom, Derbyshire.

G8EDH, P. M. Clarke, 34 St. Marys Court, Melford Road, London, E6-3QZ. (Tel. *01-552 4882.*)

G8EDR, J. Perry, 137 Turf Lane, Chadderton, Oldham, Lancs.

G8EDS, J. Hind, 15 Sandy Lane, Stretford, Manchester. M32-9DB.

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G8EEB, C. I. James, Fairings, Grasmere Road, Lightwater, Surrey.

G8EEH, N. Kenyon, 39 Mayfield Avenue, Clitheroe, Lancs. BB7-1LE.

G8EEI, T. W. Coleman, 14 Norman Court, Stapleton Hall Road, London, N4-4QD.

G8EER, F. H. Rigg, 37 Strathallan Drive, Baildon, Shipley, Yorkshire. BD17-6QH. (Tel. *Shipley 53556.*)

G8EES, D. M. Rigg, 37 Strathallan Drive, Baildon, Shipley, Yorkshire. BD17-6QH. (Tel. *Shipley 53556.*)

G8EFQ, M. S. Dodgson, 150-A Liverpool Road, Birkdale, Southport, Lancs. (Tel. *Southport 68385.*)

G8EGG, D. Hemingway, Ivanhoe, Glen Road, Beacon Hill, Hindhead, Surrey. (Tel. *Hindhead 4645.*)

G8EHA, T. E. O'Neill, 41 Willoughby Road, Wallasey, Cheshire. (Tel. *051-638 7400.*)

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GD3AUC, J. R. Plumbeley, Honeycote, Barrule Road, Foxdale, St. Johns, Isle of Man.

G3CDJ, R. R. Adams, 10 Lady Winifrides Walk, Great Billing, Northampton. (Tel. *Cogenhoe 554.*)

G3IWP, A. Parr, 43 Argyle Road, Poulton-le-Fylde, Lancs.

G3JMB, J. Brooker, 20 Farnham Avenue, Hassocks, Sussex.

GM3NSK, G. H. Hillier, Contullich, AIness, Ross-shire.

G3PDK, G. J. Newnham, 72 Point Hill, Greenwich, London, S.E.10.

G3TAQ, N. H. Bullock, 29 St. Marys Road, Stowmarket, Suffolk. IP14-1LP.

G3TML, T. H. Lloyd (*9LITL*), Hall of Residence, Lanchester Polytechnic, Coventry, CV1-5FB.

G3VWJ, G. Westwood, 134 Furber Road, St. George, Bristol, 5.

G3WEQ, C. Collins, c/o 129 Rylston Road, Fulham, London, S.W.6.

G3WEV, R. D. H. Hooper, 207 Stockwood Lane, Bristol. BS14-8NF.

G3WFX, J. A. Harper, 5 Trinity Road, Dawley, Telford, Salop.

G3WHQ, J. M. Kelly, 108 Louth Road, Holton-Le-Clay, Cleethorpes, Lincs.

G3XLS, T. J. Williams, 25 Broadwaters Road, Lowestoft, Suffolk.

G3XTN, R. Hough, B.Sc., Edgefields, Marton Road, Birdingbury, Rugby, Warks. (Tel. *Marton 873.*)

G3Y CZ, B. W. Forster, Hillsover, Treilissick Road, Hayle, Cornwall.

G3YDJ, L. F. Masters, 132 Kingsway, Chandlers Ford, Hants. (Tel. *Chandlers Ford 2057.*)

G3ZY, J. R. Tweedy, Stoneleigh, Wadshel, Chesterfield, Derbyshire. (Tel. *Chesterfield 68005.*)

G6AFM/T, J. R. Tweedy, Stoneleigh, Wadshel, Chesterfield, Derbyshire. (Tel. *Chesterfield 68005.*)

G8AAY, J. D. Merrifield, 84 Wareham Road, Corfe Mullen, Wimborne, Dorset.

G8BSF, P. A. Seldon, 22 Seaford Road, Wokingham, Berks.

G8CUB, R. V. Ray, 91 Lewisham Road, River, Dover, Kent. (Tel. *Kearsney 4215.*)

G8CZC, A. L. Riley, 13 Linington Avenue, Botley, Chesham, Bucks.

G8DLO, Miss José Brooker, 20 Farnham Avenue, Hassocks, Sussex.

G8RS, F. E. Sperring. *QSL via F2SF.*

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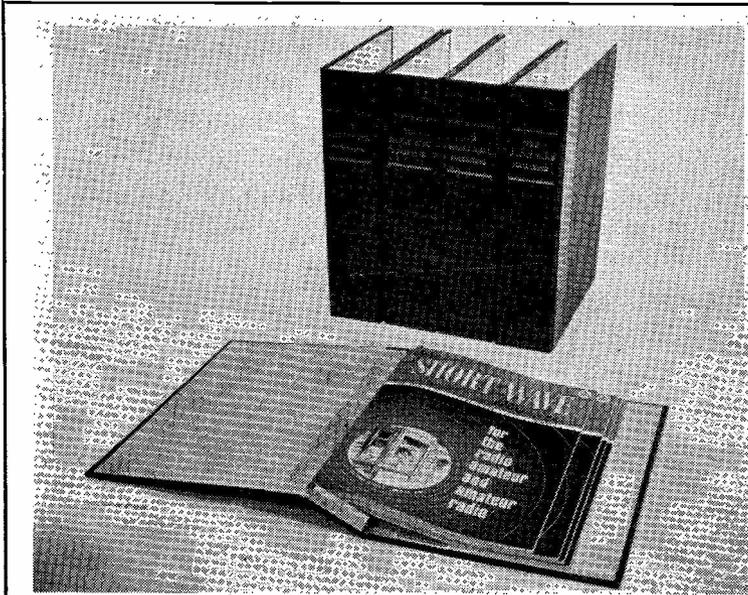
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FOR SALE: Eddystone 740 Receiver, in very good condition, price £25, buyer to collect.—**Phillis, 7 Lovelace Gardens, Walton-on-Thames, Surrey. (Ring 23201 after 6.0 p.m.)**

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JANUARY Issue Short Wave Magazine, due out January 1. Single-copy orders 4s. 6d. (or 4s. 9d. "first-class") post paid to reach us by Wednesday, December 30, for despatch on Thursday, 31. These copies are sent flat in an envelope.—Orders, with remittance, to: Circulation Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

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WANTED: Heathkit SB-10U SSB Adaptor; HW-12 80m. SSB Tx; also AR88 receiver in any condition, need not be working. Buyer will collect.—Bryan, 42 Max Road, Coundon, Coventry, Warks.

EXCHANGE or Sell: Hammarlund HQ-100A general-coverage receiver, with amateur bands spread and Q-multiplier, £50 or offer.—or Exchange for amateur-bands-only Rx, with cash adjustment.—Bartlett, GW3YSA, 35 Pen-Y-Waun, Efail Isaf, Pontypridd, Glam., South Wales. (Tel.: Newtown Llantwit 3809.)

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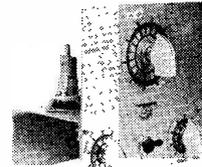
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WANTED: Walkie-Talkie or similar for 156 MHz band operation.—Box 4978, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SALE: Drake-2B Rx, with 2BQ multiplier, 160m. and 49m., price £75. Also a K.W. Vespa Mk. I with AC/PSU, in mint condition, £75. And an R.209 Rx, £10.—Brooke, Pentire, Castleton, Cardiff, CF3-8UR, Glam., South Wales.

EXCHANGE or SELL: Simon SP3 Tape Recorder and Spot Frequency Generator. WANTED: Hallcrafters S-36A, Eddystone 770R or similar VHF receiver.—Wilkes, 5 Eldalade Way, Wednesbury, Staffs.

URGENTLY Require the film-strip ZA.49511 for an R.210 Rx. Also want the ATU and circuit for this receiver.—Jackson, 38 Haslemere Road, Thornton Heath, Surrey.

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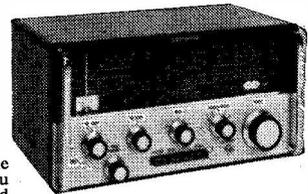
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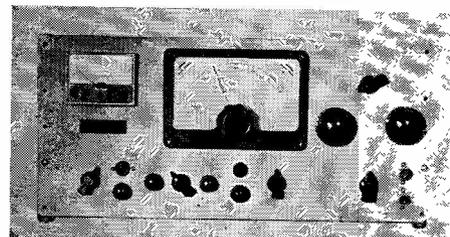
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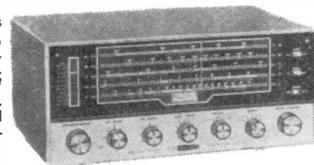
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DE-LUXE SHORTWAVE RECEIVER, GR-54

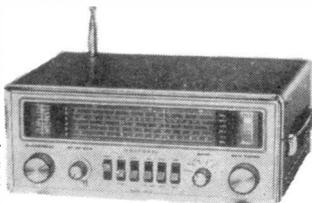
2 MHz to 30 MHz, plus 550 kHz to 1550 kHz, 180 kHz to 420 kHz. Tuned RF. Crystal filter. Product detector. AM/SSB/CW. Noise limiter. Sleek styling. Charcoal grey metal cabinet. 120-240v. A.C.



Kit K/GR-54 £48 16s. Carriage 9s.

SOLID STATE GENERAL COVERAGE RECEIVER, GR-78

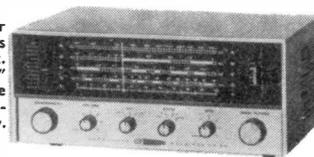
Tunes from 190 kHz to 30 MHz in six bands. Double conversion above 18 MHz. AM/CW/SSB. Nickel Cadmium Battery charges from 240v. A.C. or 12-15v. D.C. Modular construction. Durable charcoal and matching finish.



Kit K/GR-78 £65 Carriage 8s.

LOW COST 4-BAND RECEIVER, GR-64

3 shortwave bands cover 1 MHz to 30 MHz, plus 550 kHz to 1620 kHz. Built-in 5" speaker. 7" slide rule dial 4-valve superhet circuit. Handsome styling. 110-240v. A.C.



Kit K/GR-64 £24 16s. Carriage 9s.

DE-LUXE AM/FM/SHORTWAVE TRANSISTOR PORTABLE, GR-43A

10 bands tune Longwave, Standard Broadcast, FM and 2-22.5 MHz Shortwave Bands. Travel the airways of the world... with this 'go anywhere' smart styled receiver.



Kit K/GR-43A £112 6s. (incl. P.T.) Carriage 12s.

PROFESSIONAL SHORTWAVE RECEIVER, SB-310

Frequency range (MHz) 3.5-4.0; 5.7-6.2; 7.0-7.5; 9.5-10.0; 11.5-12.0; 14.0-14.5; 15.0-15.5; 17.5-18.0; 26.9-27.4; (other options). Less than 100 Hz drift. Selectivity 5.0 kHz at 6 dB-15 kHz at 60 dB. 8 ohm ext. speaker. 110-240v. A.C.



Kit K/SB-310 £145 Carriage 12s.

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