

The SHORT WAVE Magazine

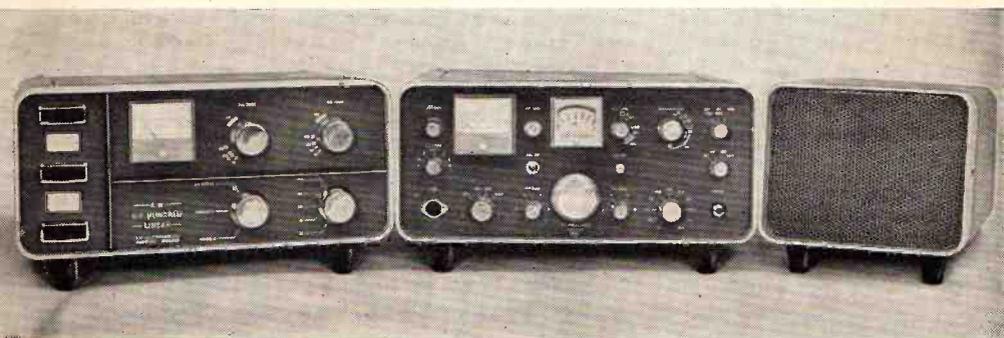
VOL. XXIV

MAY, 1966

NUMBER 3

KW ELECTRONICS

EUROPE'S LEADING MANUFACTURER
OF EQUIPMENT FOR THE RADIO AMATEUR



KW2000
TRANSCIVER

plus

KW600
LINEAR
AMPLIFIER

**SIGNAL
PUNCH**

For maximum signal punch, using the maximum power permitted by the GPO—the KW600 Linear Amplifier is unbeatable; and can be driven by either the KW2000 or KW2000A, S.S.B. Transceivers.

KW2000 (90 watts) complete for only **£173**. PSU £32.

KW2000A (180 watts) complete for only **£195**. PSU £40.

KW600 Linear Amplifier, complete with PSU **£115**.

Available from stock

Illustration shows a smart and powerful station, the KW2000 and KW600 with PSU — styled in the new 'G' line. (Cabinets with lift-up inspection lids, handsomely finished in two-tone grey stoved-enamel.)

Continued Success

**KW "VANGUARD"
TRANSMITTER**

for AM and CW

Price 10-80M **£69. 6. 0**
10-160M **£73. 10. 0**

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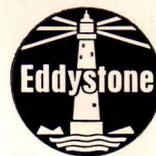
Outstanding Success

**THE KW 'VESPA'
TRANSMITTER**

10-160 metres SSB, CW and AM.
Price **£110**. Power Supply **£25**

K.W. ELECTRONICS Ltd., 1 HEATH STREET, DARTFORD, KENT

Phone: DARTFORD 25574
Cables: KAYDUBLEW, Dartford



Eddystone RECEIVER

OF MAJOR INTEREST TO ALL RADIO ENTHUSIASTS

EC 10 transistorized communications receiver

A most efficient transistorized communications receiver of light weight, compact dimensions, and capable of a really good performance. Five ranges give continuous coverage from 550 kc/s to 30 Mc/s (545 to 10 metres), and included are the medium-wave broadcast band, the marine (coastal) band from 1500 to 3000 kc/s, and all the short-wave broadcast bands. Also available are the six major amateur bands and many services in between.

The EC10 receiver accepts normal AM telephony and CW telegraphy, a special filter being provided to increase selectivity (and also reduce noise) in the CW mode, as is often desirable. Single sideband signals can



be successfully resolved by appropriate setting of the BFO for carrier reinsertion. A total of 13 transistors and diodes is used, leading to high sensitivity and consistent results on all ranges. The main scales occupy a length of nine inches and are clearly calibrated direct in frequency. The standard Eddystone precision slow-motion drive controls the tuning, which is exceptionally smooth and light to handle. An auxiliary logging scale permits dial settings of chosen stations to be recorded.

An internal speaker gives good aural quality and a comparatively high audio output is available—one can easily believe the set is mains operated. For personal listening, a telephone headset can be plugged into the socket on the front panel, the speaker then being out of action.

Alternative aerial sockets are provided, for dipole, long wire, or short rod or wire. Power is derived from six cells housed in a separate detachable compartment. Current consumption is related to audio output and, for long life, HP2-type heavy-duty cells are recommended.

The receiver is housed in a metal cabinet, and, with robust construction throughout, it will stand up to hard usage over a long period with a high degree of reliability. The finish is an attractive two-tone grey. The dimensions are width 12½", height 6¾", depth 8"; weight with batteries is 14 lb.

Eddystone Radio Limited

Eddystone Works, Alvechurch Road, Birmingham 31

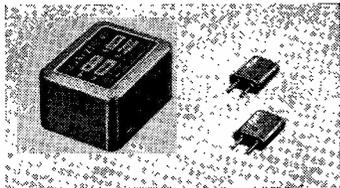
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LTD/EDS

SUPERPIGMYFILTEROLOGY

(or how to get yourself a good miniature crystal filter)

At last a miniature crystal filter of outstanding specifications to fit your available space without emptying your pocket.



THE K.V.G. XF-9A & XF-9B MINIATURE CRYSTAL FILTERS

DEVELOPED AND MANUFACTURED IN WESTERN GERMANY
ESPECIALLY FOR S.S.B. APPLICATIONS

Check these outstanding specifications

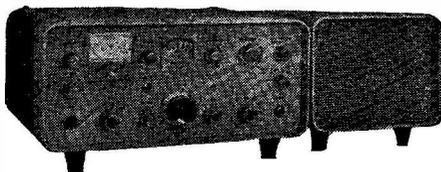
Filter	XF-9A	XF-9B
Bandwidth (-6 dB)	2.5 kc/s.	2.4 kc/s.
Shape factor	6 : 50 dB, 1 : 1.7	6 : 60 dB, 1 : 1.9
Stop band attenuation	> 45 dB	> 80 dB
Dimensions	1.05" x 1.42" x 0.75"	
Centre frequency	9.0 Mc/s.	

Delivery : immediate.

Application notes supplied with each unit.

Price (including 2 subminiature carrier crystals and sockets)

Write or phone for data sheet **XF-9A** £15 . 15 . 0 **XF-9B** £19 . 19 . 0



K.W. EQUIPMENT

- KW2000** transceiver, £173, p.s.u., £32 **KW Vespa** transmitter, £110, p.s.u. £25
- KW2000A** transceiver, £195, p.s.u. £40 **KW600** linear amplifier, £115
- KW Match Mk. II** SWR bridge, £8 . 10 . 0 P.P. 2/-.
- KW Low pass filter** 52 or 75 ohm (state BBC channel), £4 . 4 . 0
- KW High pass filter**, 18/6.
- KW Multiband trap dipole** with 75ft. feeder, £8 ; with 97ft. feeder, £8 . 10 . 0
- Set of Traps and T-piece** only, £3 . 7 . 6

JOYSTICKS

	£	s.	d.
Joystick de luxe ...	5	19	6
Joystick standard ...	4	15	0
Joymatch, type 3 tuner, for receiving ...	2	15	0
Joymatch, type 5 tuner, for transmitting ...	1	17	6

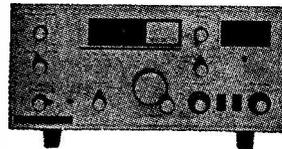
HIRE PURCHASE

PART EXCHANGE

DELIVERIES

DEMONSTRATIONS

NATIONAL TRANSCIVER NCX5 MKII

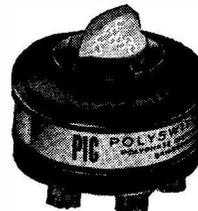


- ★ complete 10-80 metre station.
 - ★ 200 watts PEP SSB/CW, 100 watts AM.
 - ★ Digital frequency read-out.
 - ★ Solid state VFO.
 - ★ 2.8 kc/s. filter shape factor 6 : 60 dB, 1 : 1.7.
 - ★ Receiver sensitivity 0.5 μV for 10 dB S/N on SSB.
 - ★ Calibration : 100 cycles on all bands.
- Price : £235 . 10 . 1

NCX-A power supply/speaker console, £48 . 9 . 11

Congratulations to G3TJ/mobile (in motion near Bridport, Dorset) on working VK3EG/mobile (near Melbourne) on 27th March 1966. An outstanding QSO. Both stations running National equipment of course — NCX-5 and NCX-3 respectively.

POLYSWITCH R.F. SWITCHES



- Power rating :**
2000 watts PEP SSB/CW.
- Current rating :**
5 amps maximum.
- Impedance :**
50-75 ohms.
- VSWR :**
less than 1.2 : 1 over the range DC—100 Mc/s.
- Dimensions :**
diameter 3 1/4".

- MODEL PS750** single pole, 5 positions, £6 . 15 . 0
 - MODEL PS751** two poles, 2 positions, £5 . 19 . 0
 - MODEL PS752** single pole, 2 positions, £5 . 14 . 0
- Write or phone for data sheet

ELECTRONIQUES SMD-2

SLOW MOTION TUNING DIAL

Complete with 6" x 4" escutcheon, 6 : 1 and 36 : 1 two-speed epicyclic drive, 2 scales, 2 pointers, tuning knob, fixing screws, instructions, etc. Excellent value at 30/- P.P. 2/6.

SECOND HAND GEAR ALWAYS AVAILABLE

DIGITAL CLOCK FOR THE SHACK



- Features a precision synchronous motor. 220/260 volts, 50 cycles. £9 . 19 . 6
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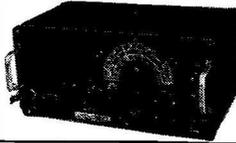
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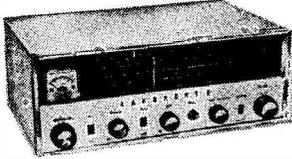
P.C.R.3. RECEIVERS

Absolutely brand new. Three wavebands, 190-550 metres and 2.2-23 Mc/s. With circuit, £8/19/6. Carr. 10/6. Plug in power supply 12v. DC, 19/6; 230v. AC, 35/-.



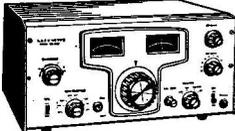
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Four wavebands covering 535 kc/s.-30 Mc/s. Five valve superhet circuit. Incorporates S meter, B.F.O., BANDSPREAD TUNING, BUILT-IN 4" SPEAKER, FERRITE AERIAL AND EXTERNAL TELESCOPIC AERIAL. Operation 220/240v. AC. Supplied brand new with handbook, £16/16/-, carr. 10/-.



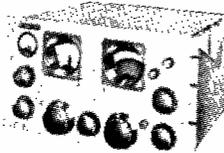
HA.350 10-80 METRE AMATEUR RECEIVER

A superb receiver. Dual conversion with mechanical filter. 12 valves, crystal controlled osc., product detector, 100 kc/s. crystal calibrator, crystal B.F.O., A.N.L., "S" meter. Rock like stability. Brand new and guaranteed. 75 gns. S.A.E. for full details.



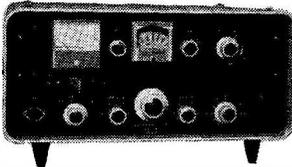
HAMMARLUND SP-600JX COMMUNICATIONS RECEIVER

High quality professional dual conversion communication receivers available for the first time in this country at a reasonable price. Frequency range 540 kc/s.-54 Mc/s. in 6 bands, variable tuning or 6 channel crystal controlled. 2.5 watt output into 600 ohms. Input 110/230v. AC. 20 valve circuit incorporating Xtal filter, B.F.O., A.N.L., S meter, etc. Size 19" x 12" x 22". List £520. Offered in excellent condition, fully tested and checked, £100 each.



K.W. EQUIPMENT

YESPA TRANSMITTER
10-160 metres SSB, CW and AM, £110. Power supply, £25.



IMMEDIATE DELIVERY

ALSO AVAILABLE: KW 2000, £173. PSU, £32. KW 2000A, £195. PSU, £40 KW 600 Linear Amp., £115

GREEN EQUIPMENT IN STOCK

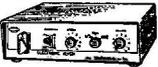
TRMS RECEIVER, £35; SPEAKER AND DC UNIT, £6; AC P.S.U., £5. Mk. V CONVERTERS, 4m., £10; 2m., £12; 70cm., £18

SWAN-350 10-80 METRE TRANSCEIVER

400 watts P.E.P. Complete with AC power supply consul, £250 ex-stock. S.A.E. for details.

MODEL DA-1 TRANSISTORISED FULLY AUTOMATIC ELECTRONIC KEYS

230v. AC or Battery operate in 230v. AC or Battery. £16/10/-, P.P. 6/-, also Precision automatic bug keys, £4/10/-, P.P. 3/6.



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200 P.I.V. 200 mA ... 2/6
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1,000v. P.I.V. 650 mA ... 7/6
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Discount for quantities. Post extra.

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24v. DC. Complete junction box as used for TR 1985 TX. Brand new boxed, 39/6, carr. 4/6.

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AT5 Amateur TX	16 10 0
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AT5 12v. Transistor P.S.U.	11 5 0
AT5 Remote control and Aerial Switching Unit	2 7 6
T.28 2-band Receiver	15 10 0
CC-40 Station Control Unit	6 10 0
Postage extra	

NATIONAL HRO COILS

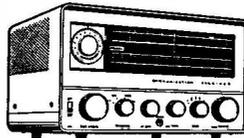
Set of 9 general coverage coils, covering 50 kc/s.-30 Mc/s., £10/10/-, carr. 10/-, also HRO dials, 27/6. P.P. 1/6.

HA.230 DE LUXE GENERAL COVERAGE RECEIVER. Wonderful value. 8 valves + rectifier. Coverage 550 kc/s.-30 Mc/s. 1 RF and 2 IF stages. "Q" multiplier, B.F.O., A.N.L., "S" meter, electrical bandspread, aerial trimmer, etc. Brand new and guaranteed, £33. S.A.E. for full details. Also available in easy to assemble semi-kit form at 25 gns.



HA.63 GENERAL COVERAGE RECEIVER

7 valves — Rectifier, 4 Bands 550 kc/s.—31 Mc/s. "S" Meter-B.F.O.-A.N.L.-Bandspread Tuning 200/250v. AC. Brand New, 24 gns., carr. paid.

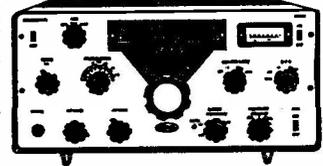


HA.55 AIRCRAFT RECEIVER

108-136 Mc/s. High selectivity and sensitivity. Incorporates 2 RF stages including 6CW4 Nuvistor, 8 tubes for 11 tube performance, solid state power supply, adjustable squelch control, slide rule dial, built-in 4" speaker and front panel phone jack. 220/240v. AC. Supplied brand new and guaranteed. £19/7/6, carriage 10/-.

STAR SR.600 AMATEUR COMMUNICATION RECEIVER

New crystal controlled triple conversion de luxe 80-10 metre band receiver. Extremely high sensitivity, selectivity and stability. Special features include 3 I.F. stages, crystal controlled oscillator, 4 section L/C filter, "S" meter, B.F.O., A.N.L., 100 kc/s. crystal calibrator, etc. Supplied brand new and guaranteed. 95 gns. S.A.E. for full details.



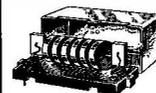
CLEAR PLASTIC PANEL METERS

First grade quality, Moving Coil panel meters, available ex-stock. S.A.E. for illustrated leaflet. Discounts for quantity. Available as follows. Type MR. 38P. 1 2 1/32" square fronts.



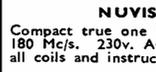
50µA	32/6	1mA	22/6	200mA	22/6	10v DC	22/6	750v DC	22/6
100µA	29/6	2mA	22/6	300mA	22/6	20v DC	22/6	15v AC	22/6
200µA	27/6	5mA	22/6	500mA	22/6	50v DC	22/6	50v AC	22/6
500µA	25/-	10mA	22/6	750mA	22/6	100v DC	22/6	150v AC	22/6
50.0-50µA	29/6	20mA	22/6	1A DC	22/6	100v DC	22/6	150v AC	22/6
100.0-100µA	A27/6	50mA	22/6	2A DC	22/6	150v DC	22/6	300v AC	22/6
500.0-500µA	A22/6	100mA	22/6	5A DC	22/6	300v DC	22/6	500v AC	22/6
1.0-1mA	22/6	150mA	22/6	3v DC	22/6	500v DC	22/6	'S' Meter	29/6

Larger sizes available — send for lists



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As used in HA.350 Receiver. For superb selectivity. For 455 kc/s. I.F. provides 60 dB attenuator at 2.5 kc/s. either side. Complete adjacent channel rejection, £9/19/6, post paid.



NUVISTOR GRID DIP METER

Compact true one hand operation. Frequency range 1.7-180 Mc/s. 230v. AC operation. Supplied complete with all coils and instructions, £12/10/-, carr. 5/-.



TM-59'er "S" METER

Signal strength meter using VTVM principles. Calibrated in 5 units. Sensitivity and zero adjustments for any superhet receiver with AVC. Requires 150-200 volt and 6 or 12 volt. Complete with valve and full instructions, 59/6. P.P. 2/6.



DE LUXE V.F.O.

5 bands covering 80-10 metres. Employs high "Q" series tuned Clapp Osc. High output of 10-20 volts to drive any TX. Large slide rule dial. Dual impedance O/P. 230v. AC operation. Size 6 1/2" x 5 1/2" x 7 1/2". Supplied complete with all instructions, £13/19/6, carr. 7/6.



TRANSISTORISED FIELD STRENGTH METER

3 bands, 2.5 to 57 Mc/s., permits easy tune up for max. transmitter output. Earphone jack to monitor audio. 200µA meter cal. 0-10. Supplied complete with battery, telescopic aerial, £4/19/6 each. P.P. 2/6.

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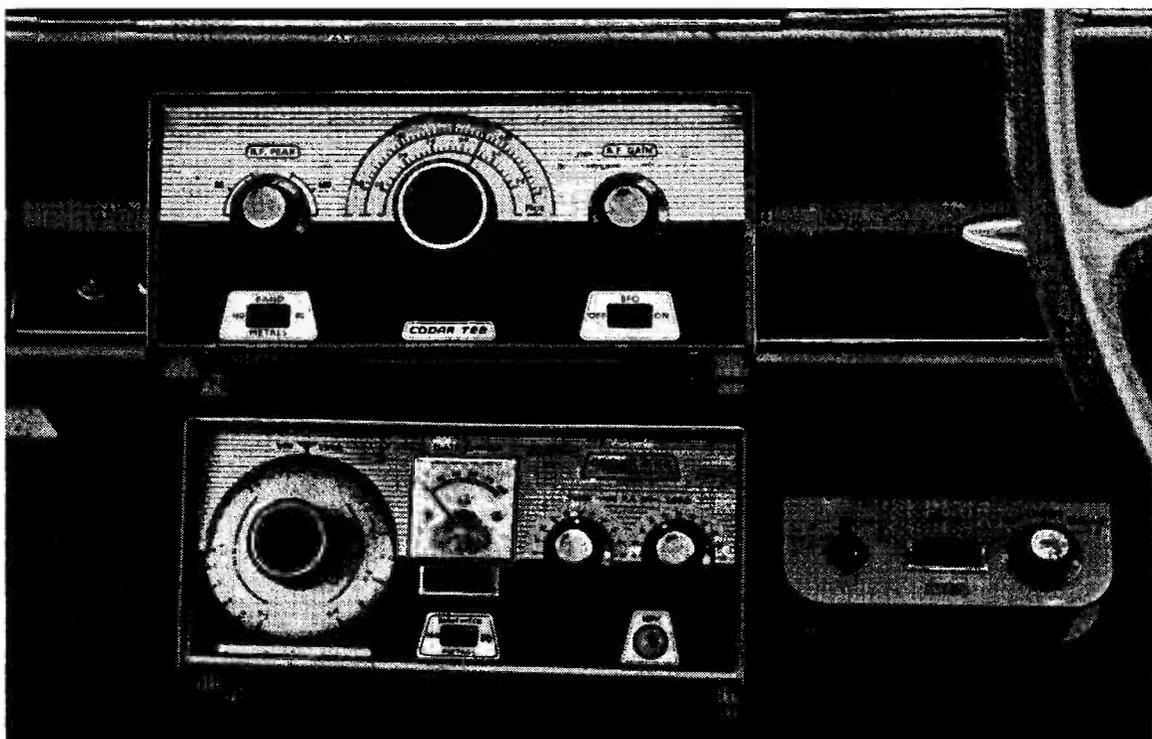
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PART
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GO CODA-

on 160 x 80 at the



The tiny CODA-MOBILE gear fits snugly below the dash

Here comes the sun ! Get out in the fresh, clean air—go Coda-Mobile. Codar have really done it this time ! No matter if you drive a giant Jag., a family jalopy or the mighty Mini, the Coda-Mobile units just slip in anywhere—you could stand the lot on this open magazine, power supplies included !

So £39 is still pricey ? Not a bit. Look around—there's no equivalent to this outstanding offer. The special PACKAGE DEAL price of £39 brings you a complete Two Band mobile/home rig, ready for installation and connecting to any suitable antenna. You save almost £7 and we even pay the carriage! In addition, CODAR would be pleased to buffer the blow to your budget with good H.P. terms.

While the XYL goes TV—you just creep out to the car, unplug the TX/RX and slip back to your arm-chair ; she'll never notice you connect up the rather smart mains unit that lives in the bookcase—anyway the gunfire will drown your quiet CQ.

Hear what G6TQ (Leicester) has to say about the AT5—“ now installed mobile, going great guns ! ”

MOBILE'

lowest-ever cost of

'CODA-MOBILE'

Package Deal

£39

*Here's what you get
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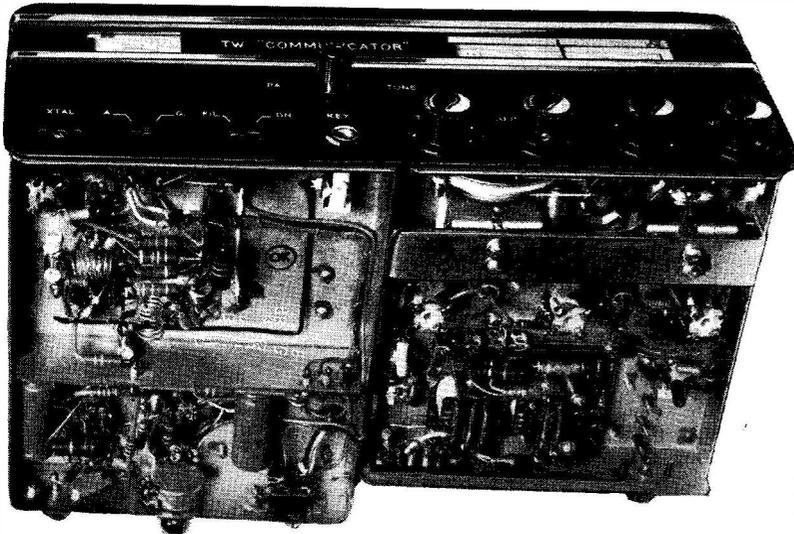
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INDEX TO
ADVERTISERS

	PAGE
B. J. Ayres & Co.	129
G. A. Briggs, Ltd.	183
Britec, Ltd.	191
Charles H. Youngcover iii
Codar Radio Co.	132, 133
Contacto Switchgear, Ltd.	136
D. Cursons	190
Data Publications, Ltd. ...	183
Daystromcover iv
Eddystone Radio cover ii
E.M.S.A.C., Ltd.	180
Finnigan Speciality Paints...	190
Garex (Wholesale) Ltd. ...	191
George Francis	180
G3HSC (Morse Records) ...	180
G.W.M. Radio	186
Halson Radio Services ...	190
Henry's Radio	183
Home Radio	192
A. Imhof, Ltd.	189
K.W. Electronics	front cover
Labgear, Ltd.	134
J. B. Lowe	187
JXK Converters	134
Mosley Electronics...cover iii
Multicore	189
N.W. Electrics	190
Partridge Electronics Ltd. ...	179
Peter Seymour, Ltd.	184, 192
Practical Wireless	184
RCA Great Britain, Ltd. ...	185
Short Wave (Hull)	186
Small Advertisements	181-189
Smith & Co., Ltd.	131
Stephens-James, Ltd.	188
S.S.B. Products	188
S.W.M. Publications	130, 178, 180, 190, 191
Tweedy (Electronic Supplies) Ltd.	180
John Williams Electronics, Ltd.	180
Withers	134
Yukan Products	183, 188

SHORT WAVE MAGAZINE

(GB3SWM)

Vol. XXIV

MAY, 1966

No. 271

CONTENTS

	Page
Editorial	137
Transistorised Converter for Two Metres, <i>by G. Garside, Grad.I.E.R.E. (G3MYT)</i>	138
An Efficient Earthing System, <i>by S. E. Janes (G2FWA)</i>	141
Receiver Vernier Tuning, <i>by M. W. Dixon (G3PFR)</i>	142
Quick Transistor Testing, <i>by J. M. Osborne, M.A. (G3HMO)</i>	143
Discussing Single Sideband, Part V, <i>by B. A. Walling (G3RNL)</i>	144
Portable in Florida, <i>by C. R. Templer (G3RDX/W4)</i>	150
"SWL"—Listener Feature	152
Miscellany—Comment on the Times	156
VHF Bands, <i>by A. J. Devon</i>	157
Communication and DX News, <i>by L. H. Thomas (G6QB)</i>	161
Programme of Mobile Events	168
The Other Man's Station—G3UDW	170
The Month with The Clubs—From Reports	171
New QTH's...	177
Specially on The Air	178

Managing Editor: AUSTIN FORSYTH, O.B.E. (G6FO/G3SWM)

Advertising: Maria Greenwood

*Published on the first Friday of each month at 55 Victoria Street,
London, S.W.1.*

Telephone: Abbey 5341/2

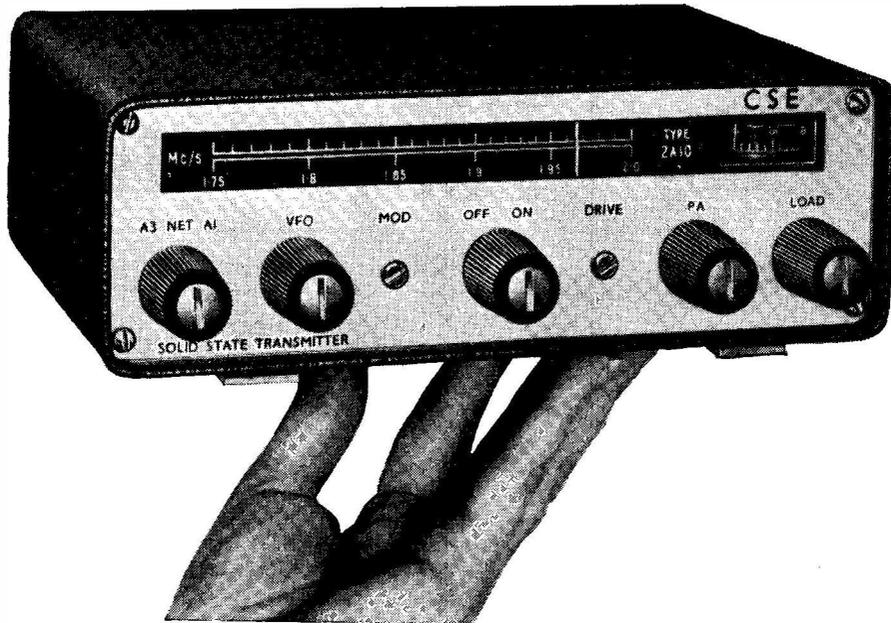
Annual Subscription: Home and Overseas 42s. (\$6.00 U.S.) post paid

Editorial Address: Short Wave Magazine, BUCKINGHAM, England

AUTHORS' MSS

Articles submitted for Editorial consideration must be typed double-spaced with wide margins on one side only of quarto or foolscap sheets, with diagrams shown separately. Photographs should be clearly identified on the back. Payment is made for all material used, and it is a condition of acceptance that full copyright passes to the Short Wave Magazine, Ltd., on publication.

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FOR THE RADIO AMATEUR AND AMATEUR RADIO

The SHORT-WAVE Magazine

EDITORIAL

Contribution *It is hardly realised that about 50% of the readers of Short Wave Magazine—essentially a periodical produced strictly in the radio amateur interest—are in fact professionals, engaged at all levels in the radio and electronics industry, from the board room to the work bench. A large proportion of these “professional amateurs” started with us as SWL’s, inspired by no more than the desire to engage in an absorbing scientific hobby.*

That so many of them began as amateurs with no thought of turning professional shows in the first place how useful Amateur Radio is in the national interest, and secondly it proves what a large contribution Short Wave Magazine has made, and is continuing to make, to the “supply of scientific man-power,” of which nowadays we hear so much.

In commercial circles generally, the value of this contribution is not always appreciated nor understood—though it needs to be said that there are many firms in the radio and electronics industry who do value the Amateur Radio association. Our real contribution lies in getting people interested, not in attempting to train them in the educational sense. This is why it is that, after serving a sort of apprenticeship with us—first as SWL’s and then as licensed AT-station operators—so many turn away from Amateur Radio to enter industry, or the technical branches of the Services. Though they may in some ways be regarded as a loss to us, the gain is to the economy.

This is not all fancy thinking. It can easily be proved. But it does need to be said, every now and again. It has taken long years of steady work to bring the process about. While we like to think of radio amateur activity as the non-professional approach to telecommunications, in all its fascinating variations, in fact the amateur interest in radio means a good deal more than that. If it were not so, half our readers would not be professionals.

Hence, by nourishing and sustaining that interest, this Magazine makes its own contribution to the art. And now being in our 21st year since Hitler’s War, so we shall try to continue.

*Austin Forsyth,
G6FO.*

WORLD-WIDE COMMUNICATION

TRANSISTORISED CONVERTER FOR TWO METRES

INTERESTING DESIGN FOR
SIMPLIFIED CONSTRUCTION
WITH GOOD RESULTS

G. GARSIDE, Grad. I.E.R.E. (G3MYT)

A PROTRACTED spell of "limited facilities" accommodation—digs., flats and the like—having forced the writer to cease his 160m. DX activities, it was decided to investigate the possibilities of the higher frequency bands where the physical size of a reasonably efficient aerial allowed of its use on a car, at a portable location or "invisibly," out of a flat window. Of the three bands considered—10m., 4m. and 2m.—it was eventually decided to try two metres, as the writer had some previous experience of this band (and none of 70 mc) while a brief spell of operating on Ten had produced very little in the way of contacts.

For obvious reasons, maximum usefulness could only be obtained from the equipment if it were made completely independent of mains power, thereby allowing of instant operation anywhere. Economy decreed the use of semiconductor circuitry.

The receiver converter described here was the logical starting point for such equipment—"You can't work 'em if you can't hear 'em!"—and it is hoped to give details at a later date of the transmitter side.

Circuit Details

Transistor TR6 is a conventional third-overtone crystal oscillator operating on 35.0 mc, using an HC6/U crystal. These crystals, obtainable from *Henry's Radio*, have been found in the writer's experience to perform excellently in transistor circuits, and are no problem to get going—controlled oscillation occurs if the collector tuned circuit is anywhere near the desired frequency—unlike the more old-fashioned crystal types which often refuse to start under the low-voltage operating conditions of transistor applications.

The 35 mc RF drive is fed to two frequency doublers TR5 and TR4, the final injection frequency being 140 mc. There is more than enough energy at 140 mc for injection purposes, since transistors are by their very nature, and especially under these operating conditions, potent generators of harmonic output.

The injection voltage is coupled to the emitter of mixer TR2, the base of which receives signal from the RF amplifier TR1. DC operating conditions for TR1 and TR2 have been set to those recommended by the manufacturer for best operation, both gain and noise figure having been taken into account.

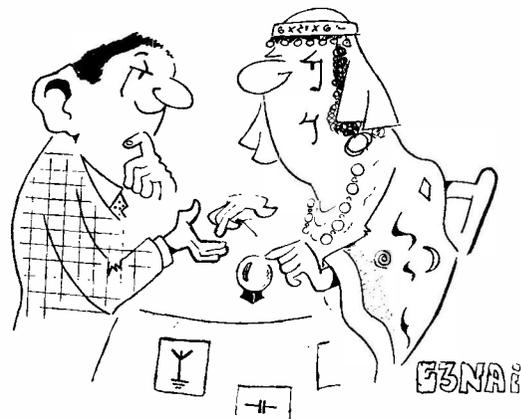
TR1 has neutralisation applied conventionally from its collector side, but because transistor input

and output circuits are seldom completely isolated the neutralisation of the stage is only effective with the 75-ohm impedance of the aerial present at the input socket, as a load. As long as this condition is met, no instability will be encountered. The writer has experimented with tuned and aperiodic inputs, together with grounded emitter and grounded base configurations for the RF stage, but the results obtained have given little improvement in performance over the circuit shown here.

Since it was desired to simplify, and therefore to eliminate the traditional IF peaking control at the mixer output, it was resolved that the latter should be untuned, the 4 mc-6 mc IF voltages being developed across a load resistance only. However, operating conditions for TR2 decide the limits for the value of its collector load, and if the output coax is then merely capacity-coupled to the mixer collector, a gross mismatch results. In an attempt to improve the output matching without resorting to a tuned transformer, emitter-follower TR3 is introduced as an impedance converter. By this means, the output impedance at IF is in the region of 100 ohms—resulting, in the writer's version, in a significant increase in output for a fixed-signal input.

Construction

The original was constructed on a piece of unetched printed-circuit-style board, the copper side being used as a chassis, all earthy connections being made direct to the copper, the "upper" ends of such components (e.g. R2, R4, etc.) then forming tag-points for the coil and transistor leads. It is important that a screen be incorporated, separating the input and



"... and I predict a pretty good season for the
EDX ..."

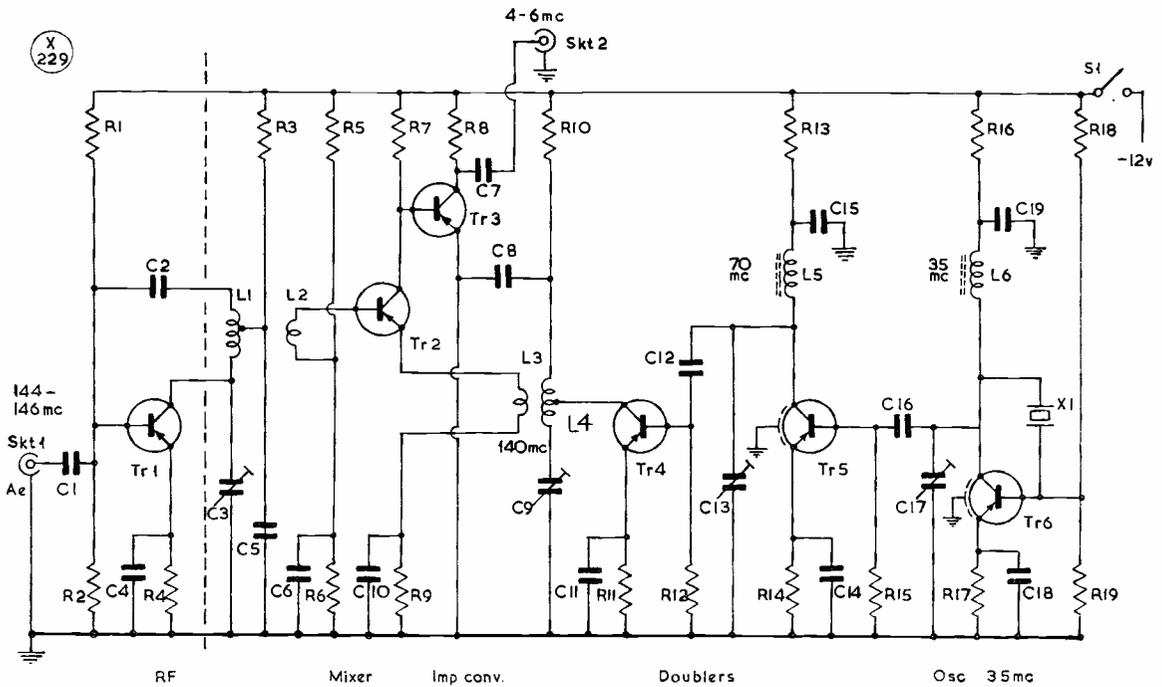


Fig. 1. Circuit of the two-metre transistor converter, capable of a very good performance in the 144-146 mc band. It is easy to construct, and some guidance is given in the text. Transistor stage Tr3 functions as an impedance converter, to match the untuned mixer (Tr2) output to about 100 ohms for the 4-6 mc tunable IF. The transistors used are all readily available types and are listed in the table, together with all other values.

output circuits of TR1—here again a piece of copper-backed board was used, soldered to the chassis. This form of construction is also convenient for the attachment of the concentric trimmers, and can be recommended provided no extreme vibrational stresses are likely to be encountered. The coax sockets, too, may be soldered direct to the copper-backed board, and the whole unit forms a compact assembly which is quite strong. It is then fitted into a brass box of appropriate size (bent up from scrap, and the seams soldered) which also contains, in the writer's case, two six-volt batteries, and carries the toggle-switch. The finished job, fitted with a lid also soldered up from scrap, is then quite self-contained, externally neat and uncomplicated by "twiddleables."

Setting-up

As with any converter of this basic type, the first job is to check that the oscillator stage is (a) oscillating, and (b) crystal-controlled. Ideally, one has a 35 mc receiver in the shack and one simply listens on the crystal frequency until adjustment of C17 produces a characteristically stable signal, indicating that the crystal is in control. However, many amateurs will not possess such a receiver and the usual "guess-timate" methods may have to be used. For example, the writer put on his 10m. converter (local oscillator frequency 31 mc) and listened on the calculated *image*

Table of Values

Fig. 1. Circuit of the Converter described

C1 = 47 μF, mica	R2 = 1,200 ohms
C2 = 4 μF, tub. cer.	R3, R10 = 180 ohms
C3, C9 = 3-30 μF con. trimmer	R13, R16 = 820 ohms
C4, C7 = .001 μF, min.	R4 = 15,000 ohms
C11, C14 = .005 μF, min.	R5, R18 = 3,300 ohms
C5, C6 = .005 μF, min.	R6, R7 = 470 ohms
C10 = .005 μF, min.	R8 = 1,500 ohms
C12, C16 = 20 μF, mica	R9 = 1,000 ohms
C15 = 0.1 μF, min.	R11, R14 = 6,800 ohms
C8, C18 = .047 μF, min.	R17 = 1,000 ohms
R1, R12 = 4,700 ohms	R19 = 6,800 ohms
	TR1, TR2 = 2N1742, Philco
	TR3 = C111, Fairchild
	TR4 = 2N711, Texas
	TR5, TR6 = OC171, Mullard

Notes: Crystal is a 35 mc type HC6/U, Henry's Radio. All transistors specified are obtainable from John Williams, Ltd., Birmingham. Sockets used are for 75-ohm coax.

TABLE OF COIL VALUES

- L1 — 8 turns 18g. enam., wound to ½ in. i.d., 1¼ in. long, tapped 5¼ turns from collector end.
- L2 — Single turn 22g., inserted in L1 at cold tap end.
- L3 — Single turn 22g., inserted at cold end of L4.
- L4 — 5½ turns 22g., wound to ½ in. i.d., ½ in. long, tapped at 2¼ turns from C9 connection.
- L5 — 5 turns 30g. enam., wound into threads of ¼ in. dust-iron core.
- L6 — 12 turns 30g. enam., wound as for L5.

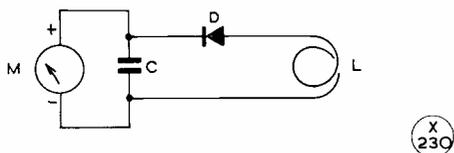


Fig. 2. Circuit of the RF indicating device (see text), values for which are: C 500 μF ; D any small TV type signal diode; L 8-inch strand of 22g. p.v.c. insulated wire, with the centre bent to form a loop of about $\frac{1}{2}$ in. diameter; M moving coil meter, 500 microamp. or less.

frequency for the 35 mc beat. It may be emphasised that the type of crystal specified is very tolerant, and if virtually any signal due to the 35 mc stage can be picked up (even a spurious response on an FM set, for instance) and its stability verified by handling the components of the stage, it is then almost certain that the stage is operating correctly.

For initial checks for oscillation, and as an assistance in aligning the doubler stages, an RF indicator made as shown in Fig. 2 will prove invaluable. Loosely coupled to the appropriate collector coil, an indication will be obtained on the meter, using which the collector tuning may be peaked up. An absorption wavemeter also coupled loosely to the same circuit will cause a sharp change in the meter reading when tuned to the frequency of the RF signal present. (The reading may increase or decrease due to the absorption wavemeter being resonated, according to coupling conditions.) This method was used to align the doubler output circuits to 70 mc and 140 mc respectively.

All that now remains is to peak up the RF stage on a two-metre signal. A signal of your own is best, and Fig 3 gives the circuit of the writer's band-centre marker, which, in spite of its simplicity, puts a very hefty signal on 145 mc. Trimmer C3 is peaked for maximum signal output from the main receiver (don't have the marker oscillator so close that you overload the converter) then trimmer C9 is rotated slightly from the previously peaked condition. It will be found that if the 140 mc stage is tuned for maxi-

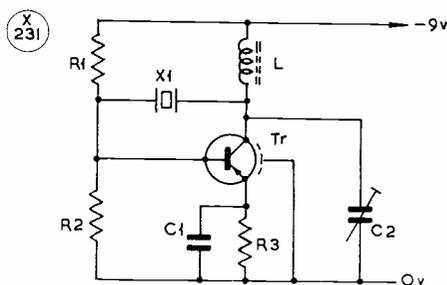


Fig. 3. The band-edge marker recommended can be made up by taking the following values: C1 .001 μF ; C2 3-30 μF concentric trimmer; R1 10K; R2 4.7K; R3 1K; Tr is an OC171; L is 22 turns 18g. on a 3/8 in. diameter ferrite rod, to a winding length of 1 1/2 in. The 18.125 mc crystal gives an 8th harmonic at 145 mc (band centre); the more easily obtainable HC6/U type could be used, and if of either 18.006 mc or 24.006 mc would give a beat at a known frequency within the two-metre band.

mum output, there is considerable noise from the converter, corresponding to too great an injection voltage. C9 should be detuned until the noise is reduced considerably, though little or no change in signal strength takes place. Further detuning, of course, reduces both noise and signal. This is in accordance with the manufacturer's curves, which indicate that as the injection voltage is increased beyond a critical value, no increase in signal output is obtained, but noise output continues to rise significantly. Alternate adjustments of C3 and C9 will enable an optimum signal-to-noise ratio to be achieved.

Results

It is not claimed that the circuit under discussion is the last word in two-metre receiver technique (no figures being available for one thing) but it can be said that reasonable sensitivity is obtained from a design which has all the advantages of transistor circuitry, and is, in addition, readily set up and put into operation.

Using the converter in conjunction with an indoor dipole and a Collins TCS receiver, *Oscar III* and 2m. 'phone stations on the South Coast and in Wales have been received at RS-57 or better at the writer's previous Birmingham QTH. With the same dipole eight feet above ground outside the present QTH in Warwickshire—surrounded by trees—and using an Eddystone EC10 after the converter, ON, GC and EI 'phone stations have been received at 5-and-7 or more, together with the usual G and GW stations.

Since the writer considered that, for the amount of circuitry involved, the converter described was reasonably successful on the basis of the above results, no exhaustive receiver tests have been carried out using multi-element antennae. Instead, the development time has been spent producing transmitter circuitry; but in any case, the use of an efficient beam system can only improve on the results already being obtained!

CORRECTION NOTE — "Oscilloscope For The Amateur Station"

G3OCB, author of this article in our April issue, points out that in Fig. 11, p.84, the output connections of the bridge rectifier (D2, D4) should be reversed, and R10 for Fig. 13 shown as 470K. The $\div 300$ value for R29 should have been given as 15K, and in the table, Fig. 10, the anode current swing for the 10K anode load shown as 0.7 mA. And, if you are using any other type of CRT, watch the base connections.

CAREFUL ABOUT MAINS FILTERING

With reference to the *D-Y-K-T* item by G3TFM on p.82 of the April issue, G3GVM points out that, strictly, the .005 μF condensers should be rated 2000v., stated AC or DC (IEE Reg. BF415) and that the fuses and filter windings should be correctly rated.

AN EFFICIENT EARTHING SYSTEM

TO REDUCE STRAY RF FIELDS

S. E. JANES (G2FWA)

MANY cases of instability and feed-back troubles caused by RF pick-up in the microphone lead can be traced to a poor earthing system. Careful attention to this point can result in a remarkable improvement in the handling of the transmitter. TVI and BCI (if anyone still suffers from the latter?) are also likely to be cleared up in the process.

The author has come across some very doubtful "earths" at many amateur stations. The most common error is to rely on the third pin of the mains plug, even when using a Marconi-type aerial on Top Band—this, of course, depending on a really good earth connection for anything like reasonable results. It is quite likely that this "ground" may be no more than a corroded wire wrapped round a dirty water pipe! (Have you checked your own household?) Nowadays, too, the use of plastic-pipe sections has to be borne in mind.

Experience has shown that an amateur station should have available two separate ground systems. If a Marconi antenna is used, then it is of prime importance. To explain the reason let us look at a diagram (Fig. 1) showing the arrangement when using an ATU to tune a wire against ground. On Top Band, where the majority are forced to use a Marconi aerial (and even on 80m. for many of us) the earth connection forms part of the resonant system. This is not the only case, however. The grounding of any other form of ATU, such as at the inductance centre-tap or split-stator rotor when using tuned feeders, also produces excitation of the earth lead.

The grounded side of the tuning condenser in Fig. 1 is likely to be a substantial proportion of a

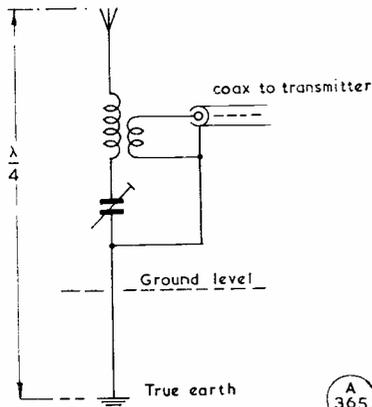


Fig. 1

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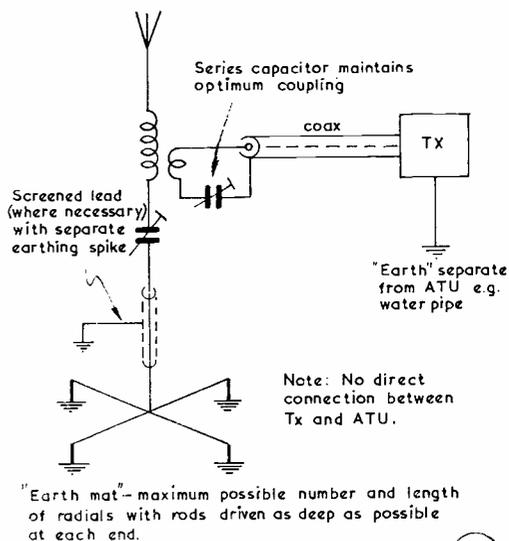


Fig 2

A
366

wavelength above true ground. On Top Band with only 10 watts and a long earth wire you may well be able to strike a neon lamp along much of the length of this wire. (The fact that this is *not* where you want your RF is outside the scope of this article!)

A practical demonstration will be more convincing than just words, so the radiation meter (Fig. 3)—which is a most useful addition to any shack—will prove the point. (See SHORT WAVE MAGAZINE, July, 1958.) If the pick-up rod of this instrument touches various ground connections in the shack the pointer will probably go hard over, so be careful about it if the movement is less than 1 mA full scale. A thermocouple in the earth lead will also show a current, depending on the position of the meter in this wire and of course the frequency and method of feeding the aerial. Your "grounded" transmitter and receiver cabinets may not be quite so neutral as you have always believed, but remember body-capacity and instead of holding the radiation meter it is preferable to clip it to the point of test and to view the scale at a short distance (Fig. 3 overleaf).

There is always RF to be found around the shack, often where least expected, but the plan suggested by the author will reduce it to an acceptable minimum (Fig. 2). Otherwise, by the conventional method shown in Fig. 1 you are in effect taking your earthing connection, while it is satisfactory for the purely DC requirement, from a point of RF potential in the overall resonant aerial/earth system. In Fig. 2 the ATU is appropriate for the lower frequencies but any other coupler may be used with link coupling, which is essential in order to isolate the transmitter from a point of RF potential.

The ground system in Fig. 2 is perhaps a little elaborate but is worth attempting. With only one earth rod, however, the arrangement is still prefer-

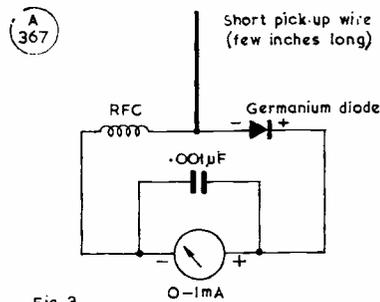


Fig. 3

Fig. 3. An RF-probe-sniffer device, which will check whether RF radiation is occurring. The meter should have a sensitivity in the microamp. range, and the choke with the diode can be wired in behind the meter.

able to that shown in Fig. 1. A refinement, often of advantage in cases of TVI when one is, for example, in an upstairs flat, is shown in the form of a screened earth lead with a separate spike for the screening. We have discovered that there may be some radiation from your earth wire and this is likely to pass close to a TV receiver. (This sug-

RECEIVER VERNIER TUNING USING A CRYSTAL DIODE — CIRCUIT AND TECHNIQUE

M. W. DIXON (G3PFR)

It is often desirable to have a limited degree of bandspread tuning available on a communications receiver in order to correct scale calibration or to make the fine adjustments necessary for the proper resolution of SSB signals. These remarks apply particularly to the users of older or less refined receivers—and perhaps to some of the more recent types, too!

Conventionally, the fine tuning is carried out with the aid of a small capacitor of a value lying between 1 per cent and 5 per cent of the main tuning condenser swing. This is perfectly satisfactory when the additional capacitor can be sited adjacent to the main tuning gang and connected to it by means of short, mechanically rigid wiring.

However, it is very often not possible to fit this vernier condenser because the mechanical layout of the tuning dial mechanism or the location of the oscillator tuned circuits will not allow mounting without resort to many inches of “wobbly” wire connection or possibly the fitting of an awkward extension spindle.

A technique now readily available (quite widely used commercially, but so far little exploited in the

gestion was put forward by the author in *SHORT WAVE MAGAZINE* many years ago when TVI was much more troublesome.) In difficult cases of TVI it may be worthwhile calculating the length of the screening so that there is no relationship to the affected TV channel.

With your transmitter matched to the ATU by means of an SWR indicator you will find that residual RF around the chassis and cabinet of your transmitter will be directly proportional to the SWR after adopting the layout shown in Fig. 2. If you leave the radiation indicator clipped to a grounded point you will notice that minimum reading corresponds with minimum reflected power for a given transmitter input. This fits in nicely with the theory of the exercise and should provide those of an inquiring frame of mind with plenty of ideas for experiment.

The use of two separate earthing systems can be of advantage, not only in the transmitting field but where other apparatus is used and where a single earth lead may cause undesirable coupling. Separate ground terminals can be regularly checked for their condition and effectiveness by measuring the resistance between them. An alternating current source must be used because this avoids errors caused by electrolytic effects when using DC alone.

amateur world) is remote tuning by means of the variable junction-capacitance effect in the semiconductor diode. A few experiments with a home-built amateur-bands only receiver and an old HRO showed that the technique is cheap, easy to apply and gives excellent results. Frequency swings from about 5 kc to 200 kc (larger at higher frequencies) are obtainable with common-or-garden semi-conductor diodes at about one shilling each.

Practical Circuit

The circuit is simplicity itself—see diagram—requiring only a couple of fixed resistors, two condensers, a potentiometer and a diode.

Note that the diode and fixed silver mica capacitor should be mounted directly across the oscillator tuned circuit (or preferably across the oscillator section of

TABLE

Showing Frequency Shifts Obtainable

DIODE TYPE	MATERIAL	SWING AT* 2 mc	SWING AT** 20 mc
OA79	Ge	±1 kc	±3 kc
OA81	Ge	nil	nil
OA91	Ge	±5 kc	±15 kc
SI025	Si	±7 kc	±20 kc
OA202	Si	±100 kc	±250 kc

* On amateur-bands-only Rx, tunable IF range 1.8-2.3 mc, with tuning gang of 30 $\mu\mu\text{F}$ + 15 $\mu\mu\text{F}$ preset trimmer.

** Across HRO main-tuning gang, of about 300 $\mu\mu\text{F}$ maximum capacity.

Ge denotes germanium types, Si silicon.

An arrangement for vernier receiver tuning using a diode. At left is a typical circuit showing the connection points, Ct being the tuning gang and Cx the trimmer. On the vernier side, C1 is 30 μ F; C2 .001 μ F feed-through; R1, 100K $\frac{1}{2}$ w.; R2, 10K; R3, 100K 1w. (see text); D, diode, Ge or Si (see table). Leads should be kept short and rigid.

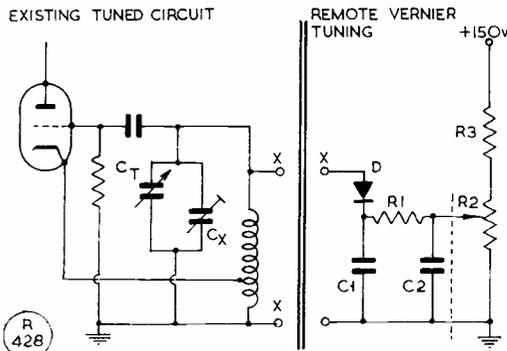
the tuning gang, so that it remains in circuit on all ranges of the receiver bandswitch) using very short, rigid leads, with the 100K isolating resistor R1 as close as possible to the diode and capacitor junction. A feed-through .001 μ F capacitor C2 is suggested as it can serve as a stand-off insulator supporting the other end of the resistor whilst efficiently decoupling the variable DC supply to the diode. A regulated supply voltage should be used if possible—this will usually be available in the receiver anyway.

The control potentiometer R2 may be sited at any convenient point on the receiver front panel, or indeed several yards away from it if so desired.

Results

The results shown in the Table have been obtained with a selection of cheap, easily obtainable diodes using applied DC voltages up to 25v. The figures for frequency shift should not be taken as absolute since much will depend upon the capacity of the main tuning-gang: The larger the tuner the smaller will be the effect of the variable diode.

Individual experiment will decide the degree of shift attainable and the amount desirable and hence the type of diode to be used. Where very wide swings of frequency are desired, genuine Varicap



diodes such as the G.E.C. SVC1 may have to be used.

Needless to say, a small amount of receiver re-alignment may be necessary to compensate for the additional oscillator circuit capacitance and this should be carried out with the trimmer potentiometer set at mid-track. Care must be taken to adjust the resistor R3 so that the maximum DC voltage applied to the diode does not exceed the maximum p.i.v. rating for the device in use.

Finally it should be noted that the circuit is admirably suited to side-band switching in an SSB receiver, where the simple act of switching a pre-set DC voltage can provide immediate and accurate shift of operating frequency.

QUICK TRANSISTOR TESTING

USING A MULTIMETER

J. M. OSBORNE, M.A. (G3HMO)

A VERY quick test of a transistor can be carried out using only a multimeter—and a pair of licked fingers! The multimeter on its “ohms” range provides the battery supply and reads the current, while the wet fingers constitute a high-resistance bias.

For example, an n.p.n. transistor (such as an OC171) is connected to, say, an AVO Multiminor, using the x100 ohms range. The positive lead from the meter is taken to the collector, and the negative lead to the emitter. (This apparent polarity paradox is explained later.) With no connection to its base, the meter should indicate very little leakage, i.e., near infinity ohms. Touching across collector and base with wet fingers—see Fig. 1—will leak a little current into the base, the amplified current through the collector now being indicated by a substantial change in meter reading.

The current leaked through the fingers can then be checked by putting them across collector and

emitter, when the reading will be little more than the transistor leakage current. (All this takes about ten times as long to describe as to do.) With such a test actual readings mean little unless related to

[over

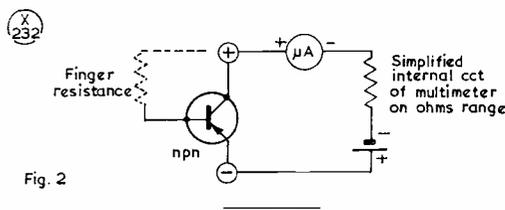


Fig. 2

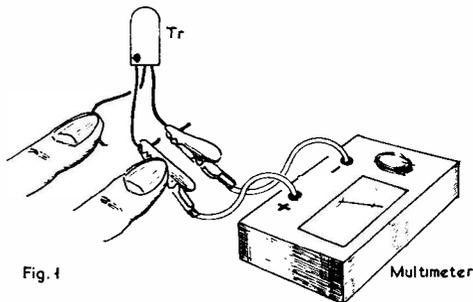


Fig. 4

Fig. 1. A quick test of a transistor using a multimeter on its ohms range — see text. Fig. 2. The effective circuit of the diagram of Fig. 1, showing how the polarity of the meter terminals is the opposite to that marked.

experience. A few trials with a transistor known to be good will do more to justify the method than a page of print.

As to the polarity paradox mentioned earlier: Though very obvious when one gives it a little thought, it should be remembered that a normal voltmeter or ammeter has its *plus* and *minus* marked according to the way it is to be connected to the external circuit under test. Hence, when the same instrument is switched to read as an ohmmeter using its internal battery, the polarity of the test voltage is the reverse of the meter markings. See Fig. 2. This important fact must be borne in mind when testing transistors.

The junctions of the transistor can be checked

independently using the ohmmeter. The positive lead is connected to the base of the *n.p.n.* transistor and the negative side in turn to collector and emitter, to read the forward resistance of the collector and emitter junctions. Repeating the process with reversed polarity of the leads tests the leakage current of the junctions.

Of course, *p.n.p.* transistors can equally well be tested by interchanging *plus* and *minus* throughout the foregoing explanation. To prove the method, carry out some careful tests, just to see what happens. After you have tried it a few times with good transistors, you will find you can do it all quickly and accurately, and that you have a reliable test method—at your fingertips!

DISCUSSING SINGLE SIDEBAND

MIXING TO THE AMATEUR BANDS—MUTING AND NETTING —VFO STABILITY—POINTS ON DRIVERS

Part V

B. A. WATLING (G3RNL)

Previous articles in this series appeared in December, January, February and April issues.—Editor.

IN Sideband systems, mixing processes are quite critical, though the object is simply either to add or subtract two frequencies to produce a third *without spurious responses*. The mixer in order to perform its task must be non-linear which not only means that the two frequencies will mix but also that harmonics will be produced which will also mix. Careful selection of the frequencies is necessary, as is the ratio of signal voltage to oscillator voltage; this is generally at least 10:1, and preferably greater.

Consider first of all the conversion of a 455 kc LSB signal to 80 metres. The VFO must run at either 3955 kc to 4255 kc, or 3045 kc to 3345 kc. It has been mentioned earlier in the series that sideband inversion will occur if the SSB signal is subtracted from the oscillator: this is obvious if one considers that increasing the frequency of the SSB will cause the final frequency to decrease. The convention is that LSB will be used on 80 metres, therefore the oscillator must run 3045 kc to 3345 kc and therefore *add* to the 455 kc LSB signal. This range of frequencies is perilously close to the final output frequency and therefore must be eliminated. Tuned circuits alone, unless of course a number are used of high Q, will not attenuate the VFO signal enough. Thinking back on the discussion of balanced modulators the same problem occurred there in

eliminating the carrier. The same solution is the answer, *i.e.*, a balanced modulator, termed a balanced mixer in this application. Diode types could be used but are uncommon because of the high losses involved. It is more usual to find double triode balanced mixers, the simplest of which is shown in Fig. 1. The analysis of this mixer is a little complicated but consider what will appear at the output if only the conversion oscillator input was present. Due to the fact that a phase change occurs between grid and anode and not between grid and cathode or between cathode and anode, both anodes will have the oscillator signal present but of opposite phase and will therefore cancel out. In fact, the degree of suppression that can be effected in practice by this mixer is only about 20 dB, because the oscillator signal at the anode of the first half of the valve will be less than the signal at the anode of the second half. A slightly more elaborate version with improved rejection is shown in Fig. 2. Here some of the oscillator input is taken direct to the cathode to ensure more oscillator voltage at the anode of the first half of the valve.

These two circuits are useful because of their simplicity and they require no adjustment. They are only permissible when the oscillator is not too close to the final output frequency. In the example earlier of converting 455 kc to 80 metres a mixer with better rejection capabilities is needed. The circuit of Fig. 3 provides the necessary rejection. The anode of the second half of the valve has the most oscillator signal on it and is capacity coupled to the first anode by VC1. This is adjusted until the two out-of-phase signals at the first anode are of the same amplitude and therefore cancel. An improved type with more conversion gain is shown in Fig. 4. RV1 is the balance control and should be adjusted for minimum oscillator signal at the output. Slightly more oscillator attenuation can be achieved by replacing the tuning capacitor on the primary of T2 by a differential capacitor and should be adjusted after RV1 to improve the null. This refinement however is not at all essential and is generally dispensed with. T1 in Fig. 4 is the 455 kc IF transformer in the anode of the filter amplifier of the fixed frequency sideband generator described

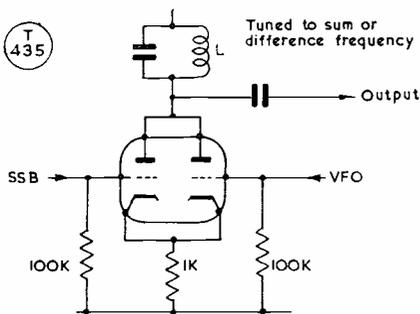


Fig. 1

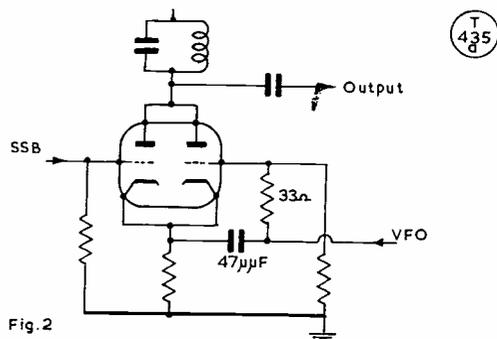


Fig. 2

Fig. 2. A balanced mixer with slightly improved oscillator rejection compared with the circuit of Fig. 1.

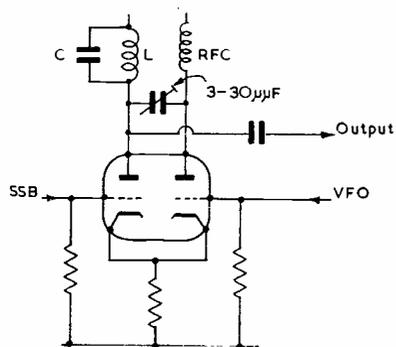


Fig. 3

from one side of the filter passband to the other.

The output from this mixer must be amplified to provide enough output to drive a PA stage. A single EF80 will give sufficient gain and output voltage swing to drive any PA in Class-AB1. Fig. 5 shows the circuit diagram of a mixer/amplifier section designed to follow a 455 kc fixed frequency sideband generator section as described in the January issue. By the suitable selection of T1, L1 and VFO frequency, this may be used for 80 metres or 160 metres.

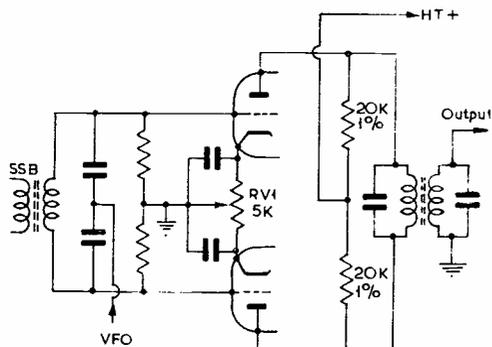


Fig. 4

Fig. 1. Simplest form of balanced mixer, providing some degree of conversion oscillator attenuation at the output. Fig. 3. Balanced mixer with much higher oscillator rejection capability. Fig. 4. A push-pull type of double-triode balanced mixer.

in the January issue, p.664.

If the sideband generator is an HF type, e.g., 9 mc, then either of the mixers shown in Figs. 1 and 2 will suffice. The sideband signal output, if mixing 9 mc with a VFO running 5 mc to 5.5 mc, will be the same sideband as the 9 mc signal. Sideband switching must therefore be performed at the beginning, i.e., by switching the carrier oscillator

Muting and Netting

Transmitter muting on standby is achieved by cutting off the mixer with a negative voltage via RV2, which also provides the negative voltage required for the PA. Netting is achieved by taking the mixer grids to earth via SW1 but leaving the PA cut off. The mixer (V1) and driver (V2) tuning is carried out by VC1 and VC2 which could be ganged to the VFO tuning. The VFO can be built on a sub-chassis to mount at the rear of Chassis 2 if required. A VFO circuit suitable for use with the circuit of Fig. 5 is shown in Fig. 6. (See p.146.)

Of course many various types of VFO configuration are possible. However, the Colpitts circuit shown is very reliable and stable. Best stability is achieved by keeping the frequency-determining components away from all heat sources and preferably in a separate screened box, as indicated in the circuit, connected to the valve electrodes by lengths of coax.

Two-band operation on 160 metres and 80 metres could be achieved by switching the tuning inductors in the anode circuits of the mixer and driver and by switching the VFO. This can be achieved by two methods, as indicated in Fig. 7, the method in (b) being probably the best.

VFO Stability

As previously mentioned stability of the VFO is very important. The main cause of drift in VFO's

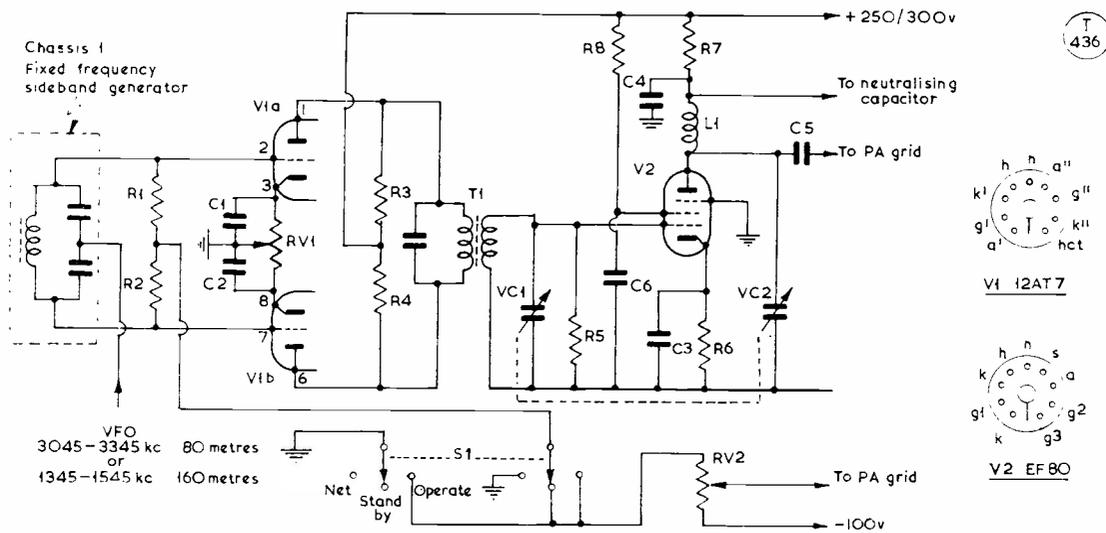


Fig. 5. Circuit of a mixer-amplifier section suitable for converting a 455 kc lower SB signal to the 80 or 160m. bands. Coil L1 can be as required, wound on a miniature slugged former. T1 is also selected to tune the required band.

Table of Values

Fig. 5. Circuit of a Mixer/Amplifier

C1, C2,	R7 = 1,000 ohms
C3, C6 = .01 μ F	R8 = 4,700 ohms
C4 = .001 μ F	RV1 = 5,000-ohm carbon
C6 = 150 μ F	potentiometer
VC1,	RV2 = 10,000-ohm w/
VC2 = 100 μ F	wound potentiometer
R1, R2 = 100,000 ohms	T1, L1 = To tune 80/160m.
R3, R4 = 20,000 ohms, 1%	V1 = 12AT7
R5 = 27,000 ohms	V2 = EF80
R6 = 100 ohms	

is the changing characteristics of the components used in the frequency-determining section. All capacitors used should be NPO (zero temperature characteristics). The inductor, which can change its characteristics when warmed up, should preferably be tension wound on a ceramic former. The tuning condenser should be of high quality, preferably with ceramic end plates. These are what should be aimed for. You may, with careful design, get away with a little less but only a little, and of course capacitors with the required temperature characteristics can be added to counteract some thermal drift. Don't think these will cure *all* drift problems, though; some can be caused by poor components changing their characteristics due to high RF currents. Careful design both electrically and mechanically is essential if a lot of frustration is to be avoided.

Before venturing on the air with a new rig it should be checked for stability. First switch on the heaters to the VFO and then, 30 seconds later, apply HT. Measure the frequency and after, say, 30 minutes check again. Not more than 500 c.p.s. to 600 c.p.s. drift should be aimed for; obviously, the quicker it reaches its stable frequency the better. After the initial warm-up period the drift then should not exceed 100 c.p.s. in any 30-minute period

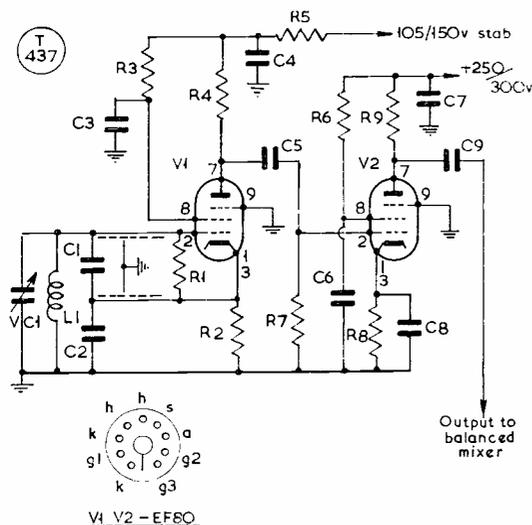


Fig. 6. A VFO circuit suitable for the mixer-amplifier shown in Fig. 5 — see text.

Table of Values

Fig. 6. VFO circuit for Fig. 5

C1, C2 = .001 μ F, s/m NPO	R1, R4 = 27,000 ohms
C3, C4,	R7, R9 = 27,000 ohms
C6, C7,	R2, R8 = 1,000 ohms
C8 = .01 μ F	R3, R6 = 100,000 ohms
C5, C9 = 150 μ F	R5 = 10,000 ohms
VC1 = 250 μ F	V1, V2 = EF80

HF Conversion

So much for single conversion rigs. In order to get on to the HF bands a further conversion must take place. With this second conversion automatic sideband selection can be effected by choosing the frequency of the conversion crystal oscillator so as to subtract the original sideband signal from it to obtain sideband reversal, or to add the original sideband signal and therefore maintain the same sideband. The type of mixer used for this conversion need not be a balanced type if mixing from 80 metres. Various types are in use, two of which are shown in Fig. 9. These mixers act as Class-A amplifiers when there is no conversion oscillator input and can therefore be used to amplify the 80-metre signal. When a conversion oscillator signal is applied the valve is driven into the non-linear region and therefore mixes.

Of course various other forms of mixer can be

Table of Values

Fig. 10. Mixer/Amplifier 10-80 Metres

C1, C2, C3, C4, C5, C6, C8, C9, C11, C14, C15 = .01 μ F disc cer.	R5, R11, R14 = 27,000 ohms
C7, C16 = 100 μ F, s/m	R6, R7, R16, R17 = 1,000 ohms
C10 = 500 μ F ²	R9 = 10,000 ohms
C12 = 22 μ F, s/m	R10 = 4,700 ohms
C13 = 250 μ F, s/m	R12 = 100 ohms
VC1 = 100 μ F	T1 = To tune 3.5 to 4.0 mc (WBC)
VC2/VC6 = To tune L3 to xtal freq.	L1, L2 = To tune amateur bands
R1, R2, R8, R15 = 100,000 ohms	L3 = To tune highest xtal freq.
R3, R4 = 20,000 ohms, 1%	V1 = 12AT7
	V2 = ECF80
	V3, V4 = EF80

Crystal Frequencies: X1, 40m., 3.3 mc; X2, 20m., 18 mc (or 2/9 mc); X3, 15m., 25 mc (or 2/12.25 mc); X4, 10m., (28-28.5 mc), 32 mc (or 4/8 mc); X5, 10m., (28.5-29 mc), 32.5 mc; X6, 10m. (29-29.5 mc), 33 mc.

Note: L3 is to tune highest crystal frequency with no external capacity. For more drive on HF bands, V3 can be a 6BW7.

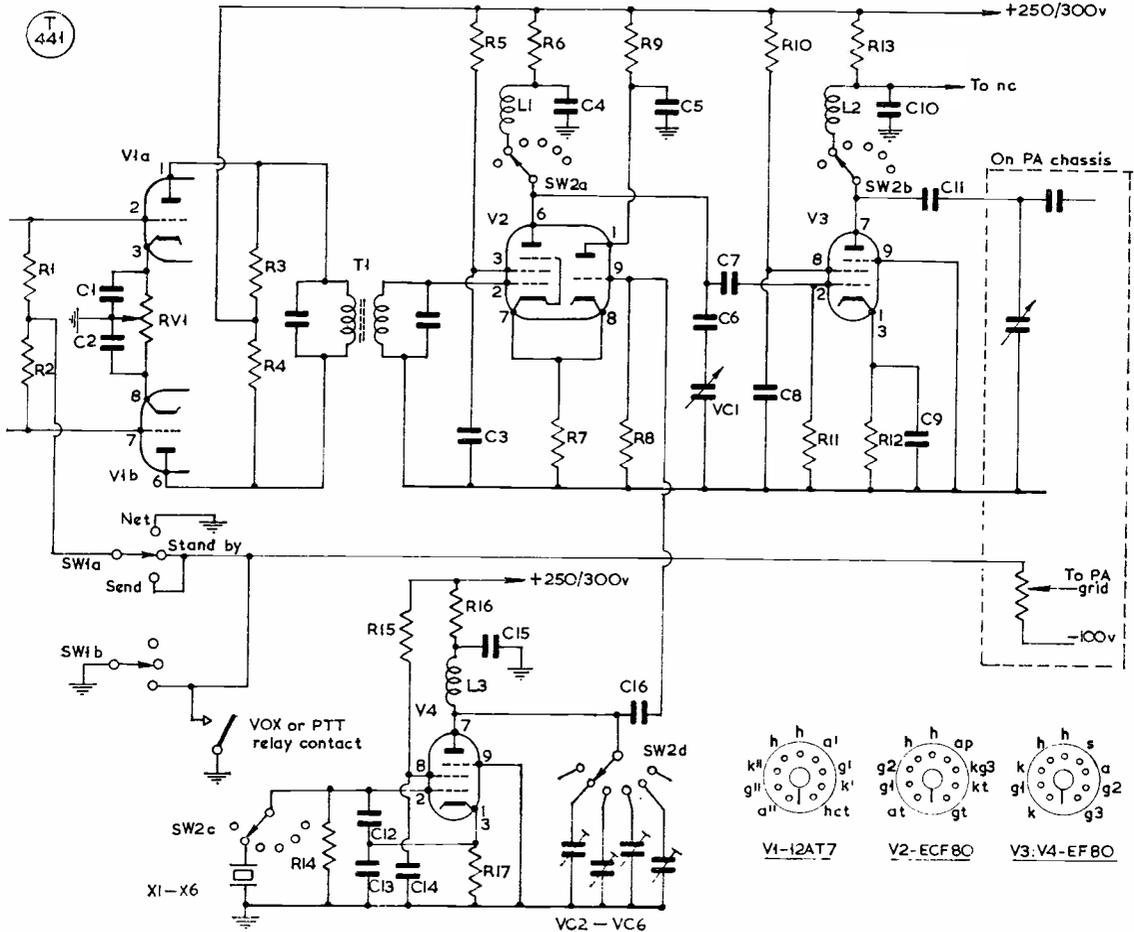


Fig. 10. Suggested mixer-amplifier arrangement for complete 10-80m. coverage, to follow a 455 kc Sideband generator. A suitable layout is shown in Fig. 11 and a VFO in Fig. 6. If lack of drive is experienced on the HF bands, V3 can be changed for a 6BW7, but care must be taken to avoid instability.

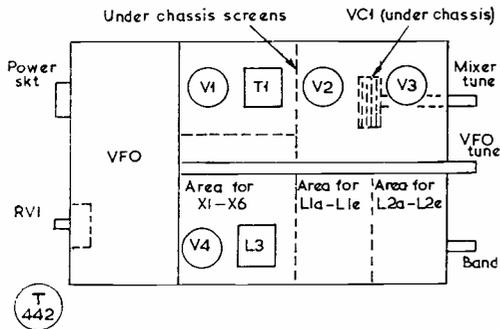


Fig. 11. A suggested layout for the circuit of Fig. 10, where it is essential to provide good separation in the interests of stability.

utilized for the second conversion, such as the type used in a receiver's frequency changer stage, but those shown in Fig. 9 produce a good output and should be followed by a Class-A amplifier and then into a PA in AB1. A design for an exciter to cover 80 to 10 metres from an original 455 kc sideband signal is shown in Fig. 10, together with a suggested layout in Fig. 11.

Instability Problems

One of the biggest causes of frustration and disgust when building a Sideband rig is the problem of getting enough drive without having the amplifier stages taking off. The driver is the big problem, particularly when using a high-slope valve such as a 6CL6. Trouble has also been experienced with the filter amplifier when using a home-built filter finishing up with an IF transformer. This instability is not always immediately apparent to the operator of the offending rig because on steady carrier, when tuning up, and on zero carrier, all seems well. The fault can, and has done in one of the writer's rigs, manifested itself only when the signal is applied to the stage at syllabic rate, *i.e.* when modulating. The receiving station thinks you're mad while adjacent stations think you're an idiot putting out such a signal.

How can one overcome this problem? A lot of people have asked that question, and one is sure also that some have given up in disgust. Instability is caused by some form of positive feedback. The most common cause of this is due to stray RF fields being radiated from wires connecting the valve to band-change switches and coils. It's more common in driver stages because the output, hence the radiated field, is that much stronger. It is therefore important to pay particular attention to the positioning of components and to screen the input and output leads to a stage particularly if, as in the case of a driver or filter amplifier, the input and output tuned circuits are resonant at the same frequency. In addition adequate decoupling must be achieved. In really stubborn cases grid and anode stoppers can be tried.

In some cases the instability may be caused by internal positive feedback due to the inter-electrode capacitance between grid and anode. To overcome

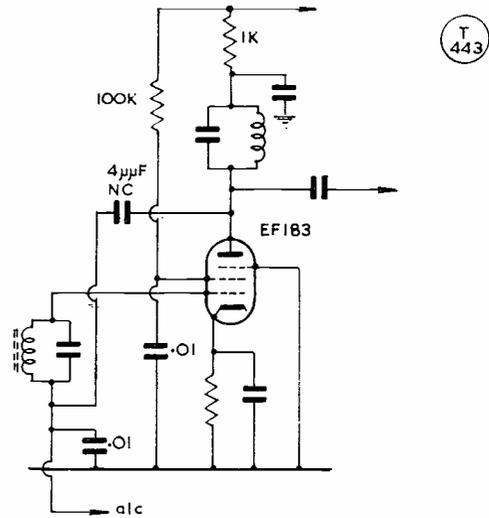


Fig. 12: Method of neutralising a filter amplifier

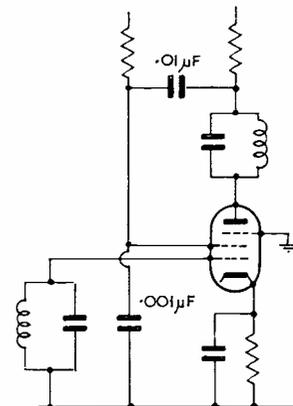


Fig. 13: Screen grid neutralisation of a Class-A amplifier

this, feedback of the opposite phase must be applied. The easiest method of providing negative feedback, which obviously reduces the stage gain, is to remove the cathode decoupling capacitor. If this doesn't cure it then your instability is most certainly still due to external feedback. An alternative to this, and a method that can be adjusted so that the loss of stage gain is an absolute minimum, is to neutralise the offending stage. In the case of low-level stages such as a filter amplifier, this need only be a small capacitor of a few $\mu\mu\text{F}$ connected between the anode and the cold end of the preceding coil. Fig. 12 shows the method used at G3RNL to tame an EF183 with a form of AGC, or ALC (automatic level control) as it is termed in transmitter circuits, applied to it. For really troublesome stages the neutralising capacitor NC can be made variable and should be adjusted

for minimum output from the stage with the anode and screen volts removed. Screen grid neutralisation is another form, an example of which is shown in Fig. 13. It must be pointed out here that neutralisation should only be used if all else fails. Careful design of the rig should prevent the necessity for this.

Finally, before going on next time to PA stages, it is important in the interest of minimum distortion to run the driver into a constant load impedance. As the gain of a stage depends upon the load resistance presented to its anode, if the following PA was in Class-AB2 or Class-B, then during some of its input cycle grid current flows requiring driving power, while the remaining part of the cycle requires no driving power. This varying load that the driver sees causes its gain to change and hence distortion products will occur due to the non-linearity. This can be overcome either by using a PA in Class-AB1, where no grid current is drawn at all, or by having a swamping resistor such that the varying load presented by the PA causes only a small variation in the required

driving power. This does mean that the exciter must be capable of delivering quite a few watts of output power. Those exciters described in this month's article have, however, been designed only for a Class-AB1 PA. Some power output is available but it is always nice to have output in hand rather than barely enough. For local contacts the exciter alone could be used, the aerial being fed by a link winding on the driver tank coil.

(To be continued)

Editorial Note: For the information of correspondents, our contributor's address as given in the current U.K. *Call Book* is not correct. However, he is QTHR in the Winter Edn. of the *Radio Amateur Call Book* issued by us, and as in "New QTH's," p.558, November. He can also be reached c/o The Editor, SHORT WAVE MAGAZINE, BUCKINGHAM.

PORTABLE IN FLORIDA

WITH A RECIPROCAL LICENCE

C. R. TEMPLER (G3RDX/W4)

HAVING been asked to stay with a war-time friend in Florida U.S.A., my XYL and I decided on hiring a motor caravan ("rent a camper"), thereby to see something of the State.

Luckily the Reciprocity Agreement with America was signed in November and I at once sent in an application (Form 610A) to operate over there to the Federal Communications Board in Washington with a photostat copy of my G licence (all four double-sided sheets of it!). An application for a U.S.A. visa came back from their London Embassy in two days and that information too went on to Washington, with Form 610A.

With some help from A.R.R.L., who were most co-operative, I was granted a licence to operate as G3RDX/Portable/W4 from February 7 to July 30, 1966, and we were all set to go.

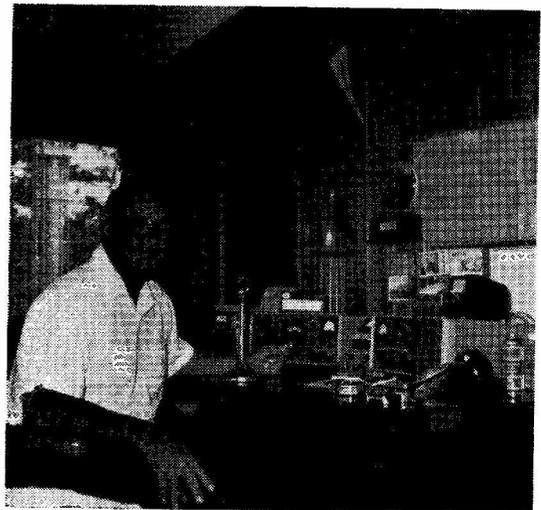
For some months I had been working Florida stations on 20m. SSB and had made a number of friends on the air, all of whom proved most helpful and generous. On arrival in Orlando on February 15, W4YJQ produced a Heathkit 80-metre transceiver with a Bandsparner antenna which K4GA helped to fit on the camper and I made my first QSO with W4BKC, the local representative of *Florida Skip*, the State Amateur Radio magazine.

Our tour started down the west coast, where we stopped at various State Parks and Static Caravan sites. There are many of the latter in each city, well provided with all facilities and mains electric outlets.

Florida is completely flat and conditions on 80 metres are excellent. They use 3-8-4-0 mc for SSB

and, as in this country, there are a number of skeds going daily, some of which provide phone-patch facilities for other amateurs in other parts of the U.S. One difference noticed from the U.K. was the shortness of the "overs"; the continuous wise-cracking was most amusing and there were no long technical discussions! I had thought that being probably the first G to operate in the U.S.A., a call like "G3RDX/Portable/W4" might produce some excitement on the band, but they accepted it almost without comment!

The Orlando Amateur Radio Club put on an excellent dinner meeting for us and I had to answer



Station of Larry Hull, W4WSM, at 11850 S.W. 69th Avenue, Miami, Fla., first met over the air by G3RDX on 20m. SB, and then in person when he went out there on his safari, as G3RDX/P/W4.

a number of very good questions on conditions over here. I was also entertained by the Fort Myers Club, where the State representative of the A.R.R.L. gave a talk on their problems and invited criticisms and suggestions.

In Miami we stayed for three days with W4WSM and were entertained to dinner to meet local amateurs, including Bill Halligan, W4AK, of Hallicrafters. Larry then took us for two days' fishing on the Florida Keys, where we saw two tarpon, each weighing about 70lbs., caught; most exciting seeing them leaping clear of the water in their struggles to get free. The rods used were only 7ft. long with very light thread-line tackle.

We found driving on the right of the road with self-changing gears a bit difficult at first. Traffic moves at a very fast rate; on the Turnpike (toll) roads the minimum speed is 40 m.p.h. and there are a great number of road signs; if one disregards even one of them, the pile up is terrific.

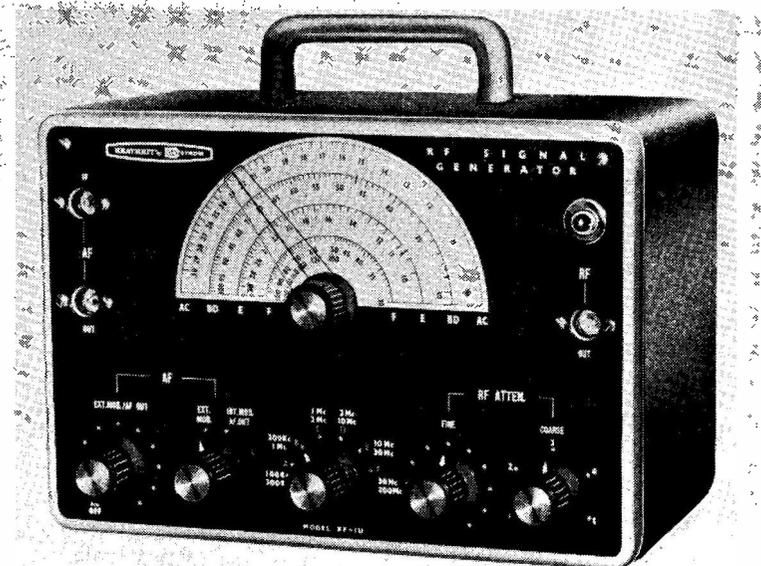
The weather was very pleasantly warm all the time and we bathed from sandy beaches almost every day; near Miami we found the air conditioning in the camper very necessary as the air temperature was over 80 degrees. It rained twice during our three weeks stay and then only at night; luckily the camper was quite waterproof.

We cannot say enough about the kindness and hospitality of all the amateurs we met; it was W4WSM and W4JYQ, only known previously on the air, who made our trip the great success it turned out to be.

If anyone thinking of operating /W would like to get in touch (QTHR), I shall be glad to give them any advice I can.



At the " Gardens of Light " Camper Park, Fort Myers, Florida. On left, G3RDX, worrying out some problem with W4AV. The vehicle is a regular hire motorised caravan — see accompanying story — used by G3RDX/P/W4 for his trip. Note the whip antenna at right.



The new Heathkit RF-1U Signal Generator has an attractive two-tone grey front panel with a charcoal-grey cabinet, and spun-aluminium knobs. The frequency range is 100 kc to 100 mc in six bands (with up to 200 mc on calibrated harmonics) and there is a 400-cycle output for audio tests. The kit price is £13 8s., or £19 18s. factory built and tested.



SHORT WAVE LISTENER FEATURE

SECOND SLP—NEWS AND VIEWS—MORE YL's

—R.A.E. PASSES—QUERIES AND QUOTES—

DX-TV—HPX LADDER

THE second SLP (March 20, 1500-1800 GMT, 21 mc) seems to have fared much better than the first. Better conditions, a bigger entry, more accurate logging all contributed to its success. Perhaps the rather harsh remarks on the standard of logging for the first event had something to do with the great improvement in that respect?

One surprising feature was the apparent distribution of the available DX heard over different parts of the country. The lists have come in from locations that are pretty well spread out, and reveal that readers logged, between them, 40 countries to qualify for inclusion in their lists. Yet even the sender of the best log can write down only 20 of them—and that is no reflection on his ability.

Here are some countries that were heard—most of them by several listeners, but a few by only two or even one: CN8, CO, CR6, CR7, EA8, EL, ET3, HC, HI, HK, HKØ, KG4, KP4, KZ5, LU, MP4, OD5, PY, TG, TF8, UL7, VE, VP9, W, XE, YS, YV, ZC4, ZD8, ZE, ZS, 5A, 5N2, 5X5, 5Z4, 6W8, 7Q7, 9H1, 9J2 and 9Q5.

The highest score (20 countries) came from **K. R. Denman (Hayling Island)** who is ex-VR3D and 4S7KD, and obviously no novice to the game. Closely behind him were three listeners with 18 countries each—*Pete Cayless (Exeter)*, *P. D. G. Milloy (Doncaster)* and *C. D. Morris (Tenbury Wells)*. The "overlap" between these four was such that between them they accounted for 35 countries out of the 40 available, although singly the best score was 20.

In hot pursuit came **J. E. Hart (Leeds)** and **C. Edwards (Warwick)**, each with 15. The other logs worthy of special mention came from the following: **R. D. Claridge (London, S.E.11)**, **D. Whitaker (Harrogate)**, **R. G. Poppi (London, S.E.24)**, **P. Smith (Linby)**, **L. Case (Widnes)**, **D. Kirby (Manchester)**, **W. E. Bachell (Southend)**, **A. J. Botley (Chichester)**, **O. Williams (Hitchin)**, **R. E. Oxley (Maidstone)**, **D. Dawson (Birmingham)**, **A. G. Scott (Liverpool)**, **R. de Buis (Felixstowe)**, **A. Ashcombe (Bexley)**, **T. Pinch (Plymouth)**, **W. Felton (Lincoln)**, **K. Evans (Shepperton)**, **H. M. Graham (Harefield)**, **G. Wood (Grimsby)**, and **R. Coates (Lancaster)**.

An interesting, but unexplained, fact is that most of the countries which were heard by only one listener (and therefore might be presumed to be the more difficult ones) appeared in some of the shortest logs.

As far as one could tell, there was very little

misreading of callsigns this time. The agreement between the various logs proved this. Lots of W8's and 9's helped to swell the logs; in fact a few of them consisted of little else, proving that some SWL's are not yet capable of copying the weaker signals when there are strong ones about.

We shall definitely be arranging more of these events, and hope to announce the third of them in our next instalment. By then we shall know whether Ten metres is going to be sufficiently active by the end of the summer.

Quite a number of readers expressed their disappointment at not being able to take part, on account of working hours, travelling or (in a few cases) a technical hitch! We hope they will all be able to join in the next, which will be some time during July.

Readers' News and Views

Brian Cullen (Dublin), sending his SLP log, remarks that he notices the great popularity of Top Band, but the only "DX" he has ever heard on the band was a GM—although he has a good receiver and aerial.

J. E. Hart (Leeds) has gone back to collecting prefixes on AM only, but doesn't qualify for the Ladder yet. Several others do, however, and this "retrograde step" appears to be becoming more popular.

D. H. Foster (Rainham) recommends the idea of receiving SSB by using an externally-generated signal. In his case he uses a Class-D wavemeter, coupled by switched capacitors to the aerial input of the receiver. The advantages of this method are that the receiver, whatever it is, doesn't have to be internally modified; the amount of injection can be varied to suit the circumstances; and when it is on the high side, this tends to kill the noise. He mentions a doubtful station signing "YUØIRU" on CW, but the brighter side of CW was revealed by signals from VP8HJ and 8IV, as well as BV1USA.

Andrew Niblock (Ilkeston) has a new HA-350 and is very pleased with it. Having heard Ten alive with W's on one occasion (about the only one so far), he is looking forward to the real opening that is bound to come one day.

Welcome to YL's

In the January instalment we chronicled the fact that *Mrs. Janet Davis*, on the HPX Ladder, is the wife of G3MGL, who is the son of G3MER and

G3MSK. Now we welcome other members of the fair sex to these columns, and also to the Ladder. Mrs. M. Worbey (Dartford) writes "Both my husband and I are interested, and he is taking the RAE in May. We would like to hear from other enthusiasts in the area." (QTH: 1 Spring Vale, Dartford.)

And Miss Patricia Longbone (Hull) has this to say: "Due to my boy friend's interest in Amateur Radio, and my brother being G3PQY, I have decided that if you can't beat 'em, join 'em . . . I also thought the XYL already in the table needed some company." Yet another connection is that her brother held the call MP4TAC while out there with the Army.

Any more applicants for the YL/XYL stakes? We shall be pleased to welcome them.

The Other View

J. Singleton (Hull) is the boy friend referred to in the previous paragraph, and he writes: "Also adding to my troubles, the YL has started to take an interest, and so part of my time is taken up with helping her." We don't quite approve of that "troubles" business . . . he must mean that it's such a pleasure that it interferes with his listening! (Despite this, he has logged BV1USA, HSI, XW8 and "as many VK's as UA's on Twenty SSB." On Fifteen the log shows ET3, MP4, 9V1, TG8 and ZP5, so he doesn't do so badly.)

The Hopefuls

Quite a bunch of readers are in for R.A.E. this month. S. Hardisty (Accrington) is already building an SSB exciter (all transistors except the output stage, which is an EL81 and will give about 25 watts p.e.p.). We hope he is able to let it loose pretty soon.

Chris Pedder (Cambridge) has already deserted us, having passed both R.A.E. and CW test—as a result of which he is now signs G3VBL. He wants to thank fellow-students G3RUZ and G3SUC for pushing him through the Morse test, and his ticket arrived in time for him to take part in the University's Isle of Man expedition, GD6UW. By Easter he hopes to be on Twenty SSB, and finds it a dreadful thought that he will have to start hunting all those EU prefixes again.

Quotes and Queries

"I listened to the SLP, but to ensure I don't get any callsigns wrong I only give a breakdown of what I heard (21 countries in 11 Zones). Don't particularly enjoy SLP's, so what's the point?" (A. D. Jones, Chertsey) . . . "I use a CR-100 greatly modified by ex-G3GAV, whom I would like to thank for his help (he was forced to go QRT some years ago because of TVI!)" (B. Macklin, Winchester) . . . "Last time I reported that I was awaiting the R.A.E. result. I now have it, and I was successful; now Morse is coming, slowly" (W. Smith, West Bromwich).

"I am really finding HPX-ing on AM-only no harder than on SSB, but I don't see Terry Popham's score of 909 being reached very quickly on

AM" (Pete Cayless, Exeter) . . . "Have only been listening since the beginning of December—mostly Fifteen metres AM—and have heard quite a lot on that band. Not yet 'ladder standard', but next time, perhaps, CR-100, Q-multiplier and noise limiter, with a 132ft. wire" (Alaster White, Chester) . . . "My favourite band is Forty metres, SSB, on which I have logged over 70 countries. I also read CW and have an extra 25 in this mode. Hope to take R.A.E. next December" (Barrie Stephenson, Walsall).

"Heard 7G1A working East Coast W's at the rate of five a minute, but don't know where he is—could it have been the famous 'Gus'?" (R. de Buis, Felixstowe) . . . No, it wasn't; 7G1A is an amateur resident in Guinea, usually very active during contests. "Not quite clear on /MM calls. Could we have G3AA/MM and also G3BBB/MM?" (Chris Freeman, Nuthall) . . . No, certainly not. They both count as G3/MM. But G4AAA/MM and G5AAA/MM would add a couple more.

"Wasn't that SLP a bit long? My ears can only stand three quarters of an hour with headphones, although they're supposed to be super-comfortable"

HPX LADDER

(Starting January 1, 1960)

Qualifying Score 200

SWL	PREFIXES	SWL	PREFIXES
PHONE ONLY		PHONE ONLY	
T. R. Popham (Exeter)	909	G. Case (Widnes)	332
P. A. Cayless (Exeter)	895	B. J. Turner (Westcliff)	328
D. Douglas (Dundee)	894	D. J. Mortimer (Gloucester)	318
A. W. Nicolson (Glasgow)	727	C. Morris (Tenbury Wells)	316
S. Foster (Lincoln)	670	W. Angerson (Leeds)	306
R. G. Preston (Norwich)	553	P. A. Cayless (Exeter)	304
E. R. Chilvers (Lydney)	552	<i>AM only</i>	
D. Poulter (Morden)	540	J. Dixon	
A. Huggett (Lamberhurst)	528	(Barrow-in-Furness)	303
J. E. Hart (Leeds)	526	C. Freeman (Nuthall)	303
M. Woollin (Leeds)	507	C. Warburton (Sale)	297
P. J. Lennard (Wartling)	506	D. Edwards (Coalville)	296
K. C. Staddon (Stroud)	487	T. Finch (Plymouth)	290
G. S. Taylor		D. G. I. Cook (Nottingham)	274
(Wolverhampton)	474	D. Nicholls (Bristol)	263
C. Squires (Saltash)	474	Mrs. M. Worbey (Dartford)	262
C. Edwards (Warwick)	472	P. Freeman (Cheshington)	258
W. Smith (West Bromwich)	466	Mrs. Janet Davis (Strood)	254
P. Baxter (Winchester)	460	R. Wyatt (Basildon)	246
D. Rollitt (Navenby)	460	D. Poulter (Morden)	240
J. Singleton (Hull)	450	<i>AM only</i>	
A. Niblock (Ilkeston)	450	A. Marriot	
J. P. Fitzgerald		(Bishops Stortford)	230
(Great Missenden)	449	B. Stephenson (Walsall)	228
P. D. G. Milloy (Doncaster)	449	Miss Patricia Longbone	
W. Moncrieff (Hampton)	441	(Hull)	226
A. D. Jones (Chertsey)	440	B. Macklin (Winchester)	226
C. Sparrow (Mill Hill)	440	K. Evans (Shepperton)	224
D. E. Fitzgerald (Dublin)	416	R. T. Sutton (Birmingham)	219
W. Felton (Lincoln)	411	K. Evans (Shepperton)	218
S. Hardisty (Accrington)	403	S. Shaw (Stockport)	218
D. G. Evans (Neath)	398	N. Bradley (Stevenage)	203
W. Chaffer (Edgware)	393	E. K. Law (Brownhills)	201
A. Parker (Chesham)	391	<i>CW ONLY</i>	
A. G. Scott (Liverpool)	384	P. J. Lennard (Wartling)	594
R. Coates (Lancaster)	376	C. Harrington (Hounslow)	582
F. Crust (Loughborough)	375	D. Douglas (Dundee)	548
B. Cullen (Dublin)	375	S. Wilson (Ossett)	412
D. H. Foster (Rainham)	373	D. H. Foster (Rainham)	400
C. P. Martin (Chertsey)	351	R. de Buis (Felixstowe)	390
A. D. Jones (Chertsey)	334	M. Woollin (Leeds)	356
<i>AM only</i>		P. Etheridge (Hull)	303
S. Wilson (Ossett)	332		
H. M. Graham (Harefield)	332		

(NOTE: Listings include only recent claims. Failure to report for two consecutive issues of "SWL" will entail removal from the table. Next list, July 1966 issue—deadline May 27.)

Alan Bingham, of 69 West Hawthorn, Ambrosden, Bicester, Oxon., has a useful collection of gear centred on an R.1155. He is 16, has been a keen SWL for three years, and would like to hear from others in the same sort of bracket.



(*R. Coates, Lancaster*) . . . "My receiver is an 8-valve domestic Pye 39 J/H, about fifteen years old but still working fine. I plan to improve it with a Q-multiplier, FR/IF gain control and AVC" (*D. Walsh, Co. Tipperary*) . . . "Could we please have next SLP outside TV hours (say on a Sunday morning) as I get swamping QRM from the Rediffusion wired-vision system used in this and many other parts of the country" (*L. Case, Widnes*). (Action with the GPO couldn't do any harm here—is doesn't have to be as bad as that.)

More Newcomers

Hamilton Brown (Glasgow) has been with us for two years, but sends his first letter. He runs a CR-100, Codar PR-30 and home-made ATU, with a super-regen. for VHF and an RF-24 . . . but now he's rebuilding the whole lot for a better layout, shorter wiring, more switches instead of twisted wires and so on (and if experience is anything to go by, it won't work as well as it does now!) He would welcome any gen. on CR-100 or RF-24 mods. (QTH: 4 Midcroft Avenue, Glasgow, S4).

Iain Paterson writes from Carstairs Hospital, Lanarkshire, to say that he uses an EC-10 with a 50ft. wire and an earth connection on the central heating system. He would be delighted to hear from any SWL's who might care to give him some help and advice on amateur-band listening, at which he admits he is quite a novice, apart from working under a physical handicap.

N. Bradley (Stevenage) joins the HPX Ladder, having been active for a year with an all home-brew outfit—4-valve regenerative receiver, 10-metre pre-amp, 2-metre converter, Morse practice oscillator and so on. His father is G3UYY, so we imagine R.A.E. is on the agenda. Meanwhile, if anyone can help him with gen. on the B2 outfit he would be grateful. (QTH: 38 Popple Way, Stevenage).

E. K. Law (Brownhills) also joins the HPX Ladder (he just made it with 201!). With a home-brew "Nightrider" and a folded dipole for Twenty, he has collected some very nice DX, and we imagine he will be on his way up the ladder by next instalment.

DX-TV

Conditions haven't really fetched the DX-TV enthusiasts out in full force as yet. *Dennis Boniface (Ripon)* found a Band III opening to Europe on March 7, and is getting ready for the season with a new mast fitted with a 23-el. job for UHF, an 11-el. for Band III below it, and high hopes for some sporadic-E! *Frank Smales (Pontefract)* has moved his QTH and finds things much better than before. Having had to get council permission, he is now putting up a 30-footer and hopes for great things. He, too, found the opening on March 7—and others on March 10 and 28. On the 10th he identified Stockholm (E2) and Leningrad (O1), both around 0800.

Anyone interested in forming a DX-TV Club is asked to contact *Reg Roper* at 62 Wellington Street, Torpoint, Cornwall, for further details. Views and ideas will also be welcomed.

Some Old Stagers

Now for a few remarks from some of our regular and old-established correspondents. *L. Case (Widnes)* has built himself a crystal converter for 20, 15 and 10, with the IF in the 3 mc region, which has solved his problems of stability and sensitivity—now for some more selectivity from the HE-30! *David Douglas (Dundee)* now has 32 countries and 6 continents confirmed on One-Sixty, to say nothing of 21 countries confirmed on VHF—good going at both ends!

D. G. Evans (Neath) says he would be in

Next appearance of this feature—July 1966. All correspondence and photographs (of SWL stations and equipment) by May 27, addressed to Editorial Department, SHORT WAVE MAGAZINE, Buckingham, England. Head the letter "SWL."

favour of a return to the condition of CW only for the first year on new licences; but makes the interesting suggestion that they might be allowed to use phone on One-Sixty only (or possibly One-Sixty and Eighty)—chiefly for the sake of operating experience on phone. This seems to us a pretty good idea.

P. D. G. Milloy (Doncaster) says that during the SLP he frequently got side-tracked by interesting QSO's going on! (He did well, all the same.) And he comments on the "fantastic strength" of North Americans on Fifteen at times when the band is good. *David Fitzgerald (Dublin)* is amazed at the number of /MM stations at what he calls the "by golly" end of Twenty. Some of them seem to be working phone-patch to the U.S.A. at any time of day or night.

H. M. Graham (Harefield) has had his share of DX on most bands, including CN8AW, ZB2AJ and 9X5MH on Eighty . . . *A. W. Nielson (Glasgow)* finds that he has heard 302 prefixes already this year, including such goodies as EA9IC (Ifni), VK9DR (Christmas Is.), VS9KRV (Kamaram), all on Twenty SSB and all-time new countries.

Vic Lindgren (Hull) has fallen completely for Top Band DX. In the past three months, on One-Sixty, he has logged 60 W/K stations (including W7, 9 and Ø) and 12 VE's, quite apart from KV4, HK4, 6Y5, 9L1, 9M4 and finally ZL3RB, the day before writing. This was all done with an HRO-MX and a 40-metre doublet, 30ft. up.

R. Coates (Lancaster), runs an R-208, and he recently realised that it has an IF of roughly 2 mc, and that his TCS receiver covers that frequency. So he channelled the IF from the first into the front-end of the second, with a vast improvement in gain and sig/noise ratio. (It was an article on Q5'ers that induced him to try this.) He has been astonished at the number of VK's to be found on Forty in recent months (although those conditions have probably changed by now).

Here and There

Glyn Watson (Sheffield), after being "Eighty-only" acquired an R.1155 and can now cover Twenty and Forty as well—SSB and all. He is amused to hear these contacts that last about 20 seconds and end up with "Thanks for the FB QSO," when the fellow at the other end hasn't had a chance to get a word in edgeways. And he experienced the rat-race phenomenon during the ARRL Contest, when, as he says, anything vaguely resembling DX was pounced on and torn to pieces. He queries "FB4BCC" . . . almost certainly MP4BCC, we should say.

Bill Felton (Lincoln) has had some surprises

late at night on Twenty, when a virtually dead band has suddenly produced something quite exciting. His immediate project is a new receiver and a ground-plane aerial to go with it.

Colin Squires (Saltash) laments the "ridiculous tongue-twisting callsigns" which the GPO has decreed for foreign amateurs licensed in this country under the reciprocal agreement. Certainly we are alone in the world on insisting that a complete three-letter G call must be followed by a "slash" and the other man's call in full . . . it practically rules them out of any contest work, certainly.

Richard Wyatt (Basildon) puts in an entry for the Ladder, half the prefixes having been heard on a one-valve regenerative receiver (the other half on a home-brew double-conversion job). His favourite bands are 20 and 80, AM and SSB.

Finally, all best wishes to those taking the RAE this month. We shall hate to lose them, but we wish them all a "pass" and eventually a callsign of their own. Good luck to them!

And that's the end for this month . . . space is pressing in on us, as usual. Note that deadline of **Friday, May 27**, and don't be late. Until then, Good Listening!

SOME LATER REPORTS

Ghana, 9G1, Close-Down

The latest (April) issue of *9G1 News* contains details of the close-down imposed on 9G1 amateurs by the National Liberation Council, Ghana's provisional government. The ban was promulgated to take effect from March 5, 1966, but naturally the Ghana Amateur Radio Society approached Gen. Ankrah, chairman of the N.L.C., on the subject. A brief reply from him dated March 12 states that the ban will be lifted "as soon as possible," and that there are "security implications." So there it is. Actually, at the moment it seems that there are comparatively few active 9G1's in Ghana.

Trentham Mobile Rally, April 24

A first report on this event is to the effect that, in spite of heavy rain in the morning, there were about 2,000 people in the grounds by 4.0 p.m., with the car parks full and the exhibition hall crowded. Some 35 stands—all in the available space—were taken up, the raffle was well supported, and the financial outcome (which had been a matter of some anxiety for this year's Rally) is described as "well clear, in fact much better than last year." The occasion was covered by *ATV News*, and the star prize in the raffle, an Eddystone EC-10 receiver, was won by J. Neal, of Wombourne, Staffs. The new mobile equipment exhibited by Contactor Switchgear (Electronics), Ltd. (G8CK/M), is reported as having scooped the show.

Small Advertisements

An even larger spread than usual appears on pp.181-189 of this issue, in which many interesting bargains are offered. If you are on the look out for something special, it could well be there for you this time.

Miscellany

"We have a Sunday 'net' but I don't take part myself. It's so dull, so repetitive and if six members take part they are all on different frequencies and use up about 15 kc of the band!"

(A Club Secretary—call withheld at his request)

— • • • —

Some OM's who are 2 kW at the office are nothing but 1 watt at home.

(Auto-Call)

— • • • —

Research into earth resistance can supply some surprising figures. A recent survey in the U.S.A. (quoted in the *Wolverhampton Newsletter*) shows that an earth rod at a depth of 8ft. gave figures varying between 29 and 270 ohms (depending on the soil, of course); at 16ft. the resistances ranged between 14 and 230 ohms; and at 32ft. between 4.5 and 13 ohms. The 13-ohm example was the same one that gave the figures of 270 and 230 ohms at lesser depths.

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The present spate of secret service type features on TV (are they the modern "Westerns"), each of which seems more of a send-up than the previous one, must amaze and delight all amateurs by the ease with which communication is established with any desired person at any desired time. Pick up a Japanese walkie-talkie (in a cellar) and yell 'BYX 3746, urgent'—and there he is, from 500 miles away. Never any QRM, never any need to tune anything in, always loud-and-clear. If we tried doing this, the frequency would be occupied either by Yugoslavia police, British fish-fone, an SSB net, a mass of RTTY or just plain noise. (They never have any background noise on these things—we must ask them how it's done.) And when it comes to blowing up a car by remote control, the "bomb" being a small field-strength meter, clearly identified, under the bonnet, one boggles, does one not?

— • • • —

"Notwithstanding the attacks made on our frequencies and the wild accusations that arise occasionally from irate members of the public, there is no doubt that the G.P.O. does not lose its sense of perspective. We are accorded the same degree of protection and assistance that is given to other users of the radio spectrum in this country."

(G3JJC, in "QUA," Cray Valley)

A FEW MORE NOTES FROM THE OUTSIDE WORLD

Scene: Any amateur Phone band. LID . . . "So I'll close now. This is WX5LID over and out." 1st Operator: "What d'you suppose that lid meant? He said that (a) he was turning it over to the other station and was expecting an answer to which he'd reply, and also that he was not expecting an answer and would make no further transmissions!" 2nd Operator: "No, he's just conforming to the requirements to keep up his membership in the International Association of Bumbling Lids."

("Collector and Emitter," Oklahoma)

— • • • —

Wanted (judging by remarks heard on the bands): A really rugged, commercially-built Quad aerial. Nearly all the Quads in this country use bamboo spreaders, and they seem to be the earliest casualties when the gales blow, apart from looking anything but things of beauty. More than one American firm advertises all-metal Quads, one of which sells for as little as \$25 over there. A British version would certainly sell.



" . . . No, he didn't have a silver spoon in his mouth, but I did find this . . . "

VHF BANDS

A. J. DEVON

AS to VHF conditions generally since last time out, they have been as the Wx: Pockets of local improvement as the "Highs" went through, but with no sustained openings. It is not until a settled anti-cyclonic situation develops—as seemed possible as this was being composed—that we can expect a real uplift in conditions. What we need for VHF are warm, sunny days followed by cool, clear evenings with just a little thin cloud and no wind—oddly enough, just what you want if you have to get on with the gardening! (This is merely another expression of Murphy's Law.)

It seems that what was said here last month about the *ARTOB* balloon project has also been overcome by conditions—in fact, it has not been possible to work to the intended schedule. In any event, by the very nature of the exercise it was bound to be a bit chancy—there were too many "amateur" factors involved. (This is no reflection on DJ4ZC, who conceived and successfully demonstrated *ARTOB*.)

On the other hand, the "Euro-Oscar" undertaking is more firmly based, in that a suitable repeating VHF satellite is planned, based on the DJ4ZC design, for launching by an American rocket, all-same *Oscar*. Naturally, such projects cost money, even if on the European side the expertise of talented people like DJ4ZC is given free. The total cost has been estimated at about £275 (which seems to us rather low, having regard to all the factors involved) for what would be in effect a European VHF satellite.

The project was publicised and discussed at the London VHF Convention on April 2 last, and as a result more than £100 was raised as the immediate U.K. contribution to the *Euro-Oscar Fund*. It is expected that the balance

will be put up by the other European VHF groups interested. In the meantime, the technical work is going forward, based on an *Oscar* package, and it is reasonable to assume that—given ordinary luck—the device could be in orbit before the end of this

year.

Which naturally brings us to a brief report on the London VHF Convention itself. Very well supported as usual, the lecture sessions were attentively followed, in particular that on Auroral Propagation, by G2FKZ

THREE-BAND ANNUAL VHF TABLE
September 1965 to August 1966

Station	FOUR METRES		TWO METRES		70 CENTIMETRES		TOTAL pts.
	Counties	Countries	Counties	Countries	Counties	Countries	
G3EDD*	32	3	53	18	16	4	201
G3LAS*	24	2	42	10	17	3	164
G3FIJ*	18	2	37	12	19	4	158
G3AHB*	6	1	39	11	20	3	133
G3NNG*	—	—	47	11	21	4	133
G3PTM*	—	—	41	10	23	3	129
G5UM*	15	2	30	7	16	2	125
EI6AS*	20	5	31	7	4	3	109
G3KQF*	—	—	32	8	21	2	109
G3HRH	23	2	44	12	14	2	98
G5FK*	22	3	12	3	10	1	98
G3SKR*	36	6	10	2	—	—	96
G3OWA	24	3	36	7	14	1	85
G3RST	8	1	49	17	—	—	75
G3TLB	8	1	51	13	—	—	73
G3HWR*	12	2	14	2	8	1	71
G2AXI	14	2	36	10	7	1	70
G2CIW	—	—	14	9	32	6	61
G8ACE*	—	—	—	—	19	1	60
G3UFA*	8	1	40	10	—	—	60
G3KMI*	15	1	18	4	—	—	54
G3FNM	2	1	33	8	—	—	44
G3UCS	—	—	34	5	—	—	39
G3UFQ	—	—	28	8	—	—	36
GW3PWH*	4	2	17	4	—	—	33
G3EKP	8	5	6	3	5	2	29
GW3CBY	2	2	19	4	—	—	27
G8ACB	—	—	—	—	22	4	26

Scores are since September 1st, 1965, and will accrue until August 31st this year. Position is shown by last-column total, as aggregate of all scores. Own county and country score as one each. Entries may be made for a single band, any two, or all three. From time to time, multipliers will be announced (with at least one month's notice) to give a loading in favour of some particular band. Points so earned will be taken into the aggregate and carried right through till the end of the VHF year. N.B. *Multipliers Announced*: With effect from April 1st until May 31st, all aggregate 4-metre scores can be multiplied by two and all 70-centimetre totals by three. As an example, at his present standing in the Table above, G2AXI could claim 32 points for the 4-metre column and 24 pts. on 70 cm., making (with his x 1 two-metre score of 46) a total of 102 points. New entrants on either band within the April-May period may claim multipliers accordingly.

*Indicates multipliers claimed and taken in.

who—though working in the strictly amateur context—has made himself an authority on the subject. *Ar* propagation effects have been used for VHF/EDX

FOUR METRES

ALL-TIME COUNTIES WORKED LIST

Starting Figure, 8

From Home QTH Only

Worked	Station
56	G3EHY
52	G3IUD, G3SKR (518)
50	EI2W, G3OHH (284)
42	G3MOT
41	G5OWA (444)
40	G2OI
39	G3PIK
38	G3JHM/A
35	G3BOC, G5FK (346)
33	G2BJY, G5JU
32	G3NUE
31	G3PPG, G3PMJ
30	G3BNL, GM3EGW
29	G3AYT
28	G3OJE
27	G3RDQ
26	G3LAS, G3LQR, G3LZN, G3TCT (210), G3HXV
25	G3FIJ, G3HRH
24	G2AXI, GC3OBM
23	G3HWR (281)
20	G3EKP, G5UM (190)
17	G5CP
16	G3BJR, G3FDW G3TOT (100)
14	G3OKJ, G3UYB
12	G3TKQ, G5DS
11	G3LHA, G3PRQ, G3SNA
10	G2BDX, G3ICO
9	G2DHV
8	G3NNO, G3UUT, G8VN

This table records Counties Worked on Four Metres, on an all-time basis. Claims can be made as for the other Tables, e.g. a list of counties with the stations worked for them, added to from time to time as more counties accrue. QSL cards or other confirmations are not required. Totals in excess of 100 different stations worked can be claimed and will be shown in brackets after the call.

ever since we first started on five metres, long before Hitler's War, but how and why it happens is still imperfectly understood. Over the years, the subject has been discussed in these pages, and actual results chronicled ever since 1938. What G2FKZ was able to show was that the possibility of EDX working by Aurora occurs far more frequently than might be supposed.

DX-Pedition Notes

We are now in the season when keen types go forth portable, with all the hazards entailed, to have a good time on the VHF air while giving GDY chances to those who need some rare or unusual county. The Midland Contest Club boys are taking GW3RUF/P to the top of Snowdon for May 7-9, operating two metres and (they hope) 70 centimetres. It is now too late to fix skeds (we were not informed till after the April issue had appeared) but if this reaches you soon enough, look for them on the 430 mc band "until the early morning of the 9th." (And, incidentally, this is a good example of the importance of letting us know expedition plans in good time if advance publicity is expected. The closing date is the dead-line, given every month, allowing an additional month for sked correspondence. In other words, it was in the last issue that we ought to have been discussing the GW3RUF/P plans for Snowdon.)

On the other hand, G5UM gives us all plenty of time—to the effect that he will be signing GM5UM/P for the county of Argyll during May 29 till June 9, on 145.8 mc, AM/CW as conditions and Wx allow, 1830-2100z. Jack doesn't say if he wants skeds, but try him (*QTHR*).

Also making their intentions clear are G3BNL/G3PXP, who will be on Drum Mt., Caerns. for the Whitsun weekend, May 28-30, using both call signs on all bands from four metres to 23 centimetres—which is going to be quite an undertaking in terms of the gear to be taken along!

Going north for the week July 23-30 will be the group describing themselves as "Guildford/Southampton," involving some Guildford types but mainly members of the Univ. of Southampton Radio Club. They intend to be giving it out on two and four metres (also Top Band) from Westmorland, Cumberland, Northumberland and Co. Durham. Though no operating call sign is given (another puzzle for your A.J.D., trying to devil it out from the *Call Book*) it is stated that "skeds can be arranged through G3TCU (*QTHR*)." We do our best.

Continuing on this theme, we are advised that it is proposed to form a "South Wales VHF Group" (SWVHFG), those inter-

TWO METRES

COUNTIES WORKED SINCE SEPTEMBER 1, 1965

Starting Figure, 14

From Home QTH only

Worked	Station
52	G3DY (215)
51	G3TLB
44	G3HRH
42	G3TQZ (140)
41	G3PTM (119)
40	G3UFA
37	G3FIJ (120)
36	G2AXI, G3IOE
35	G3UFQ
33	G3FNM (65)
32	G3KQF
31	G3AHB
30	G5UM
19	G2CDX, GW3CBY
18	G3THC
17	G3BNL, GW3PWH

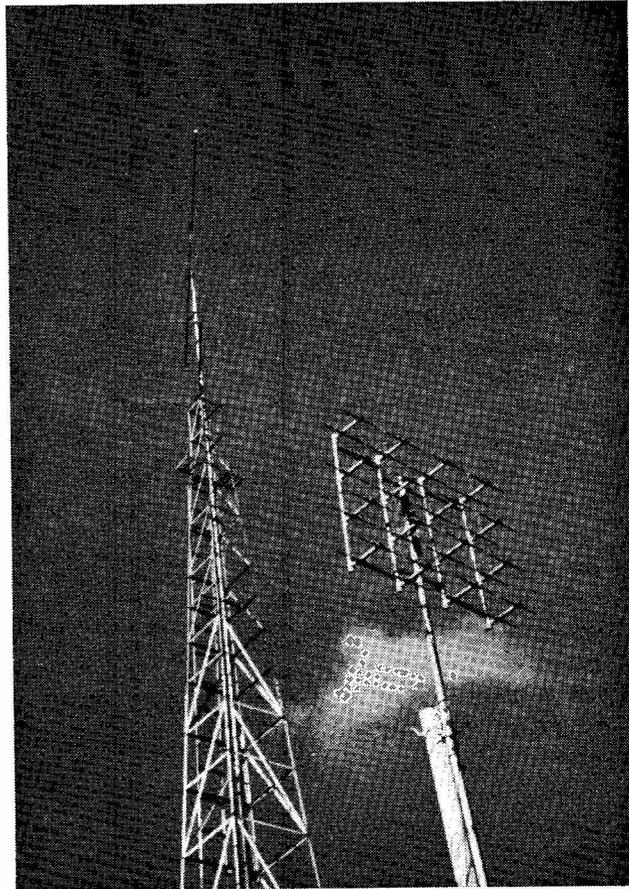
This annual Counties Worked Table will run till August 31, 1966. All two-metre operators who work 14 or more Counties on the band are eligible for entry. QSL cards or other proofs are not required. After the first 14 worked, simply claim from time to time with counties as they accrue, giving call sign and date for the county worked. Total of stations worked in excess of 50S may also be claimed and will be shown in brackets after call sign. To keep the Table up-to-date, claims should be made at frequent intervals. Operators new to VHF are particularly invited to join Annual Counties.

ested being invited to get in touch with GW4CG (QTHR)—and good luck to them. (It was in the late 1930's that a lot of pioneering work was being done on the old 5-metre band in Newport, Cardiff, Penarth and Swansea. Your A.J.D. should know!)

The Four-Metre SLP

Advertised for Easter Sunday, April 10, this produced a far more interesting response than the previous Set Listening Period—indeed, it seemed that, as requested, more than a few four-metre operators came on for what they regarded as an "Activity Period." Hence, we have a good selection of both Rx and Tx logs. Taking the SWL's first, Trevor Brook of Effingham, Surrey, turns in four neat sheets of CW/Phone logging, which can be summarised as 68 contacts heard, with G3EHY (Banwell, Som., 115m.) and G3SQV (Colchester, 75m.) as best DX. He shows not only time and station being worked or called, but also frequency, with notes on mode being used and success or otherwise following CQ calls—for instance, we see that G3OUF (London) changed to RTTY while working G3TRP (Purley); that G3SKR put out a number of abortive CQ calls on CW when beaming west; that G6HG was calling and testing at intervals; and that G6NB was a terrific signal when he was working G3HTP (70·65 mc). And much else in the same strain. SWL Brook's gear is home-built—a 6CW4 converter with 2·1-2·7 mc IF tuned on a main Rx consisting of a rebuilt SX-24, using a transistor local oscillator; his aerial is a sawn-down X-array.

Another impressive log comes from SWL W. McClintock, of Ballymena, Co. Antrim, who lists a total of no less than seventy 4-metre QSO's, mainly between GI's, but also including GD3FOC /M at 83 miles, several GM's, E17AF at 125m. and GM3EGW as best DX heard, at 157m. The log summarises to 18 different fixed stations, two portable and six /M, representing four countries and 11 counties in Ireland—a very good showing, which proves what a high level of 4m.



Close-up of the VHF aerial system at EI2W, Sandyrock, Co. Dublin. It includes arrays for 70 centimetres, two metres and four metres. EI2W is one of the best-known and most successful VHF operators in the British Isles and is still at the top of the All-Time Counties table.

activity there is in those parts. SWL McClintock remarks that no G's at all were heard, though GM3EGW was known to be working G3PLX. The gear at Ballymena consists of a fully rotatable Ae. system, giving either vertical or horizontal polarisation (this being necessary because the /M's are vertically polarised) with a CC converter into a CR-100 tuning 29·1-29·7 mc.

SWL C. Edwards and his father go out /P regularly from Warwick to a very fine site on Edgehill, from which a large number of G's can be heard—in fact, during the contest period, the weekend following our SLP, they logged stations from Surrey

right round to Somerset and Monmouth.

Both G3MWZ (Lincoln) and G3SKR (Wembley, Middx.) took the SLP as an Activity Period, the latter working GM3EGW (on sked), as well as stations in ten counties, from Devon to Yorkshire and Norfolk; G3SKR also heard GC3OBM for a nice piece of 4m. GDX. He has now accounted for 518 different stations in 52C on the 70 mc band. G3MWZ, now active on 4m. but /P only, mentions G3NEO (Sheffield) as heard.

GC3OBM himself writes from St. Peter Port, Guernsey, saying that though 4-metre activity is undoubtedly on the increase—he finds contacts possible most Sun-

day mornings—more G's could usefully head their beams his way; he also remarks on the number of pip-squeak Tx/Rx rigs now in use, tied to a single frequency. All right for local working with simple aerial systems, but hardly of much use for anything else. About the best GDX for GC3OBM during the period was a contact, of sorts, with GD6UW, lost in QSB.

SEVENTY CENTIMETRES

ALL-TIME COUNTIES WORKED

Starting Figure, 4

Worked	Station
46	G2XV
42	G2CIW
36	G3JMA
35	G3KPT, G6NF
33	G3JHM/A, G3LTF, G8ADC
32	G3LHA, G3LQR, GW3ATM
31	G3JWQ, G5YV
30	G3EDD, G3KEQ
28	G3HAZ, G3HBW, G3NNG
27	G3PTM
26	GW2ADZ
23	G3BKQ, G6NB, G5UM (155)
22	G3OBD
21	G3AYC, G3FIJ, G3IOO, G6KQI/T
18	G2OI, G3HRH, G3KQF
17	EI2W, G3BA, G3BNL, G3MPS, G5QA, G8ADS
16	G2DDD, G3BYY, G3MED
15	G4AC, G4RO
14	G2BDX, G2HDZ, G3AHB, G3FAN, G3HWR, G3OWA, G5DS
13	G6XA
12	G3NJO/T, G5BD
10	G3IRW, G3LZN, G5FK, G8ACK
9	G3EKP
7	G2AXL, G2HDY, G3JHM, G6AX/P
6	G3KHA, G3WW
5	G3FUL, G3IRA, G3IUD, G3LTN, G5ML, GC2FZC
4	G3JGY

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

G3UYB (Bromley) comes into the 4m, All-Time at 14C—and asks for more CW operation. (Don't we all!) G3UUT (York) is another newcomer making a start in the All-Time; he works VHF only, and for 4m. the Tx runs 25w. to an 832A in the PA, with a 3-ele Yagi. G3TCT (Guildford) also has a 25w. Tx, involving a home-built mixer/VFO, and the Rx is an E88CC cascode converter into a National NC-200, the beam being 3-ele. at 30ft., and the QTH 200ft. a.s.l.; he is now at 210S worked.

Seventy-Centimetre Items

It should have been mentioned earlier that G8AHE (Birmingham) will be signing GW8AHE/P from Radnor on Sunday, May 15, on 433'26 mc, opening up at 1300z. Those wanting skeds for this very rare (70 cm.) county are invited to get in touch with G8AHE (QTHR), who will be accompanied by G3OVA. They have good gear: An 8w. Tx into a 14-ele Yagi, the Rx side consisting of an AF139 pre-amp. with a G2YH-type transistor converter and an Eddystone EC-10 as main receiver.

G8ACK (Hampstead, London) has now worked 10 counties on 70 cm., with G2CIW for Warwickshire as best DX. Starting on the band, from Edgbaston, Birmingham, is G8ANY-G6ABY/T, with a five-stage 8w. Tx and a G2DD converter, AF139 pre-amp. and a transistor IF/AF strip, tuning 25-35 mc, frequencies either 433'08 or 433'45 mc. He also has a station at the home QTH at Blackpool, to which he commutes every third week.

Yet another to report himself as coming on is G8AOS (Evesham, Worcs.), who is connected with the BBC Club station there.

Dead-Line

With the prospect of a short sailing holiday, and the sun shining, it only remains to say that we hope to be with you again on June 3, for which the closing date for this piece is **Friday, May 20**, addressed: A. J. Devon, SHORT WAVE MAGAZINE, BUCKINGHAM. 73 de A.J.D.

TWO METRES

COUNTRIES WORKED

Starting Figure, 8

- 28 G5YV (DL, EA, EI, F, G, GC, GD, GI, GM, GW, HB, HG, I, LA, LX, OE, OH, OK, ON, OZ, PA, SM, SP, UA, UP, UQ, UR, YU)
- 27 ON4FG (DL, EA, EI, F, G, GC, GI, GM, GW, HB, HG, LA, LX, LZ, OE, OH, OK, ON, OZ, PA, SM, SP, UA, UC, UP, UR, YU)
- 26 G3LTF (DL, EA, EI, F, G, GC, GD, GI, GM, GW, HB, HG, LA, LX, LZ, OE, OH, OK, ON, OZ, PA, SM, SP, UA, UP, UR)
- 26 UA1DZ (DL, DM, G, HB, HG, LA, LX, LZ, OE, OH, OH0, OK, ON, OZ, PA, SM, SP, UA, UB, UC, UO, UP, UQ, UR, YO, YU)
- 24 G2JF, OK2WCG, UP2ON
- 23 G3CCH
- 22 G3LAS
- 21 G3HBW, OKIDE
- 20 G3BLP, OK1VR
- 19 G3EDD, G6RH, PA0FB
- 18 G2CIW, G5MA, G6NB, ON4BZ
- 17 G2XV, G3HRH
- 16 G3AYC, G3BA, G3CO, G3GHO, G3KEQ, G3PTM, G6XM
- 15 G3DKF, G3FIJ, G3FZL, G3KQF, G3OBD, G3RMB, G4MW, GM3EGW, UR2CQ
- 14 G2AXI, G2FJR, G2HDZ, G3AOX, G3FAN, G3HAZ, G3IOO, G3JAM, G3JWQ, G3KPT, G3NUE, G3PBV, G3SAR, G3WS, G4LU, G5BD, G5DS, G6LI, G8OU
- 13 EI2W, G2CDX, G2HIF, G2HOP, G3AOS, G3DMU, G3DVK, G3EHY, G3GPT, G3GWL, G3IIT, G3LHA, G3NNG, G3OHD, G3PSL, G6XX, G8VZ, GC2FZC
- 12 EI2A, F8MX, G2BJY, G3AHB, G3BNC, G3BOC, G3FNM, G3GFD, G3GHI, G3GSO, G3JLA, G3JXN, G3OWA, G3WW, G5CP, G5JU, G5ML, G8DR, GW2HIY, GW3MFY
- 11 G2AJ, G2CZS, G3ABA, G3AHB, G3BDQ, G3IUD, G3JHM/A, G3JYP, G3JZN, G3KUH, G4RO, G4SA, G5UD, G5UM, G6XA, PA0VDZ
- 10 G2AHP, G2DHY, G2FQP, G3BK, G3DLU, G3GSE, G3LAR, G3LRF, G3LTN, G3MED, G3OSA, G3RTE, G3XD/A, G5MR, G5TN, G8IC, GW3ATM, GW5MQ
- 9 G2BHN, G2DVD, G2FCL, G3BYY, G3FUR, G3OJY, G3SXX, G3UFA, G4LX, G8GF, GC3EBK, G13ONE, GM3DIQ, GM3LDU
- 8 G2BDX, G2DDD, G2XC, G3AEP, G3AGS, G3CCA, G3EKX, G3CBO, G3HCU, G3HWJ, G3KHA, G3PKT, G3MPS, G3URQ, G3VM, G5BM, G5BY, G8SB, GM3JFG

COMMUNICATION and DX NEWS

L. H. Thomas (G6QB)

THE topic of the month, judging by the mail, is "If the sunspots are so good, why have conditions been so bad?" Many of these letters, though, were written early in April, and from about the 14th onwards there was a huge improvement in the bands, which, at the time of writing, were showing what one had always imagined spring conditions to be.

Probably the usual seasonal variations were making the long-term effect of improving propagation, and one might even hope that good DX conditions are here to stay for a while. As conditions improve, QRM will increase—especially from that huge area of Eastern Europe.

There are other factors, of course. G3NWT comments "There seems to be a hefty time-lag between cause and effect, sunspot-wise." But he is rather scornful about all these predictions about what the next cycle is going to be like. He suggests that we should consider what a minute interval of time has been covered by the period over which records have been kept, or predictions made. "It's rather like predicting the future of the human race by peering at a couple of Victorian tombstones on a foggy night." And of course he is right.

If we could peruse sunspot records even for the period around 1066 we should probably be very surprised—and even that would *still* be an infinitesimal period of time, compared with the known life of the sun. Why, they haven't even found out, as yet, why there should be a cycle at all (or even sunspots, come to that).

Now for a completely different outlook. Those of us who get more and more impatient about what is loosely called "short-skip QRM" ought to consider what we really mean. *Abnormal* short-skip, from countries like France, Belgium and Holland, comes on the bands from time to time in the summer—even on Ten. This is accounted for by

abnormal propagation of various kinds.

But the European QRM that seems to be always with us comes from a distance of 1000 miles or more (a lot of it does, anyway). And a distance of roughly 1000 miles can be a perfectly normal first hop, at any rate during daylight hours.

Next part of the exercise, then, is to get out an atlas, find a convenient map of Europe, and draw a 1000-mile circle centred on London. To save you the trouble, here are the countries it will go through: Norway, Sweden, Lithuania, Poland, Czechoslovakia, Hungary, Yugoslavia, Italy, Spain and Portugal. If you now draw another one of 1500 miles radius (still quite a feasible distance for normal "one-hop" transmission) you will add to that collection the following: Finland, Estonia, Latvia, White Russia, Ukraine, Moldavia, much of the USSR (the circle almost passes through Moscow), Rumania,

Bulgaria, Greece and a sizable chunk of North Africa.

So it seems fair to say that nearly all of the European QRM which drives people frantic on Twenty emanates from those countries which are between 1000 and 1500 miles from us. There *are* times when the nearer ones can also cause QRM, but listen for yourselves and see how often you hear S8-9 signals from DL, OE, HB9, ON, PA and the like compared with those nearly ever-present monsters from HA, YU, YO, LZ, SP and the Russian states. Hardly short-skip really, is it?

We could go on and on about this, taking in the fact that some of the countries in the QRM belt are those who demonstrate themselves to be the source of the most uncouth signals on the band. No need to accuse them of radiating dirty signals—they exhibit the fact for all the world to hear. It's just our bad luck, that's all—even if they were a little

FIVE-BAND DX TABLE
(New Cycle)

Starting Date: January 1, 1966

Station	3.5 mc	7 mc	14 mc	21 mc	28 mc	Countries Worked
G3IGW	35	31	35	40	1	85
G3UML	29	25	140	55	33	164
G3UBI	25	5	26	10	2	49
G3PQF	22	18	2	4	1	35
G3IAR	16	25	32	20	1	59
G3UDR	15	2	35	14	1	55
G3LZQ	14	16	74	17	2	88
9V1LP	12	21	24	22	14	35
G13GTR	7	6	10	3	1	15
G3VDL	5	12	21	1	0	30
GM3RFR	1	3	43	7	0	45
G3NMH	0	0	128	39	23	141

nearer to us, we wouldn't be bothered so much by them. If they were farther away they would still make themselves felt—think of the UA9's, for instance.

So, in short, there seems to be nothing to do about European QRM except to improve receiving aerials and filter circuits. The CW fraternity are the worst affected, really, though, and what's the use of a 200-cycle filter against a signal that spreads over 5 kc anyway? We can only hope that an improvement in conditions will make some of the multi-hop stations much stronger than they are at present . . . then perhaps we can imagine that the QRM is not so bad!

Working Hours

The foregoing will perhaps strike home most forcibly to retired gentlemen, self-employed people and shift-workers . . . in other words, those who can be on the bands during daylight hours on weekdays. Their fellow-amateurs who work normal office hours are often inclined to envy them. "The bands are so crowded at weekends and in the evenings," they say; "it must be wonderful to be free to operate on weekdays." Not so hot, really—you simply see the very worst of the QRM, and even if you are at home all day, the early mornings and late nights still turn out to be the best times to come on.

Sometimes, when conditions are only mediocre, it is quite a problem to find a worthwhile band to settle on at, say, 2 p.m. on the average weekday. But once Ten and Fifteen are wide open, there will be no doubt any longer.

Final Final ?

Recent hard words about wind-baggery on the bands have produced interesting reactions. They include one letter that might be put in the "pleasantly rude" category, saying, in effect "You yourself are rapidly becoming the worst windbag of the lot . . . always on about this same subject." Ah, well—it shall be left alone (for a while); but not until two more brief sallies have been fired.

A doctor friend has sent the

following quotation from what he describes as "a serious scientific work": "Society's direst need is for a semantic filter—some transistor device that could be fitted by law to all human mouths, and would let through only those sounds which have real meaning. The resulting silence would be deafening."

And, to cap it all, the tear-off calendar in the shack obliges today with this one: "Blessed is the man who, having nothing to say, abstains from giving us wordy evidence of the fact" . . . (G. Eliot).

The Overseas Mail

Bob Snyder, 9VILP (whom we hope to meet in person by the end of the month) writes to say that he has eased off on his "SWL job" on Top Band. Conditions still seem to be good, but the QRN level has become exceptionally high, and the continued loss of sleep has been affecting his health. He also thinks the "big boys," having worked practically all the DX available, have reduced their efforts somewhat.

In the ARRL Contest he worked W6RW and W4BVV on five bands (the first on Fifteen to One-Sixty and the second from Ten to Eighty). All attempts to get W6RW on Ten, to complete the six bands, failed; but it was while trying to get him that he worked W4BVV. Three other Stateside contacts followed—Bob's very first QSO's with the U.S.A. on Ten. Incidentally, he has now joined the Five-Band Table (new cycle).

Mike Matthews, ZB2AM, also enthuses about Ten, on which he worked a load of stations during the Easter weekend, 1700-2100 GMT. He says the band is open every evening, and only needs more people to activate it . . . now that Twenty and Fifteen are both such a mess, Ten is ideal for good solid QSO's with little QRM (even with his 90 watts p.e.p. and a long wire). Stations worked include TG9EP, VP6JC, VP2LS, ZD7IP, VP2AZ, XE1CK, ZD8WZ, VQ9TC and a horde of Africans and South Americans.

Ham Whyte, VE3BWY, claims to have dreamed up "the most stupid

FIVE-BAND DX TABLE

(All Time)

Station	3.5 mc	7 mc	14 mc	21 mc	28 mc	Countries Worked
G2DC	112	170	317	291	170	329
G13VJ	83	103	319	263	181	325
G3IGW	74	118	157	134	123	195
G3KMQ	55	101	212	99	10	237
G3PQF	44	56	39	25	8	83
G8DI	43	74	140	98	67	161
G3UBI	42	10	79	22	10	103
G3NOF	39	34	268	193	132	285
G3UDR	37	28	74	116	4	146
G3UML	33	50	203	102	47	219
G3LZQ	27	55	138	116	54	186
G3IDG	18	27	54	71	60	102
GM3RFR	15	38	100	54	7	115
VP8HJ	11	26	173	56	8	177
G3RJB	2	50	113	26	11	120

and infantile idea for those who are tired of collecting certificates *ad nauseam*." What he boldly calls "the most puerile of them all" involves collecting Handles, with attractive awards for "One Hundred Vlads," or "Five Hundred Bobs" and so on, without limit. Stickers, suggests Ham, should be in the form of the handle of a shovel, or perhaps a baby's spoon. "Isn't it horrible?" he asks.

W4WFL/WA2WOR says he too is horrified at the favouritism and commercialism now rampant in what was once his favourite amateur activity—chasing DX-peditions. He finds that a Jekyll-and-Hyde transformation occurs among many of the 'chasers when a new one shows up. Signals become much stronger, lung-power goes up, and the general behaviour no longer fits "the mid-twentieth century man sitting before his rig." He feels that, in the U.S.A. in particular, Amateur Radio is fast becoming a status-symbol, along with the split-level ranch house and the annual holiday in Europe. The public image, however, is far from good, and the mass of TV viewers look upon amateurs as a very odd lot, who don't produce much, or contribute much to the art or the benefit of the country.

W2GT reports that George, ZD7IP, now has a 3502 kc crystal and has already worked five continents up there. He and ZD7RH also mounted a joint assault on Top Band, and raised several W's, but were discouraged by the terrific static level. Europeans were heard, but couldn't possibly be identified through the fearful row. Ed (W2GT) himself has got his beam up to 50ft. and finds a great difference in the ease of working DX—and he's delighted to find Fifteen and Ten improving so fast.

One of the ops. of VS9MB (P. S. Mackenzie, now at Horsham) writes to say that the disposal of beer-cans became such a problem out there that they actually built a folded dipole (vertical) with two stacks of 21 cans each. The insulation for the central feed point was a sheet of cellophane, the feeders lengths of fuse-wire! The only solder used was at the plug into the transmitter, and cans from G, OZ and 9V1 all fitted neatly into the



Nigel Dunn operating as MP4TBM/P from Jebel Faiya, about 100 miles inland from Sharjah, Arabian Gulf. The original intention had been to get into HZ1, but this was not possible because of the very bad condition of the track — soft sand in dunes up to 250ft. high, with the long-range desert Land Rover constantly getting stuck. Though given its place name on the desert maps, Jebel Faiya consists of no more than about a dozen palm trees, between two of which the dipole was slung. Operating 20m. Side-band, 115 QSO's were made using conventional gear — this meant that the Land Rover engine had to be kept running all the time the station was on the air, as the battery load was about 45 amps.! If you heard or worked MP4TBM/P, these were the conditions. The rifle was there ready and loaded in case of marauders or too-inquisitive visitors, on two legs or four!

pile . . . not much DX worked, though, as after the only QSO, with WA1CAW/MM," some twit knocked the structure over and it was not rebuilt." The disposal problem remains.

Where Are They ?

GM3IAA is intrigued by the mysteries of the UA9's, shown in the Amateur Atlases and Zone Maps as being in Zones 18 and 19. QTH's passed over the air to him have revealed some in Zone 17, and one even in Zone 16 (UA9KWA in Ufa). Many of them give their QTH as "Ural," which is certainly not in Zone 18 or 19. What goes on? Maybe the Russian authorities are simply issuing UA9 calls to stations outside their former territory. Has anyone any further gen.?

Awakening of Ten Metres

It is very fascinating to watch the slow, but inevitable improvement in the Ten-metre band these days. Success breeds success, and when a few dozen stations have actually found that they can make QSO's

on the band, the thing will snowball—in fact there are distinct signs that this is happening already.

The three big contests (ARRL, BERU and CQ SSB) have all provided an incentive to take a look more frequently, and we hope this habit will continue, irrespective of contests. Ten-metre beams will be sprouting everywhere, once the word gets round that it's worth while.

G3NOF has heard a few W's working Africa and South America, but they have been weak. He booked in KP4BKW, 9J2VX, 9Q5FF, CE, LU, EL, ZE and ZS, and heard VP8CW, VQ9TC, ZD8HL and 8WZ—all SSB.

G3UML worked CR7IZ, ZC4GB and PY5ASN on CW; SSB gave him many more contacts, among the best being ZP5KT, VP8CW, ZD8WZ and 8HL, two KP4's and a huge list of LU, PY, CE and African QSO's, the whole lot covering about 33 countries. "Dead band, my left foot!" he says.

G3NMH was another to have a very successful foray on 10 metres.

After reading last month's Editorial (there *are* those who do!) he QSY'd to Ten for working a local mobile, when in came ZS1JA, blasting through at 5 and 9. And this was on a "dead" band, too. During the month he raised four different EL's, 9Q5, two W's, YV's, ZD8's, VP8CW and all the more usual African countries.

G3LZQ worked ZD7IP and 9J2DT on CW; several others mention CR7IZ and a 9Q5, same mode; and the results of the SSB Contest will be very interesting.

Top Band Topics

Straight from Ten to One-Sixty, with a long letter from the most-sought-after-man-on-the-band . . . who else but ZL3RB? He says that his March sked produced worthwhile and interesting results, and resulted in two-way QSO's with seven G's: G3CFV, 3PU, 3RFS, 3RPB, 3SED, 3SVD and 3UQD. Others were heard, but *none* after March 20. VE2UQ and WA1CAG were heard but not worked, and all activity peaked between 0620 and 0700z. An SWL report was received on a DL1FF/ZL3RB contact that didn't happen.

ZL3RB makes one request: "When I send 'QRZ?' to a DX station, I don't want to hear my own callsign over and over again—I want *his!*" Only common-sense, but how often it fails to register. Final note: He wants to thank all those who co-operated, successfully or otherwise, and hopes to try some 1800-1900 skeds some time.

G2NJ reports QSO's with GM3TKV/P (the Moray Firth club) operating from Ross and Cromarty, also GD6UW (Cambridge University) and GW3PWU/P in Radnor . . . G3UBW managed 9HIAE for his 19th country . . . G3SVD raised VO1FB and WIHGT, but his ZL3RB contact was the prize.

G3TTK now has a half-wave at 65ft., and has been trying out verticals at the same height . . . G3UQD had an aerial (half-wave) 80ft. high, suspended between a cinema and his top bedroom in a block of flats. This brought him ZL3RB, a report from 9VILP and some W contacts of which the best was W8HGW. He hopes to be back

Reporting the HF Bands

next winter with "an even better aerial system." By the way, he used a K.W. "Valiant" for all the DX.

G3NJQ (Norwich) will be back on the band soon, and anyone still wanting Norfolk is invited to call him . . . G3IDG says his latest count of the number of possible countries on Top Band is 94, so maybe the century will be possible by the end of the year!

The G3T -- and G3U -- Ladder has come to life at last. G3TXZ and G3UBW were praying for some competition apart from their own little private feud . . . now they've got it.

Stew, W1BB, sums things up by saying that this season was the best ever, despite patches of poor conditions on test and contest weekends. He was especially pleased by the way the "First Timers" nights went, and at the way some pretty spectacular new countries showed up. Stew retires (not from Top Band!) in October, and goes on a long trip to the Far East, returning in January 1967, in time for the CQ 160-metre Contest.

As his mail during a busy season used to run as high as sixteen letters a day, he appeals to people *not* to write to him between September 1966 and January 1967. (He wants to be able to open the front door on his return.) But we'll be hearing more of him before then.

General Chat

G3HAL has received a card from W6OXJ for an 80-metre QSO. Alas—he would have been very pleased if the contact had ever taken place! It's someone else's property, but whose?

G3NMH says that several VPI's have asked him to try and locate ex-VP1TA, who returned to the UK some time back and has never been heard of since. Short of putting up "This Man is Wanted"

posters, he can't think of a better medium than these columns.

Members of the Limerick IRTS will be operating from Clear Island, off Co. Cork, during the Whitsun weekend, signing EIØR. All bands, all modes, Eighty to Ten and also Two metres CW and AM. QSL's *via* Terry Deegan, 2 Casement Avenue, Janesboro', Limerick. (Thanks to EI3AV for the gen.)

G3VDL is ex-MP4BBE; he fired up just before Easter, using the same home-brew 50-watter with two dipoles at only about 15ft., and already has worked VK, JA, UWØ and WAC into the bargain. He says contacts are harder to get than from Bahrain, but give more satisfaction. He has some MP4BBE cards left, and will deal with any applications, through bureau or direct (*see* "New QTH's," p.177, for address).

G3IAR, who was a former ZB1, puts exactly the reverse point of view. He says it took him over a year to get a DXCC from Malta, but now he's more than halfway there in six weeks, and it seems about five times easier. Must be conditions!

VK3AAR, who is ex-G3NKD, left the U.K. in December 1964 but has not yet got on the air. He hopes to catch up with recent developments (*via* the Magazine, he says—what else?) and then to show up on the bands once more.

5X5AU (Kampala) writes yet again to tell us that the only legitimate amateurs in Uganda at present are the following: 5X5AU, 5IH, 5JK, 5KD and 5FS. 5X5KRL and 5IU, who *were* genuine, have left the country. He gives a long list of pirate calls (even including a "VQ5X") and says they are all operating from *outside* Uganda, and may be in the Congo or thereabouts. He remarks that if no one would work these parasites, they would just pack it in.

G3NWT touches on the Phone/CW argument thuswise: "I think the

change in attitude to CW (from being the easiest mode to the hardest one) arises from the experience that the average type still on CW is keener and tougher than of old. He is still on it because he has something to demonstrate, namely that skill and operating technique is either inborn or takes years to develop. By comparison the skills and techniques of AM and SSB, apart from everyday common-sense, can be acquired in a short space. This from an admitted lip-artist, myself."

G3IDG suggests that the two modes have much in common; that there are as many poor Phone operators as brasspounders; that it's good to have something which is always open to improvement; and that those people who never improve their code probably wouldn't improve their Phone technique either. And that, of course, brings us to the fact that what sounds like bad operating to one person may be agreeable to another, because *he* does similar things. Slow Morse may sound "poor" to the high-speed operator; fast equally poor to the 12 w.p.m. man. (Certain kinds of Morse sound frightful to *anybody*, but we won't labour the point.)

Twenty Metres

All of a sudden, it seems, practically everything has started happening on Twenty. An account of all the chasers' doings would develop into one of those pages full of call signs which we long ago resolved not to perpetrate any more.

TOP BAND LADDER

(G3T-- and G3U-- stations only)

Starting Date, January 1, 1966

Station	Counties	Countries
G3UAN	64	13
G3UBW	57	16
G3TXZ	55	11
G3UTS	54	10
G3TTK	43	12
G3UMK	39	7
G3UCS	36	?
G3USE	24	3



In the August, 1965, issue, on p.368, we published a letter from John Colbert, G3TZY, 132 Coldnailhurst Avenue, Braintree, Essex, describing how he had got his start in Amateur Radio, as an active hobby for retirement. Now aged 70, G3TZY was a wireless operator R.N. in the Kaiser's War, and a radar technician R.A.F. during Hitler's War. Here he is with his gear and, as the result of a recent DX contact, he is to go out to Lusaka, Zambia, in June for a three-month holiday.

However, a few of the more choice pieces should be quoted.

Bob Miller (W9WNV) showed up from Minerva Reef, signing 1M4A, on SSB, and was immediately swallowed up by the very strong Midlands gang (G2BOZ, 3DO, 3FKM, 3HCT and 3HDA) plus G3UML, G8KS and GW3AHN. He was bound from there to Maria Theresa (FO8M) and has doubtless been besieged once more.

G3NOF reports the band open from 0500 until 0100! He raised 1M4A, too, along with other Pacific DX and some Far East stuff, and reports the 0600-0800 period crammed with long-path VK's at S9—KJ6, KM6, KS6 and the like.

G3UML made 542 QSO's in the SSB Contest, but found the European QRM making things very difficult on Twenty. He says "No matter what time I get up, the band is

already open, and it closes later every night." He has heard Japan at 2200, worked a VK at 2330 and South America at 0030, and his full list of DX reads like a small call book.

G3ABG (whose son is now G3VBG) helped to put the Cannock Chase club station on the air, signing G3VCC/A, and they collected 65 countries in ten days (mostly on 14 mc). G4CP was also in on the act, and when the club station makes full use of its space and puts up a rhombic, things will surely happen up there.

GM3JDR's list of DX worked on SSB and CW shows that conditions in the Far North are not so different from those in other parts of the country. (If anything, they seem to rake in more Far East and not so much Pacific stuff.) With only a doublet, GM3JDR has

worked a formidable array of DX.

G2DC says he has never known propagation so changeable; he found the various Contest weekends marvellous, and raised an all-time new one (VKØMI, Macquarie).

G3NMH is another one with a terrific list of SSB DX on the band, although he doesn't appear to have been on in the early mornings. However, with ZL's at 2145, Caribbeans (TG9, VP2, 6Y5 and so on) in the earlier part of the evening, DU and HS in the afternoon, and so on, who can grumble?

G3LZQ, with no beam and only 11 days on the air, found things uniformly good and worked CW with KL7's, VK, ZL, 9V1, VS9, TT8, HI8 and other all-time new ones. And he was active on all the other bands as well.

Several others mention odd pieces of DX on Twenty, in the course of letters covering the other bands. No space to mention them all this time, but their letters are appreciated, just the same.

Fifteen Metres

Apart from Ten, which must be regarded as "band of the month," *Fifteen* has shown the most worthwhile improvement. The occasional appearance of rare Pacific DX in the mornings has cheered it up no end. Still the Africans, Caribbeans and South Americans seem to predominate, but you never know when something good may turn up.

From all the letters covering the band we will select a few of the more interesting DX contacts. G3NOF heard 4S7IW on SSB (1100) and worked MP4BFR, ZD7RH and 9Q5DL, same mode. G3UML's bag included a load of JA's, VK9GN, YA1AW, 9M2DQ, XW8AZ, VK's, KR6's, ZD8WZ, HC, ZP, VP2's and others—all SSB.

G3VCC/A raised many JA's, lots of Africans and PY7ACQ/Ø (Fernando). G2DC remarks on the strange QSB that sometimes occurs on Fifteen; in the middle of a QSO with W5IGJ, 569 both ways, signals from both ends shot up *suddenly* to S9 plus, causing Frank to say "Some guy must have pulled the propagation switch!"

G3IGW represents the CW brigade

with CE, CP, VQ8AW, XE1OE, ZD7IP, ZP5LS, 7G1A and 9Y4LZ among the better ones. G3NMH and G3LZQ also had goodly lists of assorted DX, and many others casually mention a few African and South American contacts as a matter of routine.

The pleasing fact is that *no one* is now grumbling about any shortage of DX on Fifteen, and it's certainly more pleasant to work it, the European QRM being so much weaker.

Forty and Eighty

The LF bands have been well and truly eclipsed this month, except for One-Sixty, which is more a way of life than a band. G3LZQ reports working 6Y5XG on Forty and ZB2AM on Eighty . . . G3JUX worked Eighty for a bit with a home-brew 13 watts, and got out as far as a UJ8 (his first on any band) . . . G3IGW, on CW, winkled out OY2H, TF5TP, VP9BO, 5N2AAF, 6Y5BB, 9A1TAI and 9H1R on Eighty; VS9LU and 9MP, ZD7IP, 6Y5XG, 9J2DT and 9V1LP on Forty.

G2DC says he found the ZL's, on Eighty, peaking at S8 between 0630 and 0700 during the ARRL Contest. Although he was chasing W and VE, quite a few contacts resulted, and the long wire is being kept. G3UML (SSB) raised OHØNC and two VO's on Eighty, plus a curious one—GM5ABY/DJ5DT (in the Shetlands, of all places). On Forty he collected PY, VP6KL, W1FZJ/KP4 and a few others.

The fact of the matter is, though, that with all the other bands buzzing like a beehive, not many of the keen 'chasers will stay around Forty and Eighty much longer. Next winter may see them back, though.

Sundry Shorts

G3UMK has been receiving cards for dates before he was on the air. Anything prior to August 12, 1965, should be addressed direct to the pirate! . . . Lloyd, W6KG, and his wife, Iris, have received their U.K. licences, G5ACH and G5ACI respectively. (Lloyd has held about a hundred other calls all round the world, but here is his "G" at last)

. . . EL7B/MM was a pirate station operating on Eighty and One-Sixty at the time that the real EL7B was in Italy. While in Liberia, he was on Twenty SSB only.

G3GJL (Worcester) say that they appreciate those people who join in contests "just to give the boys a point" . . . *they* are among "the boys," and they write in the plural because the club station is operated by G3NUE, 3RMF, 3TQD, 3TQZ, 3UCO and others.

G3JUX joins issue with the reader who had been licensed for many years but had only 2000 QSO's to show for it, since he himself was licensed in July 1954 and hasn't yet reached his *first* thousand . . . G3UYY asks what formalities are necessary for joining the Five-Band Table. The answer is "None"—just send your score in, in the form you see it printed each month . . . G3IDG wonders how the average operator's "percentage efficiency" goes, in the shape of new countries *worked* compared with those *called* (or prefixes, or countries, or whatever you are collecting). His own appears to be about 25 per cent.

To Net or Not to Net

This old subject still comes up. G3PQF suggests that G3UBI had an unfortunate experience, because it was more of a "DX sked" that he joined in, rather than a net open to all.

GW3MTL admits to being a regular member of one of the "big nets" (80-metre DX) and puts his point of view. When a DX station does appear, all the net members can work him quickly, and it's the height of selfishness to try to start a ragchew (unless the DX station wants it, and QRM allows). If there is one outstanding signal among the net members, it's fair enough to let him handle things, provided that the others are content to wait and *keep quiet*, knowing that their turn will come.

He adds that no favours are shown to the "big boys"—whoever calls into the net is brought in on any possible DX contact. The whole thing, he says, is cleaner than a free-for-all brawl, but it's no good anyone joining the net if his receiving equipment isn't up to scratch. If you

can't hear 'em, you can't work 'em, and you just get in everyone else's way. Nets keep QRM down, QSO rate up.

DX Gossip

XPIAA, a new prefix, showed up from Thule, Greenland . . . FW8RC (Wallis Is.) is using the gear left behind by the ill-fated Ted and Chuck before they sailed on their last voyage . . . VQ9HB (Harvey) may be selling his boat and his plantation, and may settle down in ZD7 or ZD8. If he does visit Des Roches he will have to go alone.

W9WNV, signing 1M4A from Minerva Reef, made nearly 2000 QSO's during his weekend stay . . . WA7EZW/KH6 is on Kure Is., not Hawaii . . . Gus, W4BPD, is reported to be planning another trip, probably in July . . . HK0AI/P was a DX-pedition to Providencia Island, new for IOTA but not for DXCC.

VS9PRV was on Perim Island, mid-April; VS9PCZ was also reported thence . . . PJ5ME and PJ5MG have both been active from Sint Maarten . . . ZF1AA is the first Cayman Is. station to use the new prefix . . . KJ6CE and 6DA are both very active on Twenty SSB.

Sign-off

Between the writing of the first and last paragraphs of this offering,



Scene: The 80-metre band after dark. Operator has just been asked to shift 1½ kc to clear the QRM.

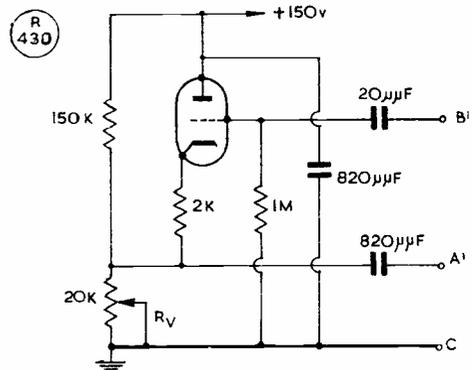
conditions have improved quite amazingly—who would have expected KS6, 5W1 and VR2 on *Fifteen*? There are still off days, but on the whole things look very promising. Let's hope they stay this way until the next deadline, which is first post on **Monday, May 16**. Address all your news,

opinions and gossip, as always, to "Communication and DX News," *SHORT WAVE MAGAZINE*, Buckingham, England. Please try to avoid long lists of stations worked, but by all means quote the very best of the DX, preferably with times. Until next month, then, Good Hunting, 73 and—BCNU.

CREDIT WHERE 'TIS DUE

It has been pointed out that the front-end Q-multiplier circuit shown on p.733 of our February issue is, in fact, due to W1DX, and has been copied into various publications. We did not know this when the piece was reproduced—and it is interesting to know that it can work, very well. The slight qualification is necessary because we have since heard from W0JVD, of Boulder, Colorado, who explains that actually the circuit can only perform Q-multiplication if the A and B points in the Rx are out of phase with one another. As W0JVD puts it "This would seem, *a priori*, to give a 50/50 bet on success-failure with an unknown receiver input." The circuit as now shown will perform when that on p.733, February, will not, and *vice versa*. In this arrangement, points A and B are in phase. So, thank you W1DX, G3DWW (who brought the idea to notice in the first place) and W0JVD—and we shall be interested to hear from

readers who try it out. In these days, *anything* that will improve Rx performance is worth trying.



PROGRAMME OF MOBILE EVENTS

By the time this appears, the Mobile Rally season will have opened, with the events at Trentham and Rochester. Some more dates have been notified and the full programme—so far as we are at present advised—is now as follows:

May 8: Thanet Radio Society Mobile Rally, cliff top, Pegwell Bay, Ramsgate, with talk-in on 160m. (G3DOE), 4m. (G3JMB), and 2m. (G3BAC). The attractions are the sea (and perhaps the sunshine!), and a display by Royal Signals, T.A. Refreshments will be available on site.

May 22: Annual Amateur Radio Mobile Society Rally at R.A.F. (U.S.A.F.) Station, Barford St. John, near Deddington, Oxon. There will be talk-in by GB2BR on 1981 kc, and by G3NMS (remotely located on high ground) on 145-125 mc, with G3SLM/A also on two metres at Barford. An SSB station will be operating on 20/80m., looking for contacts further afield. There will be a big trade exhibition, a tombola, musical entertainment and a traction-engine display. The exhibition is being organised by Fred Barns, G3AGP, and the hon. secretary, A.R.M.S., is: Norman Fitch, G3FPK, 79 Murchison Road, Leyton, London, E.10.

May 30: (*Whit Monday*), Saltash & District A.R.C. Mobile Rally and exhibition at Calstock, near Saltash, Cornwall, NGR SX.437685, with talk-in on the 2-4-80-160m. bands (GB3SAL) and a DX station operating on 20m. Free admission, hard standings for parking, refreshments, prizes and competitions for visiting mobiles, prize draw, an equipment display including DX/TV demonstra-

tion, and free boat trips on the river. Further details (s.a.e.) from: D. Bowers, hon. sec., SDARC, 95 Grenfell Avenue, Saltash, Cornwall.

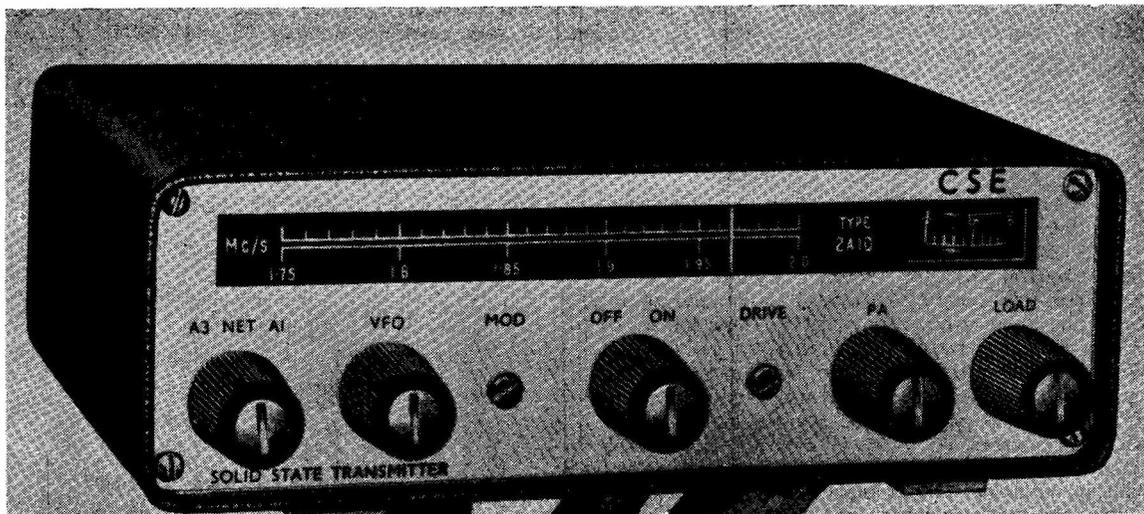
June 5: Pembroke & District A.R.S. annual party at the Regency Hall, Saundersfoot, Pembro., with talk-in on 1876 kc and two metres. Events include a D/F contest and (tide and Wx permitting) a boat trip round Caldy Island, also /M rig competitions, and a £5 prize for the amateur making the longest journey for the Rally. Further information (s.a.e.): J. Allen, GW3TUD, Coles Corner Café, Saundersfoot, Pembrokeshire.

June 19: Northern Amateur Radio Mobile Society's annual Rally at Harewood Park, near Leeds, opening at 12.00 noon, with talk-in on 160m. by G3OGV/M and on two metres by G3GJV/M. There will be the usual competitions and raffles, as well as a number of trade stands, with refreshments available on site. Details from: D. Binns, G3MGI, 80 Gipton Wood Road, Leeds, 8.

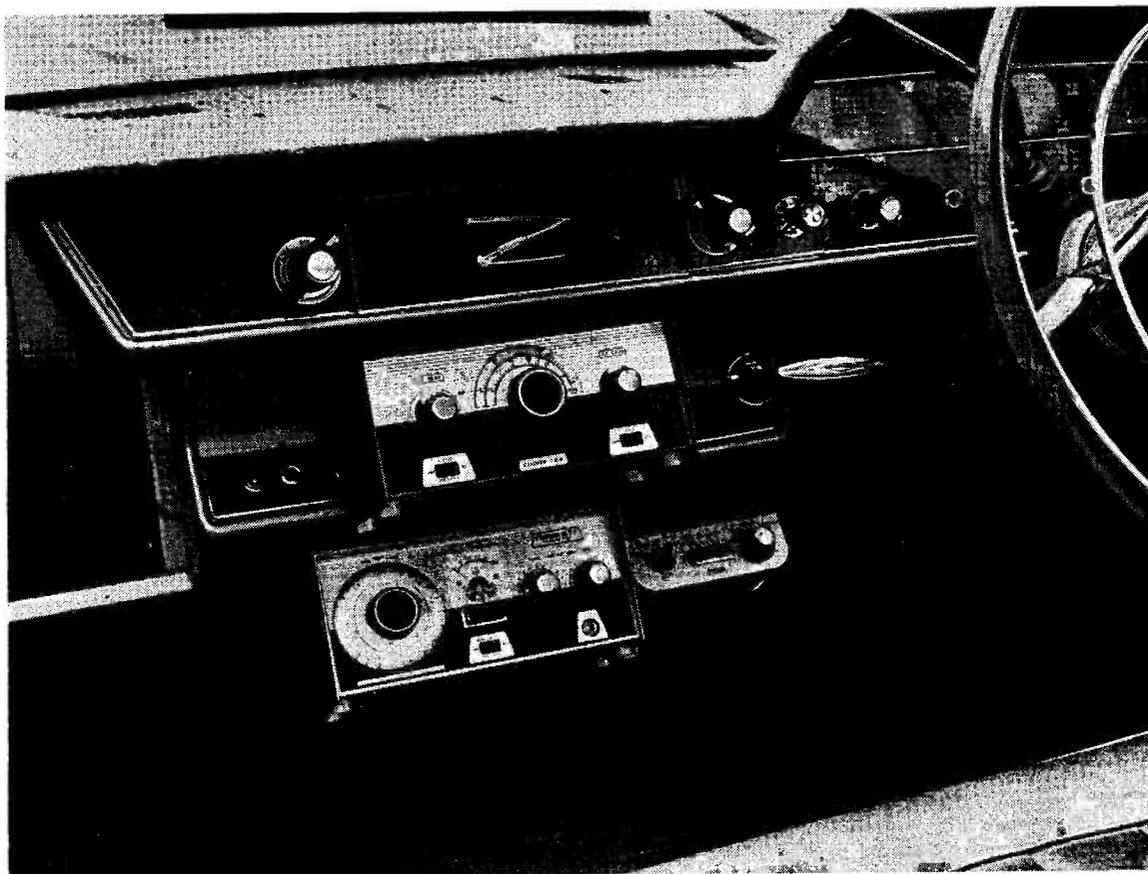
June 26: Hunstanton (Norfolk) bucket-and-spade party, meeting on the sea-front. Details from: J. G. Taylor, G3SAW, 42 Station Road, Heacham, Kings Lynn, Norfolk.

June 26: Ninth annual West of England Mobile Rally at Longleat House, near Warminster, Wilts. (where the lions are now in residence), with talk-in on the 2-4-160m. bands. Information: J. Thorn, G3PQE, 6 Plumtree Close, Winscombe, Somerset.

July 10: Wessex Amateur Radio Group Mobile Rally at Hurn Airport, near Bournemouth, in conjunction with the British Aircraft Corporation Radio Club. There will be plenty to see and do,



The new 2A10 solid-state transmitter works directly off a 12-volt car battery, drawing just over 1 amp., and runs the full 10w. input on Top Band, AM/CW. It is attractively finished, is light and compact, and will shortly be accompanied by a companion Rx, to give fully mobile working on 160m., with the utmost economy of space and in current loading. The 2A10 is priced at £43 7s., with a tuned whip and lip microphone as optional extras, and is a professionally designed and manufactured product.



The well-known Codar range of amateur-band equipment is now completed by the introduction of their new T28 transistor receiver for 80-160m. Illustrated is the compact "Coda - Mobile" installation in a Ford Zephyr. The T28 is shown above the AT-5 12w. Tx (also covering the 80/160m. bands) and at lower right is the remote control unit. The "Codar AT-5" was discussed in our August 1965 issue.

as this is also the B.A.C. Open Day. For information apply: W. G. West, G3MKN, 23 Palmer Road, Poole, Dorset.

July 10: South Shields (Co. Durham) Mobile Rally (*details later*).

July 17: Worcester & District Amateur Radio Club Mobile Picnic (*details later*).

July 24: Cornish R.A.C. annual Mobile Rally at Pentire Headland, Newquay, Cornwall, opening at 11.00 a.m. with talk-in on 2-80-160m. Close to safe and sandy beaches, with adequate cover if wet. There will be an equipment display and what are described as "sideshows." Details from: M. J. Harvey, Oak Farm, Carnon Downs, Truro, Cornwall.

August 14: Derby & District A.R.S. Mobile Rally, at Derby (*details later*).

August 28: Bromsgrove & District A.R.C. Mobile Picnic (*details later*).

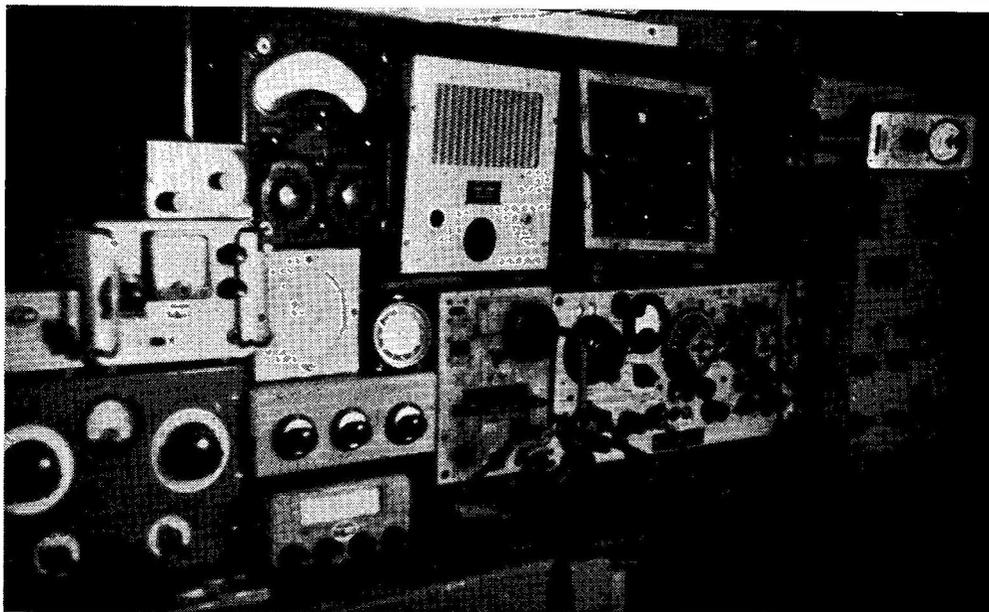
August 29: (*Bank Holiday*). Peterborough Mobile Rally, with talk-in on 1980 kc and the 2-4m. bands. Plenty of free parking and picnic space, on the river bank. Information from: D. Byrne, G3KPO, Jersey House, Eye, Peterborough, Northants.

September 4: Swindon & District A.R.C. Mobile Picnic at Lidiard Park, just outside Swindon, Wilts. (*details later*).

September 11: RSGB booking, Woburn.

September 16-18: International Amateur Convention and Mobile Rally at Knokke, Belgium, with three-day programme of meetings, demonstrations, parties and tours, at all-in prices. Further details later. U.K. amateurs will be able to obtain full information in due course from: J. C. Foster, G2JF, Wye College, near Ashford, Kent.

September 25: Harlow Mobile Rally.



THE OTHER MAN'S STATION

G3UDW

THIS station—G3UDW, owned and operated by Peter Williams, of 108 Leeds Road, Barwick-in-Elmet, near Leeds, Yorkshire—is probably unique, and for two reasons: It is built into the space above the driver's cab of a large commercial vehicle, because its owner is a travelling showman! So the call is usually signed G3UDW/P, either from winter quarters near Luton, or when on the road going round the fair grounds in the summer. G3UDW is also /M in a mini—and, indeed, tells us that though he has been licensed for a year, he has never yet operated from his home QTH!

Interested in Amateur Radio for many years, it was not until he got married and a nephew came in to help with the business that he was able to get down to the R.A.E. and the Morse Test. (And having seen G3UDW through all this, said nephew has gone off to become a B.B.C. engineer.)

The family has a long tradition in the fair-ground business, for G3UDW's great-great grandfather was the first travelling showman to have a mobile electric generating plant on a fair ground. G3UDW himself is interested in all sorts of electrical ploys apart from Amateur Radio.

Gear in view consists of a Top Band transmitter, with transistorised PSU, and the 160-metre receiver is also a transistor job. Other items include a 22 Set, a Canadian 52 receiver, field strength meter, Avometer, Class-D Wavemeter, audio oscillator, and absorption wavemeter—all packed into that space you see in the picture.

G3UDW's great interest is Top Band, and aerials for 160 metres. He has tried numerous types and is now thinking of testing a Big Wheel (as built by a showman friend) to see whether he can load it up, the next time they meet at a fair!

His own portable generator gives 110v. DC at 200 amps. and, says G3UDW, "You have to hear the QRM at a fair ground to believe it"!

NOTICES

The Northern Radio Societies Association, following the success of last year's event, have again booked the Exhibition Hall at Belle Vue, Manchester, for their second Convention, this time for the two days Sat.-Sun., September 3-4. Detailed plans will be announced at a later date.

* * *

The Ninth Jamboree-on-the-Air, the annual Scout DX/QSO Party, will be held over the weekend October 22-23, from 0001z on the Saturday to 2359z on the Sunday. It is hoped to make a special effort to have more CW operation on the HF bands, as in some countries the rule for young operators is CW-only for a probationary period.

* * *

This year's Instruments, Electronics and Automation Exhibition—an international exposition of increasing importance, at which an even larger number of firms will be represented—is to be during May 23-28, at Olympia in West London.

THE MONTH WITH THE CLUBS

By "Club Secretary"

(Deadline for May Issue: June 13)

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

LAST month's brief note about Clubs and Lecturers has brought some response which clearly demonstrates one thing: That there are plenty of clubs who want speakers, but very few speakers who are willing to volunteer!

However, they may come forward when they read what the clubs want, and we summarise the various postcards herewith:

Mid-Warwickshire want details of lecturers on any subject, and are prepared to pay "reasonable travelling expenses." *Cheshunt* need a speaker for their meeting on June 3 (preferred topics are Aerials, Receivers, Transmitters, SSB and Constructional Work). They will pay travelling expenses up to £1. *Norfolk* are particularly interested in talks on DX-peditions and Travel; in fact almost any subject *except* Aerials. They, too, will cover travelling expenses and extend the usual hospitality.

On the other side, **G3JIX** (*QTHR*) would be glad to hear from any clubs who want talks on Aerials, Test Equipment, SSB, Receiver principles and such subjects as TV, Pulse Techniques, Transistors, and his own speciality, Youth Work in Amateur Radio (formation of groups, clubs, and so on).

The *Northern Heights* A.R.S. offer to lend W1BB's tape-lecture on Top Band DX (3½ i.p.s. tape and 2in. by 2in. transparencies) provided that all reasonable care is taken of the tape and slides and that the club borrowing it will pay registered postage. (If they care to make a small donation towards the expense of having it copied from the original, that will also be acceptable.)

So that is the score to date, with doubtless more to come. We will keep readers posted month by month, and leave them to make their own arrangements among themselves. *We* supply the information; the action is up to *you*. And so to the Activity Reports, arranged, for once, under district headings.

THE HOME COUNTIES

Acton, Brentford & Chiswick have arranged a special talk on "Transmitting for the Beginner," complete with demonstration. This will take place on May 17, at their Hq., 66 High Road, Chiswick, 7.30 p.m., and visitors will be welcome.

The next meeting for **Brighton Technical College** (no details given) is on May 18. On June 1 they hope to arrange a talk-demonstration by Codar Radio

Ltd. **Chiltern** will be discussing their NFD arrangements, and will also see a BP film on the Expedition to Antarctica for the IGY, on May 26 at the British Legion Club, St. Mary Street, High Wycombe (7.30 for 8 p.m.).

Civil Service will have two May meetings (on the 3rd and 17th) at the Science Museum. The first will deal with Simple Test Equipment—Construction and Use (with demonstration and film). The second will be informal.

Crawley held a very successful dinner-dance, with a capacity crowd of 93 attending. G2BVN presented the Constructional Prizes to G3PHG and G3TIR, and a special prize to Mrs. Beatrice Braint, both for her competition entry and for the help she had given to a handicapped member. (Crawley now have three YL's on their roll.) Next main meeting, May 11.

Drinking report an excellent talk by G3OVS on Aerials and ATU's, and congratulate two of their members on becoming G3UZW and G3UZX.



At the recent Crawley Amateur Radio Club dinner, when YL Beatrice Braint was presented with a special prize for her entry in the constructional contest and for her contribution to the success of G3TNJ (a handicapped member) in getting his ticket. The Crawley boys are particularly proud of Mrs. Braint, one of their YL members, who started with Amateur Radio in her silver years.

Maidenhead also had a talk on the same subject, by G3CAZ; their next meeting is on May 17, and will be an "open" one—in other words, a chance for a ragchew after all the recent series of more formal meetings. June 21 has been fixed for their next Junk Sale.

North Kent will be holding their AGM on May 12, at the Congregational Church Hall, Bexleyheath, 8 p.m. **Purley** report a record Junk Sale, with an attendance of well over 40, on March 18. May 6 and June 3 will be two informal meetings, with NFD arrangements to the fore; on May 20 their chairman, G3GKF, will give a lecture-demonstration on SSB, and on June 17 the AGM will be held.

South London Mobile Club will meet on May 7 for a ragchew, followed by a talk and demonstration of radiotelephone equipment, by G3TYR. May 21 is the date of their weekend camp, during

which they will operate talk-in stations at Barford St. John (May 22).

Surrey (Croydon) held their AGM on April 12, and they report that their last meeting (a Junk Sale) was once more a great success; they recently suffered a sad loss in the death of one of their very active members—"Bing" Crosbie, G3NMQ. (This was reported more fully in last month's issue.)

Wimbledon have two talks coming up—one by G3OLM on Quartz Crystals (May 13) and one on International Amateur Radio by G6CL (June 10). **Shefford** invited the Bedford club to a recent meeting and recorded a very good attendance. They continue weekly meetings and will welcome both visitors and new members.

Maidstone YMCA, at their AGM, elected G3ORP chairman, G3ERY secretary (see panel for QTH) and G3REM treasurer. They report a good financial

Names and Addresses of Club Secretaries reporting in this issue :

ACTON, BRENTFORD & CHISWICK: W. G. Dyer, G3GEH, 188 Gunnersbury Avenue, London, W.3.
 A.E.R.E. (HARWELL): V. J. Galpin, Building 347.3, A.E.R.E., Harwell, Didcot.
 A.R.M.S.: N. A. S. Fitch, G3FPK, 79 Murchison Road, London, E.10.
 ASHTON: R. Higginbotham, G3VDS, 1 Bankfield Cottages, Woodlands Drive, Woodley, Stockport.
 BRIGHTON TECHNICAL COLLEGE: R. A. Bravery, G3SKI, 7 Cope Hill, Brighton 5.
 BRISTOL: E. J. Davis, G3SXY, 72 North View, Westbury Park, Bristol 6.
 B.A.T.C.: N. Hampton, G6OUH/T, 19 Grove Crescent, London, N.W.9.
 BROMSGROVE: J. K. Harvey, 22 Elm Grove, Bromsgrove, Worcs.
 BURY & ROSSENDALE: A. Cooper, 411 Holcombe Road, Greenmount, Bury, Lancs.
 CAMBRIDGE: F. A. Porter, G2CDX, 37 Metcalfe Road, Cambridge.
 CANNOCK CHASE: J. A. Reynolds, G3PTO, 2 Ashfield Road, Wobaston Estate, Wolverhampton.
 CHILTERN: G. Leonard, 13 Priory Road, High Wycombe.
 CHIPPENHAM: A. Hargreaves, G6NV, 20 Lords Mead, Chippenham.
 CIVIL SERVICE: G. Lloyd-Dalton, 2 Honister Heights, Purley, Surrey.
 CLIFTON: J. Rose, G3OGE, 63 Broomfield Road, Beckenham, Kent.
 CORNISH: M. J. Harvey, Oak Farm, Carnon Downs, Truro.
 COVENTRY: W. F. M. Hahn, G3UOL, 11 St. Patricks Road, Coventry.
 CRAWLEY: R. G. B. Vaughan, G3FRV, 5 Filbert Crescent, Gossops Green, Crawley.
 CRAY VALLEY: S. W. H. Harrison, G3KYV, 30 Plaistow Grove, Bromley.
 CRYSTAL PALACE: G. M. C. Stone, G3FZL, 10 Liphook Crescent, London, S.E.23.
 DERBY: F. C. Ward, G2CVV, 5 Uplands Avenue, Littleover, Derby.
 DORKING: J. Greenwell, G3AEZ, Eastfield, Henfold Hill, Beare Green, Dorking.
 DURHAM CITY: D. Hampton, G3UHU, 4 Ferens Close, Gillesgate, Durham.
 ECHELFORD: A. G. Wheeler, G3RHF, 88 Village Way, Ashford, Middx.
 EDGWARE: G. S. Fitton, G3RAA, 18 Beverley Drive, Edgware.
 GRAFTON: A. W. H. Wennell, G2CJN, 14 Uxendon Hill, Wembley Park, Middx.
 HALIFAX: V. Reeve, G3SJJ, 10 Rock Place, Bonegate, Brighouse, Yorkshire.
 LICHFIELD: S. W. Williams, 65 Wellfield Road, Alrewas Burton on Trent.
 LINCOLNSHIRE: N. T. Hodgson, G2ABK, Raithby Road, Hundley, Spilsby.
 LIVERPOOL UNIVERSITY: A. R. Clemmetsen, G8AIA, Students' Union, 2 Bedford Street North, Liverpool 7.
 LOUGHTON: S. A. Bunce, 60 Deepdene Road, Loughton.
 LUTON: A. W. Morgan, G8ADS, 97 Victoria Street, Dunstable.
 MAGNUS: R. Wallwork, B.Sc., G3JNK, Magnus Grammar School, Newark on Trent.

MAIDENHEAD: E. C. Palmer, G3FVC, 37 Headington Road, Maidenhead.
 MAIDSTONE YMCA: C. Robertson, G3ERY, 17 Northumberland Road, Maidstone.
 MIDLAND: C. J. Haycock, G3JDJ, 29a Wellington Road, Birmingham 20.
 MID-WARWICKSHIRE: K. J. Young, 180 Northumberland Court, Leamington Spa.
 NORFOLK: A. Marcantonio, G3TLC, 10 Hellesdon Mill Lane, Norwich, NOR.21.L.
 NORTHERN HEIGHTS: A. Robinson, G3MDW, Candy Cabin, Ogden, Halifax.
 NORTH KENT: P. T. Baber, 64 Latham Road, Bexleyheath.
 NOTTINGHAM: N. E. Down, G3SRX, 23 Lady Bay Road, West Bridgford.
 PEMBROKE: K. E. Godfrey, Kimberley, Ludchurch, Narberth.
 PETERBOROUGH: D. Byrne, G3KPO, Jersey House, Eye, Peterborough.
 PORT TALBOT: H. G. Hughes, GW4CG, 20 Austin Avenue, Porthcawl, Glam.
 PURLEY: A. Frost, G3FTQ, 62 Gonville Road, Thornton Heath, Croydon.
 RAIBC: Mrs. F. E. Woolley, G3LWY, 331 Wigan Lane, Wigan.
 RADIO CLUB OF SCOTLAND: A. Barnes, GM3LTB, 7 South Park Terrace, Glasgow.
 REIGATE: F. D. Thom, G3NKT, 12 Willow Road, Redhill.
 SALTASH: D. Bowers, 95 Grenfell Avenue, Saltash.
 SHEFFORD: G. R. Cobb, G3IXG, 75 Amphill Road, Shefford, Beds.
 SOUTH BIRMINGHAM: A. E. Bishop, 40 Cecil Road, Birmingham 29.
 SOUTH LONDON MOBILE: B. Negri, G3LXN, 17 Voltaire Road, London, S.W.4.
 SPEN VALLEY: N. Pride, 100 Raikes Lane, Birstall, Leeds.
 SURREY (CROYDON): R. Morrison, G3KGA, 33 Sefton Road, Addiscombe, Croydon.
 VERULAM: G. Slaughter, G3PAO, 6 Leggatts Wood Avenue, Watford, Herts.
 WAKEFIELD: E. Price, G3TQV, 23 Elmwood Grove, Horbury, Wakefield.
 WIMBLEDON: E. G. Allen, G3DRN, 65a Melbury Gardens, London, S.W.20.
 WOLVERHAMPTON: J. Rickwood, G3JJR, 852 Stafford Road, Fordhouses, Wolverhampton.
 WORCESTER: B. A. Jones, 12 Woodside Road, Larkhill, Worcester.
 YEOVIL: D. L. McLean, G3NOF, 9 Cedar Grove, Yeovil.
 YORK: J. A. Rainbow, 14 Temple Road, Bishopthorpe, York.

Overseas

AERONAUTICAL CENTER, OKLAHOMA: Postal Station 18, Oklahoma City, Okla., U.S.A.
 EX-G RADIO CLUB: N. F. Thompson, W8YHO, 1368 Roslyn Avenue, Akron 20, Ohio, U.S.A.
 FOUNDATION FOR AMATEUR RADIO: 2509 32nd Street, S.E., Washington, D.C., U.S.A.
 HONG KONG A.R.T.S.: M. H. Duke, VS6BJ, P.O. Box 541, Hong Kong.



The Royal Signals A.R.S. was recently presented by Marconi's with valuable equipment for amateur-band operation, for use at Catterick Camp, the Hq. of the RSARS. The Tx is a Marconi HS27, giving 350 watts p.e.p., suitable for CW/AM/SSB/RTTY, and the receiver an HR28 double superhet covering 2-30 mc. The presentation was made by Mr. A. W. Laws (manager of the Radio Communications Division of the Marconi Co.) to Brig. A. J. Woodrow, MBE, who commands the Training Brigade, Royal Signals.

situation and are looking forward to an even better season. While the new YMCA is being built, they will have to resort to temporary premises, but they hope to take that in their stride and look forward to greatly improved facilities in the long run. Meetings, every Wednesday, 7.30 p.m. in the YMCA Union Street, Maidstone.

Crystal Palace report furious NFD activity, and one station will use their newly-acquired club call, G3VCP. On May 21 they will meet for a talk on Crystal Filters for SSB, by G2FKZ. **Clifton**, their friendly rivals, lost the first half of their inter-club Quiz by six points; they were due to meet for the second leg on April 16. During the month, Clifton ran a mobile D/F Field Day, with results based on distance. Top Band was found to be better than the more usual 80-metre band in this contest.

Luton continues to grow, and two more callsigns have appeared among the members. Constructional activity is high, among juniors and seniors alike. On May 10 there will be a description of a simple 2-metre transmitter (with an invitation to the Verulam

club to attend). The 17th will be a Mobile Evening, and the 24th an NFD briefing. No meeting on May 31, on account of Whitsun. Meetings are at the ATC Hq., Crescent Road, Luton, Tuesdays at 8 p.m., preceded by CW classes at 7.30.

Loughton, at their AGM, elected G3JBS chairman and Mr. S. A. Bunce, secretary (*see* panel for QTH). They continue their meetings on alternate Fridays, and on May 6 G3CSS will demonstrate his mini-transmitter for SSB on 160 and 80 metres—Debden Community Centre, Rectory Lane, Loughton.

Grafton will be back to normal this month, with their usual Friday meetings in Room 35, Montem School. Programme is not yet finalised, but details will be given over the net, Wednesday evenings at 10 p.m., and are also available from G2CJN.

Edgware will be taking part in the Club DF Contest on May 8, and are busy building equipment for it. On the 9th G3RNK/T will talk to them about Amateur TV, and the 23rd will be an NFD discussion. A recent meeting, with a talk on Lasers, was well attended, and a welcome visitor was G5OG (Sir

Ian Orr-Ewing, O.B.E., MP for Hendon North). The Club Net is on Wednesdays, 1875 kc.

Reigate report a good dinner-dance, although attendance was disappointing, with only 30 per cent of the club members present. Their next club night is on May 19, when G3TYR of the South London Mobile Club will visit them and talk about Mobile Operation.

From the *Verulam News Sheet No. 24* we get it that their next get-together will be on May 18, for a talk by G3GJX on the KW-2000, and a discussion about Field Day arrangements; it seems that the group will have a Quad for 15-20m., on this occasion, and their CW ops. are enjoined to get in plenty of practice using transistorised el-bugs! Verulam will also be taking part in the /P two-metre contest on May 8.

MIDLANDS and EAST ANGLIA

South Birmingham will be holding their half-yearly Junk Sale on May 19, which will also be an EGM, to amend their rules. Final details for NFD will be among matters discussed; they have also arranged a special "Questions Night" for members taking the R.A.E. in May. March and April meetings, all very successful, included a talk by G3NVA and G3KVH, with colour film and slides of their recent visit to the U.S.A.

Magnus Grammar School report a high level of activity and some good talks, as well as a visit from the neighbouring Thieves Wood Short Wave Club. During the new term they plan to hold the second leg of an inter-club SWL contest.

Cannock Chase report a change of secretary (*see panel*) and a meeting on May 5, which was their Home-Built Gear Competition. **Lichfield** have had their AGM, as well as a dinner-dance attended by 160 people! They meet on the first Monday and the third Tuesday at the Swan Hotel, Lichfield, and forthcoming meetings are on May 6 (Open Forum) and June 3 (film of a trip to Russia by a member).

Derby, who now produce a very nicely printed calendar and newsletter, report that their fully paid-up membership at the end of 1965 was 194, with 519 on the "nominal roll." (They are, of course, an extremely old-established club). On May 11 they will have an NFD discussion; on the 18th a talk by G3JFD on The Short-Wave Listener; on the 25th a D/F Practice Night, and on June 1st a Surplus Sale—all at Room No. 4, 119 Green Lane, Derby, 7.30 p.m.

Lincolnshire will hold a Junk Sale and Hamfest at the Bull Hotel, Spilsby, at 7 p.m. on May 6. **Mid-Warwickshire** heard about SSB (described in their News Sheet as "Single Sideboard"!) on May 2, G3LJW being the speaker. On the 16th Mr. N. K. Read will talk about "Safety in the Shack." No meeting on the 30th, owing to the Whitsun holiday.

Nottingham continue to meet on Thursdays, 7.15 p.m. at Sherwood Community Centre, Woodthorpe House, Mansfield Road, with an R.A.E. class managed by G3OMK. On Fridays G3SJJ looks after Morse instruction. Coming attractions: A talk on

Soldering (Enthoven); a visit to the Heanor Radio Club; and technical film shows. Note new secretary's QTH, in panel.

Peterborough held a D/F Contest on April 1, hindered by a heavy rainstorm. Winners were SWL Jack Warrington, G3HXR and G2BYI. Visitors will be welcomed at the clubroom in the Old Windmill, London Road, from 8 p.m. onwards any Friday.

At their AGM, **Cambridge** elected G5BQ president, G2CDX secretary and G3IIT treasurer. Their May programme comprises informal meetings on the 6th and 27th, a Discussion on the Club Station, by G3IVB and G3USB, on the 13th and a "Take Your Pick" Quiz on the 20th. The subject for June 3 will be Amateur TV Camera Design, by G6BBY/T and G6PGF/T.

Worcester will be hearing the well-known W1BB tape (Top Band DX) on May 17, and are preparing for their Mobile Picnic on July 17. Meetings continue every Saturday, 8 p.m. at 35 Perdisswell Park, Droitwich Road.

Norfolk, whose *NARC Challenge*—now increased in size goes from strength to strength—reports among other things a change of Hq. They will henceforth be found at Old Lakenham Hall, Mansfield Lane, Norwich, with comfortable quarters, space for an antenna-farm and plenty of elbow room—all in a beautiful setting, the lucky lot! Meetings are on Mondays at 7.30 p.m.

Midland, meeting in Birmingham Library, Margaret Street, Birmingham 1, will have a lecture on Slow-Scan TV, by Grant Dixon, on May 17. At the April meeting G6GR's "Nine-Band Receiver" talk had to be cancelled—it will probably be given in July. G3BA stepped in with a talk called "Thinking Aloud in Amateur Radio."

Wolverhampton have a full month, with their exhibition of home-built gear at their own Hq. on May 9; the Midland VHF Convention on the 14th; and their Annual Dinner (Black Horse Hotel) on the 23rd. On the latter occasion the various Society

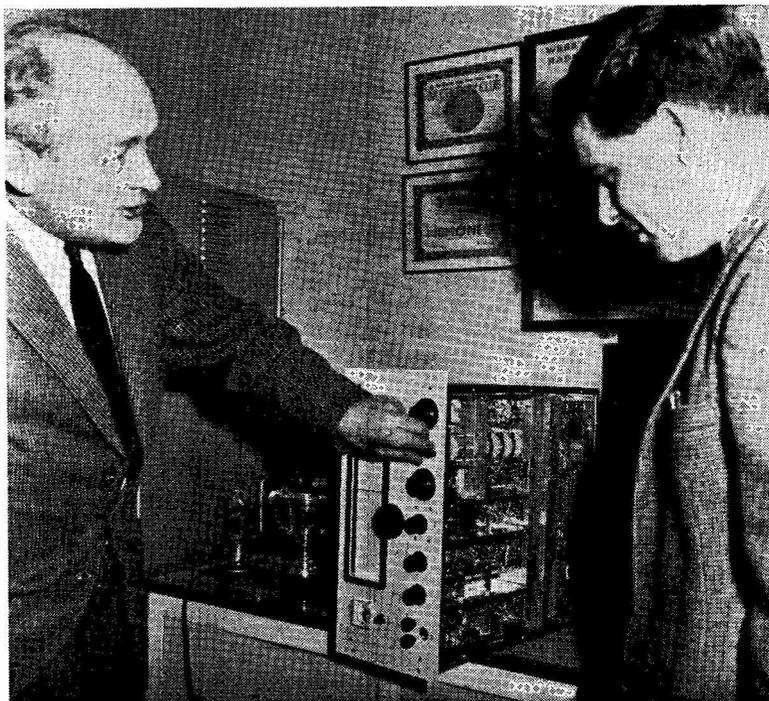
CLUB PUBLICATIONS

We acknowledge, with thanks, the receipt of the following Club publications:

Saltash (*Tamar Pegasus*, April); **Derby** (*Newsletter*, No. 1, 1966); **Coventry** (*News Letter*, March); **Cornish** (*The Cornish Link*, April); **Surrey** (*SRCC Monthly News*, April); **Purley** (*Splatter*, April); **North Kent** (*Newsletter*, March); **Echelford** (*Newsletter*, February); **Cray Valley** (*QUA*, April); **Crawley** (*Newsletter*, March); **A.R.M.S.** (*Mobile News*, March); **AERE, Harwell** (*QAV*, March); **Radio Club of Scotland** (*GM Magazine*, March); **BATC** (*CQ-TV* No. 58); **RAIBC** (*Radial*, March); **Crystal Palace** (*Newsletter* No. 125); **Wimbledon** (*QRK-5*, March); **South Birmingham** (*QSP*, April); **Worcester** (*Newsletter* No. 27); **Norfolk** (*NARC Challenge* No. 10); **Wolverhampton** (*Newsletter*, April); **Midland** (*Newsletter*, April); **Reigate** (*Feedback*, March).

Overseas: **Foundation for Amateur Radio** (*Auto-Call*, March); **Hong Kong ARTS** (*News Letter*, February); **Aeronautical Center, Oklahoma** (*Collector and Emitter*, March); **Ex-G Radio Club** (*Bulletin*, Vol. 6 No. 1).

At left G3AAZ, of the Welwyn Garden group, talking about his prize-winning Sideband exciter to G8ACE. This piece of equipment took the Oscar in the Welwyn constructional contest. And well it might—it gives SB output on all bands 10-160m., employs modular construction, and the VFO is in a small tunnel to maintain a controlled flow of air. The exciter as shown here is self-contained for power, and runs a 6146 PA giving 40w. p.e.p.



Awards will be presented.

Next meetings for **Bromsgrove** are on May 13, "General Club Topics," and on June 10, the annual general. On May 30 they support the Rovers F.C. Fête with an all-band station, and a Mobile Picnic is planned for August 28—quite a busy programme.

WEST COUNTRY

Bristol (ARC) will meet for two lectures during May. On the 5th, G3OUK was due to talk on "Understanding Interference," and on the 26th G3NOO will describe a Portable-Mobile Transmitter/Receiver.

Chippenham is a recently-formed club, whose inaugural meeting was attended by a gathering of 44 people, including 21 licensed amateurs—a very good start. Premises are available at the High School (Boys), and weekly meetings on Tuesdays have been agreed upon. Lectures, theory classes and constructional work are all being arranged, and new members will be very welcome. (See panel for Secretary's QTH.)

Cornish met recently for their AGM, and the previous meeting took the form of a talk (by G3BHC) on the ever-popular subject of Aerials. **Saltash** have two meetings in May—a talk and discussion night on the 6th, and planning for their Mobile Rally on the 20th.

Yeovil, held a Junk Sale on May 4 at the Yeovil Youth Centre, Park Lodge, The Park, followed by a discussion of NFD arrangements. Meetings are held every Wednesday at 7.30 p.m.

THE NORTH

Durham City meet on alternate Thursdays, 8 p.m., at the Bay Horse Hotel, Gilesgate. New SWL members, in particular, will be welcomed at any meeting. At a recent meeting their chairman presented the Bridge Trophy (for a Top Band CW Contest) to the winning team's captain, G3KQD.

Northern Heights report a fair influx of "G3V--" callsigns, and are as busy as ever with their numerous "special-station" activities during the coming months. On May 11 there will be a Junk Sale, and on the 25th a talk by G3GJV on "Going Mobile." June 8 is the date for their return visit (an annual affair) to the Manchester club.

Spenn Valley visited the TV and VHF stations at Emley Moor on May 5, and will see a "Visual Recorded Lecture" on the 19th. On June 16 they will be occupied with the Model Boat Regatta and Exhibition in Batley Park.

Wakefield report that the callsign G3WRS is being reserved for them (and by all the signs it won't be long now). G3HCF, who has had to QRT because of ill health, has given them a 150-watt transmitter, which will be known as the "G3HCF Rig" in gratitude to him. On June 7 they will be visiting Baird TV at Bradford; meanwhile, the May lecture will be given by G3HCD on the 24th, and the subject is being kept as a surprise.

Liverpool University are in recess for the time being, and during the new term they will be inactive because of examinations; but they hope to continue informal lunch-time meetings in the Union bar and in their new shack. The latter gives them access to

their newly-erected beam system for Four, Two and Seventy-cms. Next term they hope to obtain a grant for a KW-2000.

York met during April for a tape-lecture on Basic Valve Circuits, and for a talk on "Early Days of Radar." On May 19 they visit the BR Microwave Installation and Telecommunications Dept., and the coming season's programme is now being arranged.

Bury & Rossendale report a successful Annual Supper, with G2AMV and Mrs. O'Brien as guests. The next meeting, on May 10, will be a Junk Sale at the Old Boar's Head (Private Room), The Rock, Bury, at 8 p.m. Note new Secretary's QTH, in panel.

Ashton is a newly formed club which met for the first time on April 22. Subsequent meetings will be on the second Friday, 7 p.m. at Ashton Technical College, where the first few sessions will be devoted to setting up a club station and "settling in."

Halifax report two recent meetings, subjects including a lecture by G3MH, what is described as a "demonstration on Top Band," and "Morse for the Beginner." Though the hon. secretary does not say so (he doesn't give his address, either) some detective work suggests that they meet fortnightly on Fridays; if this is so, the next is on May 6, at the

R.A.O.B. Club, Clare Road.

Since this section of "Month with The Clubs" is headed *The North*, we might ask: Where are the GM Clubs, and what is happening in Scotland? We know that there are keen and active groups up there, and the Border need not be a curtain. If only two Club groups respond (with written reports that can be used here), they can be given a separate heading. (And the same goes for GI.—*Editor.*)

WALES

Port Talbot will be holding an informal meeting at their Hq., 8-10 Jersey Street, Valendre, Port Talbot, at 7.30 p.m. on May 31. At their Social, held on April 5, they had guests from Cardiff, Carmarthen, Pembroke, Rhondda and Swansea—51 attended in all.

Pembroke report some successful meetings, and have now completed the arrangements for their Bucket-and-Spade Party, to be held on June 5. They get together on the fourth Friday in the Lion Hotel, Pembroke, just after 8 p.m. in the Writing Room, where their May 27th meeting will take the form of a technical film show.



The new Taylor Model 192A LF oscillator has been designed as a general-purpose laboratory signal generator. The range is 10 cycles to 100 kc in four switched bands, the required wave shape being selected by the waveform switch. Maximum sine-wave output voltage is 25v. RMS, with an output impedance of 68 ohms at 25 mV. The instrument is intended as a low power source for checking the frequency and transient characteristics of audio amplifiers and transformers, speakers and similar apparatus. The circuitry involves a Wien bridge with a Schmitt trigger to form the output wave shape.

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.

- DL5XS**, Sgt. Hewitt, C.J. (G3UKN), Sgt.'s Mess, R.A.F., Gutersloh, B.F.P.O.47, Germany.
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G3UDN/P, May 21: At the Leamington Spa Carnival and Fête, where the Mid-Warwickshire Amateur Radio Society will have a stall showing members' home-built gear, and a station operating on the 2-4-20-80-160m. bands, as conditions allow. Address for QSL's and other details: C. Smith, 19 Hyde Road, Kenilworth, Warwickshire.

May 30: Bromsgrove & District Amateur Radio Club plan to have a station working all bands 15-160m. at the Rovers Football Club Fête. Hon. secretary: J. K. Harvey, 22 Elm Grove, Bromsgrove, Worcs.

GB2SSS, May 28-30: There will be an exhibition station at the Somerset Senior Scout Jamboree, East Harptree, when a particular effort will be made to contact other Scout stations in camp over the Whitsun weekend. Address for details: D. H. Dotesio, Luccombe, Woolley Street, Bradford-on-Avon, Wilts.

GB3MC, June 11-14: Operating in connection with the Malvern College Commemoration Weekend, on all bands 70 cm. to 160m. Skeds on VHF/UHF

are specially requested and can be arranged with G8ADU, *QTHR*. Further information from: C. Angell, Bericote, Malvern, Worcs.

GB3DCL, July 2-10: At the Sports Pavilion of the Distillers Co., Ltd., Saltend, near Hull, Yorkshire, in connection with their Annual Gala Day, and arranged jointly by the D.C.L. Amateur Electronics Section and the Hull & District A.R.S. Operation from noon to midnight on all suitable bands 10-160m., AM/CW/SSB. Calls G3PJR and G3UIF will also be used. For QSL's, skeds and details, write: M. Ellis, G3PJR, 351 Willerby Road, Hull, Yorkshire.

GB3PAS, July 19-21: At Peterborough Agricultural Show, a demonstration station working 80m. and other bands. All visitors welcome at the Sports & Hobbies section. Further details from G3KPO, *QTHR*.

GB3FRC, August 13-15: Organised by the Fylingdales Radio Club in connection with the Amateur Radio exhibition at Spa Gates, Whitby, Yorkshire N.R., running commercial gear on all bands 15-80m. All contacts will be QSL'd with special care, and visitors will be made very welcome. Details from: W. Burton, hon. secretary, Fylingdales R.C., 14 Westbourne Road, Castle Park, Whitby, Yorkshire.

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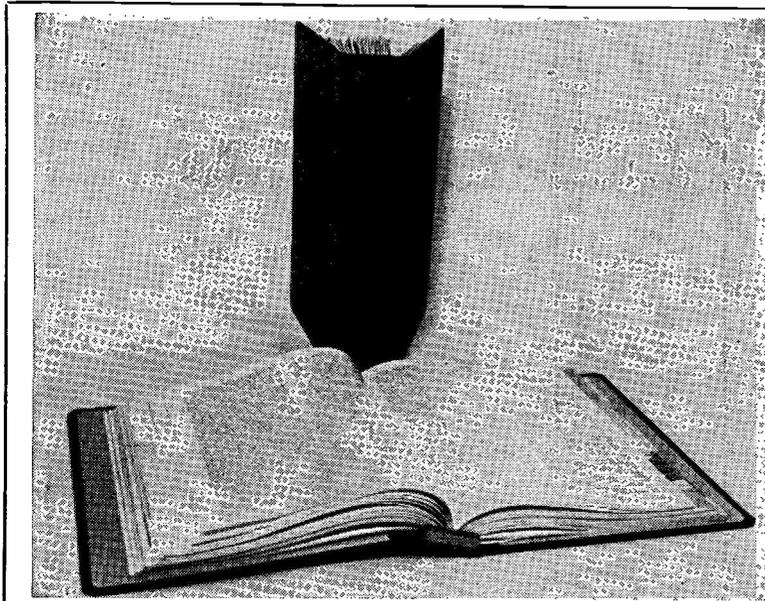
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SELLING: Type G2DAF Tx. Mk. II, complete, requires alignment, price £30. Elizabethan Tx, type G5RV, coverage 10-80m., price £8. Modulator, 30-watt, £5. A Top Band Tx. £4. Sobell 17in. TV Rx, good, price £4. Send s.a.e. for full details and lists of gear.—G2HKU, QTHR. (Tel. Minster, Sheppey, 3100.)

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SPRING CLEANING! Mohican, £25. Minimitter MR-37, £15. Eddystone S.750, £30. TCS Rx. £5. R.208, £5. All in good condition. Prefer buyers collect (Northumberland), otherwise carriage extra.—Box No. 4281, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: Panda Cub, £35; AR88LF with S-meter, £35: both in perfect condition and completely unmodified. Also coax aerial C/O unit with self-contained PSU and connectors, etc. to match this Tx/Rx assembly, £4. To buyer purchasing the complete station. £68 the lot.—G3OGZ, Braizedale Close, Leddhall Lane, Harrogate, Yorkshire.

OFFERING: Radar LHTR Unit AN/APG13: Two 446B, 14 valves inc. 829, cavities, plumbing, blower, in copper canister, ideal for 23 cm. conversion (regret no circuitry), price £10. Ceramic triode 6299. £3. 813, £2. 7289/3CX100A5, with grid flange, £3. UHF Wavemeter Type A.8231, range 945 to 1200 mc (will go higher), with calibration charts, £4 10s. R.C.A. Valve Voltmeter, mains, 4in. meter, 17 ranges to 1000v. and 1000 megohms. with probes, £8. Transistorised bug key, £7.—G3OGK, 8 Coniston Avenue, Congleton, Cheshire.

WANTED: Third IF transformer for R.1155 Rx.—R. Arthurton, 79 Sycamore Avenue, Crewe, Cheshire.

SALE: K.W. Geloso Converter, in good condition. Offers?—G3RNM, Wheatley, Martins End Lane, Great Missenden (2642), Bucks.

WANTED: Good communications receiver—Collins, Hammarlund, National, Hallicrafters, Eddystone 888A or similar; must be immaculate and unmodified. G2DAF type considered if constructed and finished to professional standards and offered at right price. Also required a Johnson SSB unit for Valiant transmitter. **SELLING:** Heathkit RF-1U signal generator, with manual, £5. R.C.A. 30-watt amplifier Type MI-11220, metal cabinet, in perfect condition, £10. AR88 gearbox, new, 30s.—Webb, G6XY, 22 Southbank Road, Kenilworth (52679), Warwickshire.

ACCOMMODATION Required, by GW3PMR, in Coventry—digs., flat or W.H.Y.? From July 10 for two months.—Jubb, 1 Friars Terrace, Bangor, North Wales.

SELLING: An Eddystone S.640 receiver, coverage 1.5 to 30 mc, with Q-multiplier, panel handles and mounting blocks, in good condition, price £25 or offers?—G3RRN, 73 Gonville Road, Bootle 20, Lancs.

FOR SALE: K.W. Viceroy Tx, Mk. IV, one year old, as new, price £140.—Bagby, 129 Enfield Road, Hunt End, Redditch, Worcs.

SALE: Receiver, having one RF and one IF stage, covers 40-80-160m. bands, nice finish, £8. Type 14RMK roof mount for Hy-Gain 14AVS array, unused, 90s. Resistance extension unit for AVO-7, 10s. Pair 1616's, 5s.—G5RP, College Farmhouse, West Hendred, Berks.

£12 Takes The Lot: Grampian DP4 mic., with stand and low-to-high xformer. PSU giving 350v. 20-150 mA. Speech clipper unit. Coupler for 80m. Valves: KT66's, KT88's, 807's, etc. Imhof rack mounting cabinet. Many "R.S.G.B. Bulletins," and large selection general apparatus.—Ring FINchley 7262 (London).

SERIOUS Collector pays generously for all unusual types of suitcase-sets, miniature transmitters and receivers, as used by the Resistance and Underground movements, also all handbooks or manuals in connection with such items.—M. Gee, 11 Whitehorse Lane, Stepney, London, E.1.

WANTED: Labgear LG.300 Modulator and PSU only. Can collect within 30 miles Birmingham.—Box 4283, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SALE: K.W. Valiant, 50w. CW model, coverage 10 to 160 metres, with Valiant PSU incorporating on-off, T/R, low power and HT/VFO switches, both units in perfect condition, price £25. Low-pass filter, £2. R.A.F. Type B heavy-duty multi-contact Morse Key, 20s. HRO Senior, Model 5T, in new condition, with PSU and eight GC coils, also one BS for 20m., and manual, £20. Also collection "Short Wave Magazines" Jan. '64 to Dec. '65. The lot £44. Prefer buyer collects.—G3AGD, 25 Coombe Road, Dartmouth (2922), South Devon.

ON OFFER: A 44ft. aerial system, consisting of 30ft. of 3ft. 0½in. screw-together rods, with 14ft. whip section for top, and large insulator to fit anywhere in the 30ft. section, together with 12 guy ropes and base, all in canvas bag, very good condition. Offers?—Cooper, 13 Churchfield Road, Outwell, Wisbech, Cambs.

WANTED: The official manual for the CR-100/B.28 receiver.—G3MFJ, 61 Heights Lane, Bradford 9, Yorkshire.

WANTED: Circuit for transistorised heterodyne frequency meter, suitable construction for mobile use. **SALE:** HE-80 receiver, with speaker and phones, excellent condition, price £33 carriage paid.—Lewis, 7 Marden Crescent, Whitley Bay, Northumberland.

PA Valves: Types 813, 25s.; QV04-7, 5s. 6d.; 807, 5s. All post paid.—G3TJP, 32 Cornwall Avenue, Clayton, Newcastle, Staffs.

SALE: Minimitter amateur-band converter, coverage 10 to 80 metres, new valves fitted, FB performance, price £7 10s., carriage paid.—Box No. 4284, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SMALL ADVERTISEMENTS, READERS—continued

WANTED: Marine Radiotelephone, and amateur receiver; any condition. **SELLING:** 6/VCR-138A, boxed; six 715B/CV398 with holders; offers? Nitrogel HV condensers, up to 10kV; 400 B7G valves; and a variety of miscellaneous surplus. Must clear, s.a.e. list.—Cain, 18 Oaky Balks, Alnwick (2487), Northumberland.

WANTED: Manuals for Monitors Type 33 and Type 56. Wavemeters W.1185A. Receivers Type R.1355 and R.1426. Calibrator Time-Base Type 1. Calibrator Unit Type 123. Power Unit Type 633. Adaptor, Frequency-Range, No. 1. Must be authentic Air Ministry and/or War Office publications.—Box No. 4285, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: K.W. Geloso Converter, 10m. to 80m., in brand-new condition, £13 o.n.o.? — Westwood, 15 Gresham Road, Oxted (2766), Surrey.

INTERESTED? An AR88D in daily use; not mint, but well worth a rebuild at £15; buyer collects. **WANTED:** Heathkit RA-1, or Eddystone 840C.—Box No. 4287, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

CSE 2A10 — see p.136

SELLING: Linear Amplifier, using 4CX250B, with built-in PSU, real bargain at £30, o.n.o.? TA-12, for 12v. heater supply, like new, £4 o.n.o.? Transformer rated 1000-0-1000v. at one amp., 15s. Buyers collect. Also, for local SWL's who can call, I have tons of free radio parts!—GW3NAM, 102 Pontypridd Road, Barry, Glam., South Wales.

OFFERED: Collins 32S-1 and 75S-1, updated to S3; 6146B's, 280 watts; with 516F-2 PSU; a superb station, with extras; price £298 all in. Demonstrated London.—Box No. 4272, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

OFFERS Invited For: Minimitter mobile Tx, for 40, 80 and 160 metres, complete with three whip antennae. AVO-8 Testmeter, needs attention. K.W. multi-band doubler. CR-100 with noise limiter. Olympic loaded Z-match, rated 150w. Wavemeter Type W.1191A. Moving-coil headphones. "Short Wave Magazines": Vol. 6, Nos. 6, 9, 10, 11, 12; Vol. 7, Nos. 1 to 12; Vol. 8, Nos. 1, 4, 5, 6, 7, 9, 11, 12; Vol. 9, Nos. 1 to 4, 6 to 12; Vol. 16, Nos. 1 to 12; Vol. 18, Nos. 7 to 12; Vol. 19, Nos. 1 to 12; Vol. 20, Nos. 1, 2 and 4 to 12; Vol. 21, Nos. 1 to 9. "RSGB Bulletins": Vol. 28, Nos. 1, 7, 11, 12; Vol. 29, Nos. 1, 2, 3, 4, 6, 7, 9, 10, 11, 12; Vol. 30, Nos. 1, 5, 7, 8, 9, 10, 11, 12; Vol. 31, Nos. 1, 3 and 6 to 12; Vol. 32, Nos. 1 to 12; Vol. 33, Nos. 1 to 5 and 7 to 9; Vol. 34, Nos. 8, 9, 10, 12; Vol. 35, Nos. 1, 2 and 4 to 12; Vols. 36, 37, 38, Nos. 1 to 12 each Vol.; Vol. 39, Nos. 1 to 6; Vol. 40, Nos. 1 to 12; Vol. 41, Nos. 1 to 3. Also "Radio Data Reference Book," and "Problems in Radio Engineering."—Box No. 4290, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

WANTED: A Linear Amplifier, K.W. Electronics or Green Electronics; must be in FB condition.—G3JQC, 19 Cambridge Street, Heckmondwike, Yorkshire.

SALE: In mint condition, a Sphinx SSB Tx, covering the 20, 40, 80 and 160m. bands, price £55.—G3PKD, 11 Browning Road, Oakham, Rutland.

FOR SALE: Cossor 'Scope Model 339, £12. Home-Lab TV Pattern Generator, £3. AVO All-Wave Signal Generator, £4. Meters, microamp. and milliamp., various ranges at 5s. each (ask). Rotary converter, 12v. DC in, 230v. AC 100 watts out.—Devereaux, 49 Wade Avenue, R.A.F. Ouston, Newcastle-on-Tyne, Northumberland.

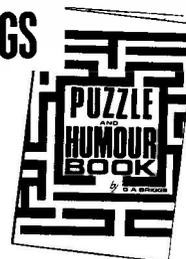
SALE: Labgear LG.300 Tx, £25 o.n.o.? Home-built TZ40 modulator, speech amplifier and PSU, £20 o.n.o.? Buyer collects.—G5HZ, QTHR. (Ring Kidmore End 2136.)

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MOSLEY V4-6 vertical with 80 Mtrs. base loading coil unused	20	0	0
GREEN LA600. Linear, 80-10 Mtrs.	50	0	0
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SMALL ADVERTISEMENTS, READERS—continued

WANTED: Collins 32S-3 Tx, 516F-2 PSU, 30L-1 Linear, Heathkit HO-10E monitor 'scope, in good order and condition. Available for PART EXCHANGE if desired: Hallcrafters HT-32B.—Box No. 4286, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

GIVE-AWAY PRICES: Buyer Must Collect from South-West England. Professionally-made 19in. rack equipment, with racks, circuits, full data and demonstration to callers: (1) Stabilised PSU, 8½in. grey panel, 500v. to 800v. DC out, 250 mA max., also 6.3v. 5A., £5. (2) RF monitor, 5½in. grey panel, 75-ohm coax in/out, with lin. CRT, variable time-base, RF ammeter 0-3 amps., and self-contained mains PSU, £5. Also R.C.A. HT xformer, 230v. in, 2250-0-2250v. 500 mA out, £3 10s. 10 Hy 400 mA choke, 10s. Four 25 mF condensers, 3500v. DC test, 20s. each. Also two new Imhof grey steel cabinets, with front panels and plated handles: 19in. by 10½in., 30s.; 19in. by 8½in., 20s. Replies to s.a.e.'s only. Repeat these items for collection only.—Box No. 4288, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SALE: Class-D Wavemeter, 6-volt, with internal OC171 harmonic generator/power amplifier, 40s. B. & W. Type 2Q4 octal-based audio phase-shift network. 20s. Labgear 5-way coax aerial selector and T/R relay, mains, £5. Pse add postage.—Box No. 4289, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

COMPLETE CLEARANCE: Components, service sheets and what-have-you, too numerous and extensive to advertise. Inexpensive, please send s.a.e. for list.—Hatley, 2 Fitzgerald Avenue, Seaford, Sussex.

OFFERING: Redifon Marine Communications Receiver, with Manual, 95 kc to 32 mc, plus 13.5 to 26 kc VLF (gets Rugby Radio, GBR), with two RF and three IF stages, xtal filter, noise limiter, the lot! Cost £185 in 1950, professionally serviced 1966, looks and operates as new, £75 o.n.o.?—Leeming, G3LLL, QTHR, Tel. Blackburn 58594. (Callers evenings, not Sundays.)

FOR SALE: K.W. Vanguard. Mk. II version, 10 to 160m., factory built; consistently good reports, in spotless condition, £50 o.n.o.? KW-77 Rx, including matching speaker, £85 o.n.o.? Reason for sale, "chasing ducks." Also offering 100/1000 kc Xtal Calibrator, with built-in PSU; and 2-metre converter, 28 to 30 mc IF.—G6CC, QTHR. (Ring Four Oaks 1737, evenings.)

SALE: Spotless BC-221, with stab. PSU, manual, charts and all spares, including xtal, £16, carriage extra. Collins 250 kc mech. filter, 3 kc bandwidth, with carrier xtal, £10. Four unused Eimac 4X150A, £4 each; one air system socket with chimney, 50s. **Unused valves:** QQV03-10, 10s.; QQV06-40A, 30s. QQV03-20A, 25s.; 6146, 25s. QQV06-40 p.f.f.e. bases, 5s. each. Claude Lyons 3-amp. Variac, £4. **Manuals:** PTC-114, BRT-400, Creed Types 7 and 8 Teleprinters, 10s. each. Many xtals, for 2, 20 and 160m. Send s.a.e. for list.—Box No. 4291, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SELLING: Lafayette HE-40 Rx, in good condition, £10. **WANTED:** Bandsread coil units for HRO.—Smith, 7 Vaughan Avenue, Linby, Notts.

FOR SALE: Grundig Tape Recorder, £10. PSU Type 247, output 600v. 250 mA DC, 6.3v. AC, £5. QRO AM modulator, pair KT88's into Woden UM3 mod. xformer, excellent workmanship, £25. Eddystone 888A Rx, complete with S-meter and speaker, £70. TW 2-metre converter, 28 mc IF, £5. TW 2-metre pre-amp, 30s. Avometer Model 8, £15. Top Band Tx, built-in PSU and mod., £10. Two-metre 80W. Tx, QQV06-40 PA. £18 10s. Command Rx, 6 to 9 mc, £3.—Sowter, 56 Alderminster Road, Coventry, Warks.

SALE: Eddystone 888A receiver, property of the late Jerry Walker, G5JU, price £65. Please write.—Box No. 4292, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SMALL ADVERTISEMENTS, READERS—*continued*

SALE: Lafayette HE-30 receiver, one year old, £20 o.n.o.?—Corbett, 1 Maybank Street, Glasgow, S.2. (Tel. POL 7975.)

SALE: G. & D. Falcon two-metre Tx, two xtals, SAC/DC PSU's, price £27. Withers Twomobile Rx, £18. Carriage paid.—G3MEW, 17 Testcombe Road, Gosport, Hants.

WANTED: LM-14 Frequency Meter, and two-metre gear. **SALE:** Eddystone 840A, grey-finish model, in new condition. £26. Telefunken Type 85KLE recorder, £30. Lenco stereo record player, £4. Valves, new unused: 4/811A, 40s. each; 250TH, £3.—Box No. 4293, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

WANTED: G2DAF-type Tx. or Viceroy. **SALE:** Good 4X150A, with base, decoupling condenser, chimney and anode ring, £5. BC-348Q Rx, band-spread on 14 mc, with int. PSU, £15. Type 1986 Tx, 15s. Command Rx, 80m., 50s.—Clark. G2BUC, 36 Carlton Avenue, Romiley, Cheshire. (Tel. Woodley 3933.)

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WANTED: Two Mullard QY3-125 Valves. Price to.—Salisbury, 17 Berrington Road, Nuneaton, Warwickshire.

WANTED: In mint condition, a Hammarlund HQ-170A receiver; London area or near.—Box No. 4294, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SALE: Marconi Signal Generator Type TF-144G, price £12 10s. Type 49, coverage 7.5 mc to 115 mc, £6 10s. Maglips, 110-volt, 12s. 6d.—Swan, 4 Langsett Avenue, Middlewood, Sheffield 6, Yorkshire.

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SALE: Eddystone S.640 in good condition, £14 o.n.o.? Other items and components cheap to clear; s.a.e. for list.—Bettinson, 41 Conaglen Road, Aylestone, Leicester.



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10 watt MODULATION TRANSFORMERS suit pair 6V6 5000 ohms to 2500 ohms, 12/6, post paid. Ceramic insulated 3 gang Variables, 56 x 56 x 35 PF, 3/6, post 1/6.

TRANSMITTER OUTPUT TESTERS type 57. Ranges 0-15, 150 and 1500 watts. Made for Pulse Modulated Transmissions 150 to 250 Mc/s. 4" scale 0-1 Ma. meter. Power supply for 230 volts A.C. or 12 volts D.C. Complete with 50 ohm R.F. head, handbook with circuit, and connecting leads packed in transit case, £2/10/-, carriage paid.

SIEBE GORMAN Underwater Torches, solid brass. £2, post paid. Good used condition.

POCKET WATCHES, ex-Government, 15-jewel Swiss movement, 50/-, plus registered post, 2/6.

CLASS "D" WAVEMETERS, £3 5s., carriage paid.

WHIP AERIALS. Eight 4ft. sections, sections and heavy base. Will make up to 24ft. max. 35/-, carriage paid.

All equipment offered is complete but not tested unless otherwise stated. Carriage charges quoted are for England and Wales only. Telephone Worthing 9097.

Terms: Cash with order. Early closing Wednesday.

40-42 PORTLAND RD., WORTHING, SUSSEX

SHORT WAVE (HULL)

65GX

	Second-hand	£ s. d.
HALLICRAFTERS HT 33A LINEAR AMPLIFIER. Up to 1kW, 80-10, Pi-network, passive grid circuit, RF output meter, Little used		95 0 0
HALLICRAFTERS SX108. 550 kc/s. to 32 mcs. Amateur bandspread. Excellent condition		34 0 0
K.W. 600 LINEAR AMPLIFIER. As new		85 0 0
FT 241 XTALS. Channels 1-15, 17, 20-24, 67, 71, 73, 76, 77, 79, 66. Singles of 273, 275, 276, 280, 297, 299, 309, 310, 351, 352, 369, 370, 371		4 0
New Equipment		
RX80. 535 kc/s. to 30 mcs. Amateur bandspread, Q multiplier, 5 meter, AM/CW/SSB		48 0 0
STAR SR550. 1.8 to 54 mcs., 7 bands, double conversion, product detector, Xtal Calibrator		61 19 0
EDDYSTONE EB 35. Transistorised, VHF/FM, Long, Medium and Short		59 7 6
EDDYSTONE 840C		66 0 0
EDDYSTONE 940		133 0 0
EDDYSTONE EC 10. Transistor receiver		48 0 0
EDDYSTONE EA 12. Amateur bands receiver		185 0 0
Professional type Receivers (to order only)		
EDDYSTONE 850/4. 10 kc/s.-600 kc/s. in 6 bands. Audio filter, 2 Xtal filters, AC mains 100/125 and 200/250volts, 40/60cycles		220 0 0
EDDYSTONE 770R/11. 19-165 mcs., 20 valves, rack or table version		231 0 0
EDDYSTONE 830/7. 300 kc/s.-30 mcs. in 9 bands, CW/AM/SSB. Selectivity continuously variable, separate detector for SSB, Xtal filter for CW. Single conversion up to 1.5 mcs. and double above 1.5 mcs. 5 meter		275 0 0
EDDYSTONE 770J/11. 150-500 mcs. in 6 bands, AM/FM, Double conversion		330 0 0
EDDYSTONE 990S. Fully transistorised single conversion, AM/FM, 230-870 mcs. 12 volt DC from inbuilt AC mains or dry cells or Accumulator		345 0 0
EDDYSTONE 880/2. 400 kc/s.-30.5 mcs. in 30 bands, AM/CW/SSB. First Osc. is Xtal controlled. Xtal Cal., 3 Xtal filters available, IF selectivity variable		580 0 0
PANORAMIC UNITS. Eddystone		195 0 0

Carriage extra on all the above
665 allowed on your Eddystone 888A against a new EA 12 Radio. Control gear by Grundig, REP, MacGregor, O.S., etc. Models by Keil, Veron, Frog, Graupner, Ripmax, etc.

Wanted—your modern receivers, SSB gear, etc.

24a NEWLAND AVENUE, HULL

Telephone: 408953

SMALL ADVERTISEMENTS, READERS—continued

SELLING: Tx and Rx type valves and transformers. Send s.a.e. for list.—Sowter, 56 Alderminster Road, Coventry, Warks.

SELLING: A Drake-2B, with 2AQ Q-Multiplier, 2AC Xtal Calibrator, 230/115v. transformer and manual, all as new, £80. An R.C.A. AR88D, unmodified, in FB condition and aligned to makers' specification, with manual, £30. A BC-453 (the original Q5'er), with BFO and gain control added, £5.—G6QB, 49 Winchelsea Lane, Hastings, Sussex.

SELLING: 1400/2800v. PSU, with 16 silicons, 16 electrolytics, and heavy bleeders. G2DAF-type SSB Linear (813's) in Philpotts cabinet, complete excluding tank coil/bandwidth (but available), relay switched PSU, offers? Also AC/PSU and speaker for KW-2000, with link cable, price £20.—G3AUX, QTHR. (Cheltenham 22764.)

FOR SALE: National HRO-5T, in mint condition, with nine coils and PS, price £30. Also Elizabethan Tx, 150w., coverage 10 to 80 metres, with high-level modulator and speech limiter, bargain at £25. Brand new Magnavox Type 363 tape deck, £8; linear tape amplifier to suit, £2.—G3VAC, 81 New Road, Chilworth, Guildford, Surrey.

WANTED: Wavemeter Type W.1191A, or G.73, with circuit or manual.—G3PLB, 162 Victoria Road, Wood Green, London, N.22.

OFFERING: Vertical Aerials, Mk. I, £3 3s., carriage paid. Rejector Units No. 1, Mk. II/1, for use as ATU, etc., 20s. plus 4s. post. Transmitter cabinet, 20s. Class-D Wavemeter, mains type, £3 10s. Parts for ATU, with Johnson condensers, 20s.—G3JFL, 11 St. Edwards Road, Bournbrook, Birmingham, 29.

SALE: Eddystone 940 Rx, in excellent condition, price £85.—Box No. 4295, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: An R.C.A. AR88LF receiver, in excellent condition, price £33. Also Eddystone 680X, as new, £60. Will deliver to 50 miles.—G3PHN, QTHR. (Tel. Swadlincote 7537.)

SALE: Zenith Trans-Oceanic mains/portable short-wave receiver, £20, or EXCHANGE for new transistor receiver.—Bannister, 4 Byron Road, Selsdon, Surrey.

SALE: HRO-MX, fitted product detector, PSU and coil packs, with BS for 20m., in very good condition, £10.—Huggett, 2 Orchard Cottages, Brewers Street, Lamberhurst, Kent.

WANTED: Top Band Mobile Rx, W.H.Y.? **SALE:** Codar PR-30X Preselector, £4 10s. RQ-10 Q-Multiplier, £5. Nombrex 27 Signal Generator, £5.—Powell, 7 Commercial Road, Hereford.

SALE: Grundig Stenorette "S" dictating tape recorder, complete with microphone, press-button remote control, foot control unit and servicing sheet, in good condition. Ideal for recording DX QSO's, etc., £10, o.n.o.—G3KML, 1 Wellington Terrace, Berwick-on-Tweed, Northumberland.

SELLING: Eddystone EC-10 Rx, £35. Codar A.T.5 transmitter, with mains and DC PSU's, £24. New Kokusai filter, £7 10s. One hundred mixed valves, 50s. Minimitter 160m./M whip, 50s. 60-watt Mobile PSU, £3. Geloso front-end, etc., £8. All carriage extra.—G3IDW, Orchard Cottage, Hook, Swindon, Wilts. (Ring Wootton Bassett 603, evenings.)

SALE: Marine Radiotelephone, Coastal Radio type "Curlew," 6-channel, 12 volts input, as new; list price over £180, complete for £125, o.n.o.? Details s.a.e. Also Pye VHF PTC-108D, coverage 70 to 100 mc, 12v. input, 40s.—McVicar, 130 New Street, Musselburgh (2420), Midlothian, Scotland.

FOR SALE: Eddystone 680X, £48. Panda Cub, £30. Goodman speakers, as new: Audiom 60, £10; Midax, £5; Trebax, £5. High-quality tape recorder, 3½ and 7½ i.p.s., twin track, £15. Will deliver to 100 miles.—G3JDT, 59 Hunt Road, Maghull (5567), Lancs.

SMALL ADVERTISEMENTS, READERS—continued

FOR SALE: HRO-MX receiver, complete with PSU and GC coils, in FB condition, £15.—G3RJB, 5 Powys Walk, Hereford.

SELLING: K.W. Viceroy Mk. II transmitter and PSU, in mint condition, £80.—Box No. 4296, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

WANTED: Low-pass Filter, Labgear E.5034, must be in good order.—Welsh, 16 Lloyd Road, Worcester Park, Surrey. (Ring DERwent 0720.)

OFFERING: New Zenith Royal 3000. Trans-Oceanic portable, with makers' extras, external wave-magnet, BFO, manual, etc., 9 waveband receiver, including VHF/FM 88 to 108 mc, cost £200, in EXCHANGE for R.C.A. Marine AR-8516L or similar receiver, in mint condition, with manual.—Carey, 89 Pevensey Road, Bognor Regis, Sussex.

WANTED: Hallicrafters SX-100 receiver, and Joystick, in immaculate condition. **SALE:** Hammarlund HQ-180 with Telechron clock; eighteen valves, triple conversion, as new, £105. Unused AVO-7, with leather case, £15. Many English and American radio magazines, cheap.—Andrews, 34 Rawcliffe Lane, York. (59035.)

BUILD That Linear: Two transformers for sale, both tapped primaries 0-250v. AC 50 c/s, (1) Sec. CT 2840-3450-4560v. at 400 mA, price £8, (2) Sec. CT 4500v. at 400 mA, £6. PA valve 813, new, at 30s.—Verlaan, 18 Alpha Street, Slough, Bucks.

FOR SALE: Eddystone EA-12 receiver, 18 months old, in mint condition, price £140. Reason for sale: Surplus to K.W. "G" Line.—Scales, 17 Westfield Avenue, Scarborough. (Tel. 1238 day, 623 evenings.)

READY Cash offered for Collins 32S-3 and 75S-3. Must be as manufactured, with no modifications or alterations.—Box No. 4298, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

CSE 2A10 — see p.136

SELLING: An ART-13, complete with all PSU's, £30, collect. Also available manuals for CR-100, CR-300, S.36, SX-28 and S.20.—5 Farrant House, Winstanley Road, London, S.W.11.

SALE: Avo Multiminor Mk. IV, £5. Taylor Multi-meter Type 127A, £5. Eddystone modulation meter, £4. Olympic Z-Match, 1966 prototype, tunes and loads all bands, rated 500 watts, £10. Bargain parcel all new components, including switches, relays, capacitors, transistors, Variac PSU, intercomm. kit, etc., etc., £10.—Box No. 4297, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

WANTED: TH-4 Array. **SALE:** KW-500 Linear, with spare 813 and rectifiers, price £52 10s.—G3HDA, 22 Lea Green Lane, Wythall (3338), Nr. Birmingham.

VALVE-TESTER—Taylor Model 45B, covering British American and Continental receiving valves, 21 different bases. Tests mutual-conductance, cathode-leakage, emission, inter-electrode shorts, heater-continuity, etc. Complete with manual covering over 5,000 valve types. (Below)

SIGNAL-TRACER AND CIRCUIT-ANALYSER—Taylor Model 20B. checks signal through RF/IF/AF stages, RF-probe. magic-eye for checking AVC and DC voltages, audio amplifier, HR/LR-loudspeaker, provision for headphones. Both instruments in A1 condition, instruction manuals.—Offers to: Watts, 62 Belmore Road, Norwich, NOR.72-T.

SALE: DG7-5 CR tube, 10s. QQV06-40A, 20s. Four 10-amp. 50 p.i.v. silicon diodes, 20s. Studio Vidicon, and coils, price £10. All items unused; post extra. Many valves cheap, s.a.e. list.—Cedar, 42 Barn Way, Wembley Park, Middlesex. (Tel.: ARNold 5849.)

WANTED: Compact miniaturised 50-watt self-powered CW Tx for 10-15-20m. bands, reasonably TVI-proofed. **SALE:** An Avometer Model D, £3, postage 4s.—GW3LSB, QTHR.

J. B. LOWE 115 Cavendish Road, Matlock, Derbyshire

Tel.: Matlock 430

Just for a change, let's try and boost sales of bits and pieces—got to do this to make room for even older and more horrible clunkers, as well as new stuff carrying the customary appalling price tag.

NEW SURPLUS

Blowers: Dandy little 2½" dia. centrifugal fan with 12v. D.C. motor. It'll suck or blow, well waddy know! 17/6, post free.

Capacitors: 500pF micas 2.5kv., 2/-, .01 mfd 600v. 1" tubular, 3d. each, 2/6 a dozen. 170pF variables single gang, 2/-, double gang, 170/170, 3/6. Air spaced trimmers, 20 and 30pF, 1/6.

Chokes: Ideal for Rx p.s.u., 2" x 1½" x 2½" high, 3/6. Fully shrouded 16H 120ma (very, very conservative), 4½" x 3½" x 4½" high, 7/6. Can't understand why these don't sell like hot cakes—they're really very good.

Coils: A couple of ½" x ½" slug tuned formers neatly mounted in an I.F. can, 1/-, 2" x ½" slug tuned former. Rigid chassis mounting in ½" hole, 2/-.

Keys: Fully adjustable, heavy duty and excellent value at 4/-.

Relays:

Type	SM6LV20.	1011HK.	SM3LV115.	SM3LV129.	SM5H12.	Starter T5
voltage	12	6	6 or 12	24	12	12
Resistance	600	100	100/100	6500	670	—
Contacts	DPDT	3p make	1p break	DPDT	4p: 2 make 2 pole	2 break make
Price	3/6	3/6	3/6	3/6	4/6	3/6

The SM5H12 is totally enclosed. Starter T5 is very heavy duty—pulls in with a sickening thud.

Resistors: Thousands and thousands of ½ watt Welwyn 5% 470K, 1d. each. Boy! that was some salesman! Trade enquiries welcomed with open arms!

Switches: Single pole aerial c/o heavy duty knife switch, 2/-, D.P.S.T. push pull with knob, 2/-, Micro switches, 2/-.

Terminal Boards: All shapes and sizes, 1/- each. Every shack should have a selection of 12 for 4/-, This will encourage you to build (and order more junk from me!)

Transformers: Miniature audio output, standard audio, R107 audio, AR88 LF crystal load. Modulation 1:1 or tapped 1:1, 4:3, 2:1, 4:1 about 2½" cube. All at 2/6 each.

Variometers: The guts of the 19 set variometer—with this at 7/6 and a cheap variable you have an antenna tuner which will do a power of good to your Rx. Not recommended for a kilowatt linear.

Sundry: Driver unit for R220 v.h.f. set. Nine resistors, 8 capacitors air spaced 10pF trimmer, 3 ceramic 7-pin v/holders, 2 coils (one slug tuned), hardware and a transformer all for 5/-.

Note: The above stuff is all BRAND NEW AND BOXED surplus. In addition I have some new stuff of current manufacture, which, as it is priced well below wholesale, should sell quickly, but it won't because you think there's a catch in it.

Resistors: Normal new colour coded ¼w. 10, 22, 33, 56, 68, 82, 220, 390, 470, 560, 5-6K, 33K, 180K, 330K, 680K, 2-2M, 4-7M, 2d. each; 100 for 15/-, 5v. wire wound 200, 250, 300, 350, 500 ohms, 4d. each.

Capacitors: Ceramic—4, 10, 22, 47, 100, 500pF, 4d. each. Tubular—47, 150, 220pF, 0.22mF, .047, .22, .33, 3d. each. Disc ceramic—0.01, .01, .01, 8d. each. High Voltage—0.01 15KV, 4/6, .001 20KV 6/-, .005 25KV, 10/-, .05 10KV 7/6, .1 7KV 5/-.

Valves: U19, 1s. PX25, 7/6. 6CB6A, 7/6.

RECEIVERS, TX's, etc.

New, and all in stock: NCX5, Mk.2, Swan 350, KW2000, Codar AT5, PR30X, Lafayette HA-350, KT-340. Electronics QP166, ham band front end, £12 12/-.

Filters: Mechanical 455 kc/s. as fitted to the HA-350, £9 19/6.

Crystal: 9 mc/s.—the fabulous XF-9A and XF-9B at 15 gns. and 19 gns. respectively. Superpig—whatever it was the man said. Unsurpassed flankensteilheit. And if you don't know what this is, it'll cost you a s.a.e. to find out.

Second-hand: A selection of mint stuff. I was about to say "mint and faultless," but even the Collins has faults—what Rx hasn't?—so don't expect miracles from the poor old S38E.

Collins 7551	£200	Hallicrafters SX117	£125
DX100U and SB10U	£75	Hallicrafters HT41 linear	£100
Eddystone 840C	£40	Hallicrafters HA5 V.F.O.	£35
Eagle Rx 80	£35	Hallicrafters S38E	£8
Lafayette HE80	£35	Lafayette HE30	£20
Lafayette HE40	£12	RGI	£35

And also the following which do not quite meet my definition of mint, but are nevertheless perfectly good.

KW500 linear	£60	HRO MX, coils, speaker	£20
Panda Cub	£30	and p.s.u.	£12
Eddystone 640	£22	R.107	£12

If you are looking for a Tx or Rx, or interested in a wide range of bits and pieces, a s.a.e. will get you the latest stock. Let's wheel and deal because I'm trading high to build up a stock of second-hand stuff.

H.P.—Certainly, a pleasure. The poor Credit Company are down to their last few paltry millions.

Tyros—tell me how much you want to spend and I'll tell you your best but without fear or favour, whether I can supply it or not. Experts—if you don't believe this, a s.a.e. will put me to the test!

Wanted: TF144 sig. gen. and a Cossor ganging oscillator.

Postage: Please send plenty of extra cash with order to cover postage—I'll refund the balance. Remember that parcel post STARTS at 2/9!!! The G.P.O. make more on the deal than I do!!!

S.S.B. PRODUCTS

DERBY

- SPHINX TX. 160, 80, (40), 20M. S.S.B./A.M./C.W., 70w. £78
- CANONBALL TX. 160M. S.S.B./A.M./C.W. (80M version) ... £28 5s.
- DELTA Co-ax aerial c/o control unit. A.C. I/P ... £7 5s.
- NAPOLEON S.W.R. bridge. 80 ohm. For/Ref. S.W., etc. ... £5 5s.
- SILPLUG replaces 5v. Rects. Two types ... 39/6 & 49/6
- SCARAB xtal filter kit, inc. carrier xtal ... each £6 19s. 6d.
- SCARAB xtal filter complete and aligned ... each £8 7s. 6d.
- HA350 RX. 160M—10M. Air tested—properly, etc. ... 80 gns.
- HA350 RX 80M.—10M. Checked throughout ... 75 gns.
- HA350 calibrator. 100 kc/s. xtal ... 35/-
- Speaker ... 55/-
- PYRAMID parts. All metalwork in stock. Transformers, etc.
- PYRAMID mains transformers. H.T. (plus carr.) 10 gns.
- Fils. ... (plus carr.) ... £3
- PYRAMID 6HF5 valves ... each 31/6
- Bases (in stock) ... each 4/-
- BUG KEY very robust and fully adjustable ... each 85/-
- KEYER automatic transistorised A.C. I/P, etc. each £16 10s.
- AUDIO MIXER pre-amp. 4-HI-Z I/P. HI-Z O/P. each 45/-
- LAFAYETTE G.D.O. Full coverage, good value each £12 10s.
- MECHANICAL FILTERS 2-1 kc. at 6 dBs 455 kc/s. £9 19s. 6d.
- FIELD STRENGTH METER 200 micro-amp. whip and control ... each 45/-
- FULL VISION DIAL Imported, very compact ... each 39/6
- DYNAMIC MIC'S DM17 or DM16HL ... each 99/-
- Stand ... 10/6
- XTAL MIC'S BM3 ... 37/6
- 200C ... 35/-
- Inserts ... 8/6

RECONDITIONED RX's and TX's Always in stock.
Please add Postage and Carriage extra. S.A.E. with all enquiries.

7A EDWARD STREET DERBY
42909

SMALL ADVERTISEMENTS, READERS—continued

WANTED: In FB condition, a Wilcox-Gay or Heathkit VF-1U VFO, also an RA-1 Rx. Can be collected.—Sweeney, G3TFS, 58 Grosvenor Road, Epsom Downs, Surrey.

FOR SALE: Set of nine general-coverage coils for HRO, price £8 or nearest. **WANTED:** Bandspread coils for HRO, 10 to 160 metres.—Constable, 15 Waverley Crescent, Ettingshall Park East, Lanesfield, Wolverhampton, Staffs.

SELLING: A KW-77 receiver, little used, as new, with spare valves, manual and speaker, also a Codar PR-30X preselector, the lot a bargain at £90 o.n.o.?—Hughes, 30 Baldwins Crescent, Crymlyn Burrows, Swansea, Glam., South Wales.

SALE/EXCHANGE: Creed Model 7 teleprinter with PSU; G3BST-type Converter with stabilised PSU, in Imhof cabinet; Creed perforator, with 12 rolls teleprinter paper, spare T/P carriage and 45 baud governor, all offered at £35, or consider EXCHANGE for Beam assembly and Rotator.—Cooper, G3CXI, 11 Hardy Road, Bishops Cleeve, Cheltenham, Glos.

SALE: An Eddystone EA-12 amateur-band Rx, few months old only, virtually brand new, with speaker and headphones, price £160.—Sales, 87 Wickenden Road, Sevenoaks (S5628), Kent.

WANTED: Following items: A Mosley TA-33Jr; Command Rx 3-0 to 6-0 mc; an R.209, or any 80m. Rx suitable for mobile.—Dunn, G3SCD, The Poplars, Scamblesby, Louth (2327, office), Lincs.

SALE: A new semi-automatic key, £2 12s. 6d. Labgear transistor compressor, plug/socket mod. for KW-2000, £3 15s. 8KW multi-band trap set, 45s.—Tucker, G3FTA, 4 St. Margaret's Road, St. Leonards-on-Sea, Sussex.

WANTED: Codar PR-30 preselector, with or without PSU. Xtals for CW end 80-160m. bands. Heathkit VF-1U VFO. All letters answered (Manchester area).—Box No. 4300, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

MASTS for Field Day! Eighteen mast sections, 1in. diameter, in lengths of 4ft., 5ft. and 6ft., screwed at both ends for easy assembly. Offers?—Watts, 62 Belmore Road, Norwich, Norfolk, NOR.72.T.

FOR SALE: National NC-303 amateur-band communications receiver, coverage 10 to 160 metres, dial also calibrated 49.5 to 54.5 mc, 143.5 to 148.5 mc and 220 to 225 mc for use with external converters; condition like new, complete with matching speaker, price £100 o.n.o.?—Ring TULse Hill (London) 7816, evenings.

WANTED: National NC-183 or NC-303 receiver, must be in mint condition. **SALE:** In brand new condition, HE-30 Rx in original carton, with manual, £23. An AR88, mint, only £37. B.44 Tx/Rx, modified for 4 metres, £4. Command Rx/Tx for 160m., mobile or fixed, in excellent condition, £14 the pair.—Timmins, G3PUA, 4 Tarnway Avenue, Thornton, Blackpool, Lancs.

OFFERING: Zorki-4 35mm. camera, speeds 1/1000th second, with F2 lens, brand new in leather case, cost £34, sell for £24 or EXCHANGE for communications Rx.—Spashett, G3RK, Bungay (88), Suffolk.

SALE: Eddystone 840C receiver, in mint condition, price £35 o.n.o.?—Ascough, 42 Gipton Wood Road, Leeds, 8 (657742), Yorkshire.

STEPHENS-JAMES LTD.

Appointed North Western Agents for KW Electronics Ltd.

Full KW range now in stock

- KW2000 Transceiver, £173. A.C. P.s.u., £32. D.C. P.s.u., £32
- KW2000A Transceiver, £195. A.C. P.s.u., £49. D.C. P.s.u., £40
- KW Vespa Transmitter, £110. A.C. P.s.u., £25
- KW Vanguard, £73/10/-
- KW SWR Bridge, £8/10/-
- KW Balun, £1/15/-

CODAR Equipment

£ s. d.		“JOYSTICK” Distributors	£ s. d.
AT5 Transmitter ...	16 10 0	Joystick De-luxe ...	5 5 0
AT5 A.C. P.s.u. ...	8 10 0	Joystick Standard ...	4 4 0
AT5 D.C. P.s.u. ...	11 5 0	Transmitting ATU ...	1 10 0
Mobile Control Unit	2 7 6	Receiving ATU ...	2 10 0
T28 Mobile Receiver	15 10 0		
CR70A Communications Receiver ...	19 10 0	Trade supplied	
PR30 Preselector ...	5 10 0	Shure Microphones	
PR30X Self powered	7 4 0	401 ...	4 5 0
RQ10“Q” Multiplier	6 15 0	Eagle 200c Mic. ...	1 19 6
RQ10X Self powered	8 8 0	Eagle 100c Mic. ...	2 0 0

NATIONAL and EDDYSTONE equipment supplied

SR550 Amateur Bands Receiver ...	£61 0 0
SR600 Triple Conversion Receiver ...	95 gns.
HA350 10-80 metre Dual Conversion Receiver ...	75 gns.
HRO Receiver, P.s.u., Speaker and 9 Coils ...	£17 10 0
PANDA CUB Transmitter ...	£30 0 0
KV VICEROY MK II ...	£80 0 0
Topmobile Receiver ...	£12 0 0
CTX2 ...	£12 0 0
PANDA ATU ...	£3 0 0
Minimitter 150 watt Transmitter ...	£25 0 0
Minimitter Low pass filter ...	£1 10 0
RSGB Publications.	Log Books.
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70 PRIORY ROAD, LIVERPOOL, 4 (ANField 3141)

Also at Liverpool Tape Recorders Ltd., 181, Kensington, Liverpool, 7. Agents for Grundig, Sony, Philips, Corsor, Fidelity, Truvox.

YUKAN SELF-SPRAY AIR DRYING MODERN EGG SHELL WRINKLE (CRACKLE) FINISH

Black same price as Hammer finishes (see our main advert., page 183)

Like our hammers?
Now have a crack at our **WRINKLES!**

SMALL ADVERTISEMENTS, READERS—continued

G3JYO Moving; new QTH is smaller! Amateur-band communications Rx, to G2DAF design, with Electroniques front end, coverage 10 to 160m., £25. An SSB exciter for 10 to 80m., 40-watt p.e.p., with silicon PSU, £25. A Sideband Linear Amplifier for 10 to 80m., pair TT21's, with silicon diode PSU, £12. PSU's, 300v. at 500 mA stabilised, 2/6·3v. 8 amp., £5; 350v. at 200 mA, 6·3v., 12·6v., metered, £3. Receiver R.1475, £10. Trap dipole, 8KW type, £3. Star Galaxy four-speed auto-changer, boxed and unused, £4. BSR three-speed changer, with Decca hi-fi heads. £8. Also numerous meters, valves and components of all kinds. No post, callers only.—Grainger, 27 Arundel Crescent, Solihull, Warwickshire. (Tel. ACO 1253.)

SALE: Kokusai Type MF455-10K Filter, with carrier crystal and conversion xtal to 2·0 mc band, cost £15, selling at £8. Gelo 4/102 VFO, with valves, £4.—Ellis, G3NSU, 12 Oldfield View, Wortley, Leeds, 12.

OFFERED: A 12-volt PSU for the KW-2000, and a Hustler mobile whip system for 20 and 80 metres. Offers?—Foley, G3SOO, 79 Prehen Park, Londonderry City, Northern Ireland.

WHAT Offers for an R.208, coverage 10 to 60 mc, in unmodified condition and complete with its manual?—Owen, 40 Kineslea Road, Withington, Manchester, 20.

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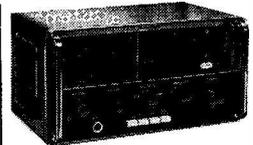
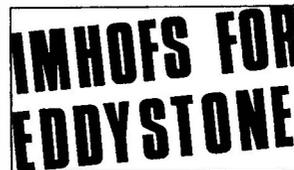
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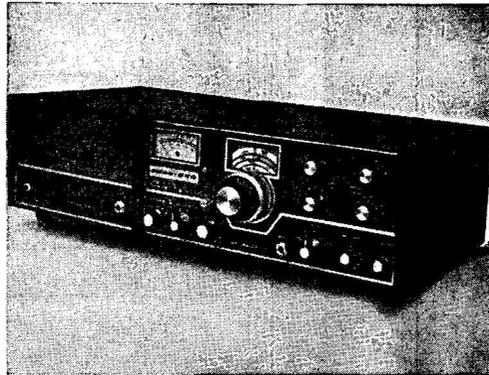
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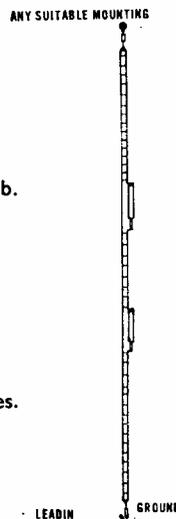


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