

The SHORT WAVE Magazine

VOL. XXVII

MARCH, 1969

NUMBER 1

TRIO

COMMUNICATIONS EQUIPMENT



SP-5D



HS-4 HEADPHONES



JR-500SE



9R-59DE



PS-500AC

TS-500

Full details of these outstanding Trio Models, together with the name of your nearest appointed stockist, are available on request from the Sole U.K. Distributors —

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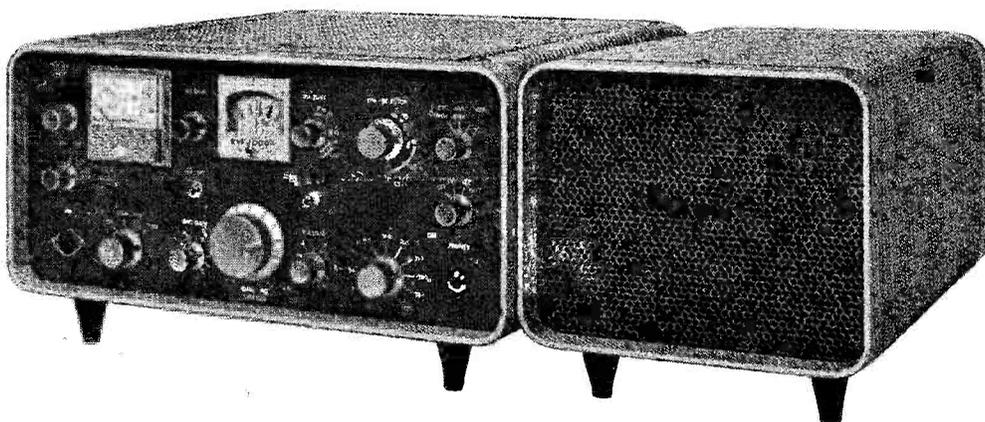
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KW SSB EQUIPMENT

for reliability

**KW ATLANTA**

HIGH POWER
TRANSCEIVER
500 watts PEP, 10-80
metres; SSB, AM, CW.
Built-in 100KHz
crystal calibrator.

KW 2000A

SSB TRANSCEIVER
180 watt PEP, 10-160
metres, complete
AC psu, VOX,
P.T.T.

**KW VESPA
Mark II**

TRANSMITTER FOR
ALL H.F. BANDS
220 watts PEP SSB,
AM, CW.

KW 1000

LINEAR AMPLIFIER
1200 watts PEP with
built-in psu and
SWR indicator.

KW 201

AMATEUR BANDS
COMMUNICATIONS
RECEIVER
SSB CW, and AM;
10-160 metres.



*Write for illustrated detailed specification on the above
and our list of KW Tested, 'Trade-in' equipment*

K. W. ELECTRONICS LIMITED

1 HEATH STREET, DARTFORD, KENT

TELEPHONE: DARTFORD 25574 CABLES: KAYDUBLEW DARTFORD

Other KW Products : KW Antenna Switch (3 position), KW E-Z Antenna Match Unit, KW PEP Meter, KW Match SWR Indicator, KW Low-Pass Filters, KW Trap Dipoles, KW Balun, KW Dummy Load, KW Q Multipliers

J. B. LOWE 50-52 Wellington Street, Matlock, Derbyshire

Tel.: Matlock 2817 (2430 evenings)

SOMMERKAMP

STAR

INOUE

I have been working out a few "Spiv Factors" or "Coefficients of Robbery." Assuming that you have copies of the Japanese C.Q. magazine you take the price of an article in Japan in thousands of Yen and divide it into the English price in pounds. This gives you some idea of whether an article is a good buy or not. A Spiv Factor of 2.0-2.2 seems about average for competitive goods, although some things are around 2.5 and somebody, somewhere, is making a nice little killing. I was rather shaken to find that the stuff I import and flog generally runs around 1.8, which is pretty good. Maybe I should put my prices up to bring my Spiv Factor in line !! Anyway, like I've been trying to tell you, what I flog I honestly reckon to be the best value for money on the market and actually the Spiv Factor merely confirms what I already know. Nothing very clever about it really—just a result of importing most of it directly from Japan and flogging straight to you.

NEW :

Sommerkamp, Star and Inoue of course. Sorry to say though, that my stock of SR-200's has all gone and it will be a month or two before I get any more. Sorry lads, but I did warn you. However, deliveries of Inoue (pronounced like phooey!) have improved and I've got a fair stock. The Rx at £85 represents extremely good value. All transistor (bags of FET's), Amateur Band only, top quality 9 mc/s. xtal filter with very steep sides. This Rx has a very impressive performance—very quiet and free of annoying images and sundry birdies and yet very sensitive. 12v. D.C. or 240v. A.C. supplies built-in. For the chap prepared to pay a bit more cash for a lot more performance—the Inoue IC-700-R takes some beating. For an extra £95 you get the companion Tx and p.s.u. which makes it the cheapest rig on the market. The performance though, is up with rigs costing very much more. Actually I've boomed badly on this Inoue stuff—the low price puts people off. They think "It can't be much good at that price." Make no mistake, Gentlemen, it most certainly is good.

Star—One or two 700 series left, but these won't last long, so not much top pushing 'em. The Spiv Factor (1.7) must be the lowest in the country.

Sommerkamp—Almost invariably ex stock. Again, not much top pushing because they're so well known and praised.

SECOND-HAND RECEIVERS :

	£	s.	d.		£	s.	d.
TCS12 ...	12	0	0	BC348. Mint ...	18	10	0
RAI ...	32	10	0	RME4350 ...	45	0	0
KW201. Mint ...	90	0	0	LAFAYETTE HA350	60	0	0
SOMMERKAMP ...				HRO ...	20	0	0
FR-100-B ...	90	0	0	NC190. Mint ...	55	0	0
STAR SR-600. Mint	50	0	0	BC348. AI ...	15	0	0

The tip top AR88D's (rewired pvc, "S" meter, spot on) are going like hot cakes. If you want one, don't linger, £45.

SECOND-HAND TRANSMITTERS :

KW VALIANT ...	20	0	0	CODAR AT5 ...	10	0	0
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New CODAR AT5's and p.s.u.'s now in stock.

COMPLETE HEATHKIT SSB STATION : HX20, HRO20 and HP20 p.s.u. 80-10 (28-29.5) 90W. p.e.p. Tx and matching Rx and p.s.u. (115v., sorry!) However, not to worry, a very nice rig, immaculate and suitable for either fixed station, or with a suitable mobile p.s.u., mobile use. Complete with all connecting cables and microphone, ready to go, £120.

TEST GEAR :

	£	s.	d.
MARCONI CT-218 sig. gen. 85 kc/s.-30 mc/s. AI ...	65	0	0
SOLARTRON CD5235, D.C. to 10 mc/s., 'scope. Mint	45	0	0
MARCONI TF885A, video oscillator. Mint ...	45	0	0
Industrial Electronic 2300 'scope, tiny thing ...	15	0	0

SUNDRIES :

Teisco DM-501 dynamic microphone, high impedance	2	15	0
Plain Morse keys, polished brass with ball bearing pivots	18	6	
C.W. Practice sets, key plus buzzer ...	15	0	
G.D.O.'s Tech. TE18, 240v. A.C. 300 kHz-220 mHz ...	11	10	0
S.W.R. Bridges Hansen SVR3, 50 or 75 ohm ...	3	10	0
Bug keys ...	4	0	0
Electronic keyers DA1 ...	16	0	0
Katsumi C.W. Monitors, high speed relay, built-in with spare contacts for break in CW ...	7	15	0
Headsets, low impedance, padded ...	2	2	6
AR88 manual reprints ...	15	0	
VHF/UHF 50 ohm dummy loads ...	2	10	0
COLLINS 5 cycle VFO's, one or two left ...	35	0	0

Tubular trimmers, 1/2-5pF or 3-15pF 1/- each or 10/- doz. Feed-throughs, 500v. 1000pF screw type 1/- each or 10/- a doz. Standard Belling Lee coax plugs, metal, 1/4, sockets 1/-, Octal B7G or B9A plugs 2/6 each. SE-05 1000piv 500mA rectifiers, the ones you can trust, 4/6 each. Panel indicator lamps for standard lilliput bulbs red or green, 2/6 each. Lilliput bulbs 1/- each. PL259 plugs 5/- each, reducers 1/3 each, sockets 5/- each. I have a very nice line in brand spanking new capacitors. Top quality at junk prices.

ELECTROLYTICS :

Can type with mounting clips. 100mF/350v. 5/6 ; 100-100mF/350v. 6/8 ; 100mF/450v. 7/2 ; 40-40/500v. 7/3 ; 100mF/500v. 7/9 ; 100-100/450v. 13/2.

Minute low voltage types :—

16mF/16v. 8d. each, 7/- doz.; 10mF/16v. 6d. each, 5/- doz.; 100mF/12v. 8d. each, 7/- doz.; 1000/12v. 6d. each, 5/- doz.; 30mF/16v. 8d. each, 7/- doz.; 100mF/16v. 1/- each, 10/- doz.

TANTALUMS :

4/20v., 4/38v., 10/12v.—all at 1/6 each. Believe it or not lads, these are normally around the 12/6 mark!

DISCS :

.01/500v. 6d. each, 5/- doz.; .001/500v. 4d. each, 3/6 doz.; 50 volt types .002, .005, .01 3d. each, 2/6 a doz.; .02-.05 4d. each, 3/6 doz.

SWITCHES :

DPDT slide switches,

KNOBES :

2 3/8" dia. fluted, 2/-, AR88 type 1 3/8" 1/6, 1 1/8" 1/3.

Crystal holders HC6/U 1/- each, 10/- doz.

75 or 300 ohm twin feeder, good for 200W., 6d. a yard.

WELLER SOLDERING GUNS :

	£	s.	d.
"Expert"—dual heat 100/140W. ...	3	12	6
"Expert"—kit with solder, spare tips, soldering aid, brush and spanner in strong carrying case ...	4	17	6
"Marksman"—25W. ...	1	11	6
"Marksman"—25W. kit with solder, 2 spare tips and soldering aid ...	2	1	6

Converters, 21 or 28 mc/s. These are hot stuff—twin triode cascade r.f. amp. 12AT7 low noise mixer/xtal osc. and 6AU6 I.F. out. The output is 5-5.5 mc/s., (21 mc/s.) and 5-7 mc/s. (28 mc/s.). They require 6.3v. A.C. and 150-200v. D.C. and are excellent value at £7 10s. We also have a 2m. version of these with an IF of 28-30 mc/s. At £10 it represents extremely good value.

All the lovely new stuff can also be inspected at Alan Whitford's, G3MME, 37 Chestnut Drive, Polegate, Sussex. Telephone No. Polegate 4659, evenings and weekends for those who can't get over to Matlock. If you can't get over to either Alan or myself send me a s.a.e. and I'll send you my latest lists.

POSTAGE : PLEASE ALLOW LOTS FOR POSTAGE. WE WILL REFUND ANY EXCESS.

73,

The Bandit, VE8DP/G3UBO.

AMATEUR ELECTRONICS G3FIK

TRIO COMMUNICATIONS EQUIPMENT. We sincerely trust that regular readers of Short Wave Magazine will now appreciate that our advertising over a considerable period has reflected our consistent faith in this excellent gear and, we are very pleased to say, this has been rewarded by our ever increasing sales. Specialising in TRIO we have put us in the position of attaining a familiarity with individual equipments in the range to a degree which could not have been expected had we merely stocked the odd item and, consequently, the prospective purchaser has at his disposal an after-sales service which without doubt is second to none in the country. This has recently been strengthened by the establishment of a first-class service department which is gladly open to inspection and which we have tried to make as comfortable as possible for the demonstration of equipment to the visitor. Needless to say, at least one licensed Amateur is usually on the premises. Having through pressure of business succeeded in missing last month's copy date(!) we will now try and rectify the position by giving our current stock position, to some extent at least, as follows:—

	£	s.	d.		£	s.	d.
GALAXY V MARK 2 TRANSCEIVER WITH REMOTE VFO. This latest model is in excellent condition and fully air-tested ... Carriage paid	230	0	0	BC221 FREQUENCY METERS. Graded according to external condition Carriage paid	£22	0	0
DRAKE 2C RECEIVER. Indistinguishable from new. Current price is, of course now £130. This one in specimen condition at ... Carriage paid	95	0	0	T-75 FREQUENCY METER. Identical appearance to the BC221. 80 to 1000 Mc/s. Absolutely mint condition ... Carriage paid	35	0	0
LAFAYETTE HA350 RECEIVER. Complete with calibration xtal and could be sold as new such is its condition ... Carriage paid	57	0	0	AVO ELECTRONIC TESTMETERS. Complete with RF probe and all leads. Carriage paid	17	0	0
EDDYSTONE 840C. Further mint receivers to hand at ... Carriage paid	£42	10	0	COLLINS VFO. 80 thru 10. Slide rule scale, as fitted to Collins AM exciters and 75A-1. Carriage paid	8	0	0
EDDYSTONE 888. Complete with matching speaker, mounting blocks and S meter. Just factory re-aligned Carriage paid	67	0	0	FLBA AUDIO FILTER UNITS. Please note that stocks of these are now exhausted.			
HEATHKIT DX40U TRANSMITTER. Complete with VFO. Used but checked ... Carriage paid	31	0	0	HAMLOAD DUMMY LOAD. 75 ohm oil-filled. Supplied dry ... Carriage paid	3	3	0
HEATHKIT SB10U SSB ADAPTOR. In first class condition indeed ... Carriage paid	26	0	0	TRIO HS-4 LIGHTWEIGHT HEADSETS. Designed for the JR-500SE and 9R-59DE Carriage paid	6	2	6
HEATHKIT RA-1. Complete with matching speaker. Unmarked and mint ... Carriage paid	36	0	0	TRIO SP-5D SPEAKER UNITS. Again designed for the above receivers and matching the lines of the 9R-59DE ... Carriage paid	4	12	6
HEATHKIT RG-1. Very clean indeed Carriage paid	28	0	0	QUALITY TRAP DIPOLES. Employing hard drawn 14 gauge wire and potted traps. 80 thru 10. Carriage paid	7	0	0
EDDYSTONE S640. Fitted new mains transformer, fully tested ... Carriage paid	20	0	0	Low loss coaxial feeder for these available at, per yard	2	0	
EDDYSTONE S640. Good condition and air-tested Carriage paid	25	0	0	AR88LF and AR88D RECEIVERS in stock as per our previous advertisements. These are graded according to physical condition only and all are guaranteed to be in first class alignment and order and entirely free from tuning drive backlash which is a most important point to watch with used AR88's. If calling to collect we would appreciate the maximum notice please as we always have a backlog or orders for these.			
LAFAYETTE KT-320. Unmarked condition and in original packing ... Carriage paid	20	0	0				
MARCONI TF 144G SIGNAL GENERATORS. In original transit cases ... Carriage paid	22	10	0				

WE URGENTLY REQUIRE HIGH QUALITY COMMERCIAL EQUIPMENT—Please state required price when writing.

Credit facilities. Part exchanges. Adequate S.A.E.'s gentlemen please.

EXCELLENT PARKING FOR THE CALLER

518-520 ALUM ROCK ROAD, ALUM ROCK, BIRMINGHAM 8.

Telephone : 021-327 1497

Fast Mail Order for the Amateur Radio Enthusiast!

AERIAL EQUIPMENT

TWIN FEEDER. 300 ohm twin ribbon feeder similar K25, 8d. per yard. 75 ohm twin feeder, 6d. per yard. Post on above feeders, 2/- any length.

COPPER WIRE, 14G, H/D, 140ft., 30/-; 70ft., 16/- Post and packing 3/3. Lengths are approx. only, actually sold by weight.

FEEDER SPREADERS. 6" Ceramic type F.S., 10d. each. Postage 2/6 up to 12.

CERAMIC CENTRE PIECE for dipoles Type AT, 1/6 each. P. & P. 1/-.

AERIAL INSULATORS. Ribbed ceramic, 2/6 each. Short stick, 1/- each. Egg, 6d. all plus postage.

2 METRE BEAM, 5 ELEMENT W.S. YAGI. Complete in box with 1" to 2 1/2" masthead bracket. Price: £3 7s. Carriage 5/-.

SUPER AERAXIAL, 70/80 ohm coax, 300 watt very low loss, 2/3 per yard. 50 ohm 300 watt, 2/6 per yard. P. & P. 2/6.

TOUGH POLYTHENE LINE, type ML1 (100lb.), 2d. per yd. or 12/6 per 100 yds. Type ML2 (220 lb.), 4d. per yd. or 25/- per 100 yds., ML4 (400 lb.), 6d. per yd. Ideal for Guys, L.W. Supports, Halyards, etc. Postage 1/6 on all line.

Midland Agents

for

**EDDYSTONE
K.W. ELECTRONICS
TRIO
FERROGRAPH**

NEW BOXED VALVES. 3/6 each, 4 for 10/- P. & P. 2/-.

Types 6N7GT, 6AB7, 6AC7, 6SK7, 6SF7, 6F7, 956, U10, MSP4, IU5, 6G6G, X22, 958A, 6SK7GT, 5Z3.

LARGE CERAMIC COIL FORMERS. 4 1/2" L. x 2 1/2" diam. Grooved and threaded 9 T.P.I. Ideal for linears, 12/6 each. P. & P. 1/6.

SHORT WAVE KITS. One valve only, 50/-, phones, ant, and batts, 40/- extra if required. Ideal for Junior op.

ABSORPTION WAVEMETERS. New improved model, 3.00-35 mc/s, in 3 switched bands, 3-5, 7, 14, 21, 28 and model control bands marked. Complete with indicator bulb. A must for any Ham Shack, only 30/- P. & P. 2/6.

SEALED RELAYS. 12v. 105Ω Coil Type A. 4 Pole, C.O., 15/- Type B. 2 Pole, C.O. + 2 Pole Norm. on, 12/6. P. & P. 1/6.

The Widest Range in the Midlands

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Please print your address. No C.O.D. under £1.

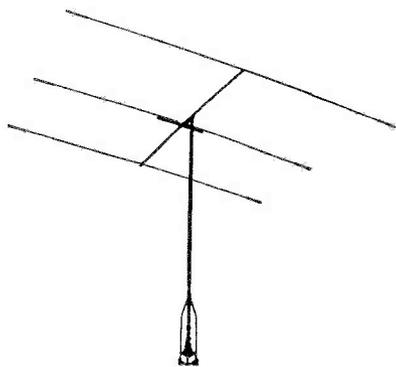
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 TA-33 Snr. TD-2
 TA-32 Snr. DI-10
 V-4-6 R4-4RK
 RV-4

Rotators, Towers, Polythene cord and rope, Coax cable,
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Mosley Electronics Ltd. 40, Valley Road, New Costessey, Norwich, Norfolk Nor. 26K

PETER SEYMOUR LIMITED

410 BEVERLEY ROAD, HULL, YORKSHIRE

Telephone : 41938

Wanted for cash, modern receivers. Please state your price.

	£	s.	d.		£	s.	d.
KW2000 "G" with matching P.S.U.	155	0	0	AR88D with tools and manual. 540 Kc/s.-32 Mc/s. As new	50	0	0
HALLICRAFTERS SXIII. 80-10 metres, dual conversion, selectable sideband "S" meter, slot filter, etc.	49	0	0	TRIO 9R59DE, 550 Kc/s.-30 Mc/s. Immediate delivery	39	15	0
SOMMERKAMP FL DX500 Tx. As new	120	0	0	MULTIBAND DIPOLE TRAP SETS, with full instructions fully encapsulated, per pair 80-10 metres	2	10	0
EDDYSTONE 2245A. 150-380 Kc., 510 Kc's. to 1.5 megacycles and 3.7 to 30 megacycles, push/pull output, large modern dial. 110-240 A.C./D.C.	17	0	0	TRIO JR500Se crystal-controlled Osc. tunable IF system, full coverage 80-10 metres. Amateur bands only. Two mechanical filters, transistorised VFO, etc. New	68	0	0
KW VESPA with P.S.U.	135	0	0	Full details of the Drake equipment are available on request.			
LEVELL, transistor A.C. Microvolt meter, type TM3A, 15 microvolts to 500 volts in 16 ranges	35	0	0	SWAN 2 metre transverter, 240V PEP	155	0	0
VOLSTATIC V.H.F. SKYMASTER, covers long, medium and 108-138 Mc/s. The best aircraft band portable in the U.K. (including carriage)	26	10	0	SHURE 201 microphones	5	10	0
HALLICRAFTERS SX101A, amateur bands only, with special calibrated I.F. for 2 metres. Dual conversion	85	0	0	LAFAYETTE PF60, all-transistor, battery/mains 152-174 Mc/s.	38	0	0
				KW 2000A with A.C. P.S.U.	232	0	0
				CODAR AT5 with P.S.U.	25	9	9
				AR88 SPARES, logging dials 5/-; escutcheon (dial windows) 10/-; plus all tubes available.			

All items carriage free.

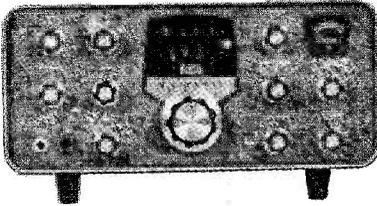
NOTE: Should you wish to part-exchange any good quality photographic equipment, our mail order camera department can quote you on trade-ins. We can also supply any new photographic equipment, and can take into stock items of Amateur Radio equipment, existing H.P. settled.

FULL H.P. FACILITIES ON EQUIPMENT OVER £35

ONE THIRD DEPOSIT UP TO 24 MONTHS TO PAY. LET US KNOW YOUR REQUIREMENTS

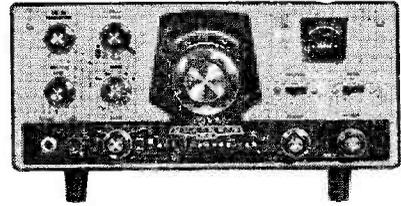
HEATHKIT Amateur Radio Equipment

DEFERRED CREDIT TERMS BY ARRANGEMENT OVER £10 U.K.



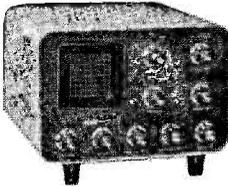
SB-101 80 Through 10 Metre SSB Transceiver . . . 180 watts input PEP SSB, 170 watts CW (the practical power level for fixed/mobile operation). Features USB/LSB on all bands, PTT & VOX. CW sidetone and more. Unmatched engineering and design.

Kit **K/SB-101**, 23 lbs., £185 . 12 . 0. Carr. 9/-.
Ready to use **A/SB-101**, £225 . 12 . 0. Carr. 9/-.



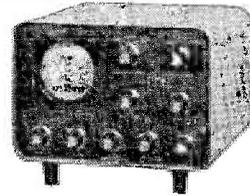
HW-100 5 Band SSB-CW Transceiver . . . Solid-State (FET) VFO covers 80-10 metre bands. Switch selector USB LSB or CW. 180 watts input PEP SSB, 170 watts input C.W. Crystal filter.

Kit **HW/100**, 18 lbs., £125. Carr. 9/- . Ready to use £165. Carr. 9/-.



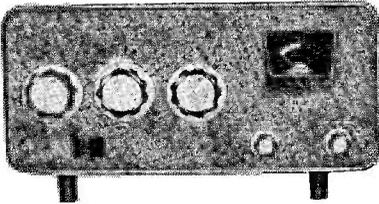
SB-610E Signal Monitor Scope . . . operates with transmitters on 160 through 6 metres at power levels from 15 watts through 1 kw. Shows transmitted envelope. Operates with receiver IP's up to 6 MHz, showing received signal waveforms. Spots over-modulation, etc.

Kit **K/SB-610E**, 14 lbs., £41 . 14 . 0. Carr. 10/6.
Ready to use **A/SB-610E**, £51 . 14 . 0. Carr. 10/6.



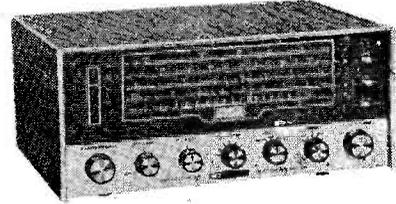
SB-620 "SCANALYZER" Radio Spectrum Monitor and Analyzer. New narrow sweep widths with crystal filter for single channel analysis. 10 kHz, 50 kHz. Variable width to 500 kHz. Styled as SB series.

Kit **K/SB-620**, £64 . 14 . 0. Carr. 10/6.
Ready to use **A/SB-620**, £77 . 4 . 0. Carr. 10/6.



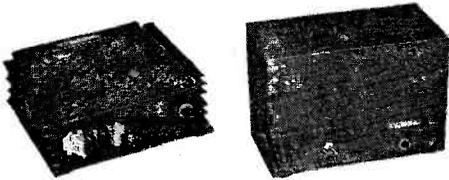
SB-200 KW SSB linear Amplifier . . . 1200 watts PEP input SSB, 1000 watts CW on 80 through 10 metres. Built-in antenna relay, SWR meter, and power supply. Can be driven by most popular SSB transmitters (100 watts nominal output).

Kit **K/SB-200**, 41 lbs., £120 . 18 . 0. Carr. 10/6.
Ready to use **A/SB-200**, £145 . 18 . 0. Carr. 10/6.



GR-54 5 Band Shortwave Receiver . . . for AM, SSB, CW. Product det. for SSB . . . 3 shortwave bands cover 2 MHz to 30 MHz plus 550 kHz to 1550 kHz AM broadcast band and 180 kHz to 420 kHz aeronautical and radio navigation band. Built-in AM antenna.

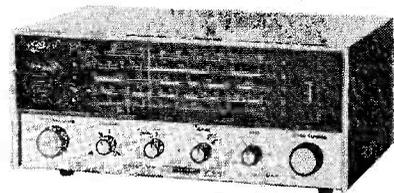
Kit **K/GR-54**, £50. Carr. 9/- . Ready to use **A/GR-54**, £63 . 6 . 0. Carr. 9/-.



HP-13 Mobile and HP-23 Fixed Power Supplies . . . For the HW-100 SB-101 and "Single Banders". Provides all necessary operating voltages with excellent dynamic regulation.

Kit **K/HP-13**, 7 lbs., £37 . 2 . 0. Carr. 6/-.
Ready to use **A/HP-13E**, £44 . 2 . 0. Carr. 6/-.

Kit **K/HP-23E**, 19lbs., £30 . 18 . 0. Carr. 9/-.
Ready to use **A/HP-23E**, £36 . 8 . 0. Carr. 9/-.



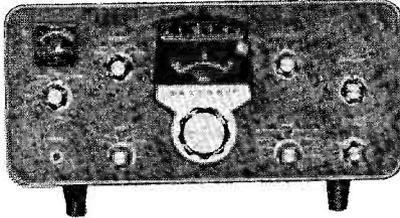
GR-64 4 Band Shortwave Receiver . . . 4 bands—3 shortwave bands cover 1 MHz to 30 MHz plus 550 kHz to 1620 kHz. AM broadcast band. Variable BFO control for code and SSB transmissions. Built-in AM antenna.

Kit **K/GR-64**, £22 . 8 . 0. Carr. 9/- . Ready to use, £29 . 8 . 0. Carr. 9/-.

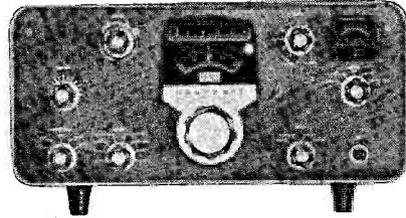
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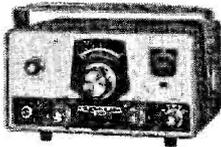


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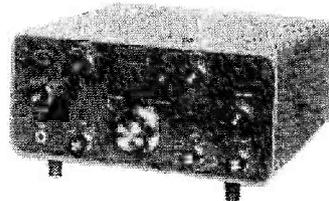
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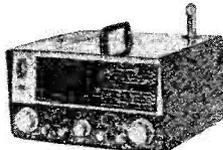


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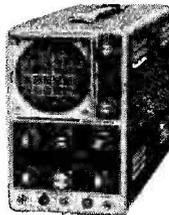
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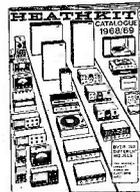
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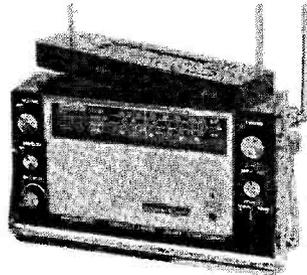
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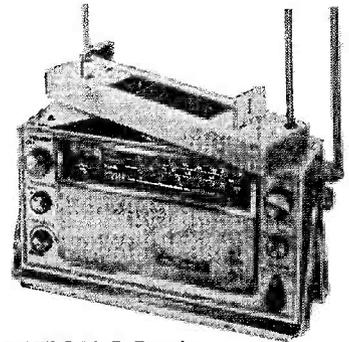
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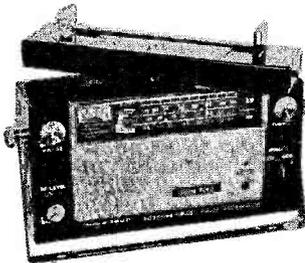
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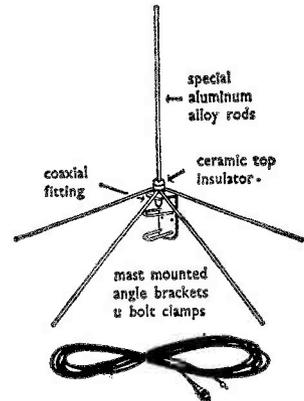
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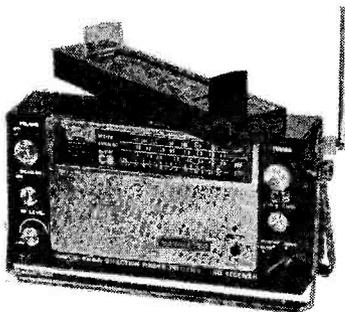
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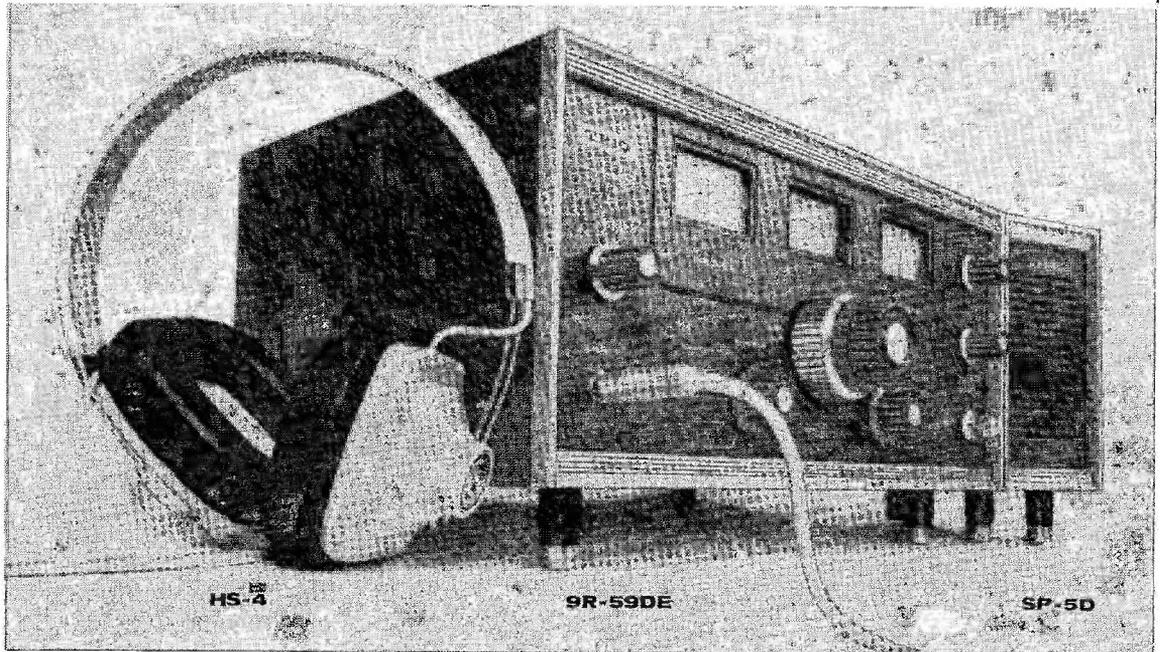


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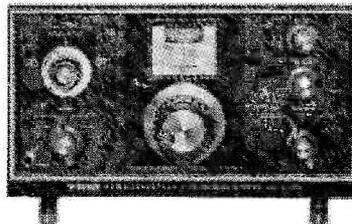
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SHORT WAVE MAGAZINE

(GB3SWM)

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MARCH, 1969

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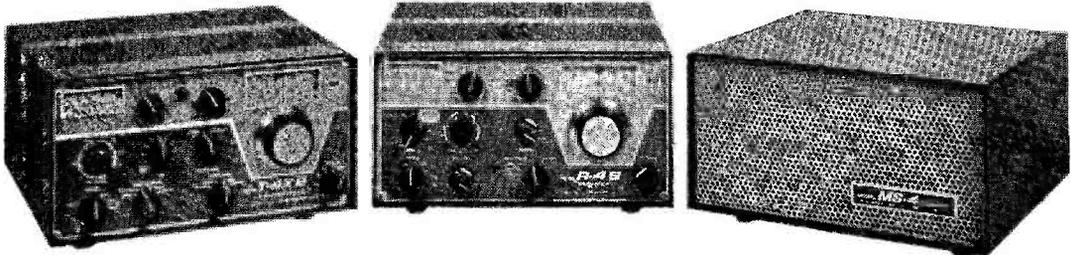


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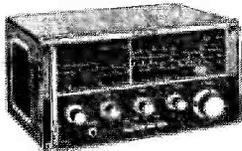
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E D I T O R I A L

Inspiration

While the art of Amateur Radio develops and changes with the times — above all else, we must have progress in techniques — the essential pattern of radio amateur activity remains the same. As has been said here before, the basic conception, the reason for the existence, of Amateur Radio is that of being able to communicate at will with one's fellows "either across the parish or across the world." It is that, in nearly every case, which inspired the original application for a licence — to be able to go on the air and communicate is what most of us want to do, and why we ever thought of becoming radio amateurs at all. Communication is, always has been, and always will be, the dominant factor in all Amateur Radio activity.

Once this first urge has been satisfied to greater or less degree, the individual nearly always tends to branch off in some direction of specialised interest. It might be pure experiment, or an unending series of constructional efforts, or band specialisation, or the collection of DX trophies, or VHF endeavour — or some other of the wide variety of possible lines of activity which together go to make up the whole fascinating field of interest open to the radio amateur.

But the important fact is that the great majority of amateurs always come back, sooner or later, to having spells of pure communication activity — very often no more than making QSO's just for the sake of having contacts. They give all sorts of reasons for this: "Just keeping my hand in," "Making sure the gear still works," "Happened to hear so-and-so on the band, so thought I'd give him a shout," or "Suddenly felt I'd like to work some DX again" — the original inspiration has never left them. And that, really, is all there is to it!

*Austin Smith,
G6FO.*

VARIATIONS ON THE VERTICAL

ADAPTING A 33-FOOT SYSTEM— TWO-BAND COUPLER FOR THE HF BANDS

A. D. TAYLOR (G8PG)

IN a previous article—SHORT WAVE MAGAZINE, June 1968—the writer described the construction of vertical aeralis made from Govt. surplus whip sections and indicated how successful a 33-foot version had been when used on the 3.5 mc band. The present offering discusses the extended use of the 33-foot aeral, describes a suitable aeral coupler and puts forward an idea for an effective and inexpensive method of housing remote aeral matching networks.

Operation on 80 metres with this 33-foot aeral was continued successfully well into the early summer of 1968. By that time, however, the advent of light evenings and seasonal static meant that long-distance working became increasingly difficult. Activities were therefore transferred to the 14 and 21 mc bands using the only other aeral available—which was a 40ft. *indoor* wire. Many interesting contacts were made, but it soon became apparent that a better aeral was needed if the really exotic stuff was to be raised. The only question was—*what aeral?* A beam was out of the question, and while it might have been possible to erect an outdoor dipole this would only have been about 20 feet high and orientated wrongly for the main centres of DX activity. For all-round DX therefore, it was necessary to devise an omnidirectional arrangement giving good low-angle radiation. The first such aeral to be considered was the ground plane, but this had to be rejected for practical reasons. To accommodate the radials for a 20-metre version, either the supporting mast would have had to be erected in the centre of the lawn or (if the existing mast position had been retained) the radials would have had to be run over two neighbouring gardens. Both these conditions were impracticable. A second method would have been to erect a co-axial dipole, constructed as described in the previous article and supported on the existing mast. However, this would have been purely a one-band affair, and it was again unacceptable. Having rejected these two alternatives G8PG began to think about certain techniques used by medium-wave broadcasting station engineers and from these there emerged a possible solution.

Why Put Up Another Aeral?

There was already the perfectly good 33-foot vertical aeral (half-wave on 20 metres) standing at the bottom of the garden, so why not use this and base feed it? Many MW BC stations use half-wave verticals to obtain good ground-wave coverage, and this implies plenty of low-angle radiation. Of course, having the base a quarter-wave above ground should give still better low-

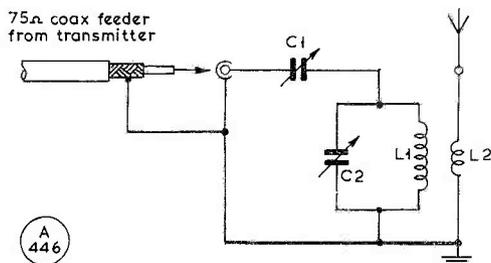
angle results, though the earthing system at G8PG could not match that of a broadcasting station, but it might still work—providing the vertical polarisation did not cause TVI. And if it did work, the requirement of omnidirectional radiation with reasonable power at low angles would have been achieved. An advantage of *amateur* radio is that once you have thought up an idea you can usually go right ahead and try it, so preparations were put in hand to prove whether or not the base-fed 33-footer would produce DX on 20 metres.

First requirement was to couple the aeral to the 90 feet of co-axial cable leading back to the transmitter. As the Z-match had been so successful on 3.5 mc it was decided to use it again on Twenty. The circuit shown opposite was therefore constructed on a piece of paxolin board. C1 in the diagram is used to tune out the line reactance and C2 to resonate the circuit. When setting up, the transmitter is first coupled into a 75-ohm dummy load, after which the feeder is connected. The transmitter is then switched on and a diode radiation meter is placed near the base of the aeral. C1 and C2 are adjusted in steps until maximum RF indication is obtained on the radiation meter. This should coincide with full loading of the transmitter.

Having tuned up the transmitter, the moment of truth arrived. With the rig switched on and his fingers crossed G8PG went downstairs and looked at the TV screen. Success! The screen was completely free of patterning and the first major hurdle had been overcome. (This was with an input of 70 watts to a well suppressed transmitter which has a commercial low-pass filter at its output socket.)

First Results

Knowledgeable readers will indulge in a sympathetic smile when the writer points out that it usually takes him at least six months to test out an aeral on the HF bands. The first few weeks of tests invariably seeming to coincide with solar flares, major magnetic storms and a mass migration of other operators to the VHF bands! It was therefore with no expectation of any immediate success that the rig was first tried out with the 33-foot vertical on 14 mc. Fifty minutes later the log was checked with a mixture of amazement and suspicion—W, PY, VP8 and 9V1 on a new aeral in less than an hour—it just could not last! Fortunately, it did. After six months of operation on 20m. it can be said that the general DX results with the system are outstanding, and no less than 10 new countries have been worked. The low-angle radiation is there, and it seems to go to



Circuit of the resonating tuner described by G8PG. Values are in the paragraph opposite.

all points of the compass. The 33-foot vertical is certainly the best non-beam 14 mc aerial that the writer has yet tried.

Some work has also been carried out on 21 mc using the aerial as a base fed $\frac{1}{4}$ -wave. Operating time on this band has been limited to a few days, but already two new countries have been worked, one of them being YA1.

Housing For The Aerial Couplers

The original 80-metre aerial coupler used with the vertical aerial was built in a metal box. This proved far from satisfactory under outdoor conditions. Apart from being expensive initially, it was very difficult to make it even reasonably waterproof and it very soon began to show signs of rust and corrosion. A cheap and elegant alternative method of solving the problem occurred to the writer while watching his XYL preparing vegetables for deep freezing. There are now available a wide range of food containers made from flexible plastic, and the larger types make ideal boxes for electronic apparatus, like remotely located aerial couplers! The material from which they are made seems to be completely resistant to damp and corrosion, the lids are far more tight-fitting than a screwed-on metal panel and holes for terminals can be made in seconds by pushing a small bradawl through the side of the box and, if necessary, opening out the resulting hole with the end of a small screwdriver. Two oblong containers of this type were purchased for 5s. each, one being used to house two of the couplers shown in the diagram (for 14 and 21 mc respectively) and the other for the physically larger 80m. unit. The couplers are built on sheets of paxolin which are then placed in the bottom of the container. Each is provided with a co-axial socket for the feeder and a terminal for the aerial connection, these being mounted on the sides of the container. The earth return consists of a length of heavy gauge, multi-strand plastic-covered wire. This is passed through a push-fit hole in the side of each container and its far end is connected to the commoning terminal of the two 33-foot buried radials and two earth rods which make up the earthing system. When initially installed the couplers are peaked for the desired band, the lids of the containers are put on and

band changing then only involves changing over the feeder and aerial connections to the coupler to be used. The 14 and 21 mc bands can be covered without retuning, and about 80 kc can similarly be accommodated on 3.5 mc.

A further development now being considered is the installation of a pair of sealed change-over relays, controlled from a cable lead back to the shack, so that any two bands can be selected from the operating position.

Practical values for the Coupler shown in the diagram can be, for the 14 and 21 mc bands: C1, C2, 100 $\mu\mu\text{F}$; L1, 6 turns of 22g. enamelled close-wound on a suitable 1-inch former (paxolin, bakelite, tufnol or poly. tube); and L2, 4 turns of 22g. wound over L1, to give coupling into any 33ft. aerial with an adequate ground connection.

For once, the writer forbears to offer a "conclusion" paragraph—because there are still many interesting things to be learned about this particular aerial system.

DISTRIBUTION — FEBRUARY ISSUE

The postal dislocation during the last week of January—when the GPO were refusing parcels and 2nd-class mail—meant that our normal distribution to the retail-wholesale trade was seriously affected. Instead of using the parcel-post service, we were thrown back on British Rail as the only alternative—as also were many other firms with goods to send out. This in turn led to chaos and congestion in the Railway parcels-handling system.

Though the bulk consignments to our newsagent outlets were sent "passenger-goods" (the most expensive way of doing it), there were considerable delays in delivery of the February issue to retailers up and down the country. While this is, of course, very much regretted, it was due to circumstances over which we could have no control, and was made all the more aggravating because (a) The February issue was out right on time, as always, and (b) It was despatched in the most expeditious manner open to us.

As regards our several thousand direct subscribers—those who receive their copies individually by post—on this occasion these were, exceptionally, sent off a day earlier than usual and stamped "1st class," so that there would be no hold-up due to the Post Office refusing second-class mail. As the 1st class postage on a single copy is 9d., no less, it cost us a good deal of money to meet the direct-subscriber commitment. As far as we know, the great majority of the D/S got their copies by the Saturday.

What makes all this so very annoying, apart from the expense, is that, on the settlement of the Post Office bother a few days later, it emerged that it need never have happened at all, and that the Nation's business had been thrown into almost total confusion because of face-saving attitudes and procrastination at *Cabinet level*!

MAKING CABINETS FOR HOME-BUILT GEAR

PRACTICAL METAL-WORK FOR THE CONSTRUCTOR— FABRICATION, FINISH AND SPRAY-PAINTING FOR THAT PROFESSIONAL APPEARANCE

J. E. AUSTIN (G3REM)

MANY amateurs spend a great deal of time on the chassis layout and wiring of their home-built equipment, but are rather stuck when it comes to finding a suitable cabinet into which the completed unit can be fitted. In some cases the unit remains as an open chassis, and in others a surplus cabinet is purchased. An open chassis is unsightly, can be dangerous and is an efficient collector of dust. Finding a surplus cabinet of the correct dimensions is not always easy and all too often one ends up with something which is larger than necessary, displays unwanted holes and possibly some damage.

The writer has a professional interest in sheet metal work and feels he could suggest an improvement in the *outside* appearance of home-built gear. The ever-present problem of TVI anyway demands adequate screening of transmitting equipment and a snugly fitting cabinet can be a great help in this respect. The cabinet described was made at home and houses a 2/TT21 linear amplifier.

Tools used are unsophisticated but good results can be obtained. In order to save the reader a lot of reading and the writer a lot of writing the accompanying drawings are self-explanatory as far as possible.

For hand working, the most convenient gauge of aluminium sheet is 18g. and this is used for the cabinet sides and bottom cover. The lid and front and rear panels are made from 16g., cut with a metal cutting blade similar to the well known "key hole" saw. The appearance of any station can be greatly enhanced if all the cabinets are matched and in the present example that of the *Sphinx* Tx was adopted.

A start was made by constructing a simple jig on which to shape the two side panels, *see* Fig. 1. The base board was cut, planed and squared to the exact height of the panels and some 2in. longer. The one-inch tube was then bolted on level with the edge of the board, with one bolt at each end. Next, cut the aluminium sheet to the exact length required but allow about 3 inches in the height for primary fixing and bending losses. Drill the sheet near the edge and screw to the jig, as shown. Now pull the sheet down over the first form and secure in a carpenter's vice, clamping it down on top of the tubes. Next, pull the sheet round the second form. Make the other side panel in the same way, then trim off the drilled edges. (Any "spring back" effect can be corrected after removal from the jig.)

Eight angle pieces are required next and these were made in a folding iron designed by the writer and made by the local blacksmith. *See* Fig. 2. Use 16g. aluminium sheet and bend over with a piece of smooth hard wood, tapping with a heavy hammer.

The front and rear side pieces can now be rounded at the ends to fit inside the side panels, *see* Fig. 3. As the front panel is to be set back $\frac{3}{8}$ in. the front angle pieces must go in by that amount *plus* the thickness of the front panel, say a total of $\frac{7}{8}$ in. The rear side angle pieces are set in by the thickness of the rear panel so it fits flush to the rear edge of the cabinet. Use a scrap piece of 16g. as a gauge.

Where the fitting of any part is known to be permanent it is good practice to use rivets. They are quick, neat and easier than small nuts and bolts. Countersunk $\frac{1}{8}$ in. ali. rivets are used to secure the angle pieces to the side panels. Where quick access may be required anchor nuts are rivetted in to save fiddling with small nuts and bolts in odd corners (we've all had some of that!) Anchor nuts are fitted to the angle pieces for later assembly work. The other four angle pieces can now be trimmed to size and the anchor nuts fitted as shown. *See* Fig. 4.

Strips of 16g. are next rivetted on to the bottom edges of the side panels to take the bottom cover. The cabinet can now be assembled and squared up, using short screws where the feet are to be put on later. (*See* Fig. 5.) Now cut out the front and rear panels and file to a good fit for the cabinet.

After drilling the panels can be worked into place, using chromed mushroom head screws on the front panel and round head on the back. The lid also is cut from 16g. ali. and dimensioned to cover cabinet assembly screws on the top. Rivet a strip of 18g. to the front to complete the "frame" to the side panels. (*See* Fig. 6.) Holes for vent grilles can be punched out if required. Slot in a length of piano hinge as shown and fit the lid into place, using countersunk BA screws. A strip of 16g. goes over the rear web of the hinge to level it with the lid. Mark the position of the lid fixing screw and drill the hole for it; the screw can be made captive by tapping the hole 4 BA and then filing off a few threads below the head of the screw. The bottom cover is cut from 18g. and held in place by small self-tapping screws. Vent grilles can also be pierced in the bottom if necessary. The feet are made from brass bar and rubber buffers,

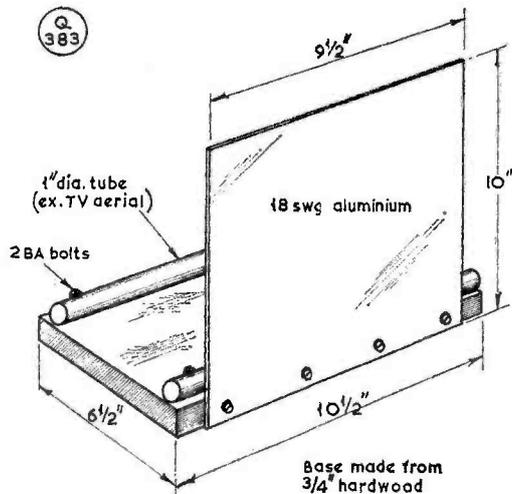


Fig. 1 Bending jig

secured by long 4 BA screws into the corner anchor nuts.

The cabinet is now complete and if any service work is necessary at a later date a side panel can be removed very quickly. In fact, the whole cabinet can be dismantled in a matter of minutes.

Anchor nuts can be purchased at good D-I-Y shops and they are rivetted into place like countersunk rivets. (An old ball bearing is very useful for starting off the rivetting action.) If the side of a hole breaks away when fitting an anchor nut, make a new angle piece twice the required width and trim off surplus metal after the nut is in place. Piano hinge can also be purchased at D-I-Y shops, in standard lengths and several different finishes, including chrome.

The completed cabinet can be spray-painted to match the colour of other units in the shack. Small pressure cans of quick drying paint are ideal for this purpose. A surprisingly good finish can be obtained.

* * *

Painting The Work

There is no doubt that a nicely painted item of equipment looks vastly superior to one which is left unpainted. Since the advent of the pressurised can a

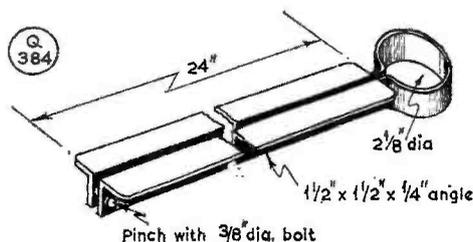


Fig. 2: Bending-irons

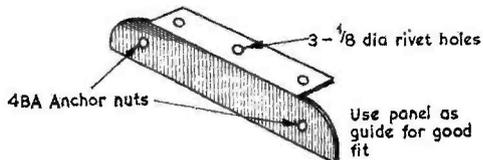


Fig. 3: Side angle pieces - 4 off

whole new vista of possibilities has presented itself to the home constructor. Though these pressurised cans of paint or cellulose can give a finish of professional standards, some practice is necessary. It may not be generally understood that the quality of any paint finish is determined by the efficiency of the preparation work rather than by the application of the final colours, as any competent home decorator knows!

Cellulose and other quick drying materials tend to settle for some time after application, thus any mark in the metal or undercoats will show through the final colour. For this reason, the surface to be painted should be free from marks, scratches, etc. before the final colour coats are applied.

Choice of colour can be determined by that of the central item of equipment in the shack, such as the Rx of Tx. The appearance of the station will be much enhanced if the gear is all matched in colour.

The range of colours on sale for touching up work on cars is very wide and one can be sure of obtaining a repeat at a later date. As there is a tendency for a general range of colours to appear in cycles it should be possible to obtain a close match to the desired pattern colour.

Aluminium is the most widely used material for radio constructional work and also presents special problems with regard to a paint finish. Aluminium oxidises very rapidly and it is for this reason that paint does not adhere too well.

Special primers are made for ali. and these are known as "etching primers." As the name implies, this type of primer tends to eat into the metal, thus getting through the surface oxides and adhering more firmly. The writer has not up to now found any etching primer for aluminium available in the popular cans, but is ever hopeful. In the meantime, the method outlined below has been adopted.

Preparation

Prepare the surface by rubbing over with fine steel-wool until the top shine has been removed—get down to the "dull." Now clean off any dust and blow out the

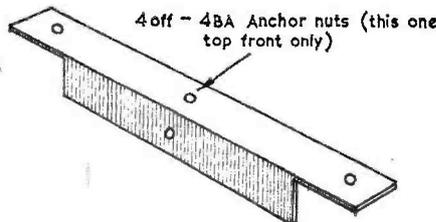


Fig. 4: Top and bottom angle pieces - 4 off

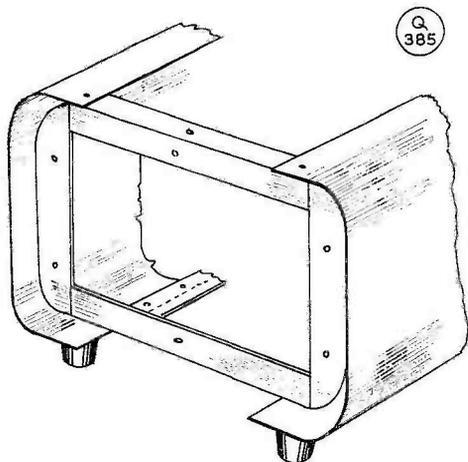


Fig.5 Diagram showing angle pieces in position and feet

odd corners, finally treating with a de-greasing agent if necessary.

Next, spray on a thin coat of *metal* primer or primer/filler and allow to dry thoroughly. When dry spray on at least three further coats. If rivet or screw heads are present give each one a separate local coat of paint before spraying the complete surface, and do the same to sharp edges. (This is to reinforce the paint thickness against later rubbing down operations, as these points will be sensitive to rubbing paper.)

The paint should now be left to dry and harden right off, preferably overnight. When hard, rub lightly with fine "wet or dry" rubbing paper, using plenty of water. The idea is to level off any surface dust or pigment. Take care not to break through the paint surface at any point, or the colour may sag or run later on. If the ali. was unmarked at the start of the job it should now look smooth and level.

Rubbing Out Scratches

However, if there were some scratches in the metal proceed as follows:

Before rubbing spray on a dust coat of contrasting colour, say, black on grey primer. The primer should just be speckled in black and not covered completely. The black will fall into any scratch marks and these will show up as rubbing proceeds. Rub until all the black guide coat has gone from view, proving that the surface is now level. Do not rub a scratch mark *locally*, but over the general area surrounding, otherwise a depression larger than the scratch will result! Deep scratches will require filling with knifing stopper, which must be left overnight to harden. To level the stopper, dust with black, then wrap a piece of rubbing paper round a flat wood block and rub until level. Spray two coats of filler over any stopper to seal it. When dry rub lightly to remove spraying dust around the area. Use a black guide coat if necessary.

Having made sure the undercoats are hard, clean and

free from dust, prepare to spray the final colours. Choose a warm, dry location which is free from draughts and lightly sprinkle water over the floor (if it is likely to be dusty).

Spray on three or four coats of colour, re-reinforcing over screw heads and edges as before. When dry and hard (overnight), inspect for quality of finish. If the colour is smooth and shiny it may now be cut down to a fine finish with metal polish and then wax polished.

Finishing

If however the well known "orange peel" effect is in evidence, take a piece of very fine rubbing paper (500-grade or finer) then fold in half and rub against itself to dull the sharpest grits. Wet the paper, then rub soap into it to prevent clogging as rubbing proceeds. Rinse and re-soap frequently, rubbing until the colour has a matt appearance all over. The shiny colour will act as a guide against the matt rubbed sections. When clean and dry spray on a final coat of colour. After cutting down with metal polish and waxing, the finish should be of a high standard.

Wax polish is chosen because some types of liquid polish contain silicones and these would react unfavourably with the paint during any later touching-up operations. The writer is also of the opinion that good wax polish produces a superior, lasting finish to that produced by the so-called "quick," "all in one," "shines itself," type of polish.

Notes on Paint Spraying

Colours are usually given a name and a *reference number*, which is printed on the can. They are obtainable from any good garage or service station.

The thickness of the material may vary from can to can and it is advisable to spray a test piece with each can before use to see how it goes. If the paint is thin, spray on one or two extra coats. Thicker paints should be sprayed on as wet as possible and then be left to settle for *up to two days*. Some paints will continue to settle for a week or two and the longer it is left before cutting down and polishing the better the finish.

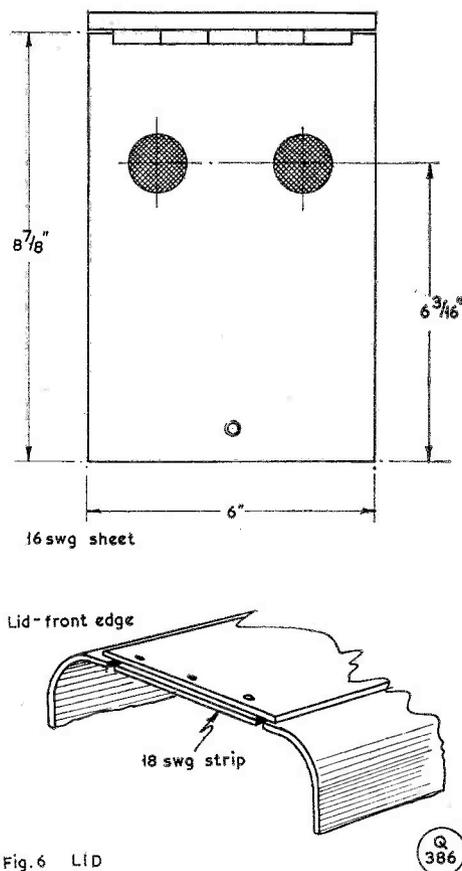
Do not spray in a cold, damp or humid atmosphere or the paint may "bloom." This effect is caused by absorption of moisture and black, for instance, will exhibit patches of whitish hue. (The only cure is to rub with fine paper and soap and spray over again!)

Where two colours are to be sprayed on to one panel, spray the *lightest* colour first. When dry and hard mask carefully with sticky tape and brown paper, then spray on the other colour.

Inside surfaces should always be sprayed first and then masked up with paper. Stick tape on the inside of any screw holes before spraying the outside.

Where a coax socket is to be fitted later, use an old socket as a mask, to leave a clean metal area of the correct shape on which to bond the final socket. Run a sharp knife carefully round the edge of the masking socket before removal. This will prevent peeling of the paint if it has bonded to the socket. Other fittings can be allowed for in the same way.

Small areas of knifing stopper will need rubbing level with 240-grade paper and a rusty steel chassis with



100 grade. Both are used with water.

Reds and maroons are difficult to get "solid" as they tend to be transparent, resulting in a streaky appearance. This can be overcome by giving the job a coat of black first.

Use light colours on battered items, because dents, etc. will show up less than if dark colours are used.

When spraying in a damaged patch, rub around the area for a few inches with fine paper, to bring the surrounding area of good paint to a matt finish. Bare metal should be primed and this can be done with a small pencil brush if the area is not great. Knifing stopper should be used if necessary to build up the paint level. Rub the stopper as before and seal with primer/filler. When dry apply the guiding dust coat, then rub until smooth and clean, taking care to remove any dry spray dust around the area.

The surrounding colour should now have a matt finish, into the centre of which is merged the built-up area. When clean and dry spray in the colour. Give three coats, starting on the primer and moving outwards with each successive coat until the edge of the matt area is reached.

When dry and hard cut down with metal polish until

the new colour merges with the old. (If the new colour is a good match it will be difficult to detect the previously damaged area.)

Finally, remember that care and patience are necessary. Do not hurry the job. Allow plenty of drying time for each stage and do not be tempted into doing the lot in one fell swoop. The quality of finish obtainable is well worth any effort put into it.

THE MAY R.A.E. RESULTS

Details have recently been received from the City & Guilds of London Institute on the results of the Radio Amateurs' Examination ("Subject No. 55") held in May last year. The largest number of candidates ever—1756, compared with 1519 the previous year—sat the Exam., at centres all over the country and some places abroad. Of these, 1097 passed (62.3%), against 60% in May 1967, and 58% in 1966. Thus, the pass-rate has been showing a slight improvement—though it would probably be agreed that it is not yet high enough; 70% of passes would be a reasonable figure. After all, this is a pass-only examination, with no restriction on numbers to qualify—as distinct from some professional examinations, in which the actual pass-mark (above a certain minimum) is determined by the number of individuals it has been decided to allow through for that particular year. Not so in the case of our Subject No. 55—you have only to get 50% to pass.

Taking the last three years together, May 1966 to May 1968, the total of candidates sitting was 4794, of whom 2906 passed. A check on the new G3/3 and G8/3 callsigns listed in the *Callbooks* shows that, since 1967 (and taking the G's only), new licences issued come to 1858. This analysis also discloses the interesting fact that the rate of increase is greater in the G8/3 category (VHF only) than in the G3/3, for which the Morse Test is required. (There were 195 new G8/3's in 1967-'68, but 453 for 1968-'69.) However, to keep the record straight: For the two-year period considered, the G3/3's added 1210 to the G Listing, while the G8/3's put on the other 648. This means that roughly two-thirds of those going in for a new licence still take the Morse Test, in order to enjoy full on-the-air facilities.

FOR SCOUTS WITH ELECTRONIC INTERESTS

Over the weekend May 2-4, a gathering is being arranged at Polyapes Camp Site, Oxshott, Surrey (between Esher and Leatherhead, NGR TQ.131597), for any member of the Scout Movement having an amateur interest in electronics. The full programme will, it is hoped, include demonstrations and discussions on such matters as hi-fi, recording, model control, the SWL interest and Amateur Radio. It is also planned to have experienced people on hand able to help those working on home-constructor projects, or having problems in the electronics field. For further details, Scout Groups or individuals interested should write in, with a large stamped addressed envelope, to: J. A. Carter, c/o Baden-Powell House, Queensgate, South Kensington, London, S.W.7.

MORE ABOUT THE 19 SET

CONVERSION OF MK. III VERSION AS TRANSCEIVER FOR LF BANDS, 80/160M.— MODIFICATION DETAILS AND CIRCUITRY

D. J. RAVEN, M.Sc., Ph.D. (G3TKR)

Though from many points of view an obsolete piece of equipment, the 19 Set—being well constructed, cheap, widely available and easy to modify—remains very popular in amateur circles where the accent is on the practical as distinct from the ornamental. Moreover, the 19 Set in its various marks seems susceptible of infinite variation—we have done articles about it before, but

still the ideas come in. This offering deals with the conversion of the Mk. III as an effective AM/CW transceiver for Top Band and Eighty, and our contributor gives much information that will be of great interest to readers looking for a station rig of this sort, whether as a stand-by or for regular operation.—

Editor.

THE Army No. 19 Set is readily available on the surplus market and is known to be widely used for reception by many SWL's, to whom it gives reliable service on the LF bands (40-80m.). However, in its original form as a transceiver, it seems to be much deprecated by the transmitting amateur.

After adapting the receiver portion of a 19 Set for an SWL friend, by incorporation of an internal power supply and output stage, the writer considered the possibility of carrying out a complete modification for transceiver operation on 80 and 160m., for CW and AM.

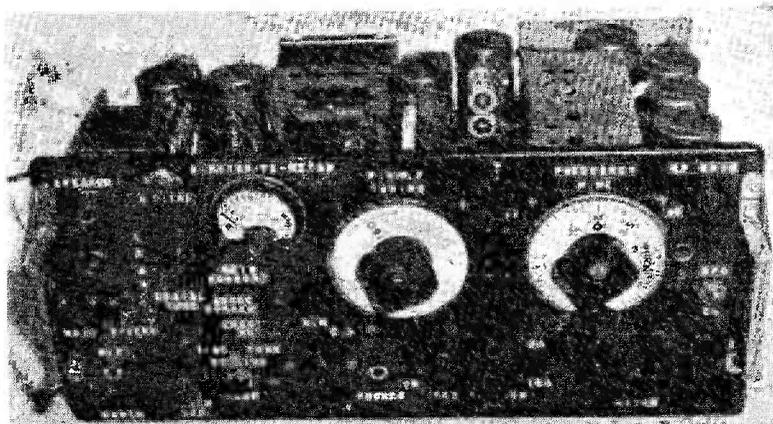
General Considerations

The No. 19 Set Mk. III covers 2.0 to 8.0 mc, in two switched bands, and the receiver portion is a conventional RF/FC/2IF/Det./Audio with 465 kc IF and a BFO. The principle of transmitter operation is that when switched to "send," the output from

the BFO at 465 kc is mixed with the output of the receiver local oscillator to produce a signal at the same frequency as the receiver setting. This is selected and amplified by a tuned buffer stage (EF50) followed by a PA stage (807). Netting is thus automatically achieved, provided that the BFO is working at exactly the IF, and the receiver is accurately tuned. It should be noted that variation of the BFO frequency, either side of zero-beat by means of the heterodyne pitch control on "receive," does not affect the frequency of the BFO on "transmit." (This is because the BFO tuning mechanism is then disconnected, and compensated for, so that the BFO is exactly at the IF.)

The four-gang tuning capacitor is used to tune the grid and anode circuits of the buffer stage, the receiver mixer input and the local oscillator. The RF stage is separately tuned by the PA tank circuit. A major disadvantage is that the frequency coverage

Front view of the completed 19 Set conversion, showing layout of panel controls. The mains transformer at rear of chassis and the heater xformer on the left are visible. The smoothing choke is positioned below the LT transformer, and the smoothing condensers and high-wattage resistors are mounted on group panels above chassis.



"transmit," in order to compensate for the increased cathode current caused by operation of the hexode section.

The various filter components associated with the 6B8G are taken out leaving the detector and AGC components for use as in Fig. 1, p.19. The 1K cathode bias resistor is returned to chassis.

At the front of the chassis, a mauve lead emerges from the "net" switch and takes HT to the BFO on "transmit" by bypassing the net switch. A white lead, connected to pin 6 of the RF stage, puts HT on the hexode of the sender frequency changer on "transmit" and a yellow lead going to a tag on the buffer anode coil provides HT for the buffer stage. An orange lead connects with the centre of the heterodyne pitch potentiometer and is for connection to earth on "receive." A yellow lead to pin 8 of the 6H6, drive level control valve, connects to the BFO compensating load and is to be earthed on "transmit."

The diode drive level control circuit is removed for direct operation of the PA. To gain access to the 6H6 valveholder, the connections from the buffer anode coil to the compression trimmer and the EF50 screen resistor were temporarily removed, so that the coil former could be unscrewed and lifted up. All components to the 6H6 are removed with the exception of the heater wiring. The leads and components connected to pins 4 and 8, dealing with the BFO compensating load, are taken back to a lead to a condenser clipped to the chassis and this lead is to be earthed on "transmit."

The connections from pin 5 (anchoring point) to the wave-change *via* a 100 μF capacitor and to the grid of the 807 are dispensed with and the grid of the 807 connected straight to the wave-change switch *via* the 100 μF capacitor. A lead to a tag-strip in the buffer grid coil compartment is snipped out and the components on this tag-strip are removed except for a lead to the EF50 grid and a 100 μF capacitor on one tag. It is then essential to connect this tag to earth *via* a 470K grid leak.

The heater wiring (in black) is rearranged from the original series-parallel arrangement for 12.6v. to parallel operation for 6.3v. At this stage it is possible to test the receiver section by connecting a suitable HT and heater supply and output transformer. Full coverage of the 160m. band is obtained by addition of a .0022 μF capacitor in parallel with the 2-4.5 mc padder (C3 in Fig. 6, p.25). Application of HT to the sender mixer and BFO gives a strong indication of output on an absorption wavemeter at the 807 valveholder.

Further stripping, prior to rebuilding, includes removal of the PA tuning coil for conversion to a *pi*-type output. The HT supplies to the BFO (yellow lead to net-switch) and local oscillator (*via* 47K from first IF transformer) are disconnected from the HT line, for operation from a stabilised supply. Some of the components to the two 6V6G and two 6K7G valves in the left rear corner were not disturbed, as these can be used for the speech amplifier and modulator. The other adjacent 6K7G is left for combined use as an S-meter valve and CW monitor.

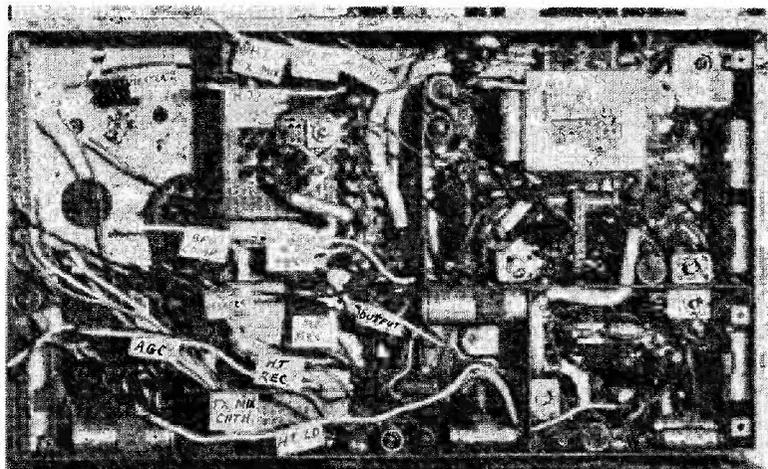
The BFO

Because of its operation from a lower voltage, the anode feed resistor is reduced from 470K to 100K. For better SSB reception, the amount of injection is increased by removing the coupling to the first IF anode and re-connecting to the receiver mixer anode through a 470K resistor and a 5 μF capacitor in series.

Receiver Output Stage

A new speaker transformer of about 45:1 ratio is fitted to give a match to a 3-ohm speaker. Headphones are now fed *via* a capacitor, as shown in Fig. 1, and the closed jack is arranged so that the speaker is disconnected on insertion of the headphone jack plug. The speaker, but not the headphone output, is disconnected on "transmit" to prevent audio feedback while allowing headphone monitoring of the transmission.

Under-chassis view of the 19 Set with redundant wiring removed and re-wiring appropriately identified. It is quite easy to do this in the course of the conversion, and could save a lot of bother if later leads have to be traced. In this view, the relays and switching have been temporarily removed.



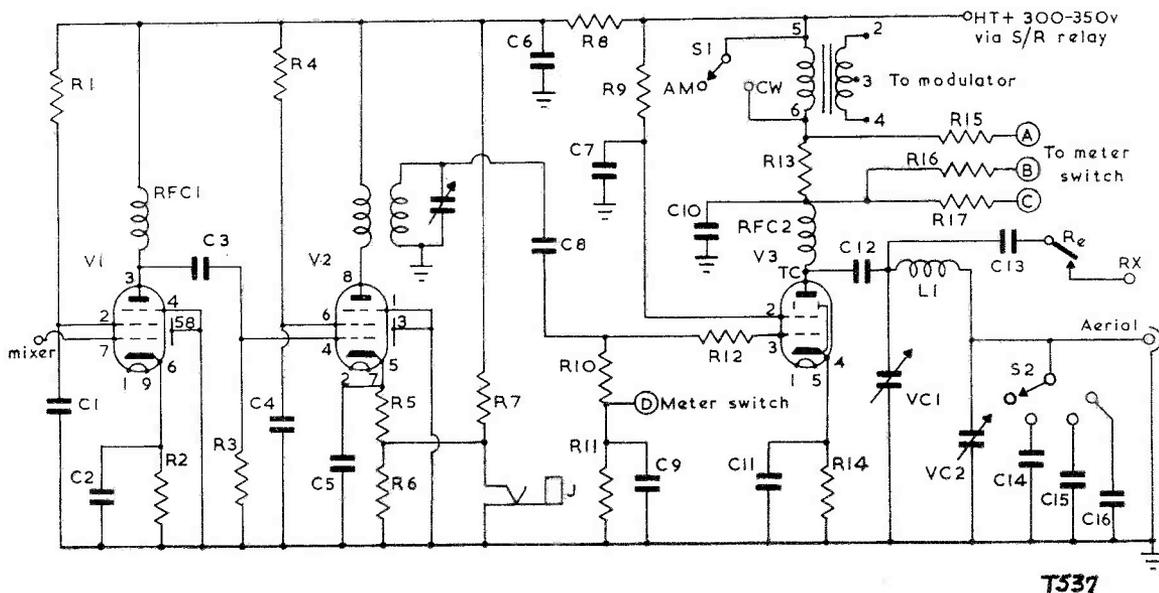


Fig. 2. The modified Buffer and PA Stages for the 19 set.

S-Meter and CW Monitor

The S-meter circuit is one devised by the writer and utilises one of the 6K7G valves, see Fig. 1, p.19. AGC is applied to its grid, and the anode voltage, which increases with increasing AGC voltage, is compared with the 150v. stabilised supply line. The sensitivity is very considerable (a 5 mA meter could be used!) and is also fairly linear dB-wise. The anode resistor, R6 in Fig. 1, is chosen such that a zero reading is obtained with the preset cathode potentiometer at about mid-travel, and consists of two 27K, 2w. resistors in series. The resistor R7 controls the S-meter sensitivity and can be altered to suit requirements. The meter is made to operate with the send-receive relay and serves other functions on "transmit."

The same valve operates as a sidetone oscillator at about 465 kc on CW transmissions only, for monitoring the keying, and is in effect a second BFO. It will be realised that the main BFO does not produce a note in the receiver on CW because it is at zero-beat with the IF signal. The oscillator uses a Colpitts circuit, the adjustable coil (L1) being the quench control in the original set and tunes to 465 kc in this circuit merely by removal of 220 turns. The RF choke in the cathode circuit is a wire-ended component found in the original set, but a standard 2.5 mH component would be suitable. The output is fed by screened wire to a tag on the second IF transformer, previously used for the BFO injection, the coupling capacitor C7 being already incorporated in the IF transformer can. The previously described change of main BFO injection ensures its isolation from this second oscillator.

Table of Values

Fig. 2. Modified Buffer and PA Stages

C1, C6 = -1 μF, 400v.	R6 = 47,000 ohms, 1w.
C2, C9 = -01 μF	R7 = 100,000 ohms, 2w.
C3 = 100 μμF, mica	R8 = 2,200 ohms, ½w.
C4, C5 = -001 μF	R9 = 10,000 ohms, 2w.
C7 = 500 μμF, 1000v. mica	R10 = 22,000 ohms, 1w.
C8, C14 = 500 μμF mica	R11 = 47 ohms, ½w.
C10 = -002 μF, 1,000v.	R12 = 100 ohms, ½w.
C11 = -002 μF	R13 = 22 ohms, ½w.
C12 = -004 μF, 1,200v., see text	R14 = 470 ohms, w/wound, 5w.
C13 = -01 μF, 1,200v., see text	R15, R16 = 1,000 ohms, ½w., see text
C15 = -001 μF mica	R17 = 1.2 megohms, 1w. 5%
C16 = -0015 μμF mica	RFC1 = 2.5 mH
VC1 = 500 μμF, see text	RFC2 = See text
VC2 = 500 μμF, solid dielectric	S2 = 1-pole, 4-way
R1 = 3,900 ohms, ½w.	L1 = PA coil, see text
R2, R5 = 200 ohms, ½w.	V1 = EF50
R3 = 100,000 ohms, ½w.	V2 = 6AG7
R4 = 27,000 ohms, 2w.	V3 = 807

Note: For simplicity, only one set of coils is shown in the anode circuit of the 6AG7, and the band-switching and associated trimmers are not shown.

Buffer Amplifiers

It was apparent that insufficient drive was obtained from the original EF50 driver for efficient operation of the PA. To provide more drive power, a second amplifier (6AG7) is added as in Fig. 2 above, using the valveholder previously occupied by the diode drive level control valve. The original anode coils of this second buffer and replaced by an RF choke. The cathode resistor of the EF50 is increased from 100 ohms to 220 ohms and keying is carried out in the cathode circuit of the 6AG7. The resistor R6

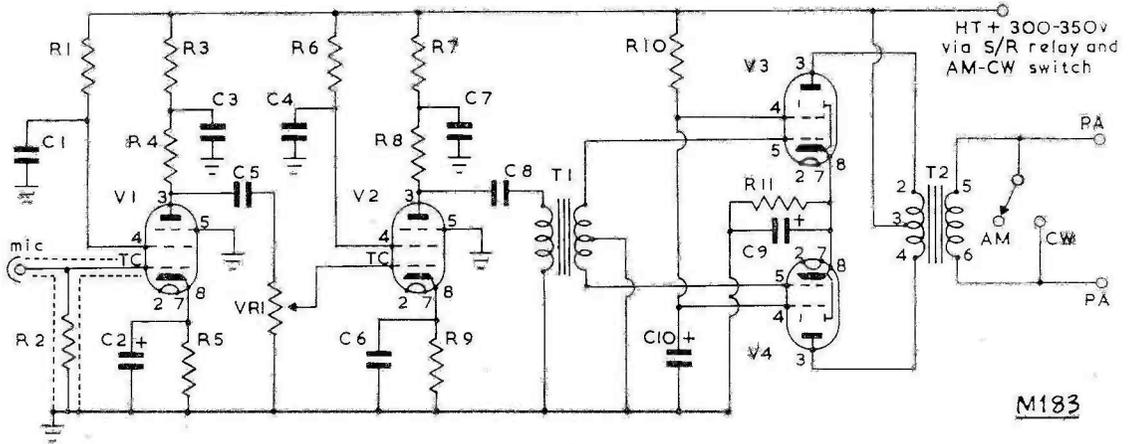


Fig. 3. Circuit for the Modulator side of the 19 Set LF-Band Transceiver.

ensures that the heater-cathode voltage does not float to too high a value with key open, and at the same time R7 increases the bias and so ensures that the valve is completely cut off.

The PA Stage

The circuit of the modified PA is also shown in Fig. 2, p.21. The pi-tank coil is rewound with 54 turns of 20g. enamelled wire, 2½in. long, using the original former. C12 and C13 are the high voltage capacitors found bolted to the frame of VC1, which is originally the PA and receiver RF tuning capacitor. Because of lack of room, a solid-dielectric tuning capacitor is used for VC2 (conveniently mounted in the position of the original UHF tuner) and the total loading capacity can be increased in 500 µF switched steps. The RF choke RFC2 is an air-cored component, of single-screw mounting, taken from under the UHF section of the original set and which has a suitably large inductance.

The Modulator

The circuit is shown in Fig. 3, above. Two 6K7 and two 6V6 valves are used in their original positions. The anode, screen and cathode resistors of the 6K7 valves are the original. The electrolytic decoupling capacitors found on the chassis showed excessive leakage on test and were replaced by the component values shown. The value of cathode decoupling condenser for V2 was chosen to give a measure of negative feedback at low frequencies and thereby restrict the low-frequency response. The modulation transformer T2 used is one commonly advertised as suitable for push-pull 6AQ5 to QQV03-10, and the numbers in Fig. 3 refer to this component.

An insulated jack is used for the microphone input, enclosed in one of the previously mentioned cube-shaped cans. Insulated screened cable extends from this to the valve top cap, the screening being exposed and earthed only at a point near the valveholder. The grid resistor R2 is incorporated close to the top

Table of Values

Fig. 3. Modulator Section for the Transceiver

C1, C4 = .1 µF, 400v.	R5, R9 = 1,000 ohms, ½w.
C2 = 25 µF, 25v.	R10 = 10,000 ohms, 2w.
C3, C7 = 4 µF, 500v.	R11 = 270 ohms,
C5 = .005 µF, 1,000v.	w/wound, 3w.
C6 = .5 µF, 250v.	VR1 = 500,000 ohms
C8 = .01 µF, 1,000v.	T1 = Standard LF
C9 = 100 µF, 50v.	transformer,
C10 = 16 µF, 500v.	Radio-spares
R1, R6 = 470,000 ohms, ½w.	T2 = Modulation trans-
R2 = 2.2 megohms, ½w.	former, see text
R3, R7 = 22,000 ohms, ½w.	V1, V2 = 6K7G
R4, R8 = 100,000 ohms, ½w.	V3, V4 = 6V6G

cap. The result is an output surprisingly free from hum in spite of the proximity of mains transformers.

Power Supplies

The largest transformer which could be fitted gives 300.0-300v. at 120 mA. Using silicon rectifiers of the BY100 type, an HT line of about 350v. is obtained on full load. The total HT current taken on full load is in the region of 200 mA, but as maximum

Table of Values

Fig. 4. Power Supply and Receiver Muting (see p.24)

C1 = .01 µF, 1,000v.	R11 = 300 ohms,
C2, C3 = 16 µF, 500v.	w/wound, 10w.
C4, C5 = .01 µF, 400v.	R12 = 1,500 ohms,
C6 = .01 µF, 25v.	w/wound, 10w.
C7 = 100 µF, 25v.	VR1 = 10,000 ohms,
R1 = 4,700 ohms, 2w.	w/wound
R2, R3 = 22 ohms,	VR2 = 50,000 ohms, pre-
w/wound, 3w.	set
R4, R5 = 2.2 megohms, 1w.	D1-D4 = BY-100
R6, R7 = 220,000 ohms, 1w.	MR1 = Rectifier 12v. 1A
R8 = 3,000 ohms,	Ch.1 = Smoothing choke
w/wound, 10w.	F1, F2 = 2A fuse
R9 = 10,000 ohms,	V1 = VR 150/30
w/wound, 10w.	T2 = Heater trans-
R10 = 10,000 ohms,	former, Radio-
w/wound, 10w.	spares "Hygrade"
T1 = Mains trans-	
former, Radio-	
spares "Hygrade"	

Note: The value of R11 will depend on the resistance of Ch.1, which should be low. Choice of Ch.1 is also determined by space limitations and the item used came from an old TV set.

current is not needed from the heater windings and operation is intermittent (HT current is less than 50 mA on receive) some increase in the VA loading of the HT secondary is permissible and the transformer does not overheat in practice. See Fig. 4, p.23.

The HT to the receiver section is dropped to about 275v. The voltage to the PA is reduced when operating on 160m. (to limit the input to 10 watts) the value of dropping resistor being increased on CW when the modulator is not drawing current. It was found quite easy to fit an extra wafer to the front of the wave-change switch and this is used to short out the voltage-dropping resistors when 80m. is selected.

A 150v. stabilised supply produces HT for the receiver local oscillator, the BFO and the sender mixer. An additional heater transformer is used to give a supply, after rectification, for operation of the relays.

A manual HT switch is incorporated to avoid application of high no-load HT voltage to the set before the cathodes of the valves reach operating temperature.

Receiver Muting

A preset potentiometer is inserted at the earthy end of the RF gain control, operative on "send," to increase the bias to the RF and first IF stages. It is necessary to replace the original RF gain control, the slider of which is in contact with the earthed spindle and would render muting action ineffective.

Relays and Switching

Both relays in the original set are re-wired and used as in Fig. 5, p.23. The change over to "transmit" is by a SPST switch which energises the relays. On "receive," the S-meter circuit operates, but for transmission the instrument is connected to the PA-meter switch which can be selected to read PA anode current, anode voltage or grid current. The switch is the original 2-pole 6-way item with alternate positions left blank to prevent any make-before-break. The values of resistors R15 or R16 in Fig. 2 (p.21) will probably need adjustment to give an accurate reading of PA anode current.

For AM/CW, four poles of the original 9-pole 3-way mode switch are used. An 8BA nut and bolt is inserted to stop down to two positions. The functions of the switch can be seen by reference to the circuit diagrams, but to summarise, the four poles operate as follows:—

- (1) Connects HT to the modulator on AM, Fig. 4, p.23.
- (2) Shorts across PA side of modulation transformer on CW, Fig. 2, p.21.
- (3) Connects side-tone oscillator on CW, Fig. 1, p.19.
- (4) Brings in a resistor in the PA HT supply on CW to reduce voltage to that obtained with modulator running. This latter works in conjunction with an extra wafer on the wave-change switch

so that it is only operative on 160m., see Fig. 4.

Metalwork

The accompanying photographs show the locations of most of the new components and panel layout. Use is made of existing holes where possible. A strip of aluminium sheet covers the holes left in the panel by removal of the large sockets, and this contains the speaker jack, loading capacitor switch, S-meter and muting presets, microphone jack and earth terminal. A bracket is fixed to the left side of the chassis to hold the additional smoothing choke and heater transformer.

The flick-mechanism on the two tuning condensers is removed. The original calibrated plates, rivetted to the tuning dials, are replaced by white card fixed with adhesive.

Numerous $\frac{1}{2}$ in. diameter holes, about sixty in all, are made in the top and rear of the outer metal case for ventilation.

Tuning Modifications and Alignment

The transceiver is now capable of operation, but as mentioned previously, it is desirable to reduce the tuning range. This proved to be much easier than expected and put a final touch to the modification. Ten of the moving vanes are removed from each section of the 4-gang tuning capacitor, leaving three vanes (one of which is an outer one) on each. After sawing through the brass spacing strip between each of the plates to be removed, they are then extracted by slight twisting and pulling with fine-nosed pliers, with the vanes out of mesh. Care must be taken to avoid damage to the remaining vanes. The tuning is then reset on each of the two switched ranges to the appropriate bands, 3.5-3.8 mc and 1.8-2.0 mc, by wiring fixed capacitors across the coils. Fortunately, the required connections are to the three outermost tags of the wave-change wafers and are easily found. The condensers required, for the 80m. and 160m. bands respectively, are 330 μF and 470 μF for the receiver mixer, and 300 μF and 470 μF for both of the buffer stages. The oscillator stage is a little more difficult because the circuit employs a single coil which is partly shorted for the higher frequency range. However, this was overcome as shown in Fig. 6 (p.25) by addition of C1 and C2 for 80m. and 160m. respectively. Capacitors are 1% silver-mica.

With these modifications, the tuning ranges are 3.45-3.85 mc and 1.80-2.00 mc, and a final alignment is possible using the existing trimmers. To maintain good oscillation, particularly on the higher range, the two damping resistors shown across the grid coil windings are removed.

A final alignment can then be made of the receiver and transmitter circuits. It should be noted that the trimmers on the higher frequency range, being always in circuit, affect the other band so the 80m. trimmers located on the 4-gang capacitor should be adjusted first. The buffer circuits are aligned for maximum PA grid current with the PA anode and screen supplies disconnected. Grid current of 4-5 mA

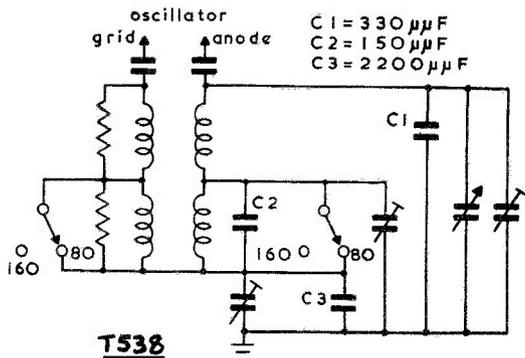


Fig. 6. The modified oscillator tuning, values as shown.

on 160m. and 3-4 mA on 80m. was obtained. It is important to check with an absorption wavemeter that the correct frequency has been selected from the sender mixer.

With the heterodyne pitch control in the central position, the BFO is adjusted by means of the dust-iron core to zero-beat with an accurately tuned signal. It is then checked that the frequency of the BFO remains unchanged on "transmit," and adjusted by the value of the sender mixer compensating cathode

bias resistor. A value of 100 ohms was found to be exact and a plan to use a variable preset was dropped.

Calibration

This was carried out using a crystal calibrator giving pips at 1000, 100 and 10 kc, and harmonics. Calibration marks were made at 10 kc intervals on both bands, drawn in black ink on white and protected by a clear lacquer spray. An additional scale was made for the S-meter and fixed higher than the existing calibration so that the latter is still readable.

Testing and Results

Preliminary tests of PA output and modulation were carried out using a dummy load consisting of carbon resistors (three 220-ohm, 2w. in parallel) or a suitable 12v. bulb. With the specified HT, an input of up to 20w. could be run efficiently on 80m. in the CW mode and slightly less on AM.

Results on the air, using AM and CW, were well above expectations and no adverse reports have been encountered. The transceiver has proved to be very simple to operate when compared with the more orthodox station equipment.

Finally, the writer wishes to thank G3TFE for his critical comments during the progress of the work and for assistance in testing the completed transceiver.

GOING QRO FROM TEN WATTS

ADDING A LINEAR AMPLIFIER

D. O'GARA (G3UQF)

THERE are many amateurs who operate small low-power transmitters on the LF bands, 80/160m. The circuit described here is a simple method of increasing the power output of such a transmitter without going to the trouble and expense of a complete rebuild. Most of us are familiar with the linear amplifier, as commonly used with single-sideband transmitters. But there is no reason why a medium-power linear cannot be added to an AM or CW rig.

The circuit is as shown in the diagram. The 807's were chosen, because they are cheap, readily available to most amateurs and, with suitable HT, will handle about 100 watts.

It would be advisable to stabilize the screen supply of the 807's, and though not done on the original, there have never been any complaints of distortion when using it on the air.

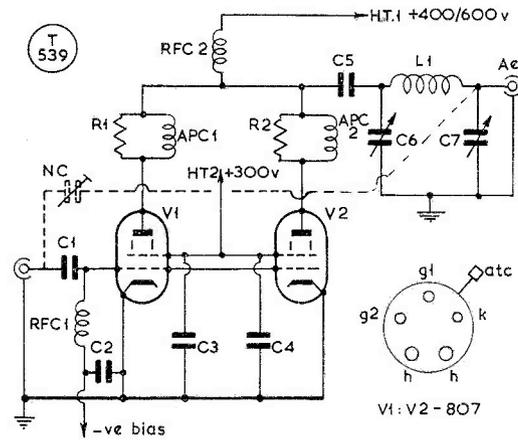
The grids of the 807's were left untuned for the sake of simplicity, since a ten-watt transmitter will fully drive the valves with ease. The grid bias is derived from a separate supply and should be in the region of -30v. to -40v.

If it is intended to use this set-up on 80 metres it should not be necessary to neutralize the valves. If instability should occur it can easily be remedied by inserting a small capacitor, NC in the diagram, of about

10 μμF, between the anode out-of-phase voltage and the grids of the valves, as shown in the sketch.

When setting up this RF amplifier, the negative bias is adjusted to give about 25 mA of standing anode current with no drive applied to the grids. Then all that remains is to feed the output from the existing transmitter to the grid of the linear and tune for maximum output.

Values for the circuit as shown can be: C1, C5, 100 μμF; C2, .001 μF; C3, C4 .01 μF; C6, 100 μμF, variable; C7, .0015 μF variable (can be 3-gang 500 μμF,



Circuit of the 807-linear for the LF bands, using a pair of 807's -see text for values. Drive from almost any low-power Tx capable of giving about 5 mA of grid current is applied to the coax socket across C1, RFC1, the grid of the amplifier being untuned.

BC type); NC, neutralising capacity, 10 μF , not normally needed on LF bands, *see text*; APC1, APC2, anti-parasitic chokes, 4 turns 16g. wound on 47-ohm resistors R1, R2; RFC1, RFC2, 2.5 mH radio-frequency chokes (should be mounted to avoid coupling); V1, V2, 807; coil L1 to tune band required. Note that C5 should be rated at least twice the HT voltage to be used.

BOOK REVIEW

AMATEUR SINGLE SIDEBAND

(Collins Radio Company)

THIS book, *Amateur Single Sideband*, is, as one would expect from Collins Radio Company, in the same bracket as their apparatus—the top class. It is clearly written for the real amateur (as distinct from the professional) who wants to know about SSB, and is prepared to accept that to gain the best out of a technical book one has to give it the best of one's attention. The mathematical standard needed is no more than required to pass R.A.E., the essential information being mainly in the text, and in circuits and graphs—but on the other hand there is no glossing over of really important detail, and anyone who has grasped all that this book has to say will know a lot about SSB and “what makes it tick.”

For anyone contemplating the home-construction of an SSB rig, the chart showing the results of a study of mixing products generated by a 12AU7 mixer, and their relative levels, and the plot on the following page which gives in graphical form all significant spurious responses from two frequencies, are worth the price of the whole book in helping to avoid the bogey of “birdies” which have brought many a promising home-brew project to nought.

A chapter on receivers for use with SSB is extremely interesting and discusses all the points involved, and the relative merits of this or that circuit; an understanding of these will go a long way to explaining just *why* a given receiver does not come up to expectations.

A topic which frequently causes arguments, and as frequently leads to incorrect conclusions being drawn, is Measurements. The use of instruments is always a problem, in that the user so often, whether he be amateur or professional, regards the indications given by his test gear as absolute and perfect; this is practically never the case, as every instrument has tolerances, even when used for the purpose for which it was designed. The pitfalls inherent in the use of the sort of low-grade test gear available in the average shack are well pointed up, but on the other hand ways and means of getting round the problem are also discussed and explained.

The discussion of the relative merits of speech-clipping, automatic level control and emphasis of the higher frequencies in the speech waveform is extremely useful, and comes to the conclusion that the best solution is to use ALC. The conclusion is correct on theoretical grounds, and indeed in practice—but it must be said that since the common methods of applying ALC derive from the onset of grid current in the PA, they fall down when considered from the point of view of TVI, since the

appearance of that dread manifestation almost invariably coincides with the commencement of grid current in a theoretically Class-AB1 PA, due to the varying load on the driver stage. Thus, there is some justification for the use of speech-clipping in the audio stages ahead of the filter, and setting the level such that the PA *never* runs into grid current, in spite of the fact that the clipping products within the speech passband do tend to increase the apparent distortion of the signal, and hence detract to a slight extent from the readability at the receiver end. Either solution is far better than the use of neither, however!

Summing it up, *Amateur Single Sideband* is a book which compresses an enormous amount of useful information into its pages, has an adequate index, and is pitched at the sort of level where it can be understood by the “amateur” amateur, while containing much that is of use to a professional. In other words, a good buy.

EDITORIAL NOTE: The cost of *Amateur Single Sideband* is 46s. 6d., post free, and is available from stock, of the Publications Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

CORRECTION — “FRINGE AREA HARMONIC FILTERS”

In Part II of this article, in our February issue, the last line of text on p.741, right-hand column, should have read “Table 3 on p.687, January, gives . . .”, and on the facing page 740, February, in the third paragraph of text, the reference should read as to “Table 4 opposite . . .”

G3LFZ also points out that his tabular treatment given as Fig. 1 on p.685 of the January issue would be equally applicable in any part of the world where local TV transmissions fall in the band 40-70 mc. And from this, the same arguments flow.

I.R.T.S. NEWS BULLETIN

We are informed that the Irish Radio Transmitters Society now puts out a weekly news bulletin, on Sundays, under their Hq. call EIØRTS, first on AM and then on SSB, starting at 12 noon local time, on a nominal frequency of 3650 kc. The hon. secretary of I.R.T.S. is W. McIlwaine, EI9F, 224 Templeogue Road, Dublin 6, Eire.

WHAT A CACOPHONY!

According to a recent UNESCO summary, there are now in the world 9,900 TV transmitting stations, about 198 million TV receivers and 18,030 sound broadcasting stations. For the U.K., the Post Office reports that there are over 18 million receiving licences in issue and that more than 75,000 Colour/TV permits were taken out during the year 1968. However, the authorities estimate that some 1½ million viewers are still dodging the column, representing a revenue loss of no less than £7½ million—or a 10s. subsidy on the part of everyone who does pay.

COMMUNICATION and DX NEWS

E. P. Essery, G3KFE

ONE of the nicer pleasures of operating comes when one makes personal contact with somebody one has worked over the air for the first, or possibly only, time. Perhaps the miracle of it is that one very seldom finds the person behind the key, or the microphone, appears at all like the mental picture one has built up. Perhaps there is a manifestation of that well-known Law of Amateur Radio—first given form by one Murphy—or is it just a question of one's hearing not being attuned *really* to listening to the voice in the speaker. The thought is the more provoking in that it is very rare to find, on meeting a person, a voice that is inconsistent with the personal appearance of its owner.

But what has all this to do with Amateur Radio? Simply this, that there are many of us who chase the stations in faraway places with strange-sounding names, to the exclusion of any thought of what makes the man—or woman—at the other end of the QSO, tick. Here we are, with facilities for communication available to us far beyond anything dreamed of by past generations, or even the man-in-the-street of today, living in a time when man's inability to communicate with man is the tragedy of the age.

How rare it is to hear among the ragchew nets anything other than a discussion of the merits of some bit of gear or a pure rubber-stamp QSO; never a mention of books, music, the arts, or even the simple pleasures of life like bat on ball on the village green in summer. And yet these are things which can, and do, bring us nearer to our fellow-man anywhere in the world; nearer by far than some ATU which cannot be drawn out in circuit form over the air, and infinitely nearer than our fellow-mortals sitting glued to their boxes watching the latest horse-opera or pop group.

The vast majority of amateurs had a hard row to furrow in getting on the air; SWL, then R.A.E., and

later Morse, all in addition to work and whatever other interests they may have. And yet, when all this is done, they tend to squander the effort in rubber-stamp contacts, become bored after a year or two, and disappear until the bug bites again, possibly not until years later. Chasing DX as an object in itself is fair enough, but one feels that when one is not actually on the war-path for something exotic, there are ways to fill in the time till the next desirable bit of DX is hunted. It would be a fine thing to spend some of this time ragchewing, and maybe even working the lids and clots; perhaps if they found out more about what is meant by the phrase "snappy operating," they would have their own enjoyment of operating enhanced.

Contests, Sheepskins, and DX-Peditions

Odd bedfellows possibly, but all arising from the competitive instinct. An expedition first, signing GB2GM over the Easter holidays, April 3-12, on Top Band SSB (and 144 mc AM), from Wigtonshire, the Isle of Bute, Inverness-shire and Perth. Queries and sked requests all go to G3WFW, *QTHR*.

Latest news on the W4BPD DX-pedition is that he and VQ8CC will be on as VQ8CCB on Raphael Island for a couple of weeks before the trip to Rodrigues, scheduled to arrive at the latter on April 12-17. VQ8CCB and VQ8CCR cards will all be sent *via* the Bureaux, and it is understood VQ8CC does *not* want incoming cards. Gus, on the other hand, does not yet know his VQ8 callsign allocations; QSL's for contacts with him go through W4ECI (along with any donations). It is a point here that not only does VQ8CC not want cards, he does not need donations either, so these can be diverted to W4ECI for the benefit of the W4BPD operation.

Yet another award to report: The Wirral DX Association award, for which you have to work five mem-

bers of the association, and send a check list plus 2s. 6d. to G3UFO for the certificate. (Wirral stations have to hook ten.) Incidentally, not all the Wirral chaps, by a long chalk, are members, so a challenge will be necessary when working Wirral stations.

Contests now: An ever-popular one is the Grafton Top Band, which this year is in three sections, AM on March 15, 2130 to 2359 GMT; the same period on March 22 for CW; and on March 29 the SSB leg. For the Phone ends, call "CQ Grafton," on CW "CQ GRS." Swap RS(T) plus a serial number. Final score is at one point per QSO, the sum of the score on CW plus that for *one only* of the phone sessions. Operation in the CW leg is thus a "must" and certificates go to the first and second in the overall, plus winners of each of the three separate legs. Logs, to arrive not later than April 9, to C. E. Heywood, G3KEB, 23 Richmond House, East St., Walworth, London, S.E.17, from whom also may be obtained log sheets and copies of the full rules.

The RTTY WAE contest runs from April 26, 0001 GMT to April 27, 2359 GMT, with a rest period in between of twelve hours, to be taken in up to three periods clearly shown in the log. All bands, Eighty to Ten, calling "CQ WAE." Exchange QSO-number, RST, and time in GMT. Score one for stations in one's own continent, three elsewhere. Non-European stations working EU's can claim five points although the EU station being worked is only able to claim three for the same QSO! A multiplier based on the WAE and ARRL countries list applies with the addition that each call area of JA, PY, VE, VO, VK, W/K, ZL, ZS, UA9 and UA0 counts as a multiplier. A further bonus comes from a "QTC-traffic" report, meaning a confirmed QSO that has taken place earlier with another station, giving time, call, and QSO-number. Each such QTC counts one

point. You can only claim a QTC point for a QSO once, and not at all if passed back to the station whose QSO is being reported on. Total score equals QSO points, plus QTC points, times multiplier, with a maximum of five QTC's per band. Logs to contain band, contest exchange, callsign, contest exchange received, QTC's sent or received, points claimed, and multiplier if claimed. Separate logs for each band, plus a summary sheet showing scoring, rest periods, and your own name and address. Deadline June 10, to Uli Stolz, DJ9XB, In der Ostert 3, D-597, Plettenberg, West Germany—from whom no doubt the full rules could be obtained. (We have done our best here to simplify them!)

April 12-13 is the period for the CQ WW WPX SSB Contest. Again only 30 out of the 48 hours may be taken for operation. The contest exchange is RS plus a three-digit number starting at 001. Contacts with stations outside one's own continent three points, but only one for those in your own continent—there is a slight variation in this arrangement for Stateside amateurs. You can work your own country for a multiplier but no QSO point accrues. Multiplier is based not on countries, but prefixes as defined by the WPX rules. Single operator all-band entries score by multiplying QSO points from all bands by total prefixes. Prefixes only can be counted once, but the same station may be worked once on each band for QSO point purposes. Logs must be postmarked not later than May 15, and addressed to CQ WPX SSB Contest Committee, 14 Vanderventer Avenue, Port Washington, L.I., N.Y., 11050, U.S.A.

Twenty Metres

As always, most of the DX can be found by sticking around on the preferred part of this band; and these can be no doubt at all that the DX has been around quite a bit of late, considering the time of year.

G2HKU seems to have stuck mainly to his morning skeds with ZL2KP, on one of which they were joined by a breaker who turned out to be ON8AW, operating in the jungle from a missionary airstrip. Other contacts included UF6CA,

VK2WC, ZL3SE and ZL3JQ, with TA2EM on CW as gotaway of the month.

The report from G3NOF is always analytic in its nature, and this time Don comments that the pattern seems to have been an awakening around 0700 with UA and UB5, followed by short-skip for a couple of hours until about 0900, the VK/ZL laddies start to break through, often for as long as a couple of hours. W's take over the stage around 1200 and are often available right through to 2300. Don has to report an all-SWL type score this month, as he started off just before Christmas with a soft bottle in the linear, for which a replacement was still awaited at the time of writing, and then after all that the PA pair of 6146's in the Viceroy went soft and the HV rectifiers also went *kaput*—and just to prove that that was not enough, Don was not among those present when the last piece was written because he was under the weather! Anyhow, the list of stuff heard reads rather like this: CR8AI, FL8DG, KW6AA, KW6EJ, HL9TW, while QSO's were made with F9UC/FC, FP8CS, FR7ZG, JA's, W7, KH6, KL7, KR6, VQ8BZ, VK and ZL.

Once again G3VPS seems to have found all he would have liked on Twenty, with SSB to 9H1, 8P6, UD6CC, TF2, VP2MK, MP4MBJ, F9UC/FC, PY, VE and W. CW was not neglected, and here the results were ZL, ZL1IL/C, CX, HPIIE, PY0EP and the usual assortment of W's.

Already G3XYP (Navenby) has made an impression on the HF scene, and showing signs of being very selective about the QSO's he is reporting—indeed on Twenty, David only mentions AP5HQ, FG7XL, FR7ZG, OR4ES, 5H3KJ and 9K2BV—but the first 300 cards are already sent out and 50 have come in, which is a better return than David used to get as an SWL—not surprising really!

Twenty in the mornings is undoubtedly the best time and place to play Amateur Radio; but the month has been a bit of a disappointment to G2DC, not so much by reason of conditions as absence of interesting contacts. Thus, hordes of W and JA, plus a goodly sprinkling of

ALL-BAND ZONES AND PREFIXES TABLE

Starting date: January 1, 1969

Station	Zones	Prefixes
9H1BL	17	156
G3VPS	13	75
G3WPO	6	46

VK/ZL, were worked but the only really interesting ones were PJ7VL, XE1AX and 6Y5SR.

Quite a few times in this piece we have mentioned 9H1BL; and now here he is in the guise of reporter, and entrant to the tables in friendly rivalry with G3VPS, who handles his QSL cards. Alan has been on from 9H1 since October last year on all bands other than 160—which he describes as the "nether regions!" Equipment is a Viceroy Mk. II, an Eddystone 888A and a preselector, from the appropriate terminals of which are connected dipoles for the HF bands, an inverted-Vee for 80 metres and a long-wire on Forty, the business parts of all of them being up at 60 feet.

One of the most interesting letters this month is from G3RJS/MM, who is third radio operator on the cruise liner *Oronsay* and reckons he is probably the only G/MM licensed on a passenger ship. *Oronsay* is at present on a round-the-world voyage, and the G3RJS/MM signal will soon be on all the possible bands, using primarily an FT-100, with FL-1000 and FR-100 to back up. The aerial will have to be a multi-band trap arrangement, but at 100 feet over saltwater, who cares? Incidentally, the /MM ticket will

FIRST YEAR OPERATOR'S LADDER

TOP BAND ONLY

Call	Counties		Countries
	CW	Phone	
GM3YCB	1	57	9
G3XVC	32	17	10
G3XDY	67	19	14

Note: A first entry for this Table must be accompanied by a statement of the date of first licensing. The same County may be claimed for both Phone and CW. Placings will be by taking a different column each month; this time it is based on the date of first licensing.

be a boon to G3RJS who has had the call for six years and up till now has only filled a dozen pages of the log due to his being at sea so much of his time. (Some would say, "lucky chap, in a ship like that"!)

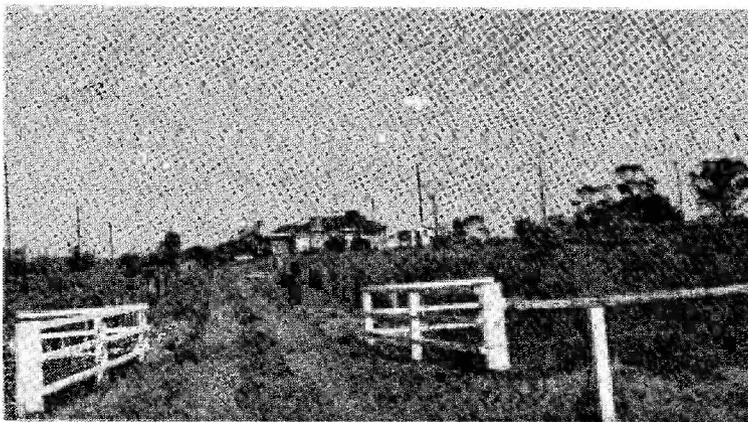
Top Band

First, we have some news on piratical activities; we have good reason to believe that the station which signed "6W8CW," reported last time around, was also responsible for such as "VK3BM," "LK1AR," "TF9AA," "GC3SKI/A," various phoney W/K calls, and is considering putting in an appearance during the JA 160m. tests, with "operation from 5R8" also planned, not to mention the odd GM spot. The form in dealing with this pest is to ignore him, but log times heard and all the relevant detail and pass it on to your scribe; and of course keep a copy of the details against the time when it will be wanted.

On the international front the prime piece of news is of WIDQF, XYL of W1BB, who was progressing well after her illness of last September until Boxing Day but then had a relapse. Home again now, she is gradually picking up the ground lost by all this. Best wishes go to her for a full and speedy recovery. Reverting to W1BB, it is interesting to note that by his QSO with PJ0MM during the *CQ WW 160 Phone Test*, Stew notched up country number 101! Congratulations are due to him for such a remarkable achievement.

It is understood that before April, when he leaves, KS6CN is game to try a few Top Band skeds. Time is short, but Dave has the gear and the site, although skeds are *essential* in the first place mainly because of a shortage of operating time. W4BPD is said to be proposing to try Top Band during his DX-pedition stops, although at the time of writing we have no information of where these will be. The St. Peter and St. Paul Rocks expedition back in November failed to show up on 160 metres only because of the sad fact that the Top Band transmitter, among other things, was severely damaged on arrival.

CE0 and FO8 operations are in the wind for later on in the year, by



An impression of the station of VK3MR (M. R. Campbell, Clyde, near Melbourne) a real old-timer with a truly magnificent site for Amateur Radio—his aerial system includes bi-directional rhombics, carried on the 66ft. masts visible in this picture. These antennae are aligned for all parts of the world, and give him true world-wide coverage in the HF/DX bands. VK3AMM/G6XJ, now on holiday in Australia, visited VK3MR recently.

DL9KRA, who has already carried out a survey of possible sites but has not had a stop of long enough duration to justify setting up the gear.

Coming to the more domestic news we have for the first time an entry in the Tables from a YL, accompanied by a letter which we hope will be the first of many. G3XVC (Dartford) sent it in, covered by a note on her first four months of activity on the 160-metre band. Maureen has had a lot of fun in getting her collection of counties and countries for the first-year tables, and more when she has worked the EU stuff on other bands. The prize one goes to the station who worked himself, using two different callsigns, closely followed by the characters—lots of 'em—who come back "R FB DR OM Maureen!" On the other hand, she at least has not had to suffer more than one clown coming back "DR OG"! Seriously, though, G3XVC is turning out to be another proof, were such needed, that a long-term SWL, coming on the air with a brand-new licence, invariably operates with all the style of an old-timer at the DX-chasing game. Incidentally, talking of G3XVC, we hear in an indirect way that she nearly made her country total up to 11 with a QSO over the pond to W1BB.

The absence of G2DC from the DX-scene has meant that Jack has

been laid low over the month centred around Christmas; first the rheumatism attacked his shoulder, arm, and, unkindest cut of all, his keying fist; alarm and despondency at that, and to crown it all an attack of the 'flu bug. However, all was not lost, insofar as when the flu went, the screws had gone as well. Thus G2DC put in an appearance in the *CQ WW 160 Test*, booked in 14 countries, and heard TA2E and KV4FZ.

Transistors are used in the rig at G3VMW (Ossett) who now only comes on at the odd time. These have yielded CW QSO's with K2ANR, W1BB/L, WA3EPT, K1KSH, K4WUY/3, W2BP, K2DGT, W3IN, VO1FB, KV4FZ, K2GNC, W2EQS, K1PBW, W2FJ, W2RAA, VE1ZZ, 9H1AM and ZB2AY, plus the EU stuff. Quite a collection for three BFY51's, even if the aerial is an inverted-Vee with its apex at eighty feet, tuned against an earth mat!

A rather flat month for G3VLX (Sidcup) who managed one new county by way of GM3PIP in Aberdeenshire, but drew a complete blank when he turned out for the W's on the morning of February 2.

Similarly a low level of activity reported from G3PQF (Cove) who came on, blasted out a few snappy CQ's, and was a bit annoyed at the proportion of Clots who came back at a speed far above his own—but it made a nice change from Sideband.

On a different tack, Dave is a little sad at the fact of wanting 22 QSL cards inwards for counties.

One of the savvy operators on 160 metres is G3RFS (East Barnet) who has spent most of the month on the band, but eventually went on to Eighty after working 14 countries in the *CQ WW Test*, with TA2E for a new one; W1, 2, 3 and 8, VE1 and KV4FZ were brought to book at other times, and a most interesting QSO with your conductor as part of a net containing several stations, and in particular G3LFF of Droitwich. It is of this latter station that your scribe has a little tale to tell. 'Way back, twelve or more years ago, G3LFF used to be visited by a youngster who became an SWL. School ended, the lad became involved in exams, became a professional mechanical engineer, moved

Reporting the HF Bands

to another part of the country, married and had a couple of children, and in the fullness of time took up the threads once more. Almost on the first evening he was on the air G3XYI (Sawbridgworth) had G3LFF come back to a CQ—and you can imagine the latter's surprise at finding G3XYI was in fact the schoolboy SWL of all those years ago, who used to live next door. But what a way to start a new station—with a chance QSO with the chap who started you off, and with whom you had lost touch for years, to put on the first page of the log!

His QSO with G3KFE is still eluding G3WJS on his rare trips home to Halstead from University; the last time he heard the writer, 'twould seem G3KFE stuck around *exactly* till the time John had rebuilt the rig—and then pulled the big switch! Eleven countries, including HB9 for a new one, were booked in during the contest, and new counties by way of GM3BQA (E. Lothians) GM3YCB (Dunbarton), G8RZ (Cumberland).

GM3YCB seems to have figured in a lot of logs, notably that of G3VPS (Wartling) who found it memorable in that it was interrupted at 0300z by The Law, who were wondering just what sort of Gunpowder Plot was being hatched under the light they could see shining at the end of his garden!

On to G2HKU (Sheppey) who is watching the March of Civilisation right outside his own front door; after forty years of mud and grass, with batteries slowly being superseded by DC mains and the latter by honest-to-goodness AC, Ted has now been surrounded by diggers, scrapers, bulldozers, pumps and what-have-you, the latter running all night and providing hideous QRM on the DX. All for the best, though, as Ted says it is to provide them with a "real road" at long last. Withal, QSO's were notched up with GC3UJE and PAØPN on Sideband, CW accounting nicely for GM3KMR /A, EI9J, GC3UJE, DL9KRA, PAØLOU, all around 2000z.

Just as encouragement for the lads with small gardens, G3WPO (Burgess Hill) mentions that he has his aerial system *within* the confines of a garden 75ft. by 12ft. plus a forty-foot tree. Tony's special system in fact works *within* this space, and is *independent* of a *ground connection*. With it, he has accounted for 21 countries plus a couple of "funnies." Sixteen counties since January 1, with KV4FZ and TA2E as gotaways is not at all bad for such space—remember, we're still talking about Top Band.

G13WSS (Holywood, Co. Down) seems to have made quite a killing in the Contest, and encountered the "SP" signal on the band, as did quite a few others. Cumberland and Dorset fell into the bag, along with GC3UJE, so that now Cryll only lacks Oxford and the Scillies in the way of the English counties.

GM3YCB figures several times in the story related so far; Stuart had 2,500 foot of wire out but some nasty individual swiped the last thousand feet, so he is now reduced to one of only 550 feet.

A first report comes in from G3RFB (Waddington) who added an entry to the tables for good measure. Ron had a dabble in the contest, and in 6½ hours worked all the U.K. prefixes and OK/OL, OE, DL and EI for good measure; but he feels strongly about the writer's comments in the preamble to the January piece, insofar as the early stage he had difficulty in sending his own call correctly, and after 60 QSO's the key hand was exhausted; this all came about as a result of a long layoff when only Sideband was being used.

Radio takes up so much of the energies of G3APA (Coventry) that Ted finds little or no time for radio! What he means is the flood of odd repair jobs that seem to come his way whenever an attack of softness results in a neighbour's radio right "for a favour!" How very true that is! December 27 was the first time G3APA had been on since his Sark expedition in the summer, and he was lucky enough to find

TOP BAND COUNTIES LADDER

Station	Confirmed	Worked
<i>Phone and CW</i>		
G2NJ	98	98
GM3UVL	98	98
G3APA	97	97
G3SED	93	95
G2HKU	90	94
G3WPO	79	85
G3WQQ	74	87
G13WSS	74	84
G8HX	72	81
G3VLX	64	89
G3WJS	56	83
G3RFB	55	78
G3IDG	55	61
G3VPS	27	53
G3XTL	26	57
G3XGD	25	54
<i>Phone only</i>		
G2NJ	98	98
G3VGB	81	90
G3MDW	67	82
G3WPO	64	73
G3PQF	55	77
G3RFB	36	47

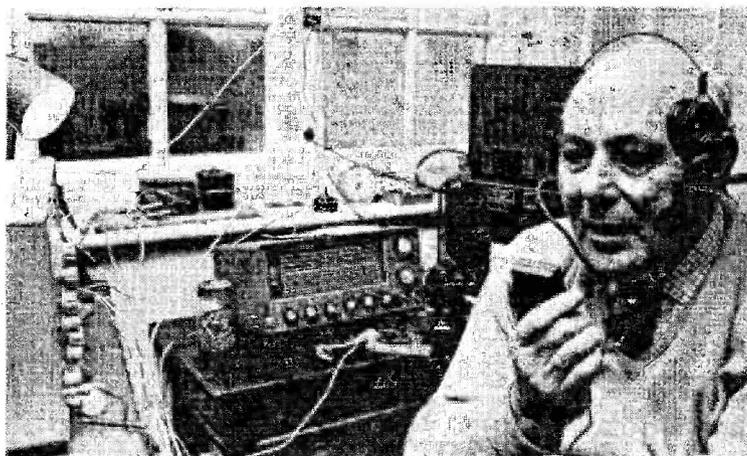
(Failure to report for three months entails removal from this Table. Claims may be made at any time. Six months of "Nil" reports will also result in deletion.)

GM3TKV in Elgin for Morayshire, leaving only Fermanagh for the total 98.

A most interesting long letter came in from G3UOF/MM, reporting various Top Band hearings. Summarising, on December 31, 1945z, G3XTB/G3MWI, and G3XUF/G3SKM were heard from Marseilles. January 1, off the Tunisian coast, 2145-2200z, G3LYW heard at 59 working ZB2AY (who was S2); others logged were G3TAG, G3TRF and G3VMW, all 579. January 10 was notable around 1945-1955, for signals from GC3UJE at 59, and G3TLJ at 46, location 25 miles N. of Cap Blanc, Tunisia. In the Straits of Gibraltar on January 26, G2JQS 579; G3SED 599; G3XTZ 56/79, all heard between 2125 and 2135z. January 28 saw G3UOF/MM off New Spain, where he noted the following signals: G3XMK/G3XTB at 589, 1655z; G3WGD and G3WYK/A at 589, 1700z; GW3WCR and G3XKR calling CQ just afterwards, at 589 and 59+ respectively; G3XDV working an OK at 1748z; EI4AN in contact with G3UDA, both 59 at 1813z; and to round off the day G3VUE/A working G3UUA, 59+ and 57 respectively, at 2018z. The trip ended with a listen-in, from off Guernsey, to the local Harlow net, with G3TLJ, G3VZY and G2BZI enjoying their afternoon natter, heard at 55/58. Quite a report, and one for which we thank Mike particularly and hope that he will do the same again at the next opportunity.

Just as this piece on Top Band was being run off, a late news flash came in from W1BB. First, and possibly the most important, is that W1BB was heard at 449 for thirty minutes by JA2CLI, while he was calling a W7; it looks almost as though the "impossible" East-Coast W to JA path may yet be worked. The FT test on February 2 was a *complete* wash-out for the W's with not a single DX signal heard by them, although, as mentioned before, W1BB himself was received in the U.K. by G3XRX and G3XVC.

However, the horrid bit of news is that W1BB is *off the air!* Gales on the night of February 9/10 knocked out the home-station aerial, which had remained up since 1940, by breaking the open-wire feeders,



Percy Scaddan, G3CEB, of Newhouse, Waltham Way, Frinton-on-Sea, Essex, is a former detective member of the Flying Squad, with 25 years' service during which he gained 26 commendations. Now retired at the age of 60, he works the DX on the HF bands, builds most of his gear, and can hold his own at 25's on the key. Good show!

leaving a warm-weather job, as a couple of roofs have to be climbed to effect repairs. At the W1BB/1 site, both ends of the aerial snapped the safety links and are lying in the snow at the time of writing, although the middle, safely up the tower, is probably intact. Our sympathies to W1BB, and may he soon have his antennae to rights—after all, he is the DX beacon station on 160 metres!

Forty and Eighty

A fair old crop this month for these two bands, which are so often just neglected. An unusual callign to mention in connection with Eighty is G3NOF (Yeovil) who came on and worked a few stations, notably CN8AW, W1FRR and W2PV.

G3WPO (Burgess Hill) seems to have turned his attention away from Top Band to some extent, and now has a dipole at 25 feet, cut for 7 mc, going; one Sunday morning he was rather surprised to find himself on the business end of a pile-up of W6/W7 stations, *all* calling him as the only G audible on the band. Other stuff worked included 9J2MX, 6W8DY, loads of UB5's not really surprising—and gotaways in the form of 5Z4KO, CR6, DU and ZL2ANX.

For G2HKU (Sheppey) SSB on Eighty produced 9H1BL and LA2PH/MM (on a tanker near Gibraltar) both around 2300z. In the morning at about 0700z, both ZL2BCG and

XE1KB were heard but not worked. Forty produced SSB QSO's with sundry EU's, including SVIAB, and PY1MB. CW around 2100z yielded a contact with 4Z4NAI, and in the morning VE3EWY and YV4OY. Gotaways were XE1RV and G6ZY/M/CN8.

Over at Wartling, G3VPS put himself up a dipole at ten feet and had his first try on 40 since last summer. One evening's use resulted in contacts being logged with EU's and W4NO, K2JOC and W8EGB. Eighty saw a sked contact with 9H1BL, and a QSO with EA1CV, the latter coming to an abrupt end when the aerial fell down.

Another unusual call to note on 3-5 mc, after his long spell on Top Band, was G2NJ (Peterborough), the 160-metre Ladder leader. Nick decided on a change, and promptly made an interesting CW contact with YO3SC/MM, who was in the Baltic at the time.

We were right about that aerial at G3XYP (Navenby) being truly for Forty, and it was put up mainly for the contest, when 15 States were worked, Colorado being probably the best in terms of DX. There are indeed plans to get going on Eighty, the plot being to produce a vertical by shunt-feeding the tower supporting the beam—but this exercise will have to await rather warmer weather.

QRP can still give the goods if properly driven—it was ever thus—and one who has been brushing up

in the art is G3WJS. Input on AM has been of the order of 5 watts, with about 7 to 9 on CW, used with care over a couple of weekends. In terms of results, there have been contacts with UO5PK, OY5NS, LZ1KAA, 9H1BL—who was also booked in two-way AM—plus W2QD, W1EVT and quite a lot of the common-or-garden prefixes.

Another to QSY up from Top Band to Eighty is G3RFS (East Barnet). Neville put the old inverted-Vee back up, with the apex at 65 feet, and it is going like a bomb; although G3RFS is too modest to mention his own doings, one can say that from where G3KFE sits, the signal is a real buster. Incidentally, G3RFS hopes to make a trip to 9Y4 and 6Y5 once again during late April, and will if all goes well take with him a small all-band transceiver. We wish him better luck than befell him on his last trip there, back in 1965, when he was all set to operate with the call 6Y5FS but could only come on from 6Y5XG's place because his own rig went u/s.

G2DC (Ringwood) still maintains Forty to be a favourite if one is sitting up late when the Intruders have gone home to bed; CW (of course!) put Jack in QSO with CE1AD, CX3BH, OD5LX, PJ0CC, PY6WF, KV4FZ, JA6YCU, VK's, ZL1IL/C, 4S7DA, all W call areas, and VE1-3. As for Eighty, a new one for the band was 9J2MX, with UF6CR, VO1AW, all W districts other than 6, also VE1-3.

The 21 and 28 mc Bands

Lumped together this month, not so much from a paucity of reports as a shortage of space for a month when everyone seems to have done everything!

G2DC opens the batting, and comments that although the 21 mc band has shown a distressing lack of steadiness it has nonetheless been quite interesting. All W's, VE1-5, CE1AD, CR6GO, CR6AI, PJ2VD, VP8JD, TA2E, YV, ZE, ZS, VK,

ZL and JA makes quite a reasonable bag for the month, for Fifteen. As for 28 mc, this is always prone to appear dead for want of a little activity, and a CQ will often raise several DX stations. CR6AI, EP2BQ, OD5LX, TA2E, UH8AE, VS6AA, VS6FX, VK2EO, VK3XB, VK3KS, VK3AXK, ZE3JO, ZE3JX, 9J2MX, 9F3USA, all W call areas and VE1-4 was the result at G2DC.

SSB seems to have been favoured at G2HKU, where Ted used that mode to give contacts with various Russians, and to allow XW8BX, KP4CL (YL operator) 9J2DT, 5A1TA, YV7AV and EL8J all to escape around 1200z—possibly savouring lunch and not paying attention! All this on Ten. Fifteen does not enter into the G2HKU plan of things for this month.

On the G3NOF who has found, on Ten, short path openings to S.E. Asia in the mornings, with W's in the afternoons, but a dead band by 1800z. Around 1200 and 1700 there have been VP8's. Sideband QSO's were logged with ET3REL, FG7XX, G3FNL/WØ in Colorado, HS3DR, KP4CL, KR6KN, VP8KD and 'KL, VS6AD, W6's, ZD5X, ZS's, 8R1Y, 9J2VB and our old friend 9M2DQ. As for 21 mc, the morning opening via the long path to JA and VK has been "giving" by 0900, with the short path following around 1100, with the U.S. coming in by 1200 most days. TVI limits operation at G3NOF, but the contacts recorded show JA's, KA2JB, KR6KN, MP4TCE, VK2AVT, VK2BLH, VK2FA, VK2XT, VK2YJ and VK3ZE, plus the usual crop of W's.

Not much time on either band, reports G3VPS, who only notched up YN1GLB on SSB and W's plus 4Z4 on CW; these were on 21 mc, where an extremely interesting first QSO with a W-Novice, on CW, lasted for an hour.

On the G3XYP; David has been very selective in his reportage, and as far as 28 mc went, only considered EP2JP, ET3REL, MP4BBA

and VS6FZ worth mentioning.

Maureen, G3XVC, has no 28 mc rig of her own, and so she sometimes comes on with the gear of a friend, using his call. This has produced some quite delightful misunderstandings like "own call is G3XVC" being interpreted as "How nice of your uncle to let you use his rig!" and the quite numerous crop who did not believe YL's were allowed to operate in G!

Just as this was going down, we heard from MP4MBJ, on the Island of Masirah (off the coast of Muscat & Oman, Arabian Sea) and at the moment the only MP4M-- licensed. He is on 15/20m. every evening from about 1500z, looking for the U.K.—he is G3POA when at home.

New on the air is G3XZP (Wolsingham, Co. Durham), at the lucky old age of 15 years. He is on the HF bands with AM/CW—and every good wish to him for a successful future in Amateur Radio.

A final comment from your scribe, who thought to put himself into well-matched business with a fixed beam for Ten, in the loft space; when tried it did not seem to be very lively as compared with direct connection of the receiver to either of the other two wires available. After some cogitation, the trip back up to the loft was made—and it is a bit of an exercise—only to find the basic cause of the trouble was simple: G3KFE had forgotten to connect the feeders! But the darn thing still refuses to work! Oh, well...

Conclusion

And there you have it; a more even spread of activity over the six amateur communication bands than we have seen in this column for a long time, a state of affairs greatly to be desired. Next month's deadline is March 10, at Buckingham, the address being, as always: "CDXN," SHORT WAVE MAGAZINE, BUCKINGHAM. Meantime, 73 es DX.

IN spite of one or two spells of good propagation conditions, activity has been very low on all VHF bands during the month. GB3CTC was received at good strength in Herne Bay every day of the week commencing January 13, but very few contacts were made with West Country stations. Pressure at the time was down to mB and the weather conditions very disturbed, but the Bristol stations were coming in quite well and a contact with GW should have been on. The two-metre CW Contest on January 26 attracted fewer participants than the corresponding event last year, and once again, most paths were very disturbed, although there was a certain amount of DX to be had if one dug down deep and had enough patience! G3LAS (Hertford, Herts) and G3GZJ (Redruth, Cornwall) for example, had a real struggle but made it in the end, as did G2NH and G3GZJ. Best DX from G3DAH was DL9RK in the Munich area, just on the 800 km. mark, so there was even some extended tropo. present.

A disturbing feature of the Contest was the incredible number of poor signals about. It was not just the clicks and chirps, but the *inconsiderate use of unstable VFO's that swept up and down the band!* Several stations had such prominent spacers that the keying was barely readable. The offenders were not all portable stations either. The RSGB VHF Contest Committee have already drawn attention, by Rule 11 of the General Rules for VHF/UHF Contests 1969, to the possibility of disqualification if poor signals are consistently radiated, and perhaps it would have a salutary effect if this penalty were invoked a couple of times. The enjoyment of the Contest must certainly have been marred for many by this disregard of elementary good manners.

February 2 was the occasion of the first Aurora of the year which affected both four and two metres. There was a short-lived repeat on the 3rd. Auroral signals were first heard in the South at around 8 p.m. when SM and OZ were logged at RST-44A. By 10 p.m.,

VHF BANDS

A. H. DORMER, G3DAH

both GM3EOJ and GM2DRD were heard at good strength operating in the CW section of the band, the former remaining at RST-55A for several hours and working two stations on SSB. Best DX heard was UQ2AO in contact with G3LTF, but copy was made difficult by severe QSB and the fact that the UQ2 was sending at about 25 w.p.m., which is not easy for everyone at the best of times! By and large, this was not a particularly widespread or energetic manifestation, which may account for the very few U.K. stations heard on two metres at the time. The only ones logged here were the two GM's, GW3FSP, GW2HIY, all of whom seem never to miss an occasion such as this—they must have a very good early warning system—G3NEO, G3LTF, G3LQR, G3BA and G3UUT. G3NEO had a very pronounced Doppler spread at times. Best heading appeared to be between North and North-East, as

usual, although this was a little difficult to determine accurately as signals were in the main very weak, and the effect was not continuous but occurred at intervals of up to thirty minutes for perhaps five minutes at a time. Further reports of *A*r experiences will be found under "News Items."

Wednesday, February 5, saw a minor opening to GW and the Continent on both two metres and 70 cm., with F and DL workable (from the South-East at any rate) on the lower frequency, but again activity was very low. The 70 cm. Cumulatives, which had got off to a promising start, were only sparsely supported.

Conditions generally during the 4-metre contest on Sunday, February 16, were poor. DX contacts, when available, were subject to severe fading. QSO totals, and activity, appeared lower than during the corresponding event last year. The best score heard here (Herne Bay) was that of G3LAS (Hertford) who was passing 068 by the end of the contest.

VHFCC Awards

Awards this month go to G3UUT for operation on two and four metres, and to G3FNM and G3SBV for 100 contacts on two metres only. Congratulations to all.

Activity has been low of late at the Acomb, York, QTH of John Wilson G3UUT, as he has been very busy with revision for A-Levels, but the BBC transmissions from Meldrum are monitored constantly and at the first sign of an Aurora John is on the air. As already noted, he was one of the few British stations audible and worked from Herne Bay during the Aurora manifestation. Activity in the past has been limited mainly to two and four metres, the equipment running 50 watts to a four-element beam and E88CC converter on Four and 80 watts to a six-over-six slot with a 6CW4 converter on Two. The main receiver is an AR88. In all, 300 stations in thirteen countries and fifty-two counties have now been accounted for on Two, and 150 stations in eight countries and forty counties on

4 metres.

Roland Parkinson, G3FNM, operating from Sale in Cheshire, has been absent from the bands for the last two years due, among other things, to a move of QTH. However, he is now nearly organised again and hopes to be on, for local contacts anyway, in the very near future. The erection of an outdoor aerial awaits more clement weather. Due to the reshuffle, complete details of the equipment in use and projected are not at present available.

The station of Harry Bellfield, G3SBV, at Streatham Common, London, consists of a home-built transmitter running 20 watts to a 6146 and a nuvistor pre-amp in a crystal-controlled converter tuning 14-16 mc on an AR88. The antenna is an 8/8 Yagi at 30ft. with a cowlgill rotator. At 160ft. a.s.l., the site is not ideal for VHF working, as Crystal Palace and Beulah Hill, rising to 400ft., screen him badly to the North and East. Harry was first licensed in 1963, and although he came on Two in August of that year, has of late been more active on the HF bands with a KW-2000A mobile. Plans are in hand to get mobile on two metres, and also to start operations on 70 cm with a QQV03-20A and a G2DD converter with a BF-180 trough-line preamp. The antenna will be an eight-over-eight mounted above the two-metre beam.

Readers are reminded that claims for these Awards should be addressed to:—"VHF Bands," SHORT WAVE MAGAZINE, BUCKINGHAM and *not* direct to G3DAH.

DX-Peditions

The G3BA/G3BHT team will be off on their travels again in May, this time to Scotland for a week, from whence they are planning a "Spring Holiday Two-Metre Haggis Hunt." As the title suggests, at least in part, the idea is to visit various counties in GM, some easy and some difficult from the VHF point of view, and so give as many operators as possible a chance to work GM for the first time, or knock up their county score if they wish. The "Haggis" part arises by reason

of the fact that they are proposing to present a genuine Scottish haggis (which they "hope to shoot on the way round!") to the operator who works them from the greatest distance or under the most difficult circumstances — as, for example, from a difficult-to-get-at portable site with 200 mW. There will be a warm-up session on the first night, May 24, from Westmorland to give operators a chance to get to know the form before they go over the border to start the tour proper, through until the following Sunday inclusive in GM.

Locations will not be announced in advance so that the surprise element will be kept going and the expedition will have a freer hand to choose the best site for the job when they arrive in the new county. The original intention was to use CW and SSB only, but as the G8/3's are now so active on Two, it has been decided to operate AM as well. Power will be 100 watts peak RF output into a ten-element *J-Beam* Skybeam at 18ft. An 80-metre link will be maintained with an anchor man, as on the highly successful EI/GI tour two years ago, and new skeds can be made, or other changes accommodated, when circumstances demand. Although more complete details will follow, requests for skeds may be sent now, with s.a.e., to either operator (*QTHR*) stating the mode of transmission which it is proposed to use, the preferred mode of operation by the expedition, and a time between 7 p.m. and 11 p.m. Morning sessions on *ad hoc* basis between 7.30 a.m. and 8.30 a.m. are also planned. Scheduled contacts occupying one third of the total operating hours and at five or ten minute intervals is the aim, the remaining two thirds of the time being "free for all." Here is a wonderful chance to work some of the rarer Scottish counties, offered by an experienced team with their EI/GI success still held up as a model of what an expedition should be, adequate power and lots of time. All that remains is to hope for some reasonable propagation conditions, particularly for those in the South.

Another expedition is planned to GM for May 1-4 inclusive. Counties to be visited are Wig-town and Kirkcudbright, and gear will be taken for four metres, two metres and 70 cm. Callsigns are G8AWS/P on 70 cm., GM3PZH/P on Two and GM3OIW/P on Four. The 70 cm. frequency will be 433.34 mc and the others have yet to be decided. Requests for skeds to G8AWS, *QTHR*.

A QRP expedition to GW is on the stocks for the weekend of July 5-6, by a group of six operators from the London area, and they propose to do it the hard way! The plan is to carry all their equipment to the top of Snowdon *on foot*. They will have two-metre and 70 cm. gear with them and the output on both bands will be under one watt, and so a real challenge for the DX man. Operation will be on phone only in the appropriate Zone, the actual frequencies being announced later, with the callsign GW8AZU/P on Two and GW8APZ/P on 70 cm. It is likely that the transmitter on Two will be that described in the July 1968 issue of SHORT WAVE MAGAZINE, with which G8AZU did so well during the Open Contest last summer while operating portable from Leith Hill, Surrey, and which has now given him over 120 QSO's on Two. Operators are G8AZU, G8APZ, G8AMG (the ubiquitous Mike), G8BQH, G8BIB and G8CIT. An s.a.e. to Robin Lucas, G8APZ, *QTHR*, will arrange a sked on 70 cm., and to G8AZU, *QTHR* for two metres. It may be noted that the dates quoted coincide with the Summer Contest, so it would be appreciated if the contacts were kept short.

Group Meetings

A meeting has been called by the organisers of the North-West VHF Group at 8 p.m. on March 11 at 50, Great Ancoats Street, Manchester to discuss their summer activities in detail, and operation at the Belle Vue Convention on April 27 in particular. The recently acquired caravan has now been kitted out and, it is understood, was given its baptism of fire during the January CW Con-

test. Enquiries to G3FNM, 141, Norris Road, Sale, Cheshire.

* * *

The January meeting of the South East UHF/VHF Group was well attended in spite of bad weather conditions, and was given much food for thought by Tom Douglas, G3BA, who had chosen as his subject the use of VFO's on VHF. As an ardent VFO man himself, Tom was eloquent in his advocacy of the system and described apparatus which produces a very stable signal on a fundamental of 24 mc with a drift of *circa* 100 c.p.s. only. This was a solid-state device, but used readily obtainable transistors. (He will be repeating the talk at the opening session of the International VHF/UHF Convention to be held at "The Winning Post" Hotel, Twickenham, on Saturday, April 26.)

The Group has now finalised a research project into two-metre propagation over the horizon. A standard signal source has been produced by G2UJ to calibrate the S-meters of participants' receivers and a standard reflectometer and power meter are used to check antenna radiation characteristics. Details of the site location in NGR co-ordinates, relevant particulars of the gear in use and the strength of the contact, are fed into a computer at Kent University which has been programmed to analyse the results of trans-horizon contacts in terms of anomalous refraction related to path contour. Amateurs in the Southern Counties who would like to come in on this research should contact Paul Nicholson, G3VJF, *QTHR*. The next meeting of the Group is scheduled for March 7, 7.30 p.m., at the University of Kent, Canterbury—notice as to where to find the meeting will be posted locally on the day. The speaker on this occasion will be Ray Hills, G3HRH, who will be talking about aerials for UHF/TV transmission. Ray has been professionally involved with this subject for many years, and will certainly be able to pass on some very useful information which will have much application in amateur work.

Auroral Activity

Charlie Sherritt, GM3EOJ in Aberdeen, almost missed the auroral opening of February 2, but not many operators could have missed *him* with the signal that he was putting into the South of England. His most exciting QSO's were with G3BA and G3LTF as these were both on SSB and signal strengths were of the order of 5 8/9 in both cases and both ways. As a matter of interest, these QSO's were heard in Herne Bay, and while Charlie and Tom were both very auroral, Peter was T9 during the whole of the period. For those who have not yet heard speech *via* an aurora, it sounds like a very hoarse (and very menacing!) message from outer space. Good and slow articulation is essential when trying this mode under these conditions, and don't try it on AM because it won't work due to the Doppler shifts. Charlie worked GW2HIY, G3BA, G3LTF, G3DAH, G3MFJ, G3NPO and G3NEO, and heard GM2DRD both direct and on aurora, also SM4MPI at 5 8/9, and one weak PAØ.

The G3LTF, Galleywood, Essex, list of stations heard or worked during the Aurora also makes very interesting reading. He

had contacts with GM3EOJ, GW2HIY, SPIIX (a nice one, that), GM2DRD and DL2C1. A complete QSO with UQ2AO did not apparently materialise after all, although he got Peter's report of 55A all right, but couldn't get over his own QRA, as at that time reflections were very weak. This would have been the first new country for Peter for some years, too; hard luck. Other stations heard by G3LTF were SM7BUN, GW3FSP, G3NEO, G3BA, G3UUT, OZ6OL, OZ3GW, G13GXP, OZ9OR, DJ5BB, SM6CYZ, PAØFAS, SM7BY and G3DAH.

Paul Quast, EI5BH, from Co. Westmeath found the Aurora a one-way mechanism, since, although he heard PAØ, OZ and DL from the Continent and G3UUT, G3NEO, G3BA, G3LTF, GM6RI, GW2HIY and G13GXP he, in company with the other EI stations active at the time (EI7AF and EI4AL) could not make a single contact between them! The disturbance was visible at 9 p.m. with one large red feather pointing almost due North, and the first signals were heard twelve minutes later, and the last around 11.20 p.m., by which time all the EI's had given up hope of ever making a

THREE-BAND ANNUAL VHF TABLE

January to December, 1969

Station	FOUR METRES		TWO METRES		70 CENTIMETRES		TOTAL pts.
	Counties	Countries	Counties	Countries	Counties	Countries	
G3DAH	—	—	34	6	—	—	40
G3COJ	—	—	24	3	11	1	39
G8BMD	—	—	22	1	—	—	23
G8APZ	—	—	13	1	6	1	21
G8APJ	—	—	12	1	4	1	18
GC8AAZ	—	—	8	4	—	—	12
G3EKP	6	2	3	1	—	—	12
G8BJC	—	—	11	1	—	—	12

This Three-Band Annual Table shows total claims to date for the year commencing January 1st, 1969. Claims should be sent as here-to-fore to "VHF Bands," *SHORT WAVE MAGAZINE*, BUCKINGHAM. The form of the Tables seems to have met with general approval, and accordingly, summaries by bands will be published at suitable intervals. Please claim as often as possible, to keep the Table up-to-date and meaningful. New entrants are always welcome.

contact. Funny thing is, that all signals were around the 5 7/8 mark, with G3BA even better than that.

Reports from other operators who were active during this manifestation would be welcomed.

Beacons

Don Hayter, G3JHM, (Worthing, Sussex) reports that the designs for the Gibraltar beacons are coming along well. They will all be solid-state devices using Butler oscillators with the two 2N918's in one can. The 50 mc and 70 mc antennae are four-element Yagis and the two-metre job a *J-Beam* eight element, and output is two watts on all bands. The installation date is likely to be April this year. Most of the design work is being done by G3JVL and G3PLX.

The French two-metre beacon, F3THF, was off the air for a few days while the aerial (blown down during recent gales) was re-erected, but was back on again by January 27. Current propagation conditions have made reception very difficult, even in the South.

23 Centimetres

Bill Green, G8AEJ, comes up with some useful gen. on operations on 23 cm. G5DT (Wallington, Surrey) is to be heard most evenings now, either working cross-band to 70 cm. or contacting his regulars on 23 cm. direct. G2RD (Caterham, Surrey) is still working on improvements to his equipment but is active on the band and is now laying plans for VHF Field Day. The new feed unit for the dish aerial at G3FP (Thornton Heath, Surrey) is working out very well. This is a broad-band affair which appears to radiate equally well on either 13 cm. or 23 cm. He works G3MCS in Aylesbury, Bucks quite regularly with it, and that on both bands. G8ARM (London, S.E.3) is QRT temporarily on both 23 cm. and 70 cm. during the rebuild of the 70 cm. rig, so don't look for him for a while. G8AOL (Bexleyheath, Kent) has not been too active of late due to examination fever, but he has a new dish

aerial which should be putting out very good signals before long. The G8AAA (Beckenham, Kent) solid-state converter is now just about complete. G6OX, (Englefield Green, Surrey) expects to have a receiver going on 23 cm. shortly. If he puts out a signal comparable with his two-metre and four-metre needlebender when he gets a Tx going, it should live up to the band a bit! Finally, G8AEJ himself puts up a fervent plea for an amendment to the Licence Regulations to permit the use of *slow* Morse by G8/3's on 23 cm. Transmissions could be limited to callsigns, at a speed of say five w.p.m., so that those weak carriers can be identified more easily. Sounds a sensible idea.

News Items

General: More two-metre operation in GI. A letter from Lt. Butrovich III of the U.S. Navy advises that he is just about ready to come on two-metre SSB from a 1,350ft. a.s.l. site on Benbradagh, County Londonderry, approximately four miles from Dungiven. His Stateside call is W6GQJ and the British one GI5ALP. The site is clear to the East and South East and so he should be able to put a reasonable signal into some parts of this country. For skeds, write to him at Box 60, U.S. Navcomsta, Londonderry. Welcome aboard, John.

GC8AAZ (Jersey) now has his eight-element beam working on Two and finds it a big improvement over the halo he was using earlier. Readers may recall that Lawrence operates portable/mobile from the heights in the north of the Island which gives him a good path into the U.K. Operating periods are mainly on Sunday evenings from Sorel Point ("YJ60f") and he is usually assisted by GC8CHJ on these occasions. He has now worked eight counties and four countries. As he is still moving around the Island, he has no fixed QTH at the present time, but cards may be sent *via* GC3GS, QTHR.

From G2NH (New Malden, Surrey), comes an idea for an economical way of producing one's own QRA Locator Map. He uses

the Shell Touring Map of Western Europe with the 2° Longitude and 1° Latitude lines inked over to form the lettered areas of the system, and transparencies to get the divisions of eighty smaller squares. The whole preparation took him two hours. Admittedly, the scale is a little large, but it is adequate for general use.

G8AWS (Ellesmere Port, Cheshire) reports that he will be starting up the /P Monday night activity on 70 cm. again from Moel Famau in April. Many readers will recall the success which he had from the 1,820ft. a.s.l. location last year, giving many operators their first GW contact. It appears that he worked G3COJ (High Wycombe, Bucks) from Flintshire during December.

* * *

G8BII (Chipping Norton, Oxfordshire) is running 100 watts to a QV06-40A modulated plate-and-screen with two 807's in AB2; he is putting out a consistently better two-metre signal now. G5AKI (Hitchin, Herts) goes back to the States next month, so there goes some more two-metre activity; good luck with the new posting, Van. G6OX (Englefield Green, Surrey) is now back on 70 cm. after an absence of some fifteen years and finds the band much changed in that a lot of the operating is pretty sloppy; he suggests that the highly directional properties of the multi-element beams are not being used to full advantage, and deplores the lack of support for Contests. He wonders whether some of the apathy is due to the fact that the G8/3's cannot use CW, but points out that hearing all the DX being worked by others *may* encourage them to go for the full licence.

The West Sussex Club now has a new secretary, G8BQE, who takes over from the indefatigable G3FRV. He is busy with the Morse test at present and hopes to come up with a G3 call before long. G3YCN, late G8BVG (congratulations, Ted), of Maidstone, Kent reports that the Maidstone Club will be active on the VHF bands as GB3YMC/A from

May 31 to June 7, operating from the Club premises at the "Y" Centre, Maidstone on two, four and one-sixty metres with special talk-in stations for the Rally there on Sunday, June 1st.

During the recent very bad weather in Kent, G2JF found himself stuck and marooned in the mud in his car at his Hasting-leigh site 600ft. up in the North Downs, with no means of getting out or calling for help other than by radio. So he went on two metres and looked for any local mobile. Fortunately, G3TDP/M, motoring back to Ashford from the Isle of Sheppey, heard the call and was able to deviate slightly and effect the necessary rescue. G8BMD (Oakengates, Shropshire) now has 90 watts of SSB on two metres from a QQV06-40A linear. G8ATK (Farnham, Surrey) is raising the height of his eight-element Yagi and that, with the new JXK Converter and Racal RA-17 receiver, should give much better performance to the North. Kent University is now well represented on two metres. Apart from G3VJF, who has been on the bands for some time, G3ULU and G8BRD have both been heard, together with a newcomer, G8CIM. It is very much a family affair for G3ULU, whose brother Julian (remember his operations from Crystal Palace mobile?), has the call G3UHK, and their father operates as G8BHV from Bristol.

* * *

Another newcomer to the two-metre band is G3XFQ (Chatham, Kent) who has recently returned from a spell of duty in Germany, but it looks as if his stay in this country is not going to be very prolonged as he expects to return to DL, or even farther afield, fairly soon. Meanwhile, he gets out very well with an RK-34(!) although he has to push it a bit with 12 mA of grid drive! G3MVV (Billericay, Essex) is

back on Two after some four years' absence; he runs a TW-2 to a halo in the loft, but gets out reasonably well. Readers may recall his /P operation from Wicklow, Wexford and Carlow some years back, and it is hoped to repeat the trip. Very useful.

A reader who had better remain nameless reports a visit from the GPO inspectors the other day to check on a reported case of TVI. He was cleared, but the QRM from the walkie-talkies the GPO were using had to be seen to be believed. *Quis custodiet . . . ?*

* * *

G3USB (Cambridge) has for some time been suffering from hum on his two-metre SSB generator and has traced it down to the 7360 balanced modulator which was in the field of a mains transformer. These valves, while excellent for this function, are very prone to magnetic hum pick-up, and bad cases will not yield, even to mumental screening treatment. Richard overcame the problem by a rebuild and now has a solid state version which is producing excellent results, the carrier suppression being better than 50 dB which, with another 20 dB in the filter, gives some 70 dB or so overall; he has a 4CX250B linear on the stocks which, with 1,650 volts on the anodes, should soon be producing some 400 watts peak output. The nightly sked at 10 p.m. between G8BMD (Wellington, Shropshire) and G3DOR (Staines, Middlesex) has now been in operation on two metres for five months and is yielding a 90% success rate. Signal levels are usually of the order of RS 5 5/6, but may improve further now that G8BMD has his linear working at full power.

* * *

A novel sound-proofing system for the radio room has been evolved by PAONAP. He has

covered the walls and ceiling with those soft cardboard egg containers, and so virtually achieved an anechoic chamber. The result sounds very BBC, or should it be NCRV?

Amateur TV: G6ADK/T (Gillingham, Kent) who, as reported last month now has 150 watts of video, has succeeded in putting pictures into Mildenhall, Suffolk. He would still like to arrange skeds with other operators, even though they have receiving facilities only.

Commercial: Mention was made last month of the new publication *VHF Communications* of which Terry Bittan, G3JVQ, is one of the compilers. G3JHM now advises that he is the U.K. representative, and that all enquiries and subscriptions, at 27s. 6d. for the four 1969 issues, should be addressed to him, *QTHR*.

Mullards have now formally released their 809-05 solid-dielectric trimmers for UHF use, and they look just the job for the QRP rig. The rigid plastic moulding is fitted with connecting pins which provide a drop fit on 0.1 inch grid, printed circuit boards. Rotor and stator assemblies are brass with silver plated contacts, and the dielectric discs are PTFE/Kapton, which not only gives a very high Q at VHF, but also a high working voltage rating and wide temperature coverage. Maximum values are 3, 9 and 18 μF , typical Q at 500 mc of 170.

Contests: Forthcoming events are the Third 144 mc (Open) over March 1st/2nd, which coincides with the major Region I IARU Contest, and the Second 70 mc (Open) during April 12-13.

Deadline

That's all for this month. Deadline for the next issue is **March 8** and the address for news, comments and claims is "VHF Bands," *SHORT WAVE MAGAZINE*, BUCKINGHAM. Cheers for now and *73 de G3DAH*.

For anything you may want to Buy, Sell or Exchange use the Readers' Small Advertisement columns in "Short Wave Magazine" — see pp.57-63 in this issue. Minimum charge is only 5s., and full coverage of the Amateur Radio interest in the U.K. is guaranteed.

THE MONTH WITH THE CLUBS

By "Club Secretary"

(Deadline for April Issue: March 7)

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

OFTEN one hears the officials of a Club, when the time comes for re-election, refusing to be nominated for another term of service, and almost as often the feeding is on the lines "I think it is time someone else had a go." Your scribe recently had to say, with regret, at the local AGM that he could no longer continue in office; and for the record he would offer his private thoughts for consideration, as he bumbled his way through his collection of clichés. "This is the fourth time I have held the office in various clubs, over the years, and I delight in the honour it does me; but the commitments of business are such that I don't get half enough time at home, on the air, watching television, playing with the children, gardening, and all the other things that are so important. The XYL has stood it for years, and now she is getting restive—but if I say I think it is time someone else had a go, maybe it will save me discussing my private thoughts publicly!"

Seriously, though, it is well to realise that Club officials, in the vast majority of cases, are shot-gunned into their jobs in the first place, and when they want "out" they are not, in most cases, going to like it if they are more or less forced into carrying on with an onerous task.

New Groups

The **Border A.R.S.**, covering the Southern Borders of Scotland and Northumberland's northern area has now been formed. Hq. is to be at the Cross Keys, Greenlaw, Kelso. At the initial meeting fourteen attended, of whom nine were licensed; all the details can be obtained by contacting the hon. sec., see Panel, opposite.

Not so very far away is **Morpeth**, where moves are afoot to form a club. The contact here is G3WTA, Mike Kinnersley-Taylor, either by phone or letter at the address given in the Panel. If enough support is found, then an inaugural meeting will be called, and action taken.

Other Reports

This time we take the clip as a whole, and work our way through; **Stockport** have the top of the pile, and are in the process of giving the club a face-lift, with various activities planned or in train. They get together on alternate Wednesdays at the Royal Oak Hotel, Edgeley, Stockport; March 5 is G3NUQ's, and he will be talking about Oscilloscopes, while on March 19 they are, sensibly, putting on a lecture on First Aid and Electrical Shock—a topic which is fairly easily organised in any area of

the country (through the local St. John Ambulance Unit) but which comes up far too infrequently in club programmes.

For years there has been a good group operating in **Southgate**, although recently problems have arisen with Hq. The latter snag is resolved, with a move to the Civil Defence Hut, Bowes Road, London, N.11. The first time the new place will be used will be March 13, when they celebrate with a Junk sale. The latest issue of their *Newsletter* announces the rules for their own operating contest, for the G3PLF trophy.

The AGM of the **Loughton** crowd produced a new hon. sec.—see Panel—and chairman. Loughton Hall is the venue, on March 7, when a film show is promised, the main title being "Engineers in Communication."

Trinity Congregational Church Hall, Ifield, Crawley, is "home" to the local **Crawley** club; the Constructional Contest is to be played off on March 26, followed by a film show. This group makes a special point of welcoming visitors, especially SWL's and newcomers to the district.

March 7 and 21 are the dates reserved for meetings at **Saltash**. The first is set aside for Mr. Phillips of Vero Electronics to discuss the uses of *Veroboard* and the techniques of using it practically, while the other evening will be given over to a progress review on their 144 mc project.

This same date—March 7, is down for the AGM of the **Mansfield** lads, and they are hoping for a good turnout of course. The New Inn, Westgate, Mansfield is the spot, and for future reference, the routine is "first Friday in each month."

Shoot the hon. sec., your scribe is muttering—the poor unfortunate is the acting incumbent at **East Wores.**, who gave us the Hq. (the Old People's Centre in Park Road, Redditch), the time, but not the *date* for the evening when G3BMY is coming over to talk to them about the avoidance of TVI. So—for the date, tackle G3EVT—see Panel.

Quite an event at **Shefford** recently—G2DPQ retired as chairman after fourteen years of continuous service, to be replaced by G3VMI. Quite a record, that! Various things are planned for the coming year, now that the club call G3FJE has been brought back to life. As for the immediate future, March 6 is for G2DPQ to talk on Factual Signal Reporting. The 13th is down for "Questions on R.A.E.," the 20th a film on Car Testing by *Which*, and on the 27th an engineer from Vero Electronics is visiting to talk about *Veroboard*.

Five meetings are booked for **Wolverhampton** in March, all at Neachells Cottage, Stockwell Road, Tettenhall, the details being as follows: ATV demonstration by G6KQJ/T March 3; a natternite on the 10th; an informal on Suppression for /M working on the 17th; followed by the committee meeting on the 24th, when the Hq. will be open to others, the month being nicely rounded off by a Film Show.

The highlight in March for the **North Kent** lads and their wives will be the annual dinner and dance on Saturday, March 15, at the Woodman, Blackfen Road, Sidcup. Tickets for this one are 27s. 6d. each. In addition, the usual meetings take place at the Congregational Church Hall, adjacent to the Clock Tower, Bexleyheath; for details contact the hon. sec. at the address shown in the Panel below.

A change in the slate of officers is noted by **Pudsey**, where the end of a year's operations has shown a healthy bank balance and an active Club; in the year, 16 members have seen the R.A.E. pass slip drop through the letterbox, thanks to the work of G3WGW, who is now president. The form is a meeting on each Wednesday, with R.A.E. once a fortnight. In between are slotted operating and constructional evenings, and the last

Wednesday is usually given over to a lecture of some sort.

Another Club with a change of officers is **Leicester**, where secretary and chairman both change. Plans are at the moment "in stew" for the programme, and so the hon. sec. should be contacted for the up-to-date gen.—see Panel.

* * *

After all the problems in finding a replacement Hq.—**Salop** are now in the Signals Hut at Shrewsbury School—weekly meetings have been resumed and an influx of new members recorded. On March 6 they entertain Mr. Carter, the county Civil Defence organiser, and afterwards hope to initiate the formation of an RAEN cell. A week later is March 13, when G3JFH is to discuss "Mobile," and on the 20th the Club station will be radiating. This leaves March 27 to account for, and is to be filled by F/Lt. R. Handley, G3GJQ, who takes "DX-peditions" as his theme.

After three years G3RAA had set up an enviable record of regularity in reporting on **Edgware** to this feature; now, he has stepped down, but quite clearly has coached his successor well! Second and fourth

Names and Addresses of Club Secretaries reporting in this issue:

- ACTON, BRENTFORD & CHISWICK: W. G. Dyer, G3GEH, 188 Gunnersbury Avenue, Acton, London, W.3.
 BISHOPS STORTFORD: A. Sianley, G3WUR, 43 Havers Lane, Bishops Stortford, Herts.
 BORDER COUNTIES: J. Nairn, 5 Murrayfield, Gordon, Berwickshire.
 BROMSGROVE: J. Dufrane, 44 Hazelton Road, Marlbrook, Bromsgrove, Worcs.
 CHESTER: P. J. Holland, G3TZO, Field House, 19 Kingsley Road, Gt. Boughton, Chester CH3-5RR.
 CHIPPENHAM: N. Cutter, G3PQG, 1 Fosseyway Close, Colerne, Chippenham, Wilts. (Box 664.)
 CIVIL SERVICE: D. McLennan, G3KGM, 52 Pinewood Avenue, Sidcup, Kent. (01-300 0767.)
 COVENTRY: C. Jaynes, 20 Belgrave Road, Wyken, Coventry CV2-5AY.
 CRAWLEY: G. Bowden, G8BQE, 51 Leighlands, Pound Hill (3253), Crawley, Sussex.
 CRAY VALLEY: D. Buckley, G3VLX, 234 Halfway Street, Sidcup, Kent. (01-850 6945.)
 CRYSTAL PALACE: G. M. C. Stone, G3FZL, 11 Liphook Crescent, London, S.E.23. (FOrest Hill 6940.)
 DERBY: F. C. Ward, G2CVV, 5 Uplands Avenue, Littleover, Derby (21931) DE3-7GE.
 DORKING: R. Greenwood, G3LBA, 8 Deacon Close, Downside, Cobham, Surrey.
 EAST WORCS.: R. J. Mutton, G3EVT, Summerhayes, Mill Lane, Alcester (2140).
 ECHELDFORD: M. Clift, G3UNV, 45 Fordbridge Road, Ashford (59528), Middx.
 EDGWARE: E. H. Godfrey, G3GC, 15 Oxenpark Avenue, Preston Road, Wembley, Middx.
 EXETER: E. G. Wheatcroft, G3HMY, 27 Lower Wear Road, Countess Wear, Exeter.
 FAREHAM: J. A. Rampton, G3VEI, 23 Oxford Close, Fareham, Hants.
 HEREFORD: B. Edwards, G3RJB, 5 Powys Walk, Hereford.
 HONG KONG: H. Asmussen, V66AD, P.O. Box 541, Hong Kong.
 KINGSTON: M. Diprose, 36 Tiverton Way, Chessington, Surrey.
 LEICESTER: J. D. Garner, G8BNP, 22 Rushmere Walk, Leicester Forest East, Leicester.
 LIVERPOOL (University): S. J. Dean, GW3CGN, Guild of Undergraduates, University of Liverpool, 2 Bedford Street North, Liverpool.
 LOUGHTON: J. Atkinson, 6 Rochford Avenue, Loughton, Essex.
 MANSFIELD: F. N. F. Bewley, G8HX, 116 Westfield Lane, Mansfield (25208), Notts.
 MAIDSTONE YMCA: W. E. B. Kent, G3YCN, 72 Bower Mount Road, Maidstone, Kent.
 MIDLAND: R. Partridge, 42 Maxstoke Road, Sutton Coldfield, Warwickshire. (021-354 5921.)
 MID-SUSSEX: E. J. Letts, G3RXJ, 87 Meadow Lane, Burgess Hill, Sussex.
 MID-WARWICKSHIRE: J. F. Coggins, G3TFC, Market Corner, Coventry Road, Baginton, Warwickshire. (Toll Bar 3688.)
 MORPETH: M. Kinnersley-Taylor, G3WTA, Seaton Ryde, Tranwell Woods, Morpeth (2541), Northumberland.
 NORFOLK: M. J. Cooke, 76 Falcon Road West, Sprowston, Norwich, NOR 73R. (Norwich 46093.)
 NORTHERN HEIGHTS: A. Robinson, G3MDW, Candy Cabin, Upper Brockholes, Ogden, Halifax (44329).
 NORTH KENT: P. T. Baber, 64 Latham Road, Bexleyheath, Kent. (01-303 8655.)
 PUDSEY: P. Conway, G3XLV, 10 Tyersal Grove, Tyersal, Bradford (64220), 4.
 R.A.I.B.C.: Mrs. F. Woolley, G3LWY, 331 Wigan Lane, Wigan, Lancs.
 READING: G. R. Addis, G3TEB, 13 Keats Close, Woodley, Reading, Berkshire.
 RHYL: A. Antley, GW3UTG, Fairholme, Fairfield Avenue, Rhyl (1362).
 SALOP: W. Lindsay-Smith, G3WNI, 22 Kingswood Crescent, Copthorne, Shrewsbury.
 SALTASH: J. A. Ennis, G3XWA, 19 Coombe Road, Saltash.
 SHEFFORD: M. Goodwin, 16 Roe Close, Stotfold, Hitchin, Herts.
 SILVERTHORN: D. Standley, G3XSA, 212 Westward Road, Chingford, London, E.4. (529 2932).
 SOLIHULL: J. Lester, G3VXV, 173 Dagson Lane, Solihull, Warwickshire. (021-705 3060.)
 SOUTH DOWNS: L. Tagliarero, 9 Tugwell Road, Hampden Park, Eastbourne (54244), Sussex.
 SOUTHGATE: A. F. Hydes, G3XSV, 6 Glenbrook North, Enfield, Middx.
 STOCKPORT: D. I. Lunn, G3LSL, 4 Farnham Avenue, Macclesfield (7903), Cheshire SK11-8LT.
 SUTTON & CHEAM: J. Marriott, G8BFH, 8 Romany Gardens, Sutton, Surrey. (FArlands 2745.)
 THANET: J. P. Barns, G3BKT, 93 Crescent Road, Ramsgate, Kent.
 TAUNTON: G. M. Sweetman, Little Copse, Monkton Heathfield, Taunton.
 VERULAM: J. Thomas, G3RXA, 9 Highland Drive, Hemel Hempstead (55136), Herts.
 WIMBLEDON: W. Hardcastle, G3XQX, 13 Carlwell Street, Tooting, London, S.W.17.
 WOLVERHAMPTON: J. P. H. Burden, G3UBX, 28 Coalway Road, Wolverhampton.
 WORCESTER: R. L. Avery, G3TQD, 24 Alexander Avenue, Droitwich (3943), Worcs.

Mondays in each month is reserved in the members' diaries for meetings—not alternate, as there is no provision for the fifth Monday (should the month contain one). Hq. is St. Georges Hall, 51 Flower Lane, Mill Hill, London, N.W.7.

A special note from the **Thanet** lads to inform us of their annual dinner, which is on March 29, at the Sanclu Hotel, East Cliff, Ramsgate, Kent. All the details, both on this and other activities—including their forthcoming Mobile Rally—are obtainable from G3BKT—see Panel.

Five Mondays in March means **Mid-Warwickshire** in session five times. In order, the evenings are devoted to Aircraft Navigational Aids (G3TFC), RAEN (G3IKL), a tape lecture on Aurora, VHF Equipment (Glenn Ross), and finally G5PP on his U.S. trip. All are at Hq. 28 Hamilton Terrace, Leamington Spa—where the Club station G3UDN is on the air most Monday evenings.

Well Equipped

That big signal from **Maidstone** in MCC came from what must surely be one of the best-equipped Club stations in the area covered by G call signs. For the HF bands a beam at 55 feet, a 270-foot wire for the LF bands, plus equipment to power them and to receive. VHF aerials are up at 60 feet. In addition, a comprehensive workshop facility and meetings on Tuesdays and Fridays at the YMCA Sportscentre, Melrose Close, Maidstone. As a matter of interest the Tuesday session is a change from Mondays, which comes into operation on March 4, and results in the cancellation of Monday March 3. As from March 7, the Friday evenings are to include, among other activities—how delightful to have so much accommodation!—a course by G3UXE, entitled Basic Electronics and Communications, specially aimed at the beginner.

March 7 and 21st are "Nights-on-the-Air" at **Coventry**, while the 14th and 28th are lecture sessions. At the former of these Eric Mollart will discuss the techniques of D/F Expeditions, while the 28th is set down for the W1BB tape-and-slide talk Mark 2.

The problem of Hq. is still taxing the resources of the **Hereford** committee, among other things, but it is nice to hear that they have their eyes on something just about perfect for the purpose, and hope to have things more or less finalised by the time this comes to print. Information from G3RJB, as in Panel.

Emmanuel Church Hall, Barry Road, London, S.E.22 is the present home of the **Crystal Palace** crowd, and their March get-together there is to be devoted to a slide show of his trip to the United States and Canada by G2MI, on the 15th.

Rhyl have decided to fix the second Thursday in every month at the Rhyl Silver Band Rooms, off Windsor Street, to book their own club call, and in addition to form a contest committee as part of their doings in the coming year.

At the Cavalier Hall, Watford Road, St. Albans, the **Verulam** lads meet on March 5 for an informal meeting at which R. Wells, G8BNR, is to talk about Test Gear and demonstrate a 144 mc Transverter. March 19 at the same venue is devoted to Certificates and Awards, for which the speaker will be G5GH.

Solihull, on the outskirts of Birmingham, have the third Tuesday in every month reserved at the Old Manor House, 126 High Street, Solihull for their meetings. We have no late details on the programme, but doubtless the hon. sec. would oblige—see Panel, p.39.

Field Day plans are being mooted at **Southdown**, where the March 3 date at the Victoria Hotel, Latimer Street, Eastbourne, is Film Night, including "Radio News of 1968" and "Moonbounce."

Every Tuesday evening the **Chippenham** chaps foregather at the High School for Boys, Hardenhuish Lane. Now they have a KW-2000 it is to be expected that alternate sessions will be devoted to it; in addition, March 11 covers a lecture and demonstration of *Vero-board* by Mr. Leadbitter of Vero Electronics, and March 25 a talk by G3NJK, on Direction-Finding Gear, in preparation for the coming season's activities.

A bonzer of an evening is planned by **Sutton & Cheam** on April 12 when they have their annual dinner and ladies' festival, with G2YS as guest of honour, and other well-known personalities expected. All this *and* a cabaret, for thirty-five bob a head! Applications to Roy Scott, G2CZH, 140 Seymour Avenue, Morden, Surrey, who is handling these on behalf of the club. Note that visitors will be welcome at this function.

For **Bromsgrove**, Hq. is at the Co-op Hall, and now the 1969 programme is in course of being settled for the year. Details of this go-ahead group are to be obtained from the secretary (as Panel).

Our next stop is with **RAIBC**, who cater so well for the blind and invalid members of the amateur and SWL fraternity, both by provision of receivers, courses on tape or paper for R.A.E., their excellent magazine *Radial*, and of course the devoted band of supporters who make all possible—not to mention Frances Woolley, G3LWY, who combines the duties of running a home with co-ordinating all the many activities in the right directions. Always wanted, of course are more supporters.

March 11 at the Midland Institute in Margaret St. is the "home" meeting for March of the **Midland** group and the matter-in-hand is a slide lecture on the GPO Tower by Mr. J. R. Tipple. Also on the slate is a trip out on March 28 to see the Tower and all the things discussed in the lecture. A good idea, this.

Acton, Brentford and Chiswick have "a fixture" in their secretary each year, G3GEH, and he rarely if ever misses a deadline. For March he tells us that on March 18 the chaps will be carrying out tests on the Club's new aerial, at Hq., 66 High Road, Chiswick, starting as ever at 7.30 p.m.

Going up to **Derby**, we have no details of their March meetings, but all these can be obtained by

SECRETARIES AND SCRIBES TO NOTE!

It is essential that we have all reports for "Month with The Clubs" by the deadline date if they are to be taken into the current write-up on Club activities. The forward dates are: March 7, for the April issue; April 4, for May; and May 9, for June. The name and address of the honorary secretary should be included in all reports. The address is simply: "Club Secretary," Short Wave Magazine, Buckingham.



During January, the Haverfordwest Amateur Radio Society held their first annual dinner—and though this group is so far out to the West, in a district sparsely populated, and not only in the radio amateur sense ("little England in Wales," as it is called), they were able to muster no less than 22 people for an organised party of strictly radio amateur interest. Callsigns in this picture include GW's 3XRZ, 3VEW, 3KGD, 3UTN, 3UBV, 3EMZ, 3YBB, 3JSQ and 3PZM. Good luck to the Haverfordwest group—and we hope to hear more from them for this feature.

applying to G2CVV—another honorary secretary who has been doing a very good job for a long time. This is one of the oldest Clubs in the country, with a record of continuous success over the years, a large membership, a very healthy financial situation and a good Hq.

March 17 and 27 are provisionally the dates for Echelford, although we gather there may be some element of uncertainty about them; the latter date should be fair enough as it is down for the AGM. Nonetheless, if anyone intends to make a first visit, a contact through the Panel address is recommended.

Cray Valley have secured a real attraction for March 6 (at the Congregational Church Hall, Court Road, Eltham) when they have the "Moonbounce" lecture given by Peter Blair, G3LTF which had unavoidably been held over. This should really set the VHF enthusiasts thinking. Later in the month—March 20 namely—the informal is at All Saints Church Hall, Bereta Road, New Eltham, London, S.E.9.

Bishops Stortford come next, with a session on the third Monday in each month, which means March 17; for only the second time this is a natter-session, in response to several calls for such an evening once in a while.

Overseas Note

What an improvement the Hong Kong chaps are going through. A year ago wondering how to keep the Club alive even, and now 25 licensed and as many associate members booked in. Meetings are at Beaconsfield House, next to the Hilton Car Park on Tuesday evenings as from February 4, with the monthly business

meeting remaining at the China Fleet Club. This arrangement is experimental, and if they do not like their new spot, it is understood a return to the China Fleet for all meetings will take place.

Back to England, to Mid-Sussex where they have the Vero lecture on March 13, and a talk about the QSL Bureau by G2MI, both at Hq., which is Marle Place Further Education Centre, Leylands Road, Burgess Hill. Visitors are always welcome, and it is suggested that they make themselves known to the hon. secretary—see Panel.

Civil Service come next, with their fine Hq. at the Civil Service Sports Centre, Monck Street, Westminster, London, S.W.1. There are facilities for lectures, a Club station located separately, and eating and drinking facilities also available on the premises. At the moment, this group is making a really big drive to obtain "country" members, *i.e.*, Civil Service employees outside London itself. And they would appreciate any suggestions as to how they can more usefully serve these members. Letters to G3KGM, the hon. secretary, as in Panel. Next meetings are on March 4 and 18th. In hand are improvements to the aerial system for G3CSR, appropriately the Club callsign.

The last information we have of the Worcester doings is their January *Newsletter*, but we do know that they have Hq. at 35 Perdiswell Park, Droitwich Road, Worcester. For the rest, it is necessary to refer you to the secretary, G3TQD.

Similarly with Chester, whose last report missed the deadline by quite a bit; but here we are able to say they foregather at the YMCA in Chester, at 8 p.m. every

Tuesday evening, and that to judge by the February offering there is something laid on each meeting-night.

Visitors are very welcome at the fortnightly get-togethers at the Victory public house, in Tilehurst, of the **Reading** crowd. We understand that quite a few of the "playing away" type of meetings are in the pot for the fairly near future.

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Over in **Norfolk**, their recent AGM produced a re-shuffled committee, and meetings weekly on Mondays have been arranged at the Brickmakers p.h., Sprowston Road, Norwich, starting at 7.30 p.m. sharp.

The report from **Exeter** says "activity increasing steadily, finances in good shape, many new enquiries for membership"—what more could they want! In fact, they are beginning to think about a more commodious meeting place, at present the St. Sidwell's Committee Room, Sidwell Street, first Tuesday in each month at 7.30 p.m. That on March 4 will be a surplus sale.

Also to have such a sale are the **Kingston** chaps, on March 12 (at Penguin Lodge, 37 Brighton Road, Surbiton), while on April 9 they start a series of talks on Receiver Improvement and Modification, which it is hoped will interest newcomers. The group's own call-sign is G3KIN, to be heard later in the season on Top Band and 4 metres.

Among their other activities **Dorking** run a Sunday-morning net on Top Band, 1920 kc, 12.30 clock. Meetings are fortnightly on Tuesdays, alternately at the "Wheat-sheaf" (March 11) and "Surrey Yeoman" (March 25), and start at 8 p.m.

Fareham, who also run a Sunday net under the benign guidance of our old friend G2QK, have March 9 booked for a talk (by him) on a Transistor Rx, with meetings following weekly on *Sundays*, be it noted. Hq. the Porchester Community Centre, time 7.0 p.m.

The month's main event for **Liverpool University A.R.C.** will be their annual dinner, on March 19 at the Shaftesbury Hotel, Liverpool, for which tickets are obtainable from S. J. Dean, GW8CGN, 2 Bedford Street North, Liverpool.

Northern Heights have started a *Newsletter*, No. 1 being a well-presented compilation, which should keep members *au fait* with what is going on round the group. Next meetings are on March 12 and 28th (venue not given), and a Club net for Top Band (Sundays, 11 a.m., 1844 kc) has been started, with parallel activity for the VHF boys, on two metres.

The report from **Silverthorn** says "owing to rapidly increasing membership, a much larger room has been placed at the Club's disposal for installation of their own station, G3SRA." This room has been re-decorated (by members), fitted out with a modernised shack, and the outside facilities are such that a half-wave wire for Top Band is possible, with much better siting for the VHF aerials—and very nice, too! A gala and open-day is to be held on May 17, when G3SRA will be on the air.

A neat, concise and informative *Newsletter* is circulated by **Taunton**, from which we get it (with the minimum of devilling to extract the facts) that regular meetings are at the S.E.V.O. Hq, The Mount, every Friday at 7.30 p.m.; on Thursdays, same venue, R.A.E.

classes are running, on both Morse and Theory; work on the caravan-station is proceeding; there are two Club Projects in hand—a VHF Rx, and a transistorised, portable two-metre station; and that on Sunday evenings they run nets, on Top Band at 8 p.m. and on two metres at 9 p.m., clock time.

The latest issue of *QRK-5* discloses that **Wimbledon** now have some 50 members, of whom 25 are licensed, eight of them being G8/3's. Meetings are on the second and last Friday of each month, 8 p.m., in the St. John Ambulance Hall, 124 Kingston Road, South Wimbledon, S.W.19, the Club nets being Top Band, Sundays on 1972 kc (G3WIM control); on two metres, 144.65 mc Mondays, with G8BVT in charge; and a Morse Practice net on 1838 kc, Wednesdays, under G3JBA. All open at 9 p.m., clock.

* * *

We are asked to announce that a Talk on Amateur Radio is to be given by L. D. Watts, GW3MOP, at the Llandaff College of Technology, Western Avenue, Cardiff, at 7 p.m. on April 1. This is being arranged by (and for) the Cardiff Graduate and Student Section of the Institution of Electrical Engineers. As GW3MOP will be talking to an informed audience, he aims to give them an up-to-date treatment of modern radio communication methods and systems in the amateur context.

In Conclusion

That's the lot for this offering—and some of them came in skating on the deadline! But we know that there were distribution delays with the February issue of the *Magazine* because instead of the parcel-post service, we were compelled (due to the postal stoppage and the chaos wrought in the nation's affairs) to use the British Rail passenger-goods parcel service—which was just our bad luck!

Anyway, we look forward to a full crop of reports for the next issue, deadline for which must be first post **Friday, March 7**, addressed "Club Secretary," **SHORT WAVE MAGAZINE, BUCKINGHAM**. Please be sure to give full forward details, including the name and QTH of the honorary secretary—we *must* have this for the Secretary's Address Panel.

SPECIALLY ON THE AIR

GB3CRW, March 1-9: From the Lanchester College of Technology, Coventry, operating all bands 10-160m., with full power, AM/CW/SSB, and an HF-band beam at 210ft. above street level. QSL's to G3TBK, *QTHR*.

GB3YMC/A, June 1: At the "Y" Sports Centre, Melrose Close, Loose, Maidstone in connection with their Mobile Rally on that day, and as part of the YMCA Anniversary Celebration. QSL's *via* W.E. Kent, G3YCN, 72 Bower Mount Road, Maidstone, Kent.

GB3FC, June 5-7: Station to be provided by staff members in connection with the Forestry Commission exhibition in Bush Estate, Edinburgh, for the 15-20-80-160m. bands. A special QSL card will be issued for all contacts and reports. Organiser: W. A. Lindsay-Smith, G3WNI, 22 Kingswood Crescent, Cophthorne, Shrewsbury.

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SHORT WAVE LISTENER FEATURE

MORE SWL's QUALIFY FOR TICKETS — NEW
READERS STILL COME IN — NOTES ON A
PRACTICAL AERIAL TUNER — NEWS AND
COMMENT — HPX RULES AGAIN — AND THE
LADDER

By *Justin Cooper*

MOST of the time since the last "SWL" has seemed to your old J.C. to have been spent under his car dealing with large repairs on a rather ancient vehicle. And just what, you may ask, has that to do with SWL'ing? Simply that the reason for some, at least, of the time spent under the thing was due to lack of planning of the practical work. Many of us who say they are "not practical," and never indulge in construction of any sort (either in radio, the garden, or whatever) really mean that they can't be bothered to think.

Many radio construction projects end up in the junk-box or the dustbin, mostly for one of these reasons: Either loss of interest in the project, inability to get the thing, going, or lack of some vital part.

In the radio context, much of this can be avoided by taking a little thought. In the first place, make sure the bits will be available when they will be wanted. Then be ready to spend a whole evening organising the layout of the major components on the chassis. What is required is a layout where the grid and anode leads are short; where fixing holes for components above the chassis do not foul parts underneath; which follows the circuit in logical progression from beginning to end; and does not put low-level stages near to output stages. A bit of paper taped over the chassis with the components sketched into place is a good idea. When you have got what looks to be the right layout put it aside, sketch another one on and try again. There are probably a dozen or more possible deviations, each having its own good and bad points. But eventually you will find one that seems better than the rest—that is the one to build up.

The Mail

Sometimes our post changes markedly from the usual pattern, and so it is this month. The first thing to do is to congratulate our new licensees. G3YCI has been allocated to *R. Schofield (Liverpool)* who has just finished building a Heath HW-100 transceiver, and should be with it on the air by the time we reach publication, although activities will be a bit limited by the onset of examinations.

A rather earlier callsign is that of G3XZI, *S. Cusworth (Wakefield)*. His first few QSO's were with a homebrew Top Band/Eighty transmitter, but Steve now has a K.W. Vanguard with which he has been making a dent

in Ten—although as yet he has only succeeded in "working TV sets on Fifteen and Twenty."

I. Gildersleeve (Newton Abbot) has had only a comparatively brief stay with "SWL," as he has moved on to be G3YAR, using CW and AM with ten watts on the LF bands. To these ex-SWL's our congratulations.

New SWL Readers

Quite a number of them this time. *R. A. Fowler (Marlow)* used to be G3IQF from 1952 to 1961; he gained his licence on a "Service exemption," but having let it lapse now finds that to renew, he has to pass R.A.E. and the Morse test! The latter poses no problem, and it is hoped both will be taken and passed before the year is out. Incidentally, even before his G3IQF days, SWL Fowler used to report to the "DX Scribe" in our old SHORT WAVE LISTENER—and that's quite a long while ago!

Another old-timer next, in the person of *L. Mobley (Coventry)*. Les had actually put in his application for the AA permit in 1939, just as Hitler's War broke out. Circumstances changed, and it was not until last year that once again the bug bit deeply. Since then, an HRO has been acquired, and an R.A.E. pass-slip—after a period of home study—leaving only the Morse test, which will be taken in due course. Les wants to know how to get his speed up—all we can say here is that apart from such systems as the admirable G3HSC "Rhythm Method" records, what can be recommended is daily practice! As for articles on the HRO (another of his queries) many have appeared at one time or another; November 1965, January and February 1966 saw a three-part piece in SHORT WAVE MAGAZINE on the HRO.

Several readers have sent in letters asking for "information on entering HPX," and so we have dealt with all their points by the simple process of reprinting the Rules as part of this piece—which could well be read by all current entrants. It should certainly answer the queries of those who have enquired this time.

It is often said that one SWL results in another; and so it is interesting to note two successive letters in the clip from *Isham, near Kettering*. The first is from *D. Nobles*, who has a Trio 9RS9 coupled to a folded dipole which has, perforce, to be used on all bands—but seems to be doing its stuff pretty well, to judge by his first entry in the Table. The other is *P. W. Brown*, who runs an

Eddystone 840C, a half-wave on Eighty, and folded dipoles for Ten and Fifteen. SWL Brown queries 9F3USA—perfectly OK and used in certain circumstances by the ET3USA party.

Record-keeping fascinates some people, like R. Carter (*Blackburn*), who in retirement has amused himself by sorting out from the 1969 U.K. *Callbook* all the listed amateur stations in Lancashire. There are as many as 895, and they are spread out over 208 towns and villages throughout the County Palatine. It is interesting to note that on cross-referring to his log SWL Carter finds he has heard 195 of them since 1965, in 98 of Lancashire's towns and villages.

Aerial Tuner Unit

SWL Carter recalls what he describes as the *Justin Cooper Five-Minute ATU* and asks for a repeat of the "recipe." Quite simple, really: All you need is a coil and a variable condenser, in parallel. It should be possible to tune to the required wavelength (frequency) with a capacity of $1\frac{1}{2} \mu\mu\text{F}$ per metre—e.g., $60 \mu\mu\text{F}$ for 40 metres, give or take a bit. If the capacitor is of a greater value than this (which is fine) then get a rough idea by eye of where the capacity setting should be to meet this requirement. Wind a coil to resonate this in the band, with a link close *over* its earthy end, connected by coax to the receiver aerial terminals. When the receiver is set to the band, and an aerial tapped on the coil, it should be found that somewhere across the swing signals peak up. Now, you have to fiddle with it so as to tap the aerial on the coil as near the top as gives reasonably flat tuning—no slow-motion drive necessary—and peaks the signal as much as may be. The latter operation can be done with croc-clips in a few moments, and then soldered afterwards. If a multi-band ATU is desired, instead of the link coupling coil to the receiver it is easier to tap this lead in to the coil. Again, adjust the taps to get the best signal and flat tuning, solder connections to these points to the bandswitch and repeat for the next band. As you go higher in frequency, you need fewer turns—so short a few out with a croc-clip as necessary when tuning, and use a third wafer of the switch to cut out the sections of coil, as indicated by the croc-clip leads. Coil former? Anything you have around about an inch or an inch-and-a-half in diameter (so long as it's an insulator) or a bit of polythene pipe plugged at each end as mountings to the chassis. Try the scheme as a "birds-nest" before ever you build it up on a chassis; it won't care if it lies on a bit of newspaper as you run through the tests. By the time you have tuned it up and noted where you are on each band, you will have a good enough "feel" for the circuit to be able to set it up in a moment when it is properly built. And if you feel this approach is not serious enough, just try to guess the name of the maker of a TV set who canned *thousands* of line-output transformers in golden-syrup tins and came up with a most reliable component!

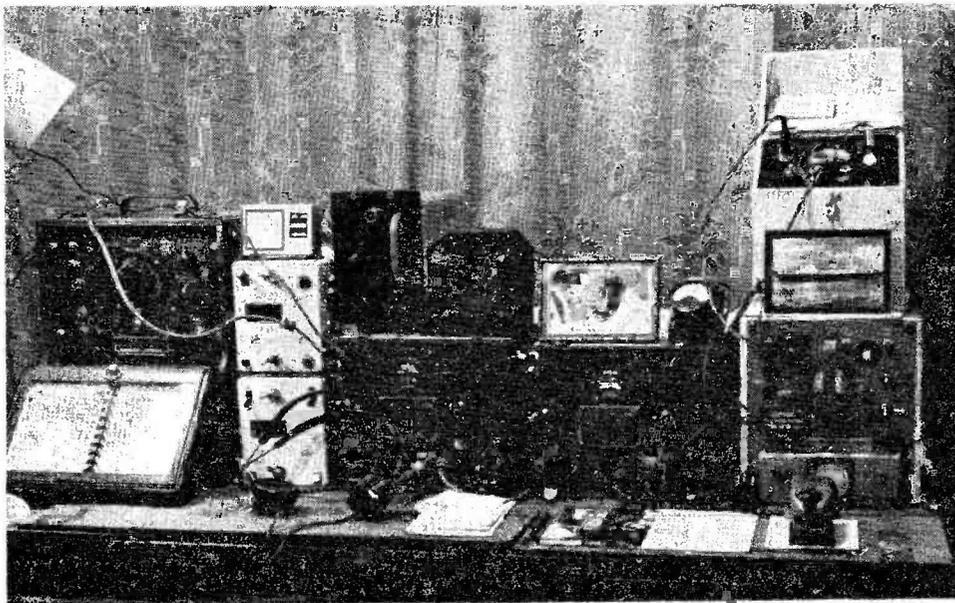
* * *

Where are all the *Hull* SWL's? The local R.A.E. class, says *A. Cobb*, has eight members, of whom three are old hands, three relatively new to the game, and two are not *Hull* people anyway; the class is made up, as

HPX RULES

- (1) The object is to hear and log as many *prefixes* as possible; a prefix can only count once for any list, whatever band it is heard on.
- (2) The /M and /MM suffixes create a new series; thus G3SWM, G3SWM/M and G3SWM/MM all count as prefixes, and, where it is known to be legal, /AM also.
- (3) Where a suffix determines *location*, the suffix shall be the deciding factor, thus W1ZZZ/W4 counts as W4. Where the suffix has no number attached, e.g. VE1AED/P/SU, VE2BUJ/P/SU they are arbitrarily counted as SU1 and SU2 respectively, and the same holds good for similar call signs.
- (4) When the prefix is changed both the old and the new may be counted; thus VQ4 and 5Z4 both count.
- (5) The object is to hear *prefixes*, not countries, thus there is no discrimination between, say, MP4B- and MP4K - which count as one prefix.
- (6) Only calls issued for Amateur Radio operation may be included. Undercover and pirate call signs will not be credited, nor may any MARS stations be claimed.
- (7) G2, G3, G4, etc., all score separately, as do GW2, GW3, GW4, etc., and in the same way K2, W2, WA2, WB2, WC2, WN2, all count even though they may be in the same street.
- (8) Send your HPX list, in alphabetical and numerical order, showing the total claimed score; with subsequence lists, it is sufficient to quote the last claimed score, with the new list of prefixes, and the new claimed total, with your name and address on each sheet, to "SWL," SHORT WAVE MAGAZINE, BUCKINGHAM, to arrive before the SWL deadline for that particular month.
- (9) Failure to report for two consecutive listings, *i.e.* four months, will result in deletion from the Table, although there is no objection to a "Nil" report to hold your place.
- (10) **Starting Score 200.** Phone Table is mixed AM/SSB, with a separate CW Table. No mixed Phone/CW Table, nor will AM-only or SSB-only entries be accepted.
- (11) Lists will be based on those shown in the current *Short Wave Magazine* list of Countries and Prefixes, as given on pp.509-514 of the October 1968 issue, and with the current edition of the *DX Zone Map*.

NOTE: The *DX Zone Map* costs 14s. 9d. and includes the latest Prefix List. The *Prefix List* alone, by countries, prefixes and zones, alphabetically both ways, costs 9d. with large s.a.e. Publications Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.



The SWL station operated by T. Cooper, 46 Links Road, Knott End-on-Sea, Fleetwood Lancs.—who started in 1922 with a crystal set, graduating to a one-valve receiver, on which at the time much MW/DX was heard. Everything was home-constructed, including the variable condensers—as they had to be in those days. The layout now in use consists of two Bendix RA-1B receivers (found most reliable), giving a tuning range of 150 kc to 15 mc, with various ancillary units, and the BC-221 frequency meter on the left. SWL Cooper finds the Rx side so interesting nowadays that he is not contemplating a transmitting licence—though he says his advice to any SWL would be “learn Morse, you’ll never regret it.”

so often, by people who want to use an R.A.E. pass as some sort of a technical qualification. Tony started on a BC receiver covering 7 and 14 mc, worked his way through an Eagle RX-60N and now has an HA-500. Tony would like to correspond with any SWL's having sporting interests in W-land—write to him at 10 Pretoria Avenue, Hessle Road, Hull.

The other Hull SWL is of course J. Singleton; last time out all we did was amend his score in the tables, although he wrote a longish epistle; now we have a first note from him in his new (married) condition, from which it seems he is starting off the way he intends to go, by training his wife to be an SWL, and putting the receiver in the lounge in direct competition with the TV. So far it seems John and Shelagh have not fallen out about it, and the cat sleeps on it, which seems a good omen!

S. J. Osborne (Shelton Lock) starts off his entry in HPX at 203. Stephen is at a residential school where he cannot have the receiver, so most of his listening has to be done in holidays, on a Trio 9R59 and a couple of aeriels.

Still with the new boys, we have next to scan a letter from M. Timms (Aylesbury); Malcolm has a Star SR-200 and 140 feet of wire. He has had, and acknowledges gratefully, lots of help from, among others, G3BMZ, in developing his interests.

S. Rees (Newport, Mon.) now has a nice Trio 9R-59DE as the reward for sixteen months spent listening on a portable on Forty. Stephen lives a few yards away from another Stephen—S. Cole, who also puts in an entry, and wonders how many folk have

passed through the HPX list since the beginning—a question to which we have no answer, except to say that it is a mighty lot!

Up in Sunderland sits G. Ayton, with an AR88D, and an NC-303 plus preselector; on the aeriels side he has a dipole for Twenty plus a tank whip fed through an ATU, both indoors. Geoff has, like some others, been around a long time, his interest having first been sparked off back in 1933 and maintained more or less continuously ever since.

M. Pipes (Derby) has a particular problem in that he is blessed with a back garden about 15ft. long, but he still manages by following the old adage that the more sun shut out by aeriels the better the DX—which includes W and ZB heard on Top Band. Michael has managed to get his CW speed up to thirteens and found it nothing like as hard as he had thought it would be.

The blessings of membership of a good club are expounded at length—and how we agree with him—by S. Pitt (Hornchurch); but Stephen forgot to mention the name of the one he goes to, along with such other readers of this column as C. Burrows of Gidea Park and N. Crampton of Romford. They have a room at the British Legion—Godchild House, Western Road—and get together every other Wednesday. A pity this group hide their light under a bushel, because they pretty obviously are catering exceptionally well for the SWL element. Incidentally, Stephen's first HPX List failed to arrive, so we cannot take in his second!

Turning to the “regular customers” now, the first one is D. Whalley (Corsham) who has recently tried

returning to his old TRF receiver after a long period. Originally, that old TRF found him ninety-odd countries, and yet now he finds some difficulty in driving it even to hear a signal at all!

D. Reynolds (Dudley) queries the use of /HTH and /CHC after a call sign. These have nothing to do with the call signs but are used in certain contexts by the Certificate Hunters Club. (And, incidentally, not legal on the air for U.K. stations.)

In the competitive context, D. Skidmore (Belper) is justifiably pleased with himself; since last he wrote, Dave has heard that he was top U.K. SWL in the Receiving Section of the VK/ZL/Oceania Contest, 1967, and also won the receiving section, telephony, of the RSGB 7 mc DX Contest.

J. E. Jenkinson (Oxford) has been rising early to catch his DX, with the profit that usually accrues from such determination. Good stuff has been heard on Top Band and Eighty in this way, though one gets the impression that the best of it was being booked in on 14 mc, with such as VK, ZL, W6—DX in anyone's language—plus MP4TCE, ZD9BE on Tristan da Cunha, CR7, VE8RCS, and hordes more which indicate a pair of well tuned ears.

Something which is puzzling S. Culnane (Harrow) is why he never seems to hear the EU's on Top Band, although he often manages GM and has logged GC, both at similar distances. The solution could be that the GM's and GC were heard on Sideband, whereas the EU stuff has to be listened for down at the LF-end and on CW generally. Another is in his receiver—a loud click and a sudden shift of frequency by a few kc is the symptom; the answer could well be in one of the fixed capacitors connected in the tuned-circuit at the front-end of the detector stage of this TRF receiver.

Another one with receiver troubles is H. M. Graham (Harefield), who finds his beast "suddenly receives nothing in the way of signals" although it appears normal in that the speaker still emits harsh. The last time this happened was from 2258 to 2304 on December 26 and again from 1418 to 1420 on the 29th. Perhaps there was a wipe-out at the periods in question which someone else could confirm from their logs—if not, there would seem to be a fault to be traced!

P. Levitt (Worksop) has a new SR-200 and is greatly pleased by it; in addition Peter has erected an 80ft. length of wire to energise it, and the combination has certainly led to some considerable improvement in his HPX score.

* * *

A complete rebuild of his rig has been undertaken by C. P. Davis (Leicester) who has put all the bits-and-pieces into a rack so as to improve the operating convenience in the shack. Peter also wanted a house intercom system, and as relays and selectors were easily and cheaply available locally, he set to work on a home automatic exchange using standard-pattern telephones all over the house. This has proved a worthwhile exercise, both in what it has taught and in its practical value.

Most of us come to the point where we seem to be "stuck" in the Table and progress becomes slow. Sometimes it is because we have taken in most of the common ones, or because we cannot be on the air at

times when new ones can be expected. However, another way of finding them is by listening in contests, a method G. Dover (Nottingham) proposes to try. In fact, it always pays to monitor contests.

Several bits of useful information from S. Foster (Lincoln) from his eyrie at the top of the Ladder. First, in response to the query about the suffix /L as applied to an LA call, it means that the station was operating portable in Rogaland. The LA's divide their country up into areas, designated A-Z, and use the area letter as the suffix to indicate where they are when operating portable. As regards that 4UØTIC, Stew opines that he was working where he said he was, but that he did not have any authority to use the prefix, since the only

HPX LADDER

(Starting January 1, 1960)

SWL	PREFIXES	SWL	PREFIXES
PHONE ONLY		PHONE ONLY	
S. Foster (Lincoln)	1020	J. Seddon (Manchester)	345
D. Rollitt (Navenby)	977	J. M. Dunnett (Singapore)	343
A. W. Nielson (Glasgow)	916	A. Wood (Husihwaite)	339
J. Singleton (Hull)	889	H. N. Plumridge (Eastleigh)	338
G. J. Smithies (Brighouse)	813	D. Whalley (Corsham)	329
W. Felton (Lincoln)	805	A. Walsh (Elland)	329
M. G. Toms (Ilford)	690	G. W. Brind	
C. P. Davis (Leicester)	685	(Kingston-on-Thames)	316
B. Geary (Leicester)	683	S. M. Phillips (Dukinfield)	303
J. Fitzgerald (Gt. Missenden)	681	C. Shearing	
R. G. Preston (Norwich)	679	(St. Agnes, Cornwall)	301
D. Skidmore (Derby)	671	S. Jassel	
M. A. Lount (Leicester)	667	(Newcastle-on-Tyne)	301
R. Allisett (Guernsey)	665	J. Austin (Birkenhead)	300
I. Poole (Leeds)	636	R. C. Ray (Bushey Heath)	296
W. Moncrieff (Hampton)	626	S. Cole (Newport, Mon.)	294
A. Hydes (Enfield)	621	P. Brown (Isham)	290
N. Hembrey (Northiam)	610	R. W. Jones (Bristol)	292
J. P. Scragg (Stockport)	590	P. Levitt (Worksop)	290
Mrs. M. Worbey (Dartford)	563	Rev. D. Brewster (Oxford)	289
R. Woods (Slough)	560	S. Culnane (Harrow)	285
G. Dover (Nottingham)	541	K. Haywood (Manchester)	281
D. Sapsworth (East Ham)	534	D. Holbrook	
C. J. A. Morgan (Wallsend)	531	(Newport, I.o.W.)	281
N. Whiting (Leeds)	529	D. J. C. Bushell (Cirencester)	281
K. Plumridge (Eastleigh)	514	D. Nobles (Isham)	269
D. Hembrey (Northiam)	498	P. Taylor (Sydenham)	264
D. Reynolds (Dudley)	492	D. Fromberg	257
H. M. Graham (Harefield)	487	M. Pipes (Derby)	256
R. Bagwell (Frimley)	486	J. Marchmont (Sharnbrook)	255
G. Ayton (Sunderland)	473	P. Gould (Tiptree)	253
S. Haseldine		C. R. Adams (Manchester)	253
(West Bridgford)	462	D. Moules (Frinton-on-Sea)	250
I. Cooper (Alnwick)	455	C. Burrows (Gidea Park)	244
R. Walkers (Btwall)	453	C. Jones (Mold)	244
L. Harwood (Wirral)	452	D. Porter (Harrow)	233
I. Rowland (Birkenhead)	446	N. Crampton (Romford)	231
J. E. Jenkinson (Oxford)	444	M. Timms (Aylesbury)	228
D. Robinson		N. P. Taylor (N. Wembley)	223
(Birmingham)	26	G. K. Upton (Nottingham)	223
D. S. Henry (Edinburgh)	433	R. A. Eva (Birmingham)	218
D. Palmer (Fareham)	432	J. W. Struthers (Hawick)	209
M. Broadway (Chelmsford)	432	P. Wilkinson (Exeter)	209
S. Cusworth (Walkfield)	415	S. Osborne (Derby)	203
Mrs. G. E. Austin (Bearsted)	412	W. Rees (Newport, Mon.)	203
T. J. Bucknell (St. Albans)	409		
D. L. Hill (Edinburgh)	408		
A. Pyne (Budeleigh Salterton)	401		
M. L. Jones			
(Leamington Spa)	372		
A. Cobb (Hull)	371	C. Harrington	
N. Peacock (Tonbridge)	369	(Maidenhead)	486
R. C. Waterman		J. M. Dunnett (Singapore)	453
(East Lothian)	366	A. Vest (Durham)	404
I. Gildersleeve		R. Hyde (RAF, Locking)	385
(Newton Abbot)	366	C. P. Davis (Leicester)	250
B. Gilbert (Aylesbury)	353	M. A. Lount (Leicester)	242
T. W. Hyder (Southampton)	350	I. Cooper (Alnwick)	240
R. Bence (Cardiff)	346	R. A. Fowler (Marlow)	238
		R. Lewis (Oswestry)	228

CW ONLY

(Note: Listings include only recent claims. Failure to report for two consecutive issues of "SWL" will entail removal from the Table. Next list, May issue, for which the deadline will be March 14.)

station authorised for 4U is 4UIITU in Geneva (if we disregard the 4UISU who came on some years ago).

Charles Morgan (*Wallsend*) started on January 1, 1968, with a BC receiver, and around June graduated to a communications job. Between them, the year's listening yielded 174 countries heard in 38 Zones—not bad going for the first year. Charles has a solution to the aerial problem—use coax with the outer and inner strapped as an end-fed wire! This solution seems to have enough strength to withstand the breezes, and has certainly managed to stay up through several gales.

A scheme for finding slow Morse to copy which has not been mentioned before, comes from *N. Whiting (Leeds)*, who listens to the U.S. novices on Fifteen when the band is open to the U.S.A. Not a bad scheme at that, and one which adds a little interest to the learning process. Neil is very interested in getting on with his CW as the December R.A.E. has been taken, and of course once the pass slip is to hand the Morse will be the only remaining hurdle.

A friend of SWL Whiting is *I. Poole*, also from *Leeds*, who has also got R.A.E. under his belt. Ian uses a converter into a 19 Set as an IF strip, but has hopes of an HRO ere long. Last time out the report was one of switch trouble in the converter—and so it is again, this time in the oscillator section. However, G3OFK was able to work wonders on it with a dental probe and all is now well again.

Not only a rise in the CW Ladder but a change of address for *R. Hyde*, who is now at R.A.F. *Locking*, where he will no doubt find the RAFARS shack and make rapid progress up the ladder.

Those exams. are a bit of a nuisance, but they are really quite important—after all a hobby is only a hobby—and in the case of *C. Shearing* listening time is being drastically reduced by his accountancy examinations.

The proof of the pudding is in the eating; and in the case of *P. R. Wilby (Ossett)* the pudding is Morse. Peter has been at it for about a year, and has got up to about 20 w.p.m. *purely by listening*. Peter's receiver in the main has been a 19 Set, but of late he has had a Heath HW-32 transceiver on loan from the Spen Valley club, which really does haul them in. It is nice to hear of a new CW enthusiast, and we look forward to a first entry in that section of the ladder from SWL Wilby.

Multiband centre-fed aerial systems are mostly a compromise, and few are suitable for coax feeding on all five bands. One such is the G4ZU "FB5" aerial, which is loaded by means of ferrite beads near to the centre to give an acceptable compromise, the theory being that the loading effect varies depending on whether the beads are at a current or voltage point on a particular aerial. Forty-two feet either side of centre, and each leg loaded with 25 Type B4 Ferrite beads of Mullard FX 1308, is the recipe. Feed is through ten feet of 300-ohm ribbon to 50-ohm coax of any length. Two such can be stacked twenty feet apart, one above t'other, and the ends of the two pieces of ribbon joined to a common piece of 75-ohm coax, to give quite a handsomely gainy array on the HF bands, and at least up to dipole standards on Forty and Eighty. *R. Allisett (Guernsey)* recently put up such an array, and swears by it.



SWL William Mantovani, often mentioned in this feature, used to live near Doncaster (where this picture was taken) but is now at 11 Ebro Crescent, Binley, Coventry. He runs a general-coverage Rx, 540 kc to 30 mc, for which at the old location he had 300ft. and 600ft. aerials! William has a ticket in prospect, and the piece of gear to the left is a partly-built Tx.

Sad Story

Over a period, your J.C. has had a sporadic personal correspondence with *J. Inglis (Alloa)* and was sorry to hear Jock had not only missed out on the R.A.E. but had a heart attack shortly after the results came out; into hospital minus receiver, and when he got home everything rearranged to give a downstairs bedroom and no stair-climbing—but the SX-28 was up those darn stairs! This problem was solved by roping in sons-in-law, and now Jock is able to take advantage of an unpleasant situation and spend a lot of time on the air. Oddly enough, *J. Carter (Harlow)* also went down in the same way at about the same time, and landed up in the London Hospital instead of your J.C.'s R.A.E. class. However, before he was whipped off to a convalescent home at Banstead, Jim's Codar receiver was got to him, together with a *Call Book*, headphones and a selection of plugs for the mains. When he arrived at Banstead all the problems were being dealt with very efficiently by the Surrey Radio Contact Club lads, who have a reputation for good turns to anyone in the fraternity in trouble in their area. However, it is nice to record that both Jock and Jim are sitting up and taking a little notice, and by the time this is in print should be well on the mend.

Funny how all the TV's pack up just before Christmas; this, plus the beer and plum-pudding, was enough well and truly to shorten the usual HPX list from *Keith Upton, Nottingham*. Incidentally, he remembers the first issue of "SWL" in SHORT WAVE MAGAZINE (the 10th anniversary of which we recalled last time) and indeed had the very first one in front of him as he wrote his letter.

Another, and more frequent absence cause is a

fault in the receiver. *A. P. Scragg (Stockport)* has had an intermittent fault plaguing him, which has caused the beast to be sent away to be mended several times, and *A. Wood (Husthwaite)* reports a series of troubles; first the PSU went up in smoke, then a certain amount of modification which resulted in bad mains hum; this, when cleared, was only to be followed by a spasm of PSU transformer overheating once again.

C. Jones (Mold), among others, is a little puzzled by the W Maritime Mobiles signing "Region 1" after their call. These are the ITU regions into which the world is divided for International Telecommunication Convention purposes. Region 1, broadly, covers Europe, Africa and Russia; Region 2 the Americas; and Region 3 the rest of the world, including Australasia. And, of course, the Regions take in the ocean spaces in their areas.

Still another reason for inactivity is offered by *N. Hembrey*, namely learning the art of driving a car. However, Norman, and son David have both managed to rake in thirty new prefixes to their Ladder scores.

Clangers Dropped

Quite often someone puts in an erroneous claim in all good faith; and this time *J. Marchant (Sharnbrook)* is the unfortunate one, in that he added 213 plus 42 and made the answer 233 instead of 255. Luckily, J.C. spotted it, so all is well. John is a little worried about the accuracy of the calibration of his PCR-3 on the bands. A rough check can be made by listening for the limits of the CW segment in each of the bands (roughly the bottom 100 kc on the HF bands) and the top limit at the phone end of the bands where no more amateur signals are heard, albeit one has to be careful about Forty, where the W's still have the segment 7.1 to 7.3 mc for Phone.

M. G. Toms (Ilford) got hold of early issues of SHORT WAVE MAGAZINE, from July 1938 to the outbreak of war in September 1939, and was interested to find some well-known calls, such as G6FO, GM3TR (then in Orkney) and "the late" A. J. Devon—but that same A.J.D., very much alive and kicking, added an unprintable epithet in red ink before he passed the letter on to your conductor! Mike's query on the HPX status—as against country status—of ZL2AFZ/Chatham Is. is covered by the HPX Rules reprinted with this piece.

Still with the clangers, *L. Rowland (Birkenhead)* managed another one, again in the arithmetic, by adding 43 to 403 and making the answer 406! Nevertheless the bleary old eye which your J.C. casts over the Ladder claims managed to pick it up, and the table is corrected.

C. Burrows (Romford) is a little despondent over his school radio club; they persist in wanting to play radio-astronomy and listen to satellites instead of being decent and working the amateur bands! Still, there seems to be some good gear available, and so there is still the personal incentive to go after the R.A.E. and a ticket.

Another HPX query settled by the Rules is in the letter from *R. Bence (Cardiff)*, who has been as they say "horizontally polarised" for the period under review. Let us hope most sincerely that Ray will be vertical once more at the earliest possible moment, and back in business with that KW-201.

Anyone know of a good circuit for a 144 mc converter

having 2-4 mc as the IF, and using "easy" transistors? If you have, details please direct to *N. Taylor, 9 The Crescent, North Wembley, Middlesex*. Similarly, Neill would like to know of a suitable equivalent to an ADT140 transistor, which he believes to be a Sinclair type.

A move to *Coventry* has happened for *W. Mantovani*, to a job with GEC-AEI Telecomms; already he has managed to find the whereabouts of the Coventry club, and by now should have made contact. As a matter of interest, SWL Mantovani received a card from G3RMO some time back for a QSO with IILDF; this call is not in the current G listings but does appear in the *World Callbook* as the Meteorological Office Radio Club, Eastern Avenue, Bracknell—so doubtless if the QSL were forwarded to the hon. sec. it would reach its intended home.

Only a small rise in prefixes to be recorded against the name of *D. Moule (Frinton-on-Sea)* this time, as all attention has been concentrated on hearing American States, of which he has so far managed forty-three confirmed.

How about an R.A.E. course in Oxford? There is a Technical College and a Club, but no course, which is a bit frustrating for *Rev. D. P. Brewster*—and if such an R.A.E. class were to be started all the county-hunters would be greatly pleased at finding some Top Band activity from Oxford!

A. Vest (Durham) wonders what the highest score claimed on the CW HPX Ladder has been. Since your scribe has been in charge of this piece the answer is—in the 700-region, albeit a higher score could well have been marked up during the reign of previous conductors. Top score comparisons, mixed and CW only, are a little misleading anyway, since the CW section has always been smaller in numbers of entries, with a tendency to a preponderance of old-timers having lots of ability. Phone HPX'ing is often done by younger chaps who rapidly learn their way around and have more time for listening—and more enthusiasm for odd hours!

* * *

That problem in resolving SSB mentioned last time by SWL Vest sparked off a reply from G3WTA, who finds that the BFO injection is adequate only if a VR100 valve is used in the BFO stage—and G3WTA is on the

SWL's PSE NOTE!

Closing date for the next "SWL," in our May issue publishing on April 25, is March 14. This may seem early but it is in fact the latest date we can allow, having regard to all the other work that has to be done in preparing each issue. For every appearance of "SWL" (which comes out in alternate issues), a certain number of letters come in too late for coverage. This is as much a disappointment to us as it must be for the correspondents concerned. If you miss March 14—and, really, there is no reason why you should!—the next date after for "SWL" (in the July issue) will be May 16, and surely there is no reason why you should miss that! The address is simply: "SWL," Short Wave Magazine, Buckingham.



“... Well it is a little different ...”

look-out for VR100 valves! Another useful suggestion is to stabilise the supply voltage to the oscillators by way of, say, a 90C1 stabiliser bottle. On another point, Mike says that the locals in Morpeth are thinking of forming an Amateur Radio group for the area; if any of the SWL's in the district care to get in touch with him by phoning *Morpeth 2541* he will give them all the dope. Yet another change of tack offers hope to those who, like David Brewster, are not able to attend a formal R.A.E. class. G3WTA did the lot on his own, with a certain amount of correspondence between himself and others in the same boat. Now he is on Top Band, and would welcome SWL reports on his signals from DX.

Nice to hear again from *Charles Harrington (Maidenhead)* who we thought had sunk without trace. However, Charles has once again set himself up in the Table, and seems to have had a little more time for listening. For those with poor aerials, it is interesting to note that the Harrington System is in fact a TV array in the loft space(!), used in conjunction with an HQ-170A receiver. On the question of possible totals of prefixes, Charles is of the opinion that the “possible” is about 1036, plus the /MM and /AM calls and the portables with a figure in.

One that missed the last deadline was *R. Jones (Bristol)* who posted his letter in plenty of time—in a drawer! He reports that R.A.E. has been tackled, and the old PCR and O-V-1 receivers replaced by a modified 19 Set which seems to be doing its stuff quite well, and the HPX list of calls heard is extending steadily.

* * *

Finally, a mention of the *World Radio Club Award* of the BBC. To obtain this you have to be a member of

the Club—which you join by writing to World Radio Club, Bush House, London, W.C.2.) and then you have to give evidence of reception of three BBC transmissions from each of the following areas: Great Britain; the Atlantic; East Mediterranean; and Far Eastern relay stations. The twelve reports should refer to the period March 2 to May 3, and should be posted in one envelope before the end of May. Each should give location, date, time, frequency and a few words about programme content. The reports will be the subject of an analysis by the Engineering chaps, the verifications being however issued by the Club. This is, of course, strictly a BC station ploy and nothing to do with SWL activity as we know it on the amateur bands. Hence we are not asking for reports from readers on the subject.

Deadline

And that is it for this time. All the entries have been taken in, and those letters which commented on other matters discussed. For next “SWL,” the deadline will be **March 14**, latest, addressed to “SWL,” SHORT WAVE MAGAZINE, BUCKINGHAM. Meanwhile, keep the fire in, and keep listening. *73 de J.C.*

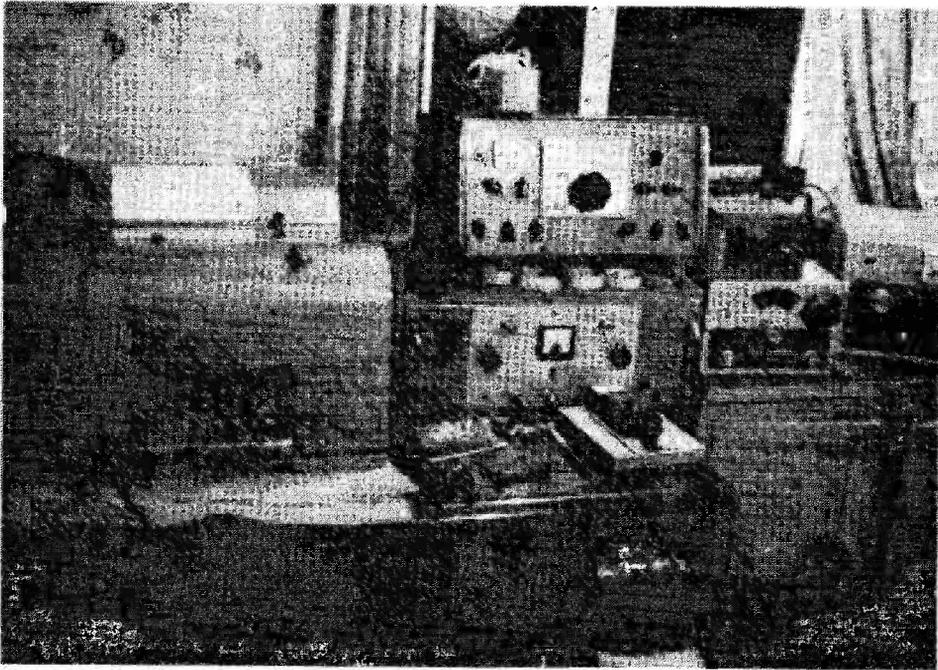
MEMBERSHIP OF THE R.A.I.B.C.

From their latest figures, we get it that the Radio Amateur Invalid & Bedfast Club now has a total of 319 members. Of these, 110 hold amateur transmitting licences, and of them 52 are blind, the remainder being incapacitated in one way or another. The other 209 members are SWL's, and 59 of them are blind.

Though the blind and the incapacitated are often very cheerful, and do not complain about their lot whatever it may be, these figures nevertheless represent quite a sum-total of deprivation. As the spread of R.A.I.B.C. membership is nation-wide, it would not be at all unlikely that in your neighbourhood there is a member, having radio as his only solace, who would appreciate an occasional visit, help in solving some current radio problem, or even a run out in the car if his condition allows.

As we have explained before, the R.A.I.B.C. is essentially a self-help organisation, its funds very well managed by devoted people who are themselves active amateurs (when they have time to get on the air!) and they make no appeal for charity. Nevertheless, they can always do with a bit of help of one sort or another. It is fair to say that the R.A.I.B.C. can be regarded as the U.K. radio amateur's own charity—and charity can be exercised in many ways. The honorary secretary is: Mrs. Frances Woolley, G3LWY, 331 Wigan Lane, Wigan, Lancs. Remember that she is a busy woman, with family responsibilities of her own, so if writing in with an enquiry, keep it short and enclose an s.a.e.

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THE OTHER MAN'S STATION

G3IYG

THE subject this month is a little unusual because G3IYG—owned and operated by B. E. Cook, 17 Prescott Road, Redhills, Exeter, Devon—is RTTY-only, no other mode of transmission being used.

As G3IYG himself says “the photograph shows that it is not necessary to have high power and racks of equipment to run an RTTY station.” His layout is such that all control is possible from the keyboard seat position.

On the receiving side, the main Rx is a home-built double-conversion superhet with variable audio filtering—regarded as essential for efficient radio T/P working—and a modified BC-312 as stand-by receiver. The transmitters available are a home-constructed 25-watt job and a Heathkit DX-40U/VF-1U combination modified for frequency-shift keying (FSK), running at 35-40 watts input, the aerial being a 20-metre dipole at 35 feet. The station is well located on high ground, overlooking the City of Exeter, at about 800ft. a.s.l.

The RTTY equipment consists of a Creed Type 7B page printer, and a Creed 3X machine; a reperforator Type 7TR/3; and a 6S5 auto-transmitter. All this gear is on a Creed teleprinter table, with the appropriate silence covers.

As regards filtering, the band-pass filters, switched from the receiver, range from several (RTTY) frequencies with 120-cycle bandwidth to the full 1 kc. In narrow-

band working, only one FSK pulse is used. The filter most favoured is a tiny variable band-pass job, transistorised, “ranging from the purely academic 5 cycles or less to 2 kc.”

Under normal operating conditions, the 6S5 auto-Tx is always in circuit. The reperforator can be switched in when required, and the switching is arranged to bring in the reserve (Creed 3X) printer and DL6EQ terminal unit as necessary.

As to results, many stations have been successfully printed that could not even be heard on the receiver without the filters—proving the point made earlier. The G3IYG score now stands at 33 countries in five continents worked RTTY running a Tx input of never more than 40 watts—and, as already mentioned, all G3IYG's on-the-air time is spent at the keyboard. Accompanying this short account of a very interesting station—using probably the most modern method of communication in the strictly Amateur Radio context—is an untouched example (*see facing page*) of a recent RTTY contact made by G3IYG with LX2FB. Note that both sides of the QSO are recorded—also that in T/P operation mis-typing or spelling mistakes are preserved in the record!

We congratulate G3IYG on his success in what is still regarded (in some amateur circles) as a somewhat esoteric branch of the art of Amateur Radio.

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.

- DL5XW**, M. Bernard, R.E., 2 Armd. Engr. Sqdn., B.F.P.O. 30.
- G3XOZ**, D. Rowan, 4 Heather Close, Cleadon, Sunderland, Co. Durham.
- G3XPN**, D. S. Kent (*5ZALJ*), Willowbridge, Lymore Lane, Milford-on-Sea, Lymington, Hants. SO4 OTX.
- G3XRJ**, S. J. Chappell, Treen, Porthcurno, Penzance, Cornwall. (Tel. *St. Buryan 415*.)
- G3XUN**, D. R. Clark, 16 Curzon Road, Maidstone, Kent. (Tel. *Maidstone 53247*.)
- G3XWX**, P. W. Ward, 47 Radstock Avenue, Ward End, Birmingham, 34.
- GM3XZA**, A. D. Lowrie, 26 Wilton Street, Glasgow, N.W.
- GC3XZE**, R. F. Allenet, Les Sablons, Le Bourg, St. Clements, Jersey. (Tel. *Jersey East 93*.)
- G3XZI**, S. Cusworth, 101 Bridge Road, Horbury Bridge, Wakefield, Yorkshire.
- G3XZL**, N. J. Jones, 53 Northgate, Pontefract, Yorkshire.
- G3XZW**, Taunton and District Amateur Radio Club, c/o R. W. Sawyer, Honeywood, Higher Beacon, Ilminster, Somerset.
- G3YAB**, M. E. Bath, 54 Barrington Road, Southgate, Crawley, Sussex.
- G3YAC**, P. A. Howarth, 40 Chatsworth Road, Eccles, Lancs. M30 9DY. (Tel. *061-789 2857*.)
- G3YAD**, M. Goodrich, 26 Frome Road, Chipping Sodbury, Bristol, Glos.
- G3YAE**, W. Murphy, 21 Oakfield Avenue, Droylsden, Manchester. M35 6PG.
- GM3YAN**, P. Polson, 79 South Street, St. Andrews, Fife.
- G3YAR**, I. R. Gildersleve, 14 Applegarth Avenue, Mile End, Newton Abbot, St. Devon.
- GW3YBB**, A. Thomas, 7 St. Martins Park, Haverfordwest, Pems. (Tel. *Haverfordwest 2181*.)
- G3YBW**, D. A. Watson, Quarts, Chart Lane South, Dorking, Surrey.
- G3YCA**, R. Purves, 3 College Road, Maidstone, Kent.
- G3YCI**, R. A. Schofield, 23 Alwyn Avenue, Litherland, Liverpool. L21 9NY.
- G3YCN**, W. E. B. Kent, 72 Bower Mount Road, Maidstone, Kent. (Tel. *Maidstone 57634*.)
- G3YCS**, R. A. Adams, 18 Orchard Road, Hounslow, Middlesex.
- G3YCX**, A. Cain, 54 Abbotsford Road, Norris Green, Liverpool. L11 5BA.
- G8BJG**, A. D. Grove, 39 Baston Road, Hayes, Bromley, Kent. BR2 7BD. (Tel. *01-462 3553*.)
- G8BNO**, C. R. Street, Wayside, High Cross Farm, Little Horsted, Uckfield, Sussex.
- G8BVA**, 129 Stainbeck Lane, Leeds. LS7 2EB.
- G8BVE**, D. W. Noel Thomas, 9 Burlington Road, Ipswich, Suffolk. (Tel. *Ipswich 55200*.)
- G8BZP**, D. Joiner, 34 Forest Approach, Woodford Green, Essex.
- G8BZR**, P. J. Clark, 62 Waltham Road, Woodford Bridge, Essex.
- G8CAU**, J. Borradaile, 47 Shady Grove Road, Raffles, Carlisle, Cumberland.
- G8CFB**, B. H. Litherland, 11 Birch Grove, Chippenham, Wilts.
- GW8CGH**, D. C. Pickering, 25 Penybont Road, Pencoed, Bridgend, Glam. (Tel. *Pencoed 444*.)
- G8CGI**, R. D. Sexton, Greenways, Kingsford Street, Mersham, Ashford, Kent. (Tel. *Ashford (Kent) 24263*.)
- G8CGM**, P. H. Raybould, 61 Wimblebury Road, Heath Hayes, Cannock, Staffs.
- G8CHI**, A. P. Tidder, 41 Charter Avenue, Ilford, Essex.
- G8CHK**, R. S. King, B.Sc., 11 Park Avenue, Abington Park, Northampton. NN3 2BX. (Tel. *Northampton 36231*.)
- CHANGE OF ADDRESS**
- GD2HDZ**, A. E. Breese, White Cottage, Pinfold Hill, Laxey, Isle of Man.
- GM3DJT**, J. M. Mitchell, 38 Marchbank Gardens, Balerno, Midlothian.
- GW3DSV**, R. W. P. Wilson (*ex-G3DSV*), Ty Ddu, Llanfechain, Montgomeryshire.
- G3EGG**, W. L. Middlemiss, 114 Brewhouse Hill, Wheathampstead, St. Albans, Herts.
- G3FRO**, M. H. Hudson, 25 Wiltloughby Drive, Empingham, Rutland. (Tel. *Empingham 652*.)
- G3GGL**, A. W. G. Wormald, Sumach House, Highclere Drive, Bewdley, Worcs. (Tel. *Bewdley 3372*.)
- G3ILK**, H. C. Manning, 32 Railway Street, Lisburn, Co. Antrim.
- G3JKU**, J. J. Forbes, 40 Hemphshaw Avenue, Woodmansterne, Banstead, Surrey.
- G3JOO**, E. Bennington, 14 Farndale Crescent, Middlesbrough, Teesside. (Tel. *Middlesbrough 87005*.)
- G3LIC**, C. L. Roome, 48 Harcourt Street, Derby.
- G3MUL**, F. C. Lathwood, 7 Lawnfield Walk, Parkside, Stone Road, Stafford.
- GM3NLO**, R. Harvie, 163 Hope Street, Glasgow, C.2. (Tel. *041-248 5691*.)
- G3PRR**, I. S. Partridge, 122A Eskdale Avenue, Chesham, Bucks. (Tel. *Chesham 4143*.)
- G3SAH**, R. J. Matthews, 10 Newfield Drive, Kingswinford, Staffs. (Tel. *Kingswinford 6319*.)
- GM3SET**, G. D. Aram (*ex-G3SET*), 6 Muirton Place, O.M.Q., R.A.F. Kinloss, Forres, Morayshire.
- G3UXN**, J. Neil, 2 Fluder Hill, Kingskerswell, Newton Abbot, Devon.
- GC3XOJ**, D. F. Gray, East Lea, Bagot Manor Avenue, St. Saviour, Jersey. (Tel. *Jersey Central 33543*.)
- G13XRQ**, Bangor and District Amateur Radio Society, c/o J. W. Campbell, 48 Abbey Drive, Bangor, Co. Down.
- G4AP**, J. G. Rooke, 4 Stone Field Close, Shrivenham, Swindon, Wilts.
- G6AAO/T**, J. J. Forbes, 40 Hemphshaw Avenue, Woodmansterne, Banstead, Surrey.
- G8BPG**, B. E. Viney, 76 Radnor Road, Horfield, Bristol. BS7 8QZ.
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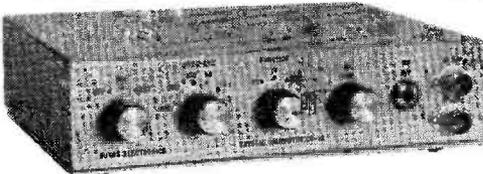
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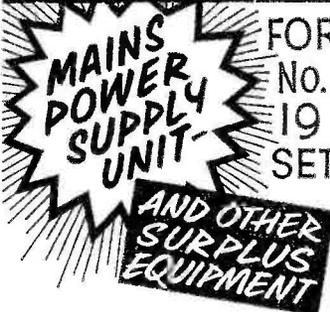
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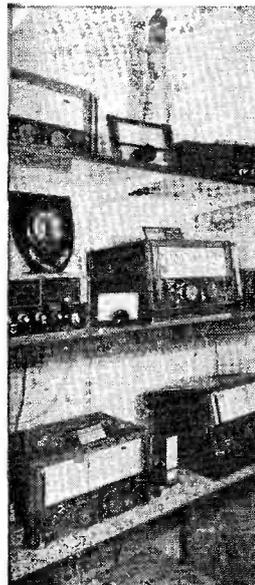
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- 2 METRE FET CONVERTER.** TIS88A cascode front-end. NF less than 1.0 dB. 2 MHz. bandpass coupler ahead of 3N141 dual gate MOSFET mixer. Cathodeon VHF sub-miniature crystal. Silicon planar injection stages. High Q break. Power: 12v, at 9 ma. D.C. Positive earth. Ifs: 12-14, 14-16, 18-20, 20-22, 24-26, 28-30 MHz. £16
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WANTED: TV 2m. equipment, Geloaso VFOs, Eddystone 888As, Good M/CW transmitters in top condition. Details please.

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QTH For Sale, at Wool in Dorset. Detached bungalow with garage and large garden, five miles from coast. Send s.a.e. for details.—Box No. 4754, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

WANTED: Eddystone receivers 770-U and 770-R. Also an APR-4, or similar VHF/UHF general-coverage receiver. Full details and price, pse.—Heggs, 94 Cardinals Walk, Leicester.

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WANTED: Dial for Command Rx 0-52 to 1.5 mc, for BC-946; coil-pack 3-0 to 6-0 mc for BC-454, and its 3rd IF transformer. Also copies "CQ" for Nov. '47, Jan. '48, April '51, Nov. '64, and "QST" from 1963 to date. SELLING: Manual for 19 Set Tx/Rx, 15s.; Gardners mains transformer 600-0-600v. 200 mA, various LT tappings, 30s., and matching choke, 17s. 6d. Valves: 5B/254M, 15s.; 2E26, 17s. 6d.; QV04-7, used, 5s. Crystal bar 100 kc, 10s. "Foundations of Wireless," by Scroggie, 8s. 6d.—Pyatt, 141 The Chantries, Coventry, Warwickshire.

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FOR SALE: Labgear Topbander, Model E.5051, clean and in good condition, £14. R.107 receiver, coverage 1.2 to 17.5 mc, in mint condition, £14—or £25 the two if taken together. WANTED: Heathkit HW-32A, must be perfect.—Watmough, G3WXB, 170 Harecroft, Wilsdon, Bradford, Yorkshire. (Tel. Cullingworth 3086.)

SELLING: Two AR88D receivers, one complete with matching speaker and handbook and in very good condition, £42; the other in good condition but less speaker and handbook, price £35. Carriage extra, or could deliver to 50 miles.—Poole, GW3JAZ, 57 Annefield Park, Gresford (584), Nr. Wrexham, Denbighshire.

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EXCHANGE or SELL: Eddystone 840C receiver FOR a 940 Rx.—Sangster, 13 Danestone Terrace, Bridge-of-Don, Aberdeen, Scotland.

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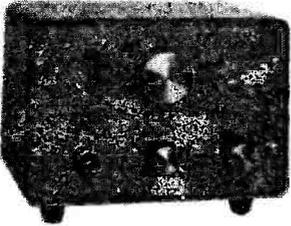
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SALE: Two Pye Rangers, in good working order, and set up on 70-26 mc, £10 each. K.W. low-pass filter, 60s. R.A.E. Correspondence Course, by British Radio Schools, £6.—Gray, GM3PZR, QTHr, or ring Dumbarton 3482.

WANTED: HW-12A, with PSU. **SELLING:** A Panda Cub Tx, coverage 10 to 160 metres, price £2.—Derrick, G3LVX, 218 Winchester Way, Bolton (20768), Lancs.

OFFERS? G.E.C. BRT-186 receiver, complete and in good condition; G.E.C. vacuum xtal, 31.4550 mc, on B7G base; Brookes 3520.3 kc xtal, with certificate; Ardenite audio amplifier, 12v. DC, with microphone, capable 10 watts output; new RF-24 Unit; and valves 811, TZ40, 866, KT66, DET-18 and DET-19. **WANTED:** Good compact phone Tx, suitable for disabled RAIBC member; reasonable price paid.—Davies, G3CXJ, 13 Lovett Road, Portsmouth, Hants., PO3-5EU.

FOR SALE: Drake TR-4 Transceiver, with AC4 PSU and Shure microphone; seldom used and in mint condition, price £295. (Owner gone S-Line.) (Eire).—Box No. 4761, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

DISPOSING: Eddystone EB.36 broadcast receiver, in immaculate condition, just over one year old, price £32 or near offer. Please ring 580-0401, extn. 116 during office hours, or write for appointment to view and test.—Stiles, 2 Dalegarth Gardens, Purley, Surrey.

OFFERING: Lafayette HA-500 amateur-band receiver, in mint condition, only five hours' use, in original packing, with handbook, what offers? (Selling due to having moved into flat).—Browne, 52 Waverley Avenue, Wembley, Middlesex. (Tel. 01-902 5511.)

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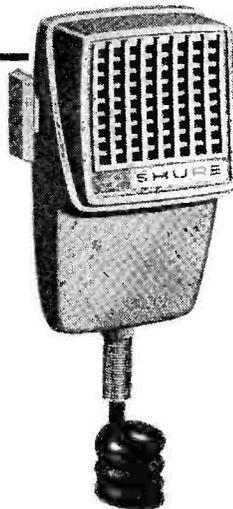
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