22½p

The SHORT WAVE Magazine

VOL. XXIX NOVEMBER, 1971 NUMBER 9

LOWE ELECTRONICS

119 CAVENDISH ROAD, MATLOCK, DERBYSHIRE.

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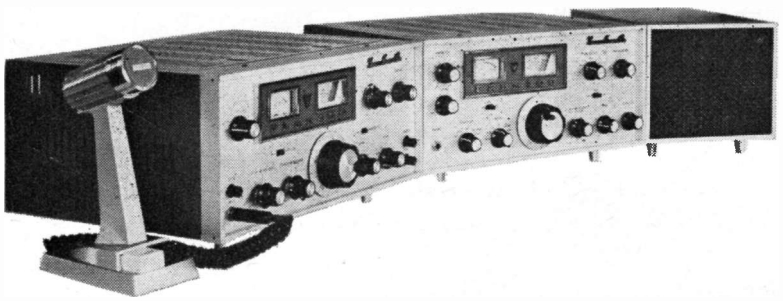

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73 de Bill and Alan

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Antenna Round-Up, Volume 1	£1.45
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Beginners Guide to Transistors	83p
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Course In Radio Fundamentals	60p
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Learning the RT Code	25p
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Short Wave Listener's Guide (N.E.)	O/P
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Engineers' Pocket Book	80p
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Radio Amateur Examination Manual	31p
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VHF Manual *(ARRL)*	£1·35
VHF/UHF Manual *(RSGB)* N/E	£1.75

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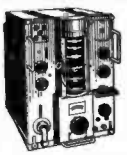

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CONTENTS

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AUTHORS' MSS

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The SHORT WAVE Magazine

EDITORIAL

Trend *It is an interesting fact that though our licences are now issued as for communication purposes—rather than experimental, as they used to be—there is more purely experimental work going go in Amateur Radio circles than ever before. This is not only because we now have a far greater number of licensed stations, but also because of the widening scope for amateur experiment in the radio field.*

Much of this "amateur effort" is, of course, not amateur at all in the strict sense, but semi-professional. It is true to say that some very large proportion—probably not less than one half—of licensed amateurs are dependent upon the radio industry for a living. Many are in positions of great responsibility as radio engineers or executives, and thereby are fortunate in having at their disposal resources (in terms of equipment, or design and constructional facilities) far beyond those of the average "non-professional amateur." There is nothing whatever to be said against this; indeed, it is a very good thing, if only for the reason that it helps to keep up standards and also contributes materially to progress.

Then there are also those amateurs who, not professionally engaged in radio at all, are leaders in other fields of industry and commerce. Theirs, too, is very often purely an experimental interest, by way of relaxation.

These remarks are inspired by the (somewhat surprising) results of a survey recently of the professional interests of a group of 20 readers of SHORT WAVE MAGAZINE, *selected at random: Eight were in senior positions in the radio industry, either in research organisations or as directors or managers of nationally-known concerns; two, both personalities well in the public eye, were professional entertainers, one on stage and screen, and the other on the racetrack; three were radio dealers; and the remaining seven were the sort of people one would expect to find at any radio club meeting.*

It does not necessarily follow that a random selection made in this way is truly representative of all. But the interesting thing is that not one of these 20 licensed amateurs is either a QRO tycoon or in the category of top flight DX operator. However, they all have one factor in common—in every case they said their main interest in Amateur Radio is experimental.

Austin Forsyth, G6FO.

WORLD-WIDE COMMUNICATION

COMMUNICATION and DX NEWS

E. P. Essery, G3KFE

BEFORE getting into the meat of the article this month, your conductor must first of all thank all those who sent their good wishes during his recent illness; at the time of writing he can, after ten weeks, begin to see the possibility of getting back to "real" work within a week or so.

Your conductor has been, for most of the time, off the air, either in bed, in hospital, chasing nurses round the wards, or suffering from an o/c aerial feeder; but enough time was left to demonstrate that the forecast of autumnal improved conditions was justified—flutterings of life on Ten, Fifteen doing nicely, Twenty going (and sometimes sounding) life a bomb, plus all the fun of the fair on the LF Bands. So . . . let's see what the 'chasers have to say about it all.

Ten Metres

G3NOF (Yeovil) found the Africans there most mornings, and again in the afternoons, not to mention the odd few very weak (S3 at best) East Coast W's, and in the early evenings quite strong South Americans. SSB contacts were made with G3MUL/CE3, KZ5JF, LU4VL, VP8MM, W4KET, ZC4ACB, ZD8KO, ZS1KZ, ZS3AK, 5H3LV, 4X4HF, 7Q7AD, 7Q7LZ, 9J2DT, 9G1DY, 9Q5IA, and 9X5EA.

In the view of G2DC (Ringwood) the band has been wide open to Africa on most days, but little or nothing could be worked for want of the essential activity at the other end; perhaps when the VK's start to break through the band will liven up, especially at weekends. All CW, of course, with ZD8CW, UA9WS, UA9WL and UA9HAD.

Fifteen Metres

G3DCS (Ipswich) seems to have had a predominantly CW month, as far as the operating side goes; on the aerial front the Quad is still not yet up, owing to space problems, albeit the rectangle *à la* G6LX is popular with one each for 3·5, 7, 14, and 21 MHz, which should be enough to shut out plenty of sunlight! Perhaps the prize signal was the CW one heard on 21026 kHz, claiming to be the "planet Mars trying to get in contact with planet Earth". Enver, one gathers was *not* amused, and instead keyed with ZD8JK, JA3LVT, JA2ZAP, JA2TQS, JH1WKS, JA5AJQ, JR1FYL, JA4EOU, JH1WDN, JA1HZN, JA1CSL, JA1CRT/MM, UI8AP, PY7VON, UAØYT, VK6SA, UK9AAT, VA2UN, SL2AV, HK3BAE, UD6AR and assorted W's.

Nice to hear again from G3VLX (Chislehurst) who seemed to be lost after his move; luckily it was only a matter of raising the trap dipole again. It is now up to 40ft. and seems to be producing the goods. A session on September 12 yielded SSB contacts with UK9CAE, WA2BVU / P / 4X, UW9WR, VK9DM, UK9ANN, YA1OS, 4Z4GV, CR6LX, 9E3USA, WB2RLK/P/VE1 and 9Q5LH, who gave him a report of R5S2, and

SIX-BAND DX TABLE

(All-Time Post War)

Station	Countries	28 MHz	21 MHz	14 MHz	7 MHz	3.5 MHz	1.8 MHz
W6AM	350	151	163	350	146	120	7
G3DO	340	216	253	333	90	83	9
G2DC	339	181	312	330	170	116	20
G3NOF	322	207	234	313	38	67	4
ZL3GQ	285	146	164	245	178	127	5
G3LZQ	265	140	156	215	72	38	8
G3KMA	262	210	209	193	146	64	11
G3IGW	212	129	153	169	136	107	50
9H1BL	202	117	129	143	74	57	8
G3RJB	180	80	58	169	60	37	8
G3PQF	175	119	53	107	85	56	13
G3YDX	148	85	83	72	81	76	17
G3IDG	131	77	97	55	27	18	12
G3DNF	131	66	89	95	42	33	2
G3DCS	130	27	83	91	30	25	10
G3XAP	122	44	75	53	77	31	13
G3ZEM	110	—	—	108	28	32	13
GC3YIZ	82	48	14	38	16	4	1
G3VLX	67	7	14	34	20	33	19

(Failure to report for three months entails deletion from this Table. Claims may be made at any time. Six months of "Nil" reports will also result in deletion. Placings this month are based on "Countries Worked".)

proved it by hearing every word Deryck said—obviously a station who gives out S-meter readings as his reports!

Definitely perking up, seems to sum up G3NOF's views of Fifteen; Don found it open in the mornings to JA, VS6, VU and YA, while the afternoons were good for S.E. Asia, and early evenings to Africa, but again Don found a dearth of decent signals from the North American continent. Heard but not worked were KC6RS, ST2SA, VS6DO and YK1AA. However, he was consoled by contacts on Sideband with CR6LX, DU1FH, EQ2BQ, EQ2TW, ET3DS, JA4KDT, JA5BJA, JA7HWC, JE1GWP, JH1XYB, JY8BI, MP4BJG, MP4MBB, MP4TDA, SVØWXX, UA9BE, UA9OO, UK9AAN, VS9MB, VS9MT, VU2HLU, WA2BVU/4X4, YA1OS, YBØAAO, ZE1DC, 3B8CR, 4X4WP, 4Z4GV, 5X5NA, 9E3USA, 9M2DQ, 9V1QB and 9V1QU.

Now to G2DC, who found that the VK's would peak about 1130z, while he could raise Africans from 0630 to around 1830z. Jack used both CW and Sideband, the former coming up with HS1ABD, all JA, VK2-8, VK9RY, all W call areas, ZS1-6, ZL1-4, and 9M2LN. On the SSB front appeared TU2ACY, ZS1-3, 9J2's, 5Z4, VK2-7, ZL1-4 and all W call areas again.

For W4WFL/1 (West Hartford, Conn., U.S.A.) activity has been a bit limited, with Fifteen yielding three new countries in GC3YIZ, KG4EQ and LX2CQ, the only contact of note (for him) being with HV3SJ. On the gotaway front, ET3ZU/A and HKØAA both caused wailing and gnashing of teeth in the W4WFL/1 shack.

Twenty

As usual, this is where the action, and the QRM, is at a maximum. Your conductor, to relieve the boredom of illness, spent some time going through his logs and noting the surprisingly large number of European countries unworked. It then seemed good to do something about it, and the resulting activity on SSB covered CT1OF, 9H1BW, 4Z4DS, EA3OF, ZB2A, VP8MM, PY4KL, VE1EI, PY2ERS, VO1BT, UK9CAI, YV1EJ, 6Y5GB, ET3DS and VP9BY, with 5Z4KL as the prize gotaway of the month, thanks to an evilly-timed telephone call which called your scribe from the shack after 5Z4KL had taken the proffered bait.

G2HKU (Minster) has been pretty busy outside the shack, not to mention having PAØPN and his XYL staying with him, plus his own

Radio room of the 24,000-ton container ship "Atlantic Causeway", signing GZML on the commercial frequencies. She is fitted with the most modern and sophisticated radio equipment supplied by the Marine Division of Redifon, Ltd. The main Tx can be set up on any of 195 channels in all marine bands, and it can put 1.2 kW into the ship's antennae on any of these frequencies. With the Redifon R.408 receiver this guarantees virtually world-wide communication. In charge of Redifon Marine training is A. F. Ward, G3HSP.

holiday, all falling into the period under review, but withal a few contacts were made, to ZL1VN on CW, and on SSB, ZL1VN again plus ZL3FO and ZL3SE, although there were some mornings when 0700z sked-time was virtually impossible to ZL-land.

CW in the main was the preferred G3DCS exercise, and it came up with W1-2-3-4-8-9, Europeans, VE1ATJ, VE3BHZ, VE2ZD, VE1IG, VE3BKP, VO1HP, IA5VNC, PY5AVV, VP9BY, YV5CKR—the one SSB contact mentioned was a lone W2.

Now to G3VLX, who on September 11 ran off a string of W's, as K3GJD, W3ORU, W4FPA, W1BGD/2, K1CSJ, WB2SQN, WA8TBQ, K1CPF, and K4II, following this up the next day by working 9E3USA, WB2RLK/VE1, UA9BE, ZB2A, and later finding VE3ZP and UL7YR, to more than adequately satisfy himself that he was "getting out" from the new place.

As ever, 20m. carries the traffic, and G3NOF noted the good sessions to VK in the mornings, long path, with, on some days quite good openings to the Pacific, KX6, KC6, KS6, VR4 and such, as well as KL7; S.E. Asia was workable in the afternoons. It all added up to an impressive list, starting with gotaways HKØAA, FH8CE, JY9DK, VE7IR/XU, VQ9XX, VR4BM, and ZM9AG, and continuing to the worked list, comprising AP2AD, ET3ZU/A, DU1FH, EQ2WB, FYØNA, HS1AFP, HS5AFJ, KZ5JF, KC6WS, KX6LH, UA9BE, UW9WR, UK9AAN, UK9CAE, VK's and ZL's, ZL3PO/C (Chatham Is.), 4S7PB—nice to have the 4S7 prefix around again—7X2BK, 9K2YG, 9V1QC, and 9Y4VV.

G2DC found conditions by and large much improved, although it was noticeable that the morning openings to the Central Pacific seemed to be best on the days when the VK path was worst, and, moreover, it seemed to change from long-path to short-path from day to day. A couple of contacts were made with VR1AA, who is ex-G3HCL—Danny has only a lowish dipole at the moment but there are indications of a tri-band beam in the offing. CW contacts were made with DU1VM, KG6DH/KS6, KS6CY, KS6CG, KG6JAK, KG6AB, OAØZS, UAØFAM, VK9RV, VR1AA, ZL5AX, 9M2LN, VK2-8, ZL1-4 and all W call areas. SSB rang the bell with JY9DK, KS6CY, VK9RY, YA2AG, VK2-8, ZL1-4, also all W call areas again.

Now to G3ZPF (Dudley), who runs a Yaesu FT-DX560 into a dipole for 14 MHz at the immense height of fifteen feet above a site which in itself is about 700 feet above sea level. David remarks on the odd conditions prevailing just after 1800z on September 12, when signals seemed to be coming in from just about *everywhere*, so that in half an hour G3ZPF booked in YBØ, 9E3, ZC4, GM5(!), VS9MB and IG5. Taking the overall picture, 275 operating hours in the last couple of months have yielded 90 countries, mainly at weekends and *all* at reasonable hours—no nocturnal stints. SSB first, for VU2, DFØ, 7Z3, 9K2AM, CN8, SVØ, CT1, CT2, 9M2, HBØ/M, ET3ZU/A (on his recent DX-pedition), MP4B, 9H1, 4X4, EQ2, 9Q5, IA5, JX3, M1D, 4U1ITU, OM2, OMØ, HS3, VK2; JY8, ISØ, CR7, HZ1, and the usual assortment of W's and whatever. CW produced some not-very-DX'y but enjoyable contacts with HA7KPE, SP3EVZ, OK1DAW, UK6AP, SM7CUU and IØBAH. Not a bad start to operations on *Twenty!*

W4WFL/1, as related elsewhere, found time at a premium, but Morgan did at least make four QSO's, all for new countries, in KS4DX, K3RIZ/TF, GI3OQR and SZØGA, with his SSB signal.

Pasteboard—How To Get It

Through the Bureau system is the *sane* answer—but for so many it seems to be necessary to QSL direct or through managers to raise a card. Here, then, is another selection.

The first list is a king-sized one from Morgan, W4WFL/1. W1FLS is *not* QSL manager for all AC3PT contacts, only those which he himself made from there, between December '69 and February '70, all of which have been despatched. The correct form for AC3PT is to the address as given in the current *Call Book*. HS2AFV cards after August 3 are to *WA9ELV;* GM5AIW to *WA3RHQ;* ZD8CW, to *W2MUM*, and *not W3MUM*, as previously quoted; HR2GK, HQ2GK, and WA8VRB/HR2 to *WA8VRB/1, Box 11331, Newington, Connecticut 06111, U.S.A.;* CP1GN has returned to the States, but anyone still needing a card for their collection may contact him—*Capt. Howard M. Mills, WA3EVE/7, Box 4242, Huachuca, Arizona 85616, U.S.A.* HC1WZ is *KØULX*, and cards should go to him, *Walter I. Funk, 1003 Eighth Avenue North, St. Cloud, Minnesota 56301 U.S.A.* HS1ADX, to *W4VFP*, and the W4 bureau; VR1AA, via *K3RLY;* K2LQQ/TF's address is *Box 10, Naval Station, FPO New York, 09571, U.S.A.* A final comment is that the Ryeham club, VE3RIT, Toronto, lost several *cases* of QSL cards and awards in a recent move to a new location, and Morgan is sure they would appreciate it if stations would let them have duplicates of the lost ones.

G2KA writes in to let us know that after nearly twenty years off the air, he was moved to make a come-back, which involved passing

TOP BAND COUNTIES LADDER

Station	Confirmed	Worked
	Phone and CW	
G2DF	98	98
G3ADH	98	98
G3VLX	98	98
G2NJ	98	98
G2HKU	98	98
GI3WSS	97	98
G3XWZ	76	90
G3KFE	72	88
G3YMH	69	93
G3LXD	64	83
	Phone only	
G2NJ	98	98
G3PQF	98	98
G3XDY	72	89
GI3WSS	67	83
G2HKU	51	53

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

the R.A.E. and the Morse all over again, and is now on all bands looking for contacts. He is J. F. A. Lavender, G2KA, 22 Honicombe Park, Nr. Callington, Cornwall.

As usual, G3NOF has a QSL list on offer, which this time includes HKØAA, to *K3RLY;* 9K2YG, to *Box 341, Kuwait;* JY9DK, to *VE6AKV;* YBØAA, to *DJØRR;* 4Z4GV, to *WB2WOU;* ZS3AK, to *W3HNK;* SVØWXX to *W3HNK;* FYØNA to REF, but G's to *G3TIK;* VK9XK, to *W2GHK;* JY6AAM and JY6EM, to *Box 32353, Amman;* all XV's to HS bureau; VR2CM to *VR2CC;* VS9MB to *G3KDB;* VS6DO to *W2GHK;* ZL3PO/C to *ZL2AFZ;* 925EA to *Box 30, Butare;* 9X5AA to *W1YRC;* OMØRZ to OK2RZ; and HM1BK to *International P.O. Box 1218, Seoul.* To finish off, Don has a *negative* one to offer; according to the latest *Call Book*, VP8LE is Dick Scoffom, Adelaide Is. This station has been giving G3NOF as his QSL manager, and talks as though he knows G3NOF—but Don knows nothing of *him*, and certainly cannot assist with QSL's for VP8LE. Furthermore, G3NOF would very much like to hear from any station who has worked VP8LE, to know just what is being said.

Prefixes

There have been a few odd ones floating about of late; at the time of writing KY4CD is on, from Georgia Southern College ARC, and till December 31 VB1MSA is on from Newfoundland, commemorating the 70th anniversary of Marconi's experiments—from December 6 to 12 there will be round the clock operation from the Signal Hill site in Cabot Tower.

XX6FL is on from Launda International Fair, and extremely active on SSB, CW and RTTY at the time of writing—his QSL address is via CR6LA.

Eighty and Forty

Sadly neglected by most people, in terms of their DX potential, either CW or phone, which really is a shame, as both can produce the goods when worked through carefully. However, it seems as though the affluent society has taken the edge off the competitive spirit of all but a few G stations, for the vast majority seem to spend their time nattering across town on Top Band or Two, and either disregarding and DX manifestations on "my frequency" or diving smartly for the big switch. A pity, because it doesn't take a lot to become a capable operator who can go after DX with at least a sporting chance in the pile-up.

Interesting photograph at the Royal Palace, Amman, showing left to right, standing: JY4IA, JY1B, 9K2AM, 7Z3AB, JY1 and SU1MA, with ST2A seated front. This was a meeting of the "Arabian Nights" net taken in King Hussein's shack on July 20 last.

G3YMH (Staines) has returned to Cambridge for another year's stint, and reports that at the time of writing, the University Club station, G6UW is without a permanent home, as the lease on the hut has run out, but it is believed they are now back in business as your conductor has within the last day or so heard their ground-wave signal at something like normal strength. Ron had a three-day session on Forty, which yielded UF6FAG, OMØBCI, OMØDB, VE3, K4 and ET3USD, while weak South Americans were also in evidence.

A new one from GD is GD4AMZ (Castletown), running a Sphinx transmitter to an 80m. dipole; Paul is of the opinion that there should be some more GD4's ere long, as quite a crowd of the lads at the College are sitting R.A.E. in December or May. Paul didn't find the Morse too easy, having had four tries at it; one hopes this will not have put him off the mode, because there is no doubt the one-mode only chaps miss a lot of pleasure, even in these days of SSB.

Concentration on *Forty* is again the theme at GM3JDR (Wick). Don's SSB list comprises KZ5JF, UK9CAE, 4Z4GV, WA2BVU/4X, ZL4JF/A, YV5DMM, VK5PB and 4X4BS, while CW resulted in PY7AZQ, FØPJ/FC, UL7NG, JA2CG, JA9YBA, JA1OHV, JA3NOJ, JA1KSO, JH1PZW, HBØXUN, 9H1CH, FPØBG, 4X4NJ, VP2LAM, JX4RI, GC5AWQ, GC5ATJ (*both* on Sark!!), 4Z4GH, CM2OF, VP9BK, UL7CAB, ZL2CH, UD6CN, JA8SI/MM (when near Greece), 4X4XL, PY1DVG, ZL4IB, OX3MQ, UL7JE, ZL1BJH, UD6DGV, UF6WAB, VK3MR, VK3XB, VK3APN, VK3OP, VK2BKM/2, VK7LZ, VK3FC, VK2EO, YV1ID and VK7KB. Now who says Forty is not a DX band?

ZD8KO is otherwise G3TTG, and is on Ascension Island at the behest of his employers for a year or 18 months. Keith has a KW-2000B and a trap vertical for 14-21-28 MHz but hopes soon to improve on this and to put up aerials of some effectiveness for the other bands. QSL's to go either by way of the

Bureau, or ZD8KO will send direct if a couple of IRC's are enclosed, the address being K. M. Orchard, ZD8KO, c/o B.B.C., Ascension Island, South Atlantic.

It is not often we hear from GC2CNC (Jersey) but Monty was a little startled on September 11, when he was working G8VG, to have the latter disappear and be replaced by F6AMM, the G8VG signal going in a flash from S9 to nothing. Around 1800 on September 12 VK3MR was working G's, and GC2CNC was called by a VK2, at S7. Then, suddenly the VK's were replaced by a G3 and an EI at S9, the former calling CQ and finding no takers. Then, suddenly again, the G and EI signals went down to S3, the VK's disappeared, and the usual bunch of commercial noises came back to life. In each case the change was *rapid*. To complicate things a little, on the 11th, an F6 gave GC2CNC a T7 report, and this although the signal sounded clean enough and, indeed was so reported by G8VG when GC2CNC checked with Bill on the land-line. Odd phenomena altogether, and close in time, if not frequency, with the conditions already mentioned for *Twenty* by G3ZPF. Anyone any explanation to offer as to what happened, please?

On the Maritime front, we haven't had much news from the seagoing side for a while now, although G2NJ (Peterborough) keeps on digging more of them up; this time he offers YV4NB/MM and JA8SI /MM, the latter being in the region of Corsica at the time.

GW3UUZ (Holyhead) has his place of duty on the Lighthouse, as ever, but now he is out at sea, on the Skerries, with an FT-250 and 5RV aerial at one hundred feet. Andy wonders if he qualifies as a new one for the IOTA award? Although there is still the DX-100 at the home QTH in Anglesey, there are only 28 days there after 56 on the lighthouse, which means that catching-up on the jobs tends to curtail activity on the air.

Reports on both Eighty and Forty comes in from G2DC, who, talking of *Forty*, says the morning W6, W7 and VE7 signals have more or less gone, but to counter this conditions to the East have improved. During the evening, 1830-1930z, VK and JA have been there, although the clottery and QRM usually prevent a finish to a QSO. CW was the preferred method, and came up with JA1EEY, JA1KF, JA2BY, PY1CPC, VK2EO, VK3FC, VK3MR, ZL1BJH, ZL1BLR, ZL3BJ, ZL3GQ, VE1-4 and W1—Ø. Clottery and plain bad mannered operating was the bane of G2DC's month on *Eighty*, it being often possible to begin a QSO, at DX, but seldom if ever to finish it, thanks to the attentions of the breakers. However, in the morning the New Zealand gang are there again, although few in numbers. For G2DC, 80m. yielded CW with ZL3FZ, ZL4IE, W1-5 and W8-0, also VE1-3.

G3DCS stuck to CW on *Forty*, which gave him contacts with 8R1J, W1DF, W2DJC, K3JH, PY7VON and sundry Europeans. *Eighty* CW did for DJ, DL, UR2, UB5, DM, YU, OZ, OH's, SM and LA, while SSB offered all varieties of ON—home, /M, /P, and even /A—plus F and SM.

Our last reporter on these two is G2HKU, who used Forty for HI8FED, YV5AMP, PJ2CC, ZL4JF/A, all on Sideband, plus a CW contact with HK2DP. As for Eighty, there was just one, namely OY7JD.

Here and There

ZC4PE was G3XMQ in U.K., and also MP4BHF—Pete gets round! At the moment the arrangements are not too satisfactory, as to reach the shack he has to get on a bus for half and hour, a rickety old thing at that, and there are also considerations posed by working shifts. A pity, this, because the home place is ideal, with room for a dipole up aloft and a straight take-off out to sea, so hopes are cherished for the resumption of 5B4 licensing. There are other diversions, too, with Famagusta beach in sight from the window and a temperature up in the mid-eighties at the time of writing. To date, therefore, practically the only activity has been by way of sked contacts with his father, G3TXG, which have not been too successful so far.

On the Awards front, we have details of a new one, called the "City of Gwelo" award, which basically is for working five stations in Gwelo. Same station on different bands count as separate QSO's for this purpose, as does an SWL report from a Gwelo listener. All the details from M. G. Hardy, Box 605, Gwelo, Rhodesia.

From G3IRM we have a note of the Tops CW Contest. Last year's effort showed 127 entries, plus 15 sheck logs, out of which only *five* were G's—just shows how competitive we are, doesn't it? For 1971, the contest dates are from 1800z December 4 to 1800z December 5, between 3·5 and 3·6 MHz, CW only. Details from—and logs to, not later than January 11, 1972—Peter Lumb, G3IRM, 22 Hervey Road, Bury St. Edmunds, Suffolk.

Another event we are asked to mention (*via* G3YRR, Grimsby) is a sort of contest during Nov. 28-Dec. 4 to work 8P6BIC/5—yes, that's the call—apparently a Club station, QTH Box 814E, Bridgetown, Barbados. Better get in touch there for details—what we can tell you is that there is some monumental number of IRC's called for when sending in an entry.

Now The Top Band

A band the popularity of which in the U.K. is quite amazing, and which seems to carry the business of nearly every all-but-inactive station in the country!

By now, 5Z5RS will be in the past, having been there on October 23, with 150 watts. At weekends, KL7HEE is on 1805 kHz at 1000z, and VS6DO on 1804 kHz at 1200; ZD8AY has been heard at 449 on 1803 at 2329z, and 8P6DR is on 1802 kHz, weekends only, from 0100 to 0600, listening for U.S. stations 1822-1825 kHz, and for Europe from 1825 kHz up.

Now is as good a time as any to remind you about the **Tests** this year. **Trans-Atlantics** first, the dates being November 28, December 26, January 9 and 23, and February 13. Times 0500 to 0730z, details as p.467 last month.

Pacific tests next. Saturdays, 1330z to 1600 on November 6, November 20, December 4, December 18, January 1 and 15, and February 5 and 19. Again, these were dealt with by A.J.D. last time. And with that little lot, one would think there would be enough to interest the most rabid DX Top Band operator.

Another one for the prefix-hunters on 160m. will be PA9LY,

whose QSL indicates he is G3TMQ at home, but working at the moment for the ESRO organisation. He has a long-wire up at 30 metres, six watts in the PA to an EL85, and a Trio JR-599 custom special. Skeds with pleasure—write to R. J. Harrison, PA9LY, Laan Van Ouderzorg 54, Leiderdorp, Holland.

W1BB says it is just wonderful to have the aerial at his /1 place back up in the air—no wonder, when said antenna is in fact an inverted-Vee with the apex at 265 feet and sited over a salt water ground, looking out over a sea take-off at that! But it makes a monumental difference—one could wish that Stew could organise two receivers of similar sensitivity, one at each of his QTH's, home and /1, to record the signal-strength put in by a specified station at each, simultaneously; it could well be put around the U.K. as a lesson and a moral to the characters who are always bleating about "over-power" whenever they hear a big signal, such as the one GW3UUZ used to put out from Nash Point.

G2HKU found GM3PFQ and EI9BG on CW, plus a hearing, very weakly, of ZD8AY at 2359z; SSB provided PAØPN and PAØINA as log entries. As for G3DCS, he almost damns the band by faint praise, mentioning but one QSO as worth thinking about, on CW with DJ3VC.

We have mentioned GD4AMZ already, and at this point it is worth mentioning that he is open to requests for skeds—Paul Leach, Walters House, King William's College, Castletown, I.o.M., will reach him OK.

Slipped in among all the other items of interest in W4WFL/1's letter is a note to the effect that KG4EQ says he will be putting up an aerial for Top Band soon, and will be quite active. It is understood that although he has 150 watts at this time, a kilowatt final is on the stocks and should be available in the near future. Looks like KG4 is going to be entered into some Top Band logs this season!

G3YMH is still an avid Top-Bander, but was rather mortified to find that the summer doldrums persisted, as far as he was concerned, until almost the day he was to return to Cambridge and so be disconnected from affairs other than by way of operating G6UW occasionally. Ron was pleased to hear MP4BJI during the slack period.

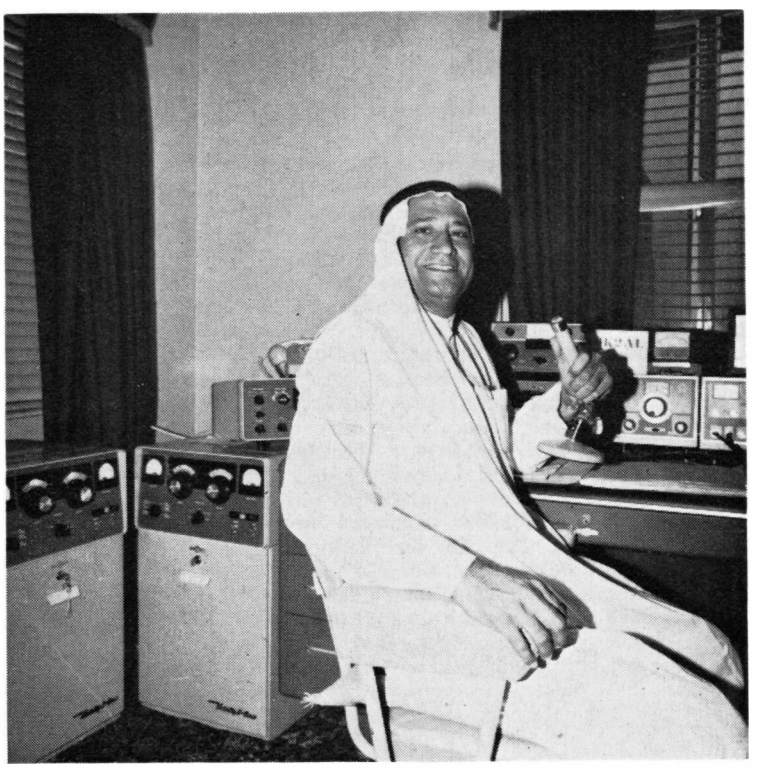
The W1BB "bulletin" of September 20 contains one king-sized hot potato. Stew is suggesting that as people are getting to have more know-how, better receivers, better aerials, and so on, it is becoming easier to work the DX—is it therefore a good thing to drop the Tests, with their five-minute calling periods, for the 1972/1973 seasons? Personally, G3KFE is in favour of continuation, thinking of the tiddlers—such as G3KFE, for example!—who would not have the know-how or the ability, especially when they first try for DX, to make QSO's without the help of the Tests. Comments please, both to CDXN and to W1BB (36 Pleasant Street, Winthrop, Mass., 02152, U.S.A.) on this one. Incidentally, if you are a keen DX-er, W1BB's bulletin is a "must," and may be obtained by sending some s.a.e.'s, stamped with sixteen cents each, to the above address.

Finale

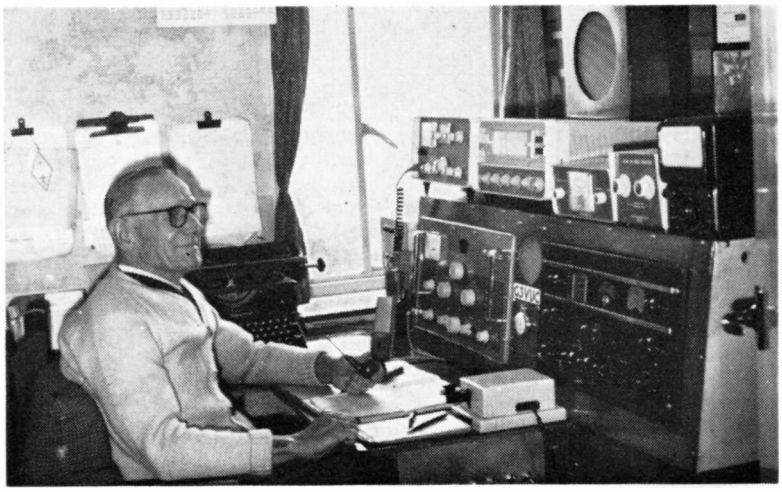
And so we come to the end of another DX travelogue; for next time, G3KFE should be fully with it—he's only half there this month!—and waiting for the letters covering the fine DX conditions the G3KFE crystal ball visualises. Deadline is **November 8**, addressed as always to "CDXN," SHORT WAVE MAGAZINE, BUCKINGHAM. *73, es tnx.*

* * *

Late Flash: Just as the script for this piece had been completed, the post brought us the results of the *CQ* Worldwide DX Contests for 1970. Looking at the Phone side first, we see no G's in the single operator multi-band or the multi-operator section top scorers. In



This cheerful chap is Zaman Aquil, 9K2AL, P.O. Box 2320, Kuwait, Arabia, whose pride and joy is his Collins S-Line equipment—and he has much other gear besides. There are now about sixty 9K2's licensed, many of whom are very active on the HF bands.



Station of G3VUC, W. M. Clarke, 66 Fillace Park, Horrabridge, Yelverton, Devon, who over the last few years has done so much for CHARN, the radio amateur effort for the Cheshire Homes. Many £100's have been raised, the work being entirely voluntary. G3VUC's location is on the edge of Dartmoor, down in a valley and not too good for getting out to DX.

the single-operator single-band category, the winner of the Top Band section was GM3YCB. The total entry of G stations in the Phone leg, of all categories was fourteen, plus five GM's.

Turning to the CW section, G3HCT placed third in the 21 MHz and GM3YCB second to DL1CF in the Top Band sections. Again, the total entry from the British Isles was low, twenty G's, four GM's (two of whom were in the Top Band section) and a lone GW.

What it comes to is that out of a total of 3143 logs entered worldwide, the G representation is lost. However, one wonders how many more did come on for at least part of the time but did not bother to put in a log. However, our congratulations to those who did enter and particularly to those who were placed, G3HCT and GM3YCB—good show.

DATA DISTRIBUTION BY SATELLITE

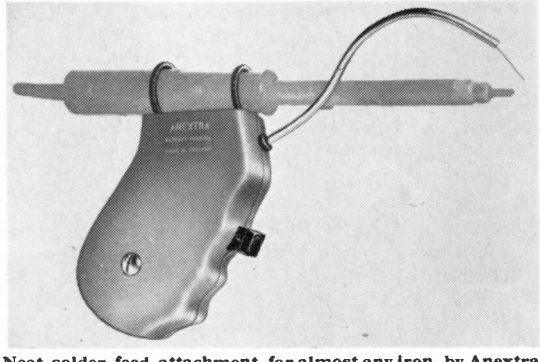
Study by Marconi Communication Systems, Ltd.

There is at present no data-only communication system in existence, and the systems which operate throughout Europe are based on the use of national and international telephone networks. These have a number of disadvantages in terms of cost and efficiency. In particular the variability of the line selection from one call to another restricts the user to relatively low data rates. The problem could be overcome by some form of equalisation equipment, but this would be expensive in terms either of capital or operator cost. The other alternative, practicable only for very large concerns, is sole-user line facilities. But unless these can be employed about 24 hours a day they are likely to be under-used and thus inefficient in terms of return on capital.

A number of proposals have been put forward for data-only systems in which improvements in utilisation efficiency have been effected by time multiplexing and by store-and-forward operation. The basis for the current proposal is that a satellite could form an ideal mode for a data distribution system which would have a number of economic and operational advantages. Ideally, each data user would have a small antenna, probably a 2-3 metre dish, situated not more than 100 metres or so from his terminal equipment, so there would be no need for connection *via* the existing public telephony network. It is, however, considered likely that some categories of data would be more suited to transmission over normal telephony links and the two systems would require some interconnection. The boost to traffic envisaged by the introduction of the satellite system would also therefore be of benefit to established Posts and Telegraph authorities in the various countries covered.

DECEMBER SMALLS

Those wishing to get For Sale-Exchange-Wanted notices into our Small Advertisement columns for the December issue of SHORT WAVE MAGAZINE—always heavily booked—are advised to send their advertisements in right away. Cost is 2½p per word, minimum charge 50p, with remittance, to: Small Advertisement Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, SW1H-OHF. We cannot guarantee appearance of any advertisement.



Neat solder-feed attachment, for almost any iron, by Anextra, Ltd., Chiltern Works, Chiltern View Road, Uxbridge, Middlesex. Basically, the fitting enables reel solder, of anything from 18 to 22g., to be fed on to the job as required. The mechanism is quite simple and the reels accommodated are standard 1 oz. in the usual cored solders.

PERSONAL PORTABLE FOR TWO METRES

GENERAL CONSTRUCTION — AND SOME CONCLUDING POINTS

Part II

J. R. HEY, M.S.E.R.T. (G3TDZ)

The first part of this article appeared in our October issue, which should be read for continuity.—Editor.

TAKING up the theme from p.486, October, winding a modulation transformer is easier than it sounds—especially on the " 'TDZ Mk. 1 D-I-Y winding machine" of two chunks of wood with a ¼in. shaft between, bent to form a handle.

An old line-blocking transformer was extracted from a TV shop junk box and stripped down. Four lengths of 30g. enamel were run off down the workshop and held with a half brick. All four ends were then attached to the bobbin, brick removed and winding begun. The winding goes on, all four at once until the spool is full to the brim, about 120 turns, then the surplus cut off. The completed spool was insulated with brown gum paper and the laminations re-assembled. The old rusty clamp was replaced by a new aluminium one to make the finished job look a bit neater.

There are now four separate windings on the transformer; after sorting out, three are connected in series to form the secondary, the remaining winding being the primary.

Values of coupling and by-pass capacitors are chosen to produce a desirable speech characteristic.

Construction

At the onset of these scribblings it was considered hardly likely that many constructors would wish to make a "Chinese copy" of this complete transmitter-receiver—the thought being that the various circuit ideas could be used separately or all together in one form or another, as a 12v. supply is a good start for portable, mobile, or fixed use. No actual printed board layout is therefore shown as this depends absolutely upon dimensions of available components.

The following notes on how the little rig was thrown together might be of use: A single double-sided printed board is used for the whole unit but would-be constructors might be advised to build all the main sections separately, linking them together when each is tested and faultless.

The receiver 3-gang has a built in 3 : 1 reduction gear but a further slow motion drive using a 1½in. drum was necessary. The tuning scale is printed on a paper disc glued to the end of the drive drum and shows through a window in the chassis side.

A change-over single-pole micro-switch mounted into the microphone case acts as T/R switch, simply swinging the HT between receiver and transmitter. When the microphone is unplugged from its 5-pin DIN socket, all power is removed and the set is quite dead; no other on/off switch is necessary.

On the "receive" side the aerial switch consists of two diodes BA141 connected in such a way that when the receiver HT is applied to R1, the diodes conduct through RFC1 and L1, opening the gate. On "transmit," the diodes being unbiased and connected back-to-back, offer a high resistance, preventing transmitter power from reaching the receiver input.

The transmitter crystal oscillator feedback tap must be no greater than one turn from the cold end otherwise odd things happen, the oscillator going off at numerous frequencies all at once.

The pre-set RV2 in the modulator is set so that the centre line voltages at C49 positive tag is half the HT value—that is, 6 volts. If an oscilloscope and audio generator are handy, the preset should be adjusted for equal clipping top and bottom.

When tuning both receiver and transmitter oscillator chains, a two-turn loop was fitted to the VVM RF probe, giving an excellent indication of when each coil came into resonance. There is no special comment necessary regarding the alignment of the receiver as this is much the same as any other once the crystal oscillator and doubler are tuned up.

However, the transmitter requires just a little care and a 75-ohm dummy load. Connect this load to the aerial socket and if a bridge is handy, set Ct3 to 8·7 pF and Ct4 to 28·5 pF; failing this, a shrewd guess must be made. Switch to "transmit" and place probe loop over oscillator coil L9. Slowly adjust slug until oscillator breaks into life, which it should do with a sudden plop. Now move probe to doubler L10 and adjust for maximum reading, retuning the oscillator again for greatest doubler output.

If the loop coil is now removed from the probe and the point refitted, placing this on the hot terminal of the aerial outlet should indicate a small reading already present. Coils L11 to L15 should now be adjusted for maximum reading on the VVM. As RF power transistors capacitances change dramatically at different drive levels, it is necessary to go back over the adjustments once or twice until no further increase is obtainable, rechecking the oscillator and doubler as some pulling is possible. Finally, either by applying an audio generator or whistling a constant note into the microphone, Ct3 and Ct4 are adjusted for maximum output under modulation conditions.

Conclusions

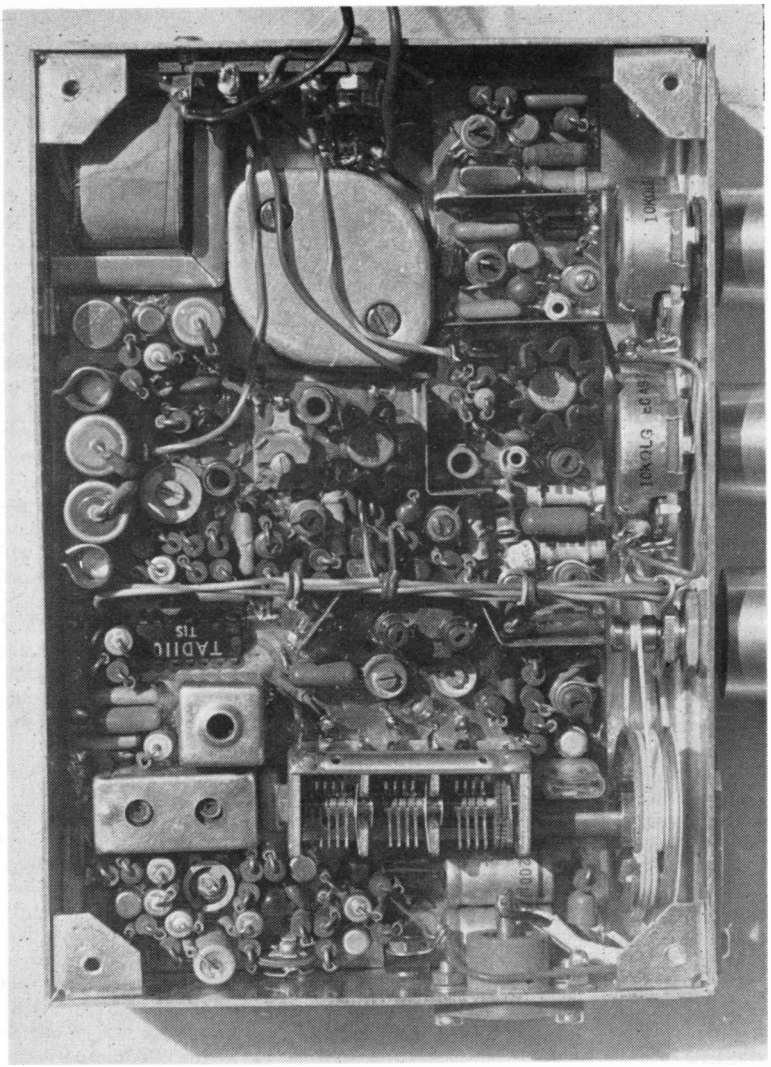
At the time of writing, 107 different stations have been worked, the greatest range whilst portable using simple aerials being 70 miles between central Yorkshire and the West Coast in Cumberland across a mountainous route. A telescopic dipole, a quarter-wave whip and a simple Turnstyle have all been tried with this unit whilst out /P, giving most gratifying results.

Power consumption is about 35 mA on "receive" and some 400-500 mA on "transmit"—which means dry batteries are a bit uneconomical; 1AH± *Deac*

batteries would be better for field use, with a 12v. regulated mains pack when at the home QTH.

There is no doubt about the feeling of "one-up-manship" when carrying this little station around, as most other /P stations seem happy to hump car loads of iron work with them and think themselves to be "portable".

G3TDZ hopes these notes will send a few /P D-I-Y types scrambling for their soldering irons before the dustman takes away the old clunker.



Another photograph to show the general layout in the 6 x 4in. chassis. Control knobs for RF and AF gains and tuning are to the right. The compact construction is made possible by the now generally-available miniaturised components.

PAYMENT BY BANKER'S ORDER

We have many hundreds of subscribers who pay by Banker's Order—a handy and civilised arrangement for all concerned. But a certain few of them are asked (*a*) When starting a B/O sub. for the first time, to note that the form we supply should *in the first instance* be sent to us and *not* to their Bank—this is simply to ensure that the transaction can be recorded at our end; we then send the form on to the Bank, after which action is automatic. And then (*b*): Readers already paying by B/O who have been notified about amending it to the new rate (£2·50, or £2·75 first-class posting) are asked to be careful to cancel any existing order when instructing their Bank to pay at the new rate.

All this, which may seem obvious to anyone who operates a local Bank A/c in the ordinary way, is to minimise the office work-load by cutting down unnecessary correspondence. You would hardly believe it, but we have subscribers whose Banks are paying at both the old and the new rates and, in one extraordinary instance, the subscriber's Bank is paying his annual sub. *monthly*—though he and his Bank have been written to three times pointing out the error, the monthly credits keep coming in! It is altogether too embarrassing!

From now on, all credits incoming, either through the Bank or by Giro, will be accepted without query. Anyone with a doubt about what is being paid on their account to the credit of Short Wave Magazine, Ltd., National Westminister Bank, Victoria Street, or Giro A/c No. 547 6151 should write in, with an s.a.e., giving dates and references.

MEASUREMENT OF P.E.P.

USING THE MINIMUM OF TEST GEAR

E. T. HOWELL (G3GUP)

ONE text book definition describes peak envelope power (p.e.p.) as the RF power at the peak of the modulating audio cycle, equivalent to the average power in a CW signal where the amplitude is equal to the peak of the modulated RF signal.

Stated thus it seems quite straightforward, but how can the average amateur determine whether his off-the-shelf equipment meets the manufacturer's claims, or measure the p.e.p. of his home-shelf equipment meets the manufacturer's claims, or measure the p.e.p. of his home-built exciter or linear amplifier?

Well, to start with, the definition given above is incomplete. Peak envelope power should be related to a specific level of intermodulation distortion. It is possible to push up the p.e.p. by increasing the audio level (providing the PA valve(s) and power supply will handle the extra load) but the level of intermodulation distortion also increases, resulting in a radiated signal unlikely to make one popular with other operators on the band.

The international regulatory organisation (CCIR) recommends modulating the transmitter with two tones to produce sidebands of equal amplitude. The amplitude of these tones is adjusted until the intermodulation distortion just reaches a specified level. One tone is removed and the output power is noted. The p.e.p. will then be equal to four times the single-tone power.

Current engineering practice recommends an intermodulation distortion level of —30 dB for third-order products and most commercial equipment specifications claim this level or better.

To carry out this test you need a two-tone test oscillator, an accurate RF power meter and a frequency analyser. While the construction of the first item is well within the capabilities of most amateurs it is doubtful if many of us can lay our hands on a frequency analyser, and the accurate calibration of a home-made power meter raises problems. So we must do the next best thing, which is to use an oscilloscope to check the linearity of our two-tone test pattern and to derive our power level.

An oscilloscope is a "must" for the serious SSB operator. It need not be a complex unit; simple circuits have been published in many journals and the leading kit manufacturers market low-cost items which can readily be adapted for RF monitoring by providing direct access to the vertical deflection plates.

Having obtained our two-tone test oscillator and monitor oscilloscope the next step is to feed the audio signal into the microphone input socket, connecting the output of the transmitter to a dummy load *via* an oscilloscope pick-up loop and a RF ammeter, as shown in Fig. 1. Switch on the transmitter and adjust the tuning controls and audio level to give the best possible two-tone test pattern as shown in Fig. 2(a). (A word of warning here —if your rig uses TV sweep valves in the PA they may not stand a sustained two-tone test condition—so keep it brief!)

Measurements

Once we have a good clean signal with no flat topping we can start our measuring procedure. With the two-tone test signal displayed on the oscilloscope the p.e.p. can be calculated from the formula:

$$\text{P.e.p.} = \frac{(0{\cdot}707 \times Ep)^2}{R}$$

where Ep is the peak voltage shown in Fig. 2(a)
and R is the load resistance in ohms.

But unless we know the coupling factor of the pick-up loop and have an accurately scaled oscilloscope how do we measure Ep? The easiest method is first to set up the transmitter for CW, noting the reading of the RF ammeter and the height of the oscilloscope display Ecw, as in Fig. 2(b). The latter can be measured in any convenient units; if the oscilloscope has a graticule scale this will do fine. (Note that it is easier to measure the peak-to-peak amplitude and divide by 2 to obtain Ecw.) Again, if you are using TV sweep valves—keep it brief! Next, apply the two-tone signal and measure Ep using the same units as for CW. The p.e.p. is then given by:

$$\text{P.e.p.} = \frac{Ep^2}{Ecw^2} = Pcw$$

where Ep is the peak amplitude shown in Fig. 2(a)
Ecw is the peak amplitude of the CW signal, Fig. 2(b)
Pcw is the CW output power I^2R, derived

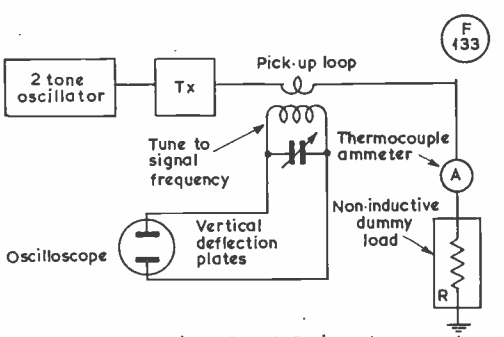


Fig.1 Interconnection of Test Equipment

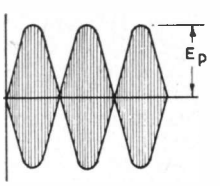


Fig.2(a) Two-tone test pattern

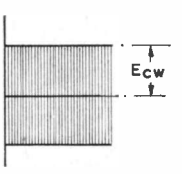


Fig.2(b) CW Signal

from the RF ammeter reading and the load resistance.

This gives us our peak envelope output power. If we want to know the efficiency of the PA it is necessary to measure also the peak envelope input power. For a Class-B amplifier this is given by the formula:

$$\text{P.e.p. (input)} = 1{\cdot}57 \times \text{Ea} \times \text{Ia}$$

where Ea is the PA anode voltage
and Ia is the PA anode current in amps.

This equation only applies if all the following conditions are met:

(1) Two sinusoidal audio tones of equal amplitude are applied to the modulator,
(2) Ia is zero with no modulation,
(3) Ia is read on a meter than actually indicates average current under two-tone test conditions.

If the anode current meter does not meet the requirement of condition (3) an alternative method is to use an oscilloscope to measure the voltage across a small resistor in series with the HT return line, calibrating the oscilloscope with the transmitter on CW and deriving the current using Ohms Law. The input p.e.p. is then given by:

$$\text{P.e.p. (input)} = \text{Ea} \times \text{Ip}$$

where Ea is the PA anode voltage
and Ip is the peak anode current in amps.

When screen-grid valves are used an element of error exists using this method as the screen current also flows through the resistor in the HT return line.

For Class-AB amplifiers condition (2) does not apply because in this class of operation a small quiescent anode current exists with no modulation. In this case, with the other conditions met, the input p.e.p. is given by:

$$\text{P.e.p. (input)} = (1{\cdot}57 \times \text{Ea} \times \text{Ia}) - (0{\cdot}57 \times \text{Ea} \times \text{Iq})$$

where Iq is the quiescent anode current in amps
and Ea, Ia are as before.

The efficiency of the amplifier is then given by:

$$\text{Efficiency}(\%) = \frac{\text{P.e.p. (output)}}{\text{(P.e.p. (input)}} \times 100$$

VXO FOR TWO METRES

A PRACTICAL CIRCUIT

D. J. RUMENS (G8EBV)

THE purpose of the VXO described in this article is to provide a flexible and inexpensive yet stable means of varying one's frequency about the two-metre band.

The VXO was built in a completely screened box, with the supply voltage fed *via* a screened lead and thoroughly decoupled to prevent RF getting into or out of the box.

L1 consisted of 23 turns of 22g. wire wound on a ⅜in. former with dust core. The extent of "pull" can be set to a given value by adjusting the dust core to suit. Alternatively, for greater stability the dust-core can be removed and the number of turns adjusted to suit the pull required—in the writer's case 30 turns were wound on the coil and the turns taken off until the required pull was found. The coil should then be coated with epoxy resin and rigidly mounted. As the tuning capacitor C1A/C1B had to be insulated from the chassis it was mounted on ¼in. paxolin and fixed firmly to the chassis.

Mechanical coupling for tuning was made through an insulated coupler to the dial mounted on the front of the box. Before fitting, the capacitor was washed in silver-cleaning fluid.

In the interests of stability, the wiring of the oscillator section was made as rigid as possible. This is very important for the final result. On the prototype the crystal was made plug-in, to a screened can on the face of the VXO case, for ease of crystal changing. There is no reason why a set of crystals, to be switched in and out of circuit for the required frequency range, could not be an integral part of the screened box containing the rest of the circuitry.

The buffer Tr2 was mounted as far away as possible from the oscillator stage and connected by screened lead to prevent inter-action between the two.

It should be remembered that although the unit is crystal-controlled it is still a *Variable Frequency Oscillator* and should be constructed accordingly.

Circuit Description

The crystal used is a 12 MHz HC-6U, frequency variation being achieved by C1A/C1B and L1. With the capacitor at minimum capacity the crystal realises only the series capacitance. As the capacity is increased, L1 is brought into series with the crystal, causing the xtal to be pulled on to a lower frequency. The degree of pull is determined by the value of L1. The output from the oscillator is fed through C2 to the buffer stage. C3 is to mask capacity changes in the input circuit of the buffer, and R3 reduces the loading, thus reducing the pulling of the oscillator by the buffer.

The output load of the buffer stage is formed by L2 tuned to 12 MHz, the output being fed *via* C5 to the coax socket. It is advised that the VXO be left on continuously during operating sessions. When netted, or calling on a station's frequency, radiation from the VXO could be too great, so a switch cuts off the output from the VXO. Signal leakage from the VXO itself is negligible.

The supply voltage to the oscillator was stabilised

Table of Values

Circuit of the VXO

C1A, C1B	= 50/50 μμF, butterfly	R3	= 56,000 ohms
C2	= 27 μμF	R4	= 68 ohms
C3	= 10 μμF	R5	= 15,000 ohms
C4	= 0·1 μF	R6	= 1200 ohms
C5	= 500 μμF	R7	= 270 ohms
C6	= ·001 μF	RFC	= 2·5 mH
C7	= 0·68 μF	D1	= 7·5v. zener
C8	= 1 μF	L1	= *see text*
C9	= ·01 μF	L2	= To resonate at 12 MHz with dust core
R1	= 680,000 ohms	Tr1, Tr2	= OC171
R2	= 27,000 ohms		

at 7 volts by a zener diode and the whole unit run from a stabilised 9-volt supply.

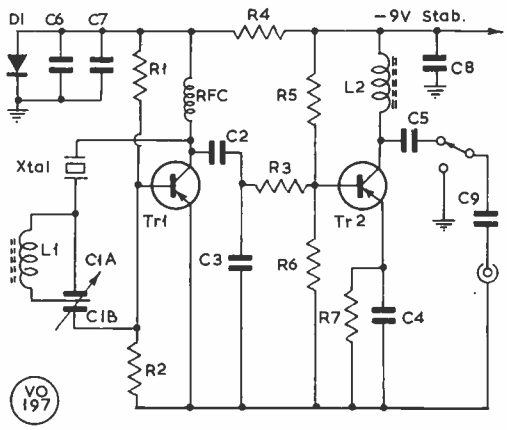
Results

Mainly, the swing was to the LF side of the crystal and is non-linear. There was a small HF swing of 50 kHz or so due to series capacity. All figures quoted here are the total swing including the small HF component.

For ultimate stability the swing should be restricted to 250 kHz. Much above this, drift will occur. At a 300 kHz pull, the drift after 10 hours was 2 kHz. At a 500 kHz pull there was an initial drift of two kilocycles in the first five minutes and the VXO would rapidly settle down and the drift measured after 10 hours was 6 kHz.

The output was sufficient to drive the normal Colpitts oscillator stage of the transmitter.

Other points noted were that a pentode crystal oscillator gave superior results to a triode. The pulling of the buffer was less and the output greater.



Circuit of the VXO by G8EBV.

CRYSTAL TESTER CALIBRATOR

USEFUL OSCILLATOR CIRCUIT

P. J. STARLING (G8EBX)

THE circuit described here has been found useful for checking the activity, or lack of it, of quartz crystals in the frequency range 1-20 MHz in the parallel-resonant mode of oscillation. If the RF output is coupled to a calibrated receiver, or a frequency meter such as a BC-221, then the frequency of the crystal may be determined. It has proved especially helpful in sorting out a bulk-buy of surplus crystals of frequencies in the region of 6 and 8 MHz for use in two-metre equipment.

Circuit (p.542)

The circuit consists of a Pierce oscillator using an EF91 valve. The 100 μA meter is arranged to read the grid current which flows when the crystal is oscillating, the amplitude of which is controlled by VR1. The input capacity is governed by C2. In the prototype, this was adjusted to give a capacitance of 30 $\mu\mu$F, as described later, since quartz crystals of the parallel—resonant type are usually manufactured to this value of C. The output of the oscillator is then coupled to the buffer amplifier, V2, another EF91.

The power supply voltages required are 150v. at less than 10 mA for the oscillator section, 200v. at 10 mA for the buffer amplifier and 6·3v. at 0·6 LT. Although these modest requirements could easily have been taken from the receiver PSU, it was decided to make the crystal-tester a complete self-contained unit and a small "convertor" type mains transformer was used, this having an HT winding of 200v. at 25 mA and an LT winding of 6·3v. 1A.

Construction

Construction is not too critical as long as the grid and anode leads in the oscillator section are kept short, direct and rigid. An aluminium chassis of 6 × 4 × 2½in. was found suitable and this was fitted inside an instrument case purchased from G. W. Smith and Co. The crystal sockets fitted depend on what type of crystals are likely to be checked. The most common ones seem to be the FT-243, 10X and HC-6/U. All the sockets should be wired in parallel, using rigid tinned-copper wire.

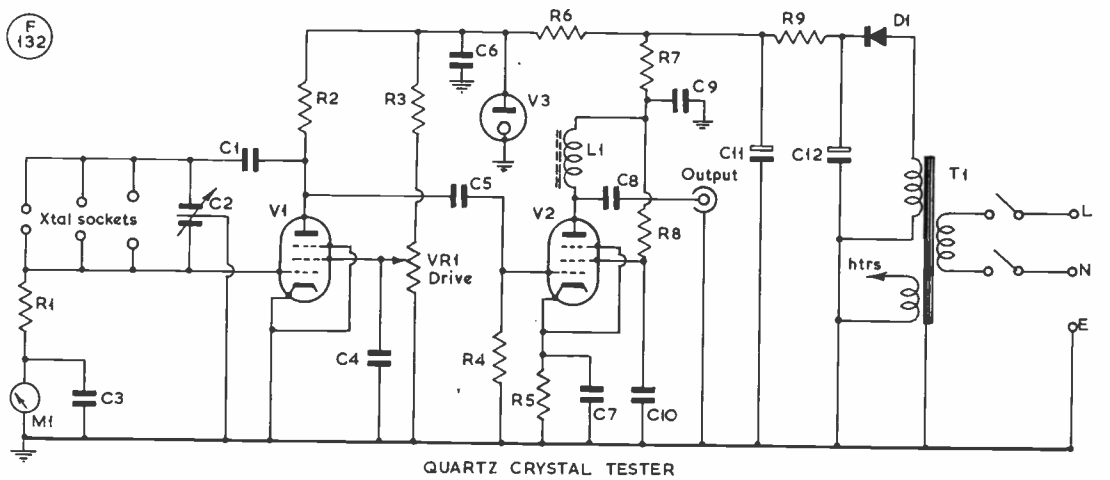
Testing and Use

If it is desired to check the frequency of the crystal under test very accurately, then C2 needs to be set to 30 $\mu\mu$F exactly. The best way to do this is to obtain a crystal which has been manufactured to this specification and of which the frequency is known. Many amateurs will probably have a suitable one megacycle bar or similar crystal in a receiver calibrator. In fact, if a constructor does not have such a crystal, he could do worse than purchase one because the crystal-tester may easily be used as a marker for receiver calibration. The prototype was adjusted using a *Cathodeon* 5 MHz

(cont'd p.542

ALWAYS IDENTIFY IN ENGLISH

While Clause 9(2) of the normal AT-station licence *might* be construed as being a shade ambiguous as to the language to be used (if one wished to strain a point), U.K. phone station operators are in fact expected to identify in English on the change-over—even if they are speaking Esperanto or Hindustani in the course of the QSO exchanges. The requirement to sign over and back in plain English is entirely reasonable (of course, you can give your c/s in the other chap's language as well if you like), the whole point being that you must always be identifiable as a British amateur station, even if you do speak Russian fluently.



QUARTZ CRYSTAL TESTER

crystal, which plugs into an HC-6/U socket. The drive level was set to give a reading of about a third of F.S.D. on the grid-current meter. The MSF transmission on 5 MHz was then tuned in on the station Rx and C2 was adjusted for zero-beat. The input capacitance was then considered set accurately to 30 $\mu\mu$F. However, if such a crystal is not available, C2 may be set to about two-thirds of maximum and the error will be quite small.

The relative activity of crystals having frequencies which are fairly close together may be compared by observing the meter deflection. Plug in one of the crystals and adjust the drive control to give a convenient reading on the meter, which should be noted. Now remove the crystal and plug in the next one. If it is of greater activity, the meter reading will be higher, and *vice versa*.

Table of Values

Circuit of the Crystal Tester

C1	= ·001 μF mica	R8	= 47,000 ohms
C2	= 75 + 75 $\mu\mu$F split-stator	R9	= 1,500 ohms, wire-wound, 3 watts
C3, C4, C7, C9, C10	= 0·05 μF	VR1	= 50,000 ohms, wire-wound, 3 watts
C5, C8	= 10 $\mu\mu$F	V1, V2	= EF91 (6AM6)
C6	= 0·01 μF	V3	= OA2
C11	= 32 μF	D1	= BY100 or equivalent 800 p.i.v. silicon diode
C12	= 16 μF	L1	= 2·5 mH RF choke
R1	= 100,000 ohms	M1	= 100 μA FSD meter
R2	= 22,000 ohms	T1	= Mains transformer, Secondaries:— 200v. 25 mA + 6·3v. 1a.
R3	= 6,800 ohms		
R4	= 470,000 ohms		
R5	= 1,000 ohms		
R6	= 5,100 ohms, wire-wound 5 watts		
R7	= 4,700 ohms 1 watt		

POINTS OF INTEREST

Worcester & District Amateur Radio Club are first away with the date for their next year's Mobile Rally—July 16, at Upton-on-Severn, Worcs.

* * *

When writing to us, please use block letters for the address and also for your name under the signature. More and more people seem to have fancier and less decipherable signatures. In certain contexts, it can be awkward or disagreeable if we get a name wrong—though it is practically never our fault if we do!

* * *

There is a possibility that the Cornish Radio Amateur Club may be running a station, signing GB3MSA, during the period December 11-16 and located at Poldhu, Cornwall, to commemorate the 70th anniversary of Marconi's first signal success across the Atlantic. Of course, this sort of thing has been done before, on other Marconi anniversary occasions, and there are signs that interest in the exercise is beginning to wear a bit thin, *e.g.*, we understand that the Marconi Company itself has declined an invitation to co-operate on this occasion.

* * *

GB2WGS will be a commemorative station on the air during November 13-21 for the 380th anniversary of the Queen Elizabeth Grammar School, Wakefield. All bands 15-160m., CW/SSB, will be worked; skeds welcomed with other schools, and visitors invited. For sked details or QSL's direct write, with s.a.e., to P. N. Butterfield, G4AAQ, 33 Grime Lane, Sharlston Common, Nr. Wakefield, Yorkshire (*Tel. Crofton* 353).

* * *

We are informed by LST Electronic Components, Ltd., that, being distributors for Marston Excelsior heat sinks which have applications to amateur-built equipment, they can supply in one-off quantities.

RECIPROCITY IN UGANDA

Short duration holiday licences can be obtained for Uganda, 5X5, on a reciprocal basis on application to: E-in-C, R.C. Section, E.A. Posts and Tels. Corpn., Box 7129, Kampala, Uganda, East Africa. Requirements are at least three months notice of intention; a photostat of the home-station licence and Morse Code pass slip; and two character references.

BUILD-UP OF A TRANSMITTING LAYOUT

THE RF UNITS FOR THE HF BANDS AND TWO METRES

Part II

P. J. PATRICK (G3TWG)
Lt.Cdr., R.N.

The first part of this article appeared in our September issue and dealt with the PSU, the modulator and the general layout for the complete assembly.—Editor.

THE previous article (September issue SHORT WAVE MAGAZINE) described the reasons for choosing to build a rig comprising one power pack and modulator to feed a number of switchable RF units of similar power output. This article goes on to describe the RF units, of which there are three incorporated in the transmitter, covering 160/80 metres, two metres and 10-40 metres respectively. In addition a four-metre unit has been built separately but draws power and modulation from this rig and uses its transmit/receive switching.

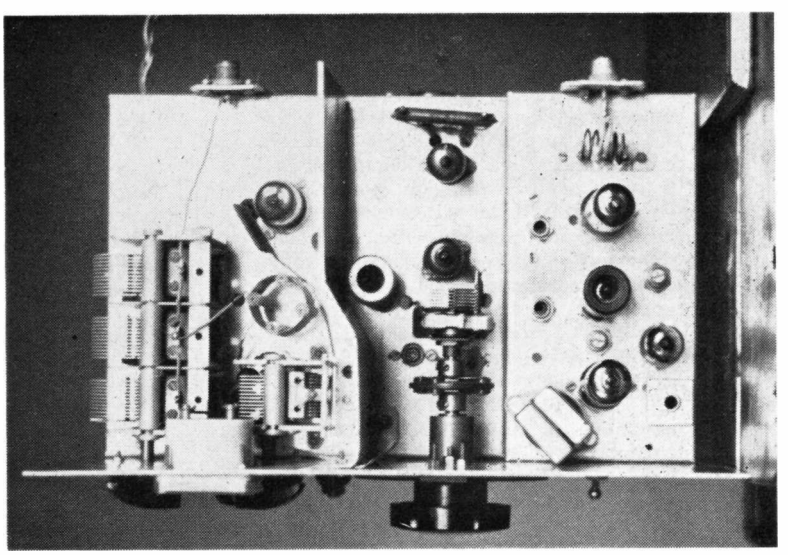
The LF band unit does not require detailed description as it is very similar to the G3OGR design, of which several variants have been described in the *Magazine*. However, it does include a key jack in the PA cathode, suitably bypassed for RF and with a 1 μF capacitor to reduce key clicks. The above-chassis partition between the VFO and later stages is not really needed for screening but is very handy for the unit to rest on when working on the under side. The under chassis screening is essential for stability, so that the VFO is not "pulled" by later stages when tuned or keyed. A can round the VFO coil helped to eliminate the last trace of pulling.

The two-metre Tx (Fig. 3, p.545) shares a box with the LF band rig. It started life as a copy of the 15-watt transmitter described in the *Radio Communication Handbook* but has in its time been adapted for both four and six metres with the valve line-up changed to EF184-EL91-5763, retaining the split-stator PA tuning to provide a ready means of neutralising. When a separate unit was built for four metres it was decided to put the two-metre Tx back to its former state but retaining the EF184 harmonic oscillator, which had proved to be much less critical in its choice of crystals than the original overtone oscillator. Space was found for an EL91 as first multiplier in place of the pentode section of the ECL80 at one side of the chassis. The revised circuit works well with all of the writer's 8 MHz crystals.

The HF Band Unit (pp.546-547)

Circuitry here is rather more unusual and will therefore be described in greater detail. It uses a mixer VFO. The tunable oscillator covers from 5 to 5·55 MHz, and its output is mixed with that of a switched crystal oscillator to give the required output frequency. For 28 MHz two crystals are provided so that 1100 kHz of the band can be covered. The advantage of a mixer VFO is that it makes it easy to obtain good frequency stability on 21 and 28 MHz. This can be a difficult and frustrating business with a straight VFO, and a listen to the CW portion of these two bands will reveal a number of transmissions which show excessive drift. By using a mixer VFO the problem is reduced to that of obtaining adequate stability on 5 MHz, a much easier task. The VFO circuit used is the Seiler, a modified Colpitts, which the writer has found very satisfactory. Nowadays there are several good VFO circuits to choose from, and it is worth remembering that careful selection of components and good constructional technique are at least as important as choice of circuit. Some points worth remembering are:

(1) Build the VFO in a rigid totally enclosed



General layout above chassis incorporating the 80/160m. Tx unit (left) and the two-metre transmitter.

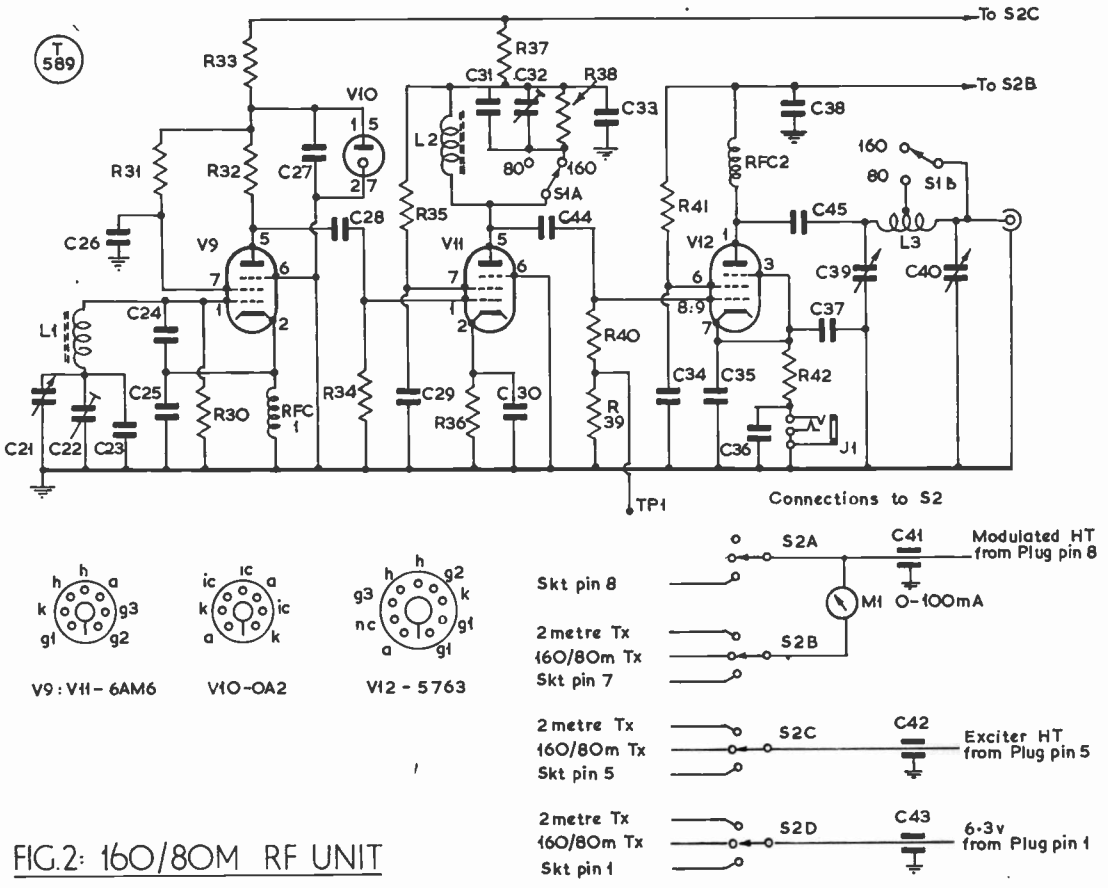


FIG.2: 160/80M RF UNIT

box,

(2) Use a tuning capacitor with bearings at front and rear, with a flexible coupler between it and the slow motion drive,

(3) Use good quality silver mica capacitors in the tuned circuit, with one temperature compensating ceramic if needed,

(4) Dust cores vary widely in their temperature coefficient—use an air-cored coil or be prepared to experiment with cores,

(5) A ceramic coil former will have the lowest expansion with temperature rise. Keep the wire really tight when winding the coil,

(6) A small inductance tuned with a large capacitance is generally better than the other way round; some published Clapp circuits use too high an L/C ratio,

(7) Run the oscillator at low power. Now that FET's are cheap consider using an FET rather than a valve with a buffer stage to amplify its output and provide isolation,

(8) Place the oscillator in a cool part of the layout; if necessary provide more ventilation,

(9) Secure all components rigidly and use stiff

Table of Values

Fig. 2. The 80-160m. RF Unit

C21	= 50 $\mu\mu$F, var.	C44	= 100 $\mu\mu$F
C22	= 50 $\mu\mu$F, trimmer	C45	= ·001 μF, 1 kV
C23	= 50 $\mu\mu$F, s/m	R30	= 68,000 ohms
C24, C25	= ·001 μF, s/m	R31, R35	= 33,000 ohms
C26, C27, C29, C33,		R32	= 27,000 ohms
		R33	= 6,800 ohms, 2w.
C26, C38	= ·01 μF	R34	= 100,000 ohms
C28	= 100 $\mu\mu$F	R36	= 68 ohms
C30	= ·001 μF	R37, R39	= 2,200 ohms
C31	= 80 $\mu\mu$F	R38	= 56,000 ohms
C32	= 3-30 $\mu\mu$F, trimmer	R40	= 22,000 ohms
		R41	= 5,600 ohms, 2w.
C34, C35	= ·002 μF	R42	= 100 ohms
C37	= 1 μF	V9, V11	= 6AM6 or EF91
Tp1,		V10	= OA2
C41, C42, C43	= ·001 μF, feed-thru	V12	= 5763

Notes: Chassis for this unit can be 7½ x 6¾ x 1¾in. The meter should read 0-100 mA. Switch S1 is 2-pole 3-way, and S2 4p. 3w. Jack should be single pole close-circuit.

TABLE OF COIL DATA

L1 = 80. turns 38g. close-wound on ¾in. former.
L2 = Layered winding in 30g. enam. on ¾in. Aladdin former, one layer full length and second layer one-third of length.
L3 = 60 turns on 1-in diameter former 2in. long, in 26g., tapped 35 turns from valve end (or *Codar* Qoil Type 43226).

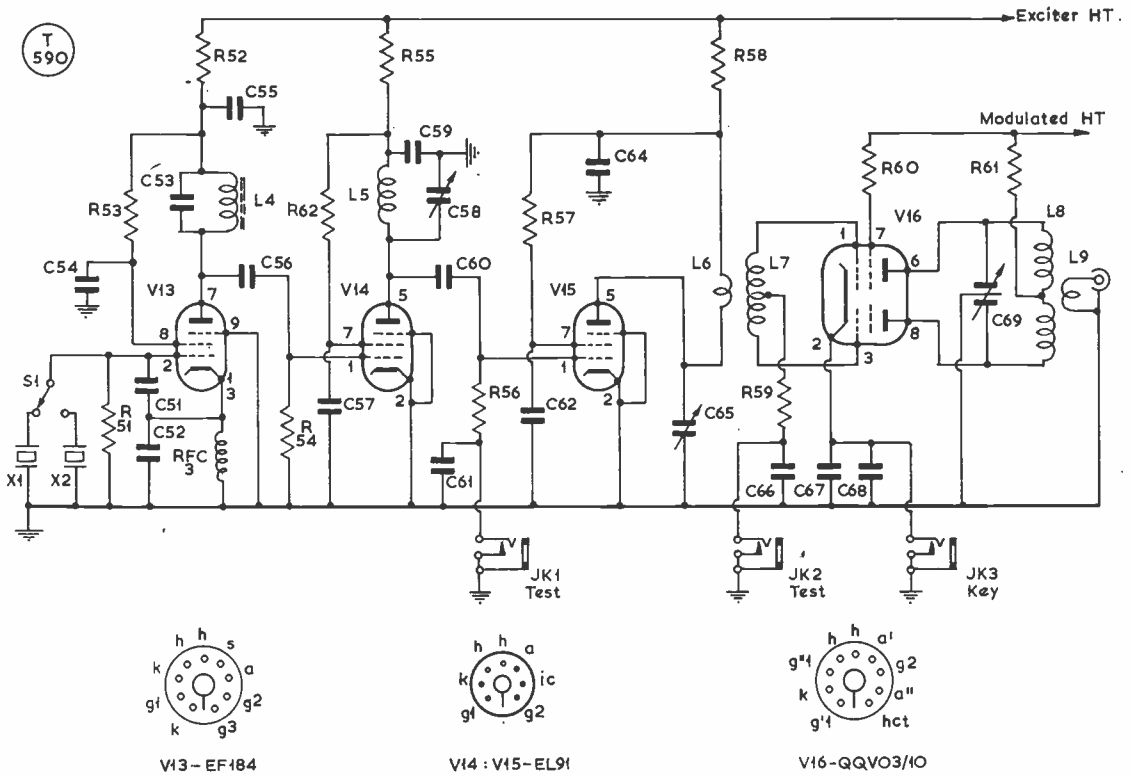


FIG. 3 TWO METRE RF UNIT

wire, 18g. recommended,

(10) Test for drift against a crystal oscillator before and after embodiment in the rig. Better still, check it against a standard frequency transmission.

It is possible to build a VFO for 160 or 80 metres without incorporating all these points, but it is better to include them, and they are all *necessary* for any VFO for the HF bands. It is far easier to build a good VFO than to endeavour to put right the faults in a poorly-constructed instrument.

The crystal oscillator is the familiar Colpitts "harmonic" circuit which gives good output on the fundamental and second or third harmonics and is stable and easy to get going. Its output and that from the VFO are mixed in a twin-triode circuit which partly balances out the two input frequencies. Either a 12AU7 or a 12AT7 is suitable.

It would be very easy to include 80m. in this rig if desired as it represents the difference between the VFO frequency range and the 9 MHz crystal used to give 14 MHz coverage.

The "wide band couplers" used between mixer, driver and PA give sufficient bandwidth to cover the appropriate band but cut off quite sharply outside it. For ten metres it proved necessary to use separate couplers between driver and PA for each segment covered—this was not required between mixer and driver.

Table of Values

Fig. 3. The Two-Metre RF Unit

C51	= 25 $\mu\mu$F	R53	= 18,000 ohms
C52	= 100 $\mu\mu$F	R54, R56	= 47,000 ohms
C53	= 10 $\mu\mu$F	R55	= 1,500 ohms
C54, C55	= ·01 μF	R57	= 33,000 ohms
C56, C60	= 47 $\mu\mu$F	R58	= 2,200 ohms
C57, C59,		R59	= 22,000 ohms
C61, C62,		R60	= 27,000 ohms, ½w.
C64, C66,		R61	= 39 ohms
C67, C68	= ·001 μF	R62	= 39,000 ohms
C58	= 25 $\mu\mu$F, var.	RFC1	= 2·5 mH
C65	= 8 $\mu\mu$F, var.	X1, X2	= 8 MHz xtals for appropriate zone
C69	= 10 + 10 $\mu\mu$F split stator or butterfly	V13	= EF184
		V14,	
R51	= 100,000 ohms	V15	= EL91
R52	= 10,000 ohms, ½w.	V16	= QQV03-1[0]

TABLE OF COIL DATA

L4 = 15 turns 24g. enam. close-wound on 0·2in. slugged former in can.
L5 = Six turns 20g., slightly spaced at ¼in. diameter.
L6 = Two turns 20g., spaced wire diameter, to 0·4in.
L7 = Four turns 20g. 0·4in. dia., centre tapped, with spacing to accommodate L6.
L8 = Four turns 18g. ¼in. dia. with gap for L9.
L9 = Two turns 20g. p.v.c., about ¼in. diameter.

Wide-band couplers not "live" may resonate at a frequency within the band in use. In the writer's case the driver anode circuit for 21 MHz resonated at 28 MHz when not in circuit and "sucked out" about a third of the

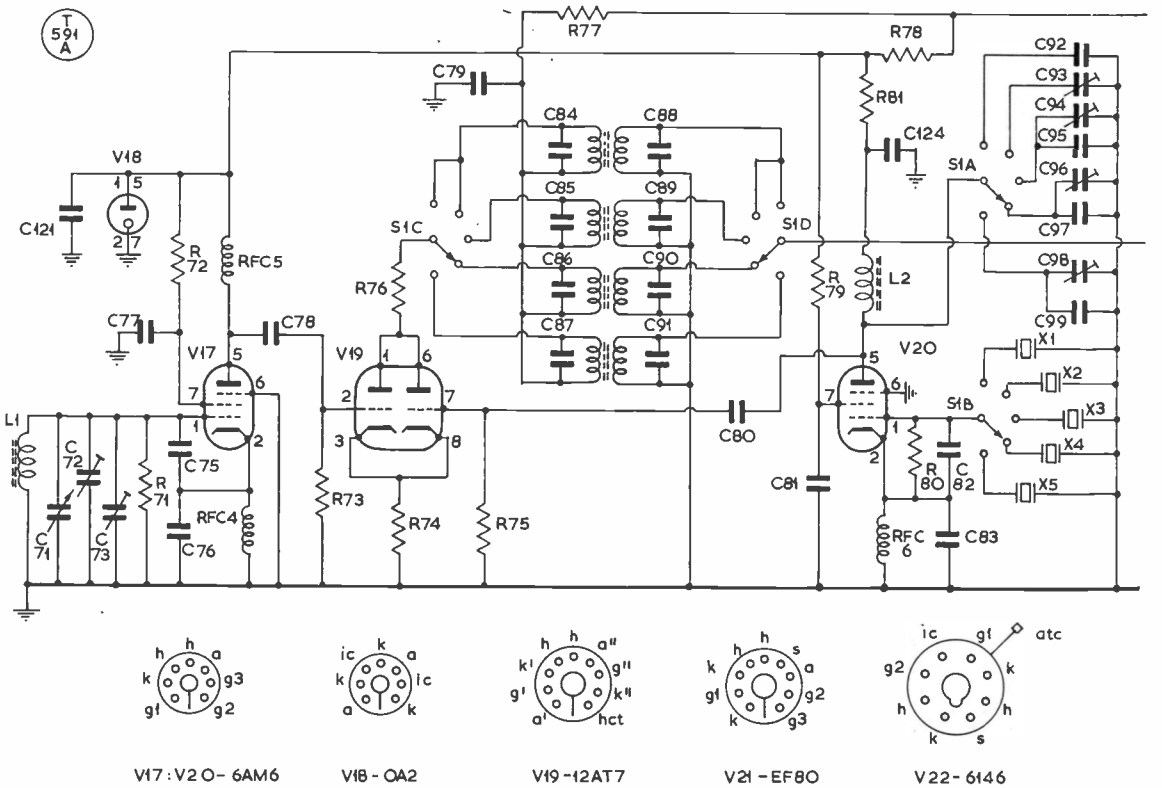


FIG. 4 10-40M TRANSMITTER WITH MIXER VFO

Table of Values

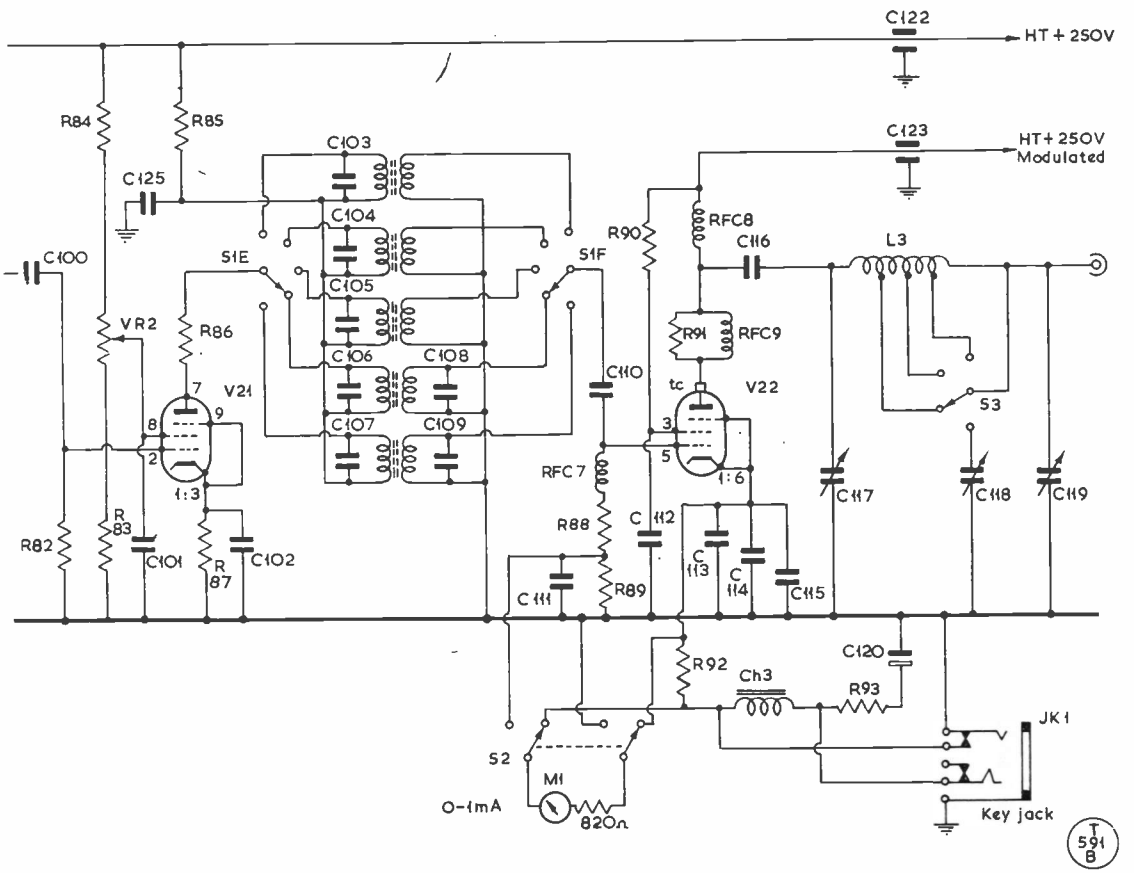
Fig. 4. RF Unit to cover 10-40 Metres

C71 = 75 μμF, var.
C72 = 25 μμF, neg. temp. co-efficient
C73, C93, C94 = 25 μμF trimmer
C74 = 560 μμF, mica
C75, C76 = 680 μμF, s/m
C77, C79, C81, C101, C102, C111, C121 = ·01 μF
C78, C80, C99, C100, C110 = 100 μμF
C82 = 25 μμF, s/m
C83 = 100 μμF, s/m
C84, C88, C103, C104 = 6·8 μμF
C85, C86, C87, C89, C90, C91, C105, C106, C107, C109 = 10 μμF
C92 = 20 μμF
C95 = 47 μμF
C96, C98 = 3-30 μμF
C97 = 220 μμF
C112, C113, C114, C115, C116 = ·001 μF
C117 = 150 μμF, wide-spaced var.
C118, C119 = 350 + 350 μμF, var.
C120 + 2 μF, 50v.
C122, C123 = ·001 μF, 1 kV feed-thru
C124, C125 = ·01 μF
R71, R77, R84 = 4,700 ohms
R72 = 33,000 ohms
R73, R75 = 470,000 ohms
R74, R81, R85 = 1000 ohms
R76 = 47 ohms
R78 = 5,600 ohms, 1w.
R79 = 10,000 ohms
R80 = 100,000 ohms
R82, R88 = 22,000 ohms
R83 = 47,000 ohms
R86 = 56 ohms
R87, R89 = 220 ohms
R90 = 15,000 ohms, 1w.
R91 = 100 ohms, 1w.
R92 = 8 ohms, high-stab.
R93 = 100 ohms, high-stab.
R94 = 840 ohms, high-stab.
VR2 = 50K potentiometer
X1 = 7833, or 11750 kHz
X2 = 7666, or 11500 kHz
X3 = 16000, or 8000 kHz
X4 = 9000 kHz
X5 = 6250, or 12500 kHz

Notes: Crystals should be FT-243, HC6-U or other small-mounting types. Switch S1 is 5-wafer, each 2-pole 5-way; S2 is 2p. 3w., centre posn. not used; S3 is single pole 4-way ceramic. Valves are: V17, V20, EF91; V18, OA2; V19, 12AU7 or 12AT7; V21, 6BW7; V22, 6146— their equivalents would be equally suitable. The main chassis is 8 x 6¾ x 2in., the VFO box 4 x 4 x 3in., and the VFO sub-chassis 6¾ x 1 x 1 inch. For S1 wiring study circuit diagram carefully, because the spare (unused) section can be wired to short out-of-band couplers (see text). Switch S3 should be a good heavy-duty RF type.

drive at 28 MHz! If this occurs use a spare switch wafer to short out the offending coil.

As built the transmitter runs 18 watts PA input with 250 volts HT. It could be run at considerably higher power but would require a larger driver valve than the present EF80, which gives only 1½ mA on 28 MHz. This is plenty for the PA when running 18 watts, but would need to be doubled if 50 watts were required. If a more



W B C DATA

NOTE: Windings associated with C84-C88 to C107-C109 are the wide-band couplers referred to in the text. They are numbered WBC1 (C84-C85) to WBC4 (C87-C91) and WBC5 (C103) to WBC9 (C107-C109). Values for the windings are given in the Table on p.548.

10 to 40 Metre RF Unit

Coil Details

L1 — VFO: 20 turns 28g. on ¼in. polystyrene former cemented with Denfix cement; iron dust core (*Osmor* in the prototype).
L2 — Xtal Oscillator: 13 turns 24g. enamelled on 0·3in. dia. former with dust core and can.
L3 — PA: *Codar pi*-Net 75 Watt with 80-metre section removed. *Or* home-made equivalent as follows: 18 turns 18g. on 1¼in. former, spaced one wire diameter, tapped as follows counting from anode end—10 Metres, 4 turns; 15 Metres, 6 turns; 20 Metres, 10 turns.
RF Chokes: RFC1, RFC3, 2·5 mH; RFC2, 1·25 mH; RFC4, RFC7, 5 mH; RFC5, 1·5 mH, rated 250 mA; RFC6, 7 turns 22g. enam. close-wound on 100-ohm 1w. resistor; and RFC8, transmitting choke for all-band *pi*-tank. So far as possible, these chokes should be of dissimilar make to avoid mutual resonances.

powerful driver were fitted some of the wide-band couplers might require modification to resonate with the different (probably greater) inter-electrode capacitances of the valve substituted.

Like the Top Band and VHF units, this transmitter uses PA cathode keying, which is perfectly satisfactory for low power use for all frequencies up to and including the two-metre band provided that the cathode is adequately grounded to RF by ceramic capacitors with really short leads. With PA cathode keying there is no need for fixed protective bias or a clamper. This transmitter includes an LCR click filter which is arranged so that it is automatically short-circuited at the keying jack when the key is unplugged.

Alignment

There is virtually nothing to it when setting up the Top Band/80m. unit. Adjust the VFO to cover 1·75 to 2 MHz. Wtith the wave-change switch set to 80 metres and the VFO at 1875 kHz peak the driver anode coil for maximum grid current at 3750 kHz. Then switch to 160m. and do the same for 1900 kHz. Tune the PA by the usual routine of "dip and draw". PA grid current should be at least 1½ mA on both ranges.

When setting up the two-metre unit one must take care that one picks the right harmonic in each multiplier. This is particularly important when multiplying all the way up from 8 MHz, and the writer has known of one instance where a transmitter was set up on 8—32—64—128 MHz instead of 8—24—72—144 MHz.! This should not occur with this design if the coil winding

10 to 40 Metre RF Unit

Wide-Band Coupler Table (see p.547)

Band	Reference Coupler	Wire gauge SWG	Primary Turns	Primary Capacitance pF	Secondary Turns	Secondary Capitance pF	Hot or cold ends adjacent
10 M.	WBC 1	28	14	6·8	14	—	*hot*
	WBC 5 & 6	28	14	6·8	12	—	*hot*
15 M.	WBC 2	28	18	10	18	10	*cold*
	WBC 7	28	20	6·8	20	—	*hot*
20 M.	WBC 3	32	30	10	30	10	*cold*
	WBC 8	32	30	10	27	10	*cold*
40 M.	WBC 4	38	57	10	57	10	*cold*
	WBC 9	38	57	10	57	10	*cold*

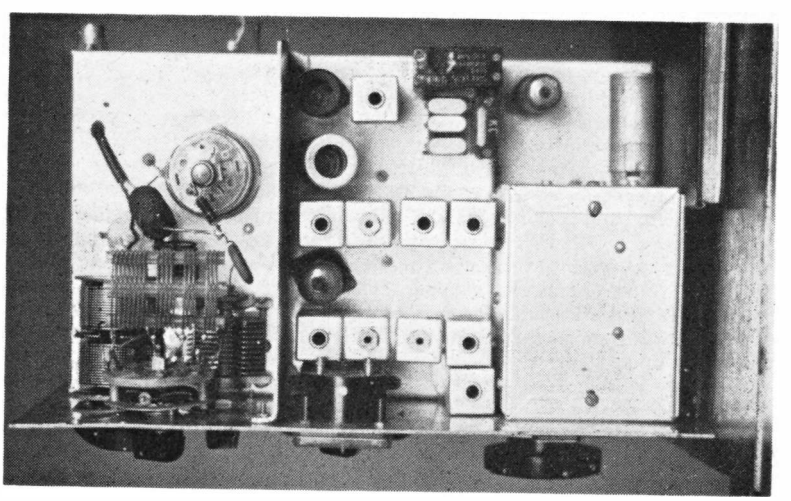
All couplers on 0·3in. diameter 2½in. long formers enclosed in cans. Short cores used throughout. Spacing between windings ⅛in. in all cases. A small improvement could probably be made by winding WBC2 as for WBC7 but with a 5 pF capacitor across the secondary. The primary is the lower winding in all cases.

Use of these wide-band couplers with valves other than those specified may require different values of capacitor.

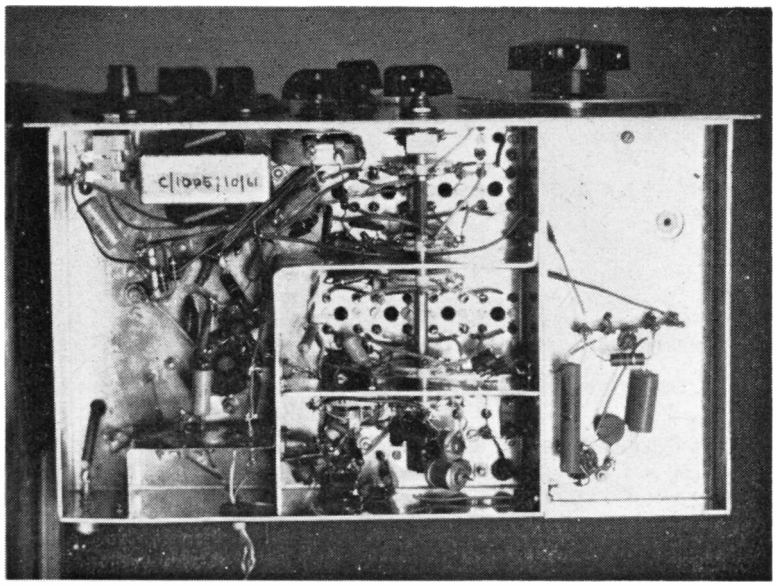
instructions are followed exactly. The writer obtained 1·1 mA grid drive to the final multiplier and 1·5 mA to the PA. The first two tuned circuits simply require peaking for maximum output on the correct frequency with an absorption wavemeter or RF40. The driver anode and PA grid circuits will require positioning for optimum coupling as indicated by maximum PA grid current. This should be done initially with PA HT off but will require adjustment with the PA HT on and the PA tuned and on load. To avoid damage HT should not be applied to the later valves in this transmitter until the preceding stages are functioning correctly.

Aligning the HF band unit is rather more complicated. A general-coverage receiver and absorption wavemeter are needed and a GDO is highly desirable to enable the job to be done quickly. First, set the VFO to cover the right range, adjusting the slug at the LF end and the trimmer at the HF end of the tuning range. Then set up the crystal oscillator. Switch to the highest frequency range and adjust the slug in L4 for maximum output on 23·5 MHz. Then in turn adjust the trimmers on the other ranges of the oscillator anode circuit for maximum. If one of the lower frequency ranges does not peak within the coverage of the trimmer it may be necessary to alter the fixed capacitance for that range.

If you have a GDO the next step is to set each winding of each wide-band coupler to the centre of the band covered. This should be done with the valves plugged



The transmitter for 10-40 metres in the G3TWG assembly, built as a separate unit—see text.



Under-chassis construction of the 10-40m. Tx. The little compartment lower left is for mounting the feed-through capacitors.

in but HT off and the bandswitch set to the range being aligned. If you have no GDO set the VFO to correspond with mid-band, *e.g.*, 5·175 MHz for 14·175 MHz. Listen on 14·175 and peak the cores for maximum beat in the receiver. (Aerial off Rx.) Peak the PA grid circuit for maximum grid current. There should be no problems provided that the WBC's follow the instructions in the table precisely. But if you've used a different gauge of wire and cannot find a peak, you'll have to beg or borrow a GDO. Peak the PA grid winding initially with no HT on the PA, *i.e.*, with the transmit/receive switch to "net". Quickly re-peak with PA HT on and make final adjustment with the PA tuned and loaded. As the PA is not neutralised, tuning the PA output will have an effect on grid current, but not so great as to make the stage unstable. Grid current should be about 1½ mA on 10 metres with the drive control at full, increasing to over double that value on 40 metres. For the lower frequencies the PA drive control should be progressively retarded to keep the drive at 1½ mA. It will be noticed that plugging in the key produces a slight drop in both grid and anode current. This is due to the resistance of the click filter choke. Normal CW operating conditions are as follows with 250 volts HT: Anode current 72 mA, screen current 8 mA and grid current 1·3 mA.

The three RF units described in this article give some idea of the range of equipment that can be used with the one power supply, modulator and switching arrangements. There are many other possible combinations. Some people may want to include 4 metres, or the dyed-in-the-wool VHF man may go for 4 metres, 2 metres and 70 cm. If one gets the urge for high power, a linear amplifier could be built for the bands of one's choice. Whatever selection one may make, the scheme will allow progress in easy stages as one's time or financial resources permit.

TRANSMIT/RECEIVE/NET SWITCH CONNECTIONS

Switch Wafer	Connection from	Position 1 "Net"	Position 2 "Receive"	Position 3 "Transmit"
Front	Tx Power Pack	Tx Exciter stages	—	Tx Exciter stages
	Tx Power Pack	—	—	S1B and Modulation Transformer secondary
	Mod. Power Pack	—	—	Mod. Transformer Primary
	Spare	—	—	—
Middle	Ae 1	—	Rx 1	Tx 1
	Rx 1	—	—	Chassis
	Rx muting in	Rx muting out	Rx muting out	—
	Spare	—	—	—
Rear	Ae 2	—	Rx 2	Tx 2
	Rx 2	—	—	Chassis
	Ae 3	—	Rx 3	Tx 3
	Rx 3	—	—	Chassis

Plug and Socket Connections

The prototype used Painton Multicon 8-pin sockets on the rear of the two lower units with plugs connected to the unit above. Connections as follows:
(1) 6·3 volts live, (2) Earth, (3) Rx mute in (lower plug only), (4) Rx mute out (lower plug only), (5) HT+ for exciter stages, (6) Spare, (7) PA HT+ (via meter) top plug only if needed for additional RF units, (8) PA HT+.

TRANSISTOR CLASS-A AUDIO AMPLIFIER

CAPABLE OF 15-20 WATTS OUTPUT—BUILT FROM STANDARD PARTS

This article is from a paper published originally by Mullard, Ltd., in one of their recent "Technical Communications", which over the years have disseminated a great deal of useful practical information.—Editor.

THIS high-quality audio amplifier is designed to operate in Class-A into an 8-ohm load, giving an output power of 15 watts. With a 4-ohm load, however, the circuit will operate in Class-AB to give 20w. output power.

The transistors are all silicon and, except for the output pair, are plastic-encapsulated. The output transistors, a matched pair of BD181 devices, are driven by BC338's which are preceded by a phase-splitting stage, using two BC147 transistors, and a pre-amplifier stage, a BC158.

The total harmonic distortion is less than 0·1% at full output. The amplifier will withstand normal overdrive conditions and does not require protection against short-circuit situations.

(The pre-amplifier described in *Mullard Technical Communications* No. 107, September 1970, may be used with this amplifier.)

Pre-amplifier Stage Tr1

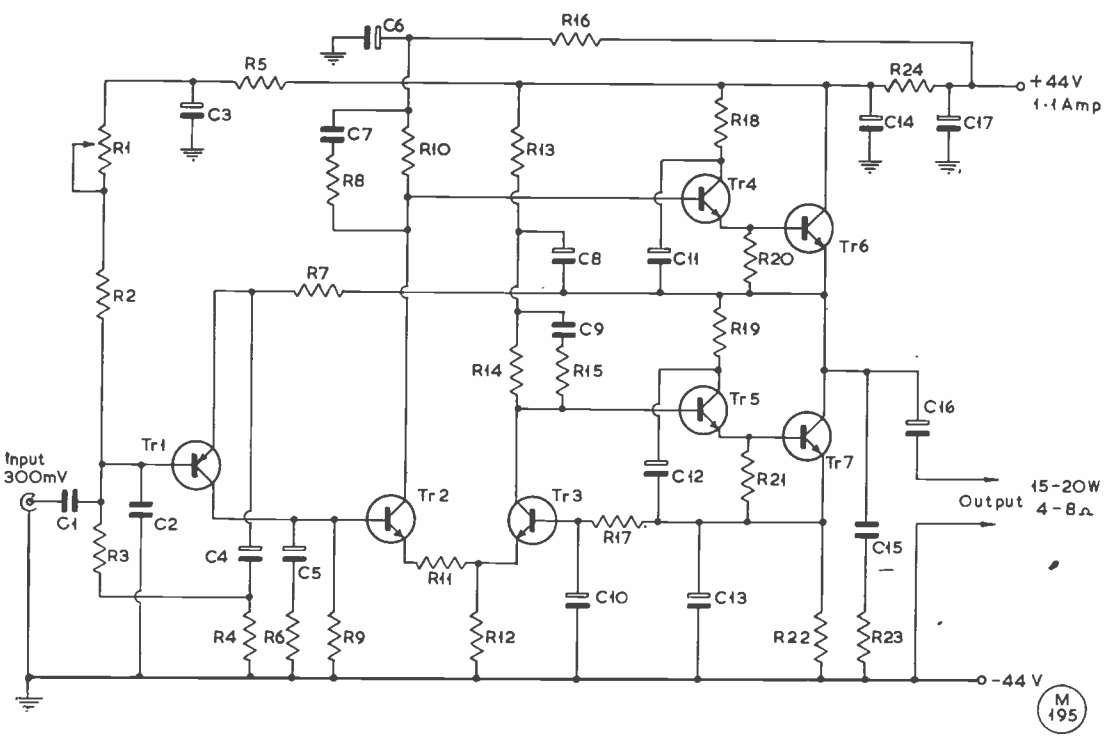
A high-gain transistor is used in this stage to allow high values of AC and DC feedback to be applied, giving an

Table of Values

Circuit of the Class-A Amplifier

C1, C15	= 0·22 μF, metallised film	R2	= 150,000 ohms
C2	= ·0068 μF, polyester	R3	= 220,000 ohms
C3	= 50 μF, 40v. elect.	R4	= 68,000 ohms
C4	= 250 μF, 25v. elect.	R5	= 56,000 ohms
C5	= ·0033 μF. polyester	R6, R16	= 390 ohms
C6	= 160 μF, 40v. elect.	R7, R13	= 2,200 ohms
C7, C9	= ·001 μF	R8, R15	= 270 ohms
C8	= 200 μF, 6·4v. elect.	R9	= 10,000 ohms
C10	= 320 μF, 6·4v. elect.	R10, R14	= 2,700 ohms
C11, C12	= 160 μF, 25v. elect.	R11, R20,	
C13	= 2,200 μF, 6·4v. elect.	R21	= 150 ohms
C14	= 2,200 μF, 40v. elect.	R12	= 220 ohms
C16	= 1,000 μF, 40v. elect.	R17	= 100 ohms
C17	= 2,200 μF, 63v. elect.	R18, R19	= 330 ohms
R1	= 100K pot'meter, pre-set	R22	= 3·3 ohms, 6w.
		R23	= 2·2 ohms
		R24	= 4·7 ohms, 12w.
		Tr1	= BC158
		Tr2, Tr3	= BC147
		Tr4, Tr5	= BC338
		Tr6, Tr7	= BD181, matched pair

Notes: All components are standard *Mullard* types. Resistor ratings ¼th watt except as stated. For optimum performance the specified transistors should be used. Tolerances of +/— 10% are acceptable in other components.



input impedance of 150K. This stage also provides stabilisation of the midpoint voltage, which is set by adjustment of potentiometer R1. The transistor collector current is 500 μA.

Phase-Splitting Stage Tr2 and Tr3

Phase splitting is achieved by transistors Tr2 and Tr3 connected in a long-tail-pair configuration, and local feedback is applied by resistor R11. A supply voltage higher than that applied to the output stages is necessary to increase the voltage swing available.

Driver and Output Stages Tr4 to Tr7

The driver transistors are bootstrapped to reduce the dissipation, especially under overdrive and short-circuit conditions. The output transistors are matched devices, designed for high power dissipation at a supply voltage not often used in transistor applications. Resistors R20, R21, ensure that Tr4-Tr7 operate within their V*cer* ratings. The midpoint voltage is 21·2v. and the current drawn by the output transistors Tr6, Tr7 is 970 mA. The total current consumption of the amplifier as shown in the diagram is 1·1 amps. under normal loading (say, 50 watts), the short-circuit load at R23 being 1·6 amps.

Supply voltage for full power output should be 44v. The input impedance at C1 is 150K, and the input sensitivity for 15w. output into an 8-ohm load is 360 mV, or 295 mV for 20w. into a 4-ohm load.

With its exceptionally low harmonic distortion, this amplifier would make an excellent modulator for any amateur-band Tx running about 50 watts DC input.

Heatsinks

The output transistors Tr6 and Tr7 require a heatsink of thermal resistance 3·35° C/W for each transistor. (This value allows for a supply voltage 10% above nominal and may be increased if a regulated power supply is used.) The remaining transistors do not require heatsinks.

THE G3BEW CLUB PROJECT

DESIGN AND CONSTRUCTION OF PORTABLE EQUIPMENT

J. R. HEY (G3TDZ)

This article will be of particular interest to all Club groups looking for a new outlet for members' energies and interests. It shows what can be done—and how satisfying results can be—when the decision for a constructional project is taken and pushed through to finality.
—Editor.

JOINT club construction projects have the unfortunate habit of dragging on for *years*, their completion being frustrated by members forgetting to bring along vital bits, together with a long summer recess producing the discontinuity guaranteed to curb active interest. A simple Top Band Tx took three *years* to complete and is rarely used due to no one having a receiver light enough to carry to Club meetings!

For two seasons it has been agreed that portable equipment should be constructed so that field events could take place—especially at weekends and during the summer break—to keep the Club together and promote further interest.

Club nets have not enjoyed much success as there has rarely been more than two members with equipment in the same band. It was obvious also that the permanent installations of most amateurs are all too permanent, being heavy and not easily moved around.

The proposed equipment has to be truly portable as only a few have cars; 12v. operation is ideal as dry batteries, rechargeable cells and vehicle batteries may all be used and a mains power supply can easily be fitted for indoor use.

Choice of band was dictated by the hope that SWL's in the area would hear our callsign and with other amateurs be induced to take an interest in the Club. Although fascinating the DX bands are unsuitable, leaving 80/160m. or VHF. The G8/3 upsurge was the influencing factor and two metres chosen for the project.

It was decided that instead of only one unit being built, a few could be put together by separate individuals using the Club as a pool of information.

Making a Start

Talks on receiver design and transmitter circuitry were held at regular meetings for a number of weeks. Discussions over size, shape, switching circuits, availability of components and many other problems broke out spontaneously during these talks.

Each week as an extra, the Club callsign G3BEW was put on the air using mains equipment hastily thrown together by two of the members, with a four-element beam constructed on the spot in the Clubroom. The idea was to whet the appetite of the more tired members; indeed, some of the fixed LF and HF operators showed surprise at the liveliness of the 2m. band. We always got a contact or two to enter in the log, with encouraging signal reports.

A few showed willing to make a start, with three members getting to work at once. At the regular meetings circuit problems were thrashed out and sometimes just argued over on the blackboard.

Inevitably total agreement could never be realised so two different approaches were adopted by the early constructors. Dual conversion using ceramic filters at 465 kHz was one whilst single conversion with a 10·7 MHz IF was the other, crystal filters being favoured.

On the Tx side, an output of two watts was considered the most one dare hope to maintain from dry batteries for any sensibly sustained period. Both VFO and crystal circuits were explored with only one intrepid member going VFO with a phase-lock loop. The remainder decided from the start to go for a 72 MHz crystal, not wishing for a repetition of earlier experiences when angry neighbours came pounding on the door about TVI.

A circuit must be seen to work before the less experienced constructors are persuaded to have a go—also, amateur circuit design is decided as much by component

availability as by technical considerations.

The younger end whilst expressing keen interest could hardly be expected to turn out a project of this complexity. with their limited experience and pocket. A high performance super-regen. costing only shillings was more to their liking and indeed proved popular; at least as SWL's they could listen to what the rest were up to.

It is one thing to scribble circuits on the blackboard but another to make them work. Birds' nest lashups of each part of the circuit were tried one by one, then linked together. Snags were again discussed at the Wednesday meetings, members turning up with little boxes and even paper bags containing their prototype circuits. Size and battery consumption became the big problems.

Development Progresses

As soon as different sections showed signs of being workable, printed circuit layouts were planned and copied.

Coil winding was demonstrated on the home-built winder to show how easy it was. It seems many amateurs actually buy coils ready made as they distrust their own efforts. This was shown to be both uneconomic and pointless as 5 turns of wire, for example, are all the same whether wound by hand or in some remote factory.

Not everyone has adequate facilities, therefore allocation of expertise and equipment was a "must." One might have chassis punches whilst another might be good at circuit board etching. "There's twenty coils in this thing so you, you and you get winding."

Once actual chassis construction commenced, we felt it necessary to photograph the parts and circuit boards for the benefit of those who came after.

The slowest job was ordering and awaiting parts to arrive. Seemingly commonplace items were the most difficult to obtain. Aluminium stockists were all closed on Saturdays and not every tool shop keeps No. 60 drills for the printed boards.

Of course the exhibitionists raced ahead, which meant they hit the snags the hardest. The slower chaps took advantage of the latest gen as it was unearthed. One, while still at the birds' nest stage, found his best new IC had gone queer; another saw his cunning solid-state aerial switch go up in a cloud of smoke when faced with a few watts of RF.

The first receiver to emerge just went *put-put-put*, and another howled like a banshee. A neat Tx gave plenty of output, with or without the crystal, all over every band.

One by one all the problems were solved; tins of paint and aerosols replacing the soldering irons. Tuning scales were covered with an impressive display of *Letraset* figures.

Great Day Arrives

The first working model was proudly shown off to the gathered onlookers. "Wait until mine is ready next week—well maybe the week after".

Eventually two and then three fully working models were displayed for all to see. Last minute modifications diminished the newness of some but a bit more paint would soon put that right.

Someone suggested bringing in the aerial. This is one of our less impressive monuments and falls to pieces each time it is tilted to pass through the door. However, after the traditional ceremony of slotting back the elements into the badly fitting saddles on the wooden boom, the contraption was pointed West and the coax plugged into the first unit.

The excited cheering and jumping up and down by the flock as the "S" meter hit the backstop prevented anyone from copying the callsign of the obviously local station pounding in. At last he signed with the other station who was 90° to our beam heading; with impressive optimism the switch was pushed over. A short snappy call followed by an awful silence. Another not quite so snappy call. As our own callsign chattered out of that tiny 2½in. speaker a further burst of wild enthusiasm drowned our report and his callsign. It was another local Club (there are five in Leeds) who gave us our first battery-powered contact. Although perhaps only two or three miles away, the very fair report produced an atmosphere which was positively euphoric.

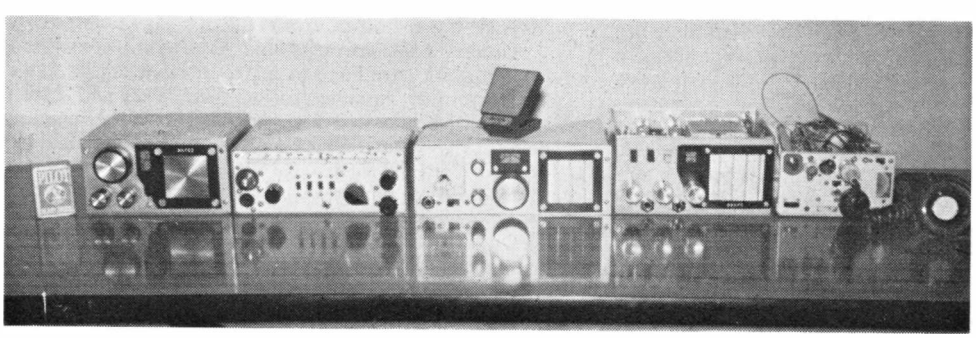
The fun having died down, more serious testing of the other units went ahead and a field test was planned.

That unsightly aerial had to go; one could hardly fly the Club flag from a dubious contraption like that. A much lighter five-element was cadged and the first weekend truly-portable expedition decided upon. A high point near to main roads and bus routes was chosen with general agreement; would it rain or snow? Three completed units were taken to the site, as these again had to be tried on their own whip aerials as well as on the beam.

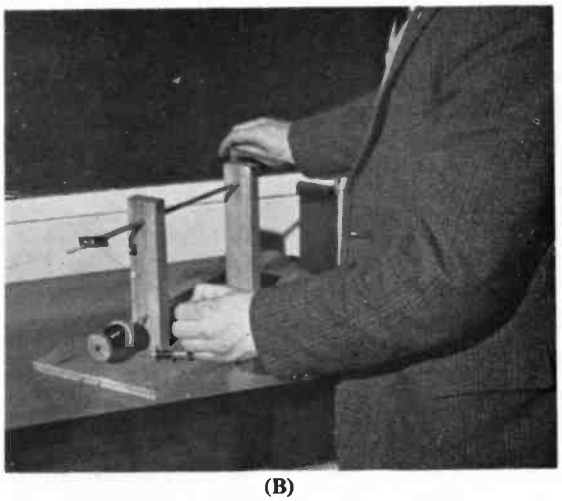
We are proud to say the results were as sunny as the weather with contacts from many points of the compass.

Conclusions

As more members have now been encouraged to reach for their soldering irons, a new project is already



(A)



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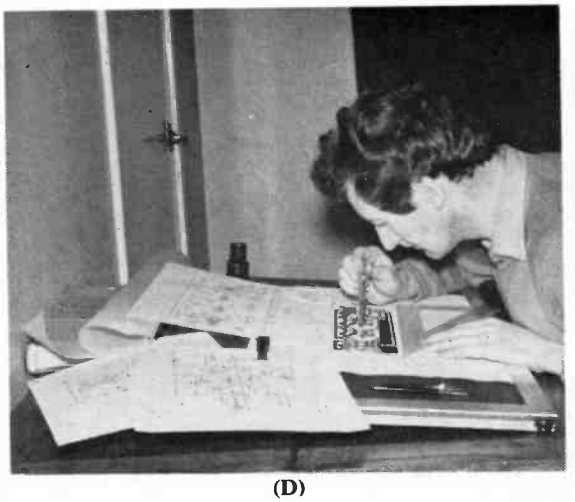
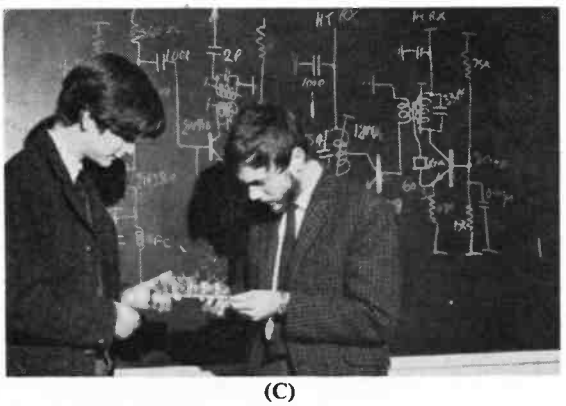


(D)



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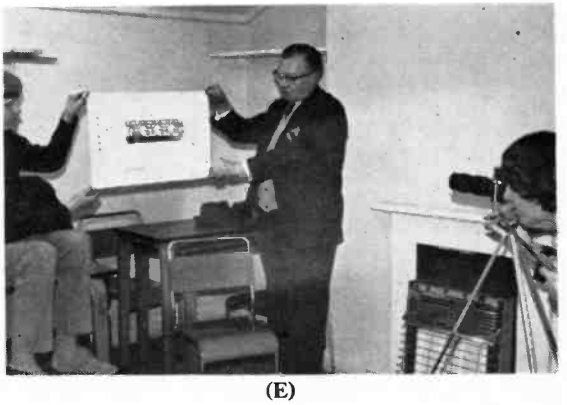

(E)

(A) Five of the two-metre units, as completed by Leeds Radio Society members. (B) The home-built coil winder, which produced a large number of inductances for the project. (C) Discussing a receiver module at one of the working meetings—circuitry on blackboard. (D) Planning the circuit board for the Leeds club project. (E) Hold it steady! The completed prototype printed circuit board being photographed for final reproduction. All the work centred on the construction of two-metre portable gear, designed by the group and carried out entirely from within their own resources.

being considered.

It is hoped the actual circuits will be published in due course, with constructional notes provided for the benefit of those wishing to follow our lead. We do not claim originality in our circuitry but hope to show how a practical approach can be copied and improved upon by the sufficiently interested. Our blundering and eventual success may stir other groups into similar ventures. May they obtain the same satisfaction we have shared, helping to enrich the "build-it-yourself" belief of true amateurs. When you hear or work G3BEW on two metres you will know it is all our own Club effort.

MCC—"MAGAZINE CLUB CONTEST"

This annual Top Band event, the 26th in our series, no less, takes place over the weekend November 6/7. Though it is essentially a Club contest, individual stations (non-entrants) caring to take part may be worked to add to the score, as Rule 4. Full details covering this year's MCC appeared in the October issue of SHORT WAVE MAGAZINE—Rules on p.497, with MCC Identification Codes and scoring procedures on pp.500-501. Any Top Band CW operator who fancies himself on the key is invited to join in and see how many Clubs he can work. Check logs will also be greatly appreciated ("MCC", SHORT WAVE MAGAZINE, BUCKINGHAM).

VHF BANDS

A. H. DORMER, G3DAH

SEPTEMBER saw a spasmodic but reasonable amount of DX activity after the VHF/NFD peak. One outstanding piece of DX for example, which unfortunately did not produce a two-way QSO, was that reported by G6CW in Nottingham who heard 9A1CT in San Marino at 1215z on September 5, calling CQ on CW near the two-metre SSB calling channel. The path to and from GM was particularly good between September 6 and 8th, with GB3ANG at 45 dB above noise during the evenings, stronger even than the Durham beacon in the South, although, apart from GM3BRM/P, few Scottish stations were heard South of the Midlands. This North/South path continued to produce DX results for the next week or so, with the night of 17th/18th favourable for 200-mile contacts with some ease. LA, SM and OZ were all being worked from the Midlands on September 7, but were poor copy in the South. G2DSP/P, in Rutland for the weekend September 17/19, seemed to be putting his 5-watt signal over a fair distance on all headings, and the Northern French stations were also coming in well at that time.

The French balloon test, *Sonde 4*, was launched on Sunday morning, September 19. For those who may have looked for it at the scheduled launch time without result, it may be noted that the ascent was delayed nearly two hours by a broken cable! French speakers may have got wind of this if they were listening on 145·7 MHz, where F1AGY in Lille was relaying up-to-date information from F1HL/P in Nancy, where the launch was being made. The transponder—the up-frequency was on 70 cm. and the down-frequency on 2m.—was designed by F1SA, who was heard making good use of it himself. Conditions were not very good at this time, and it was only those stations almost vertically below the balloon who seemed to be completing many DX contacts *via* the device, and of those logged here, most were known to be operating on high power. One British station who appeared to be having himself a ball was G3LQR in Woodbridge, Suffolk, but then he doesn't run a transistor in the PA either! Last signals were heard at about 1720z. In conversation with French stations after the event, it was suggested that there should be a broadcast in English to keep us in touch with progress, and a promise was made to examine this possibility.

The evening of September 19 produced some good EU/DX on both 2m. and 70 cm., mostly to the East. ON4HN was heard at 5 & 9 contacting British stations up into the Midlands, and some of the PAØ on 70 cm. were like locals in the South. Incidentally, ON4HN really is striving to get the last milliwatt out of his Tx. You may have noticed that he has a long change-over between transmissions, and this is due to the fact that he found that the antenna change-over relay was costing him half-a-watt, so he has removed it and now performs the operation manually! The lift persisted Eastwards through to September 22 on both bands, with Germany, DK6KX in particular, being worked on 70 cm. at good strength on the last night.

And so into October, and at last the long looked-for Autumnal lift. A study of the contemporary weather and pressure charts showed the build-up of the high pressure system and its slow progress to the South-East, and this brought good propagation to Scandinavia on October 1, but it was the steady anti-cyclonic conditions, with a "high" centred over France and Germany, which really produced the goods for days on end from October 5 onwards. Contacts were made between the U.K. and LA, SM, OZ, PA, ON, F, DL, OK, OE, DM, LX, HB9 and SL on 2m., and although not quite such spectacular results were achieved on 70 cm., the nearer Continentals, OZ9FR and OZ9SW, and GC2FZC in Guernsey, were all worked from this country at good signal strengths. G3COJ and others had a QSO with HB9AMH on October 8. OZ9IGY on 145·976 MHz and DLØPR on 145·971 MHz near the Danish border were fantastically strong in the early hours of October 7, and as GB3DM and PAØDSW were also operating around these frequencies, there was some unusual QRM! Inter-G QSO's at 200+ miles were commonplace, and one expects some fairly hefty claims for new counties and countries worked for the Annual VHF Tables!

By October 8, the situation had reverted to normal as the centre moved away, and in spite of some highish temperatures for the time of the year in this country, and the appearance of fog at times, comparatively short-haul contacts are once again the order of the day.

VHF Repeaters

It was announced at the Scottish VHF Convention recently that consideration was being given to the establishment of a series of VHF repeater stations, on the lines of those in the U.S.A., Canada and certain Continental countries.

The decision on the form which such a network should take will obviously be the subject of much discussion, and it would seem unlikely that there will be any hardware in actual operation for a year or so. Questions to be resolved must include the choice of modulation system—AM or FM, restricted or general access, siting, frequency—single band or crossband, radiation polarity, and the type of user, whether mobiles only or free-for-all. Tom Douglas, G3BA, had some experience with the operation of these devices when he was in LX recently, successfully completing QSO's *via* the Aachen repeater, and from all accounts this was a very effective way of making DX con-

contacts, but a great deal of self-discipline is required, particularly from those running high power, if the system is not to be monopolised by the few. Admittedly, one can incorporate time-limiting circuits in the design, but if anything other than a linear repeater is envisaged, the Tx and Rx frequencies will be on discrete channels and the QRM and possible blocking of the transponder are likely to raise problems.

Then there is the question of who owns them. In the U.S. particularly, a number of repeaters have been set up by Clubs and Groups who try to arrange that they be for the exclusive use of their members. This has led to a lot of ill feeling, and any attempt to duplicate this procedure in a small country such as ours, with consequent attempts at monopolisation of a particular frequency, would probably have a similar result. Public, as opposed to private, operation would seem most desirable.

Whichever way one looks at it, the whole project is beset with difficulties and imponderables, to which, one hopes, a speedy and satisfactory solution will be found, since amateur opinion, as so far consulted, would appear to favour the scheme. Even if permission for the operation of active devices is withheld, it might still be possible to set up a system of passive re-radiators to do a similar sort of job.

VHFCC Awards

Four Awards this month, the first, No. 113, going to G3YSB, Don Hood of Hastings. Operations commenced on Top Band and the HF bands in September, 1969, and 2m. activity followed in August 1970. Initially, the rig was QRP with about one watt output to a dipole and a super-regen Rx, but this has now been replaced with a QQV06-40A PA modulated by 807's in AB1, an 8-ele Yagi and a dual-gate mosfet converter feeding into an AR88. The site at 420ft. a.s.l. gives a clear take-off in all directions except to the West and North-West, where there is considerable screening. It took 380 QSO's to produce 100 QSL's.

Certificate No. 114 goes to David Hemmingway, G8EEG (Hindhead, Surrey) and is again for operations on 2m. The gear, nearly all home-built, consists of a QQV03-10 PA with EL84 modulators running at 13 watts input, a dual-gate mosfet converter tuning 4-6 MHz into an HRO, and a 5-ele beam at 30ft. David can receive on 70 cm. at present, and has a Tx under construction. The QTH at 730ft. a.s.l. should enable him to put out a fair signal on any of the VHF/UHF bands! QSL return rate is about average—30% or so—and 'EEG notes in particular how poor the return is from stations worked during contests!

G8CPG is Eddie Chambers of Sheffield, and he gains Award No. 115 for his 2m. activity from a 720ft. a.s.l. site on the Yorks./Derbys. border, which he claims is the most southerly station location in Yorkshire. Take-off is good in nearly all directions, although to the West, a 2000ft. mass of Derbyshire mill-

THREE BAND ANNUAL VHF TABLE

January to December, 1971

Station	FOUR METRES Counties	FOUR METRES Countries	TWO METRES Counties	TWO METRES Countries	70 CENTIMETRES Counties	70 CENTIMETRES Countries	TOTAL pts.
G3OHH	51	7	63	7	33	4	156
G3COJ	37	5	64	16	30	7	159
G3ZTC	45	5	37	8	46	10	151
G3DAH	34	3	59	13	30	7	146
G5DF	21	2	55	12	31	6	127
GD2HDZ	28	4	54	9	24	4	123
G8ATS	—	—	48	10	41	8	107
G8BCA	—	—	50	6	35	6	97
G3JXN	27	2	57	9	—	—	95
G3ZPZ	—	—	78	13	—	—	91
G2AXI	24	3	39	4	8	2	80
G3EKP	27	6	24	7	8	6	78
G3FIJ	4	1	45	9	12	4	74
G2JF	—	—	53	19	—	—	72
G8BKR	—	—	46	5	14	2	67
G3IAR	31	3	21	4	—	—	59
EI6AS	15	5	30	6	1	1	58
G8ECK	—	—	46	9	—	—	55
G8BWW	—	—	32	5	6	4	47
G8CBU	—	—	36	5	3	1	45
G8EMS	—	—	35	8	—	—	43
G8AUN	—	—	31	6	3	3	43
G4ALN	—	—	33	8	—	—	41
G8CYN	—	—	32	9	—	—	41
G8APZ	—	—	—	—	33	6	39
G8CVD	—	—	32	5	—	—	37
GM3EOJ	—	—	18	10	3	1	32
G8CXC	—	—	24	8	—	—	32
PAØLY (G3TMQ)	—	—	13	6	—	—	19

Just a reminder that the Tables go through to December 31, 1971. The Three-Band Annual Tables show claims to date for the year commencing January 1, 1971. Claims should be sent to "VHF Bands," SHORT WAVE MAGAZINE, Buckingham.

stone grit intervenes! The Tx runs 20 watts input to a QQV03-10, choke-modulated with EL84's, but this is boosted to 40 watts input to a QQV03-20A outside TV hours. The reception side is covered by a converter tuning 5-7 MHz into an R.107.

Congratulations to them all.

The Scottish Scene

The event rousing the most interest in GM this month must surely be the VHF Convention held in Edinburgh on Sunday, October 3. Attendance was better than ever with over 120 visitors for the Convention itself, and 73, an appropriate number, attending the subsequent dinner. Organised by the Lothians Radio Society, the occasion included talks by G3BA on VFO operation on 2m., by G3FZL on repeaters and by Paul Widger, GM3APU on his recent mammoth DX-expedition to the rarer Scottish counties. In an after-dinner speech, Vic Stewart, GM3OWU, referred once again to the annual invasion of the better VHF sites in Southern Scotland by Sassenach hordes during summer contests! This influx, with its attendant QRM problems for the local groups, has now reached such proportions that it must be brought under some sort of control, and while not wishing to exclude such visitors entirely, steps are being taken to protect these sites. This Column has indicated several times in the past that it is only common courtesy to check with the locals *in any situation* before occupying a site and operating /P; for Southern Scotland the approach should be made to GM3OWU, *QTHR*. The Jock Kyle Trophy was awarded this year to George Burt, GM3OXX, that indefatigable bicyclist, whose /P efforts from the summits of various eminences have given pleasure, and DX, to so many. George was an RAF apprentice at Cosford and Melksham during the seven years he spent in the Service, and after working for several years as the Head Technician in the cardiograph section of the Edinburgh Royal Infirmary, he joined the electronic research laboratories of one of Edinburgh's leading hospitals for mental diseases, where he commands the high respect of the surgeons and staff.

A slightly nostalgic note was struck in conversation with GM6XI of Edinburgh, when the topic of *five-metre* operation was broached, and it was realised that he and GM2DL of Wishaw still hold the SHORT WAVE MAGAZINE 5m. record for countries worked on that band.

Altogether, a very enjoyable and successful occasion, to be repeated next year under the auspices of the Glasgow groups.

* * *

NBFM appears to be achieving a deserved popularity in GM. GM3PQU has shown that, properly used, the Japanese transceiver (which has been so severely criticised in some quarters) is capable of very good quality when correctly adjusted and operated, and GM3FGJ, with a reactance valve modulator, has been producing an excellent signal. GM8DKB uses the Varicap method to good effect. GM8BQV should be heard on NBFM shortly. If only there were more stations throughout the U.K. equipped with FM detectors!

During the recent openings, a goodly number of the Scottish stations were biting their finger-nails while SM and OZ stations were coming through at S9 on the SSB channel and not tuning the rest of the band. The situation was remedied through the initiative of GM3ZVB who, with his VFO, was able to attract their attention and tell them that half Scotland was theirs for the asking, an action which resulted in a number of newcomers achieving their first Scandinavian DX. An extension of this idea would be welcome in the South of England, as would some scheme to prevent out-of-Zone operation in the top 200 kHz of the 2m. band when there is an opening to and from GM.

Finally, that tireless octogenarian GM6SR, Syd Rowden, would welcome skeds on 4m. Contact him *QTHR*.

Contests

The UHF contest over the weekend of October 2/3 brought some good DX. Propagation was excellent for most of the time, but tailed off a bit on the Sunday. Generally, it seemed that conditions on 70 cm. were superior to those on 23 cm., having due regard to the different propagation characteristics of the two bands, but, even so, some useful DX was possible. As an example, G3ZYC in Derbyshire worked PAØDBQ at 406 km. on 70 cm., G3LTF/P near Folkestone at 288 km. and G3CMH/P in Somerset at 250 km. on 23 cm. EI8AYZ/P near Larne was a consistently good signal on 433·1 MHz on the Saturday evening, as was G3KMS in Bolton, who made it into I.o.W. on 70 cm. G3RPE/P, from near Oxford, was also piling up the points, with their paramp. on 23 cm., and enjoyed a solid QSO with G3ZYC. Those with SSB on 70 cm. had an edge on the others, as several PAØ were workable on that mode only, as was DLØFT/P and PAØMJK/LX/P. This was the first of the IARU Region 1 UHF contests, and should not be the last, as the intention is that this shall be an annual event.

Forthcoming events are the 432 MHz fixed station contest over the weekend October 30/31; the 144/432 MHz CW event during November 6/7 and, a long way ahead yet, the 144 MHz fixed station contest on December 5.

Beacons

The GB3DM 70 cm. beacon Tx has now been delivered and by the time these notes appear may be audible on 432·7 MHz from nearly 1000ft. up near Burnhope, Co. Durham. This is a solid-state device with some 5 watts output feeding into two 8/8 slots, one beaming South and the other towards GM. It is planned to have a 23 cm. beacon operating from the same site by the end of 1971. This also will be a solid-state Tx with two varactors and high-Q breaks and will beam South. All of which is likely to keep Bill Burton, G8ANQ, the beacon minder, busier than ever. Our thanks must go to him, and indeed to all the beacon keepers, who ensure so admirably this welcome service. Please send reception reports on the 70 cm. beacon to G8ANQ, *QTHR*.

GB3ANG is temporarily out of service, but GB3GEC has made a welcome reappearance. PAØVD is on intermittent operation. There is hope that the 2m. Thurso beacon, GB3GM, may radiate to the North-East as well as to the South, and this will give a useful pointer to the possibility of Auroral activity.

It is reported that a beacon with the callsign F3FHP has been heard in operation on 144·002 MHz

recently, but nothing is known officially of such an installation. News would be welcome.

News Items

Activity

G3LTF and G3LQR had a contact on 23 cm. with ON4HN on September 29 at 1930z. F1AOY/P from Calais is now on 70 cm. and has had several contacts with British stations, although he is only running ½ watt! QSO's are being made with Scandinavia on SSB on the first Tuesday in each month, as this is their activity night. G3ZUD (Welwyn Garden City) worked HB9IN on low power on the morning of Friday, October 8. QRA is EH55h. G2JF contacted OK, OZ, PA, DL, DM, LX, OE, and F over the recent opening, and also had a QSO with F9NL in the Pyrenees at 5 & 9 both ways on October 3. This gives Jim 82 new stations worked between October 1 and October 10, and brings his total of *countries* worked on two metres this year up to 19! G3ZYC got GC2FZC at 5 & 9+ on October 6 on 70 cm. He found 23 cm. unusable on that day due to strong radar-type QRM over the whole band; he also made it at last with G8ATK on 70 cm., in spite of high obstructions on the path. EI6AS had 2m. contacts with several PAØ on October 1, and also a 70 cm. QSO with PAØEZ for good measure. G3COJ made it on October 6 with OK1KSO/P, in QRA GK46c, on 2m. for his first OK contact after trying for years; to dodge the QRM on 2m. he then transferred his attentions to 70 cm. and promptly worked OZ9SW and OZ9FR! G3COJ also raised LX1DT on 2m. on October 7. G3LQR worked a DM on 70 cm. the same day, and also OK1KSO/P. Radio Gdansk was S9+ on 70·31 MHz on October 7 but there was little 4m. activity—presumably everyone was having a ball on 2m! The G3ZYC/G5QA 70 cm. sked on Monday and Friday evenings is proving some 90% successful. GC3YIZ made it with GD2HDZ on 2m., to give the I.o.M. station his first GC.

We referred earlier in this piece to the fine signal put into the South by GM8BRM/P. It is now learned that between September 6 and 8th, he worked 93 G, four GM, 10 OZ, 20 PAØ, seven DL, two ON and two F. The rig is a Pye "Ranger" and DL6SW converter to an Eddystone EC-10, with an 8-ele beam. The QTH was again Cairnorrie, 40 km. north of Aberdeen.

General

In a letter from the beacon keeper of F3THF, a request is made for reports of sporadic-E contacts made by G operators during the opening on May 24 last. These should be sent to Monsieur S. Canivenc, F8SH, 6 rue de Pont-Hélé, 22 Perros-Guirec, France, who is correlating them as a member of the REF Scientific Council. For example, he would like further information on the contacts made with YU, such as those between that country and G5ZT and G5FZ. He reports also that the French beacon is now nearing 25,000 hours of continuous and successful operation, and that the only changes envisaged at the present time are modifications to the keying circuits to incorporate IC's. For those who may not have a record, the frequency of F3THF is 144·007 MHz.

G8COG (Birmingham) now has a 6/6 slot and an Fet converter to go with the "Two-er". He is another sufferer who complains of grossly over-modulated signals during contests! G8CXC of Portsmouth will shortly be running high power on 2m. with a 100/150 watt Tx for AM and NBFM. Although he has worked into Lancs. and Yorks. with the HW-17A and a 14-ele Parabeam, he finds the going a little tough from a QTH at zero ft. a.s.l.! He also has plans for 70 cm. operation. G8BKR is now QRV on 23 cm., transmit only at present, from Bristol and has had crossband contacts with G8AII, GW8AII/A and GW3FNQ/M. It would be interesting to know how many other operators have reception facilities for 23 cm. in a car?! G3ZYC is looking for 70 cm. skeds with GM any night between now and the end of the year. As he is not yet in the callbook, his QTH is: Farm Close, Pentrich, Derbyshire, DE5 3RR.

GI3HNM in Co. Antrim will soon be operating portable with an FT-2F and a 6-ele beam. Such operation is really forced upon him since the home QTH is at zero ft. a.s.l. and the surrounding hills are at 1500+ft.! He would like information on how to calculate the basic xtal frequencies for the FT-2F. Can anyone help? Steve Ruff, GI8EWM is now on 2m. most evenings from just north of Belfast. He runs a QQV03-10 with EL84 modulators on 145·8 MHz to an 8-ele beam, and plans to have SSB shortly.

GD2HDZ has got 2m. SSB and so joins GD3FOC. G8DYX is now at Mildenhall, Suffolk, and is active on 2m; he is looking for details of a D-I-Y counter at a reasonable price. Although he now runs 150 watts on 2m. from the home QTH in Swindon, G8DMY does not always find this power essential for DX contacts; he had a QSO with F9YR/P at 800 km. on *two watts* into a halo from the Cardiff University site. G8CKG is now G4AEP. Another father and son combination is G8EER and offspring G8EES, both of Baildon, Yorks. G6NB near Aylesbury had a very nasty experience recently when he had a lightning strike on the shack. Much of the gear was badly damaged, but he is back on the 2m. air, and is taking advantage of the occurrence to do a bit of a rebuild.

An amusing comment heard recently—" . . . some of these supposedly NBFM signals sound like badly modulated spark!" A sentiment with which many of us will regretfully agree.

Goodbye

A sad loss to the U.K. Amateur fraternity will become apparent shortly when Arnold Mynett, G3HBW, leaves this country to take up an appointment with Racal, Ltd. in South Africa. He started his VHF career as an SWL in the days of our *Short Wave Listener* (November 1946-March 1953), then became a regular correspondent to "VHF Bands" and also an occasional contributor to SHORT WAVE MAGAZINE. We wish him the best of luck in his new venture.

Deadline

Deadline for the next issue is **November 6,** and the address for news, views, claims and comment is: "VHF Bands", SHORT WAVE MAGAZINE, BUCKINGHAM. Cheers for now and *73 de G3DAH.*

• • • SWL • • •

SHORT WAVE LISTENER FEATURE

By Justin Cooper

SWL EXPERIENCE NEEDED — NEWCOMERS, AND SWL's RECENTLY LICENSED —NEWS, VIEWS AND COMMENT —THE LADDERS, AND HPX RULES

ONE of the sadder facts of life in the Amateur Radio context is the large proportion of new licensees, both "A" and "B" categories, who come to their ticket with absolutely no experience of short-wave listening, either on the band they start on or indeed any other. Almost all of these chaps end up unable to radiate signals much beyond the local area but quite satisfied with the results they do obtain, simply because they know no better.

Fine, if that is how they like it, who are we to complain? However, when these chaps set themselves up to prescribe for a keen SWL what he needs to use and where he can economise—as by saying that a commercial trap vertical is "too good an aerial for SWL'ing", for instance—then we must join issue. Nothing is ever too good for an SWL station, any more than for the lad with the callsign. This is not saying, of course, that the keen type must buy all his gear—obviously, only home-constructed gear built by and designed by an expert for the task in hand can be anywhere near perfect, since all the commercial equipment is of necessity a compromise to please the majority of potential customers. A prize example of this is the fact that many amateurs still do not trust transistors, which means that all the SSB transceivers available on the U.S. or U.K. market, with one exception, are fully valved—the one exception being, of course, a hybrid using valves, transistors, and IC's. The number of transmitters and linears on the market which use colour-TV line timebase valves of European or American origin rather than, say, the old 813, is a very eloquent testimony to the instinctive fear of voltages measured in four figures—even though the lower-voltage, higher-current supplies are probably more likely to be killers than the 2·5 kV on the anode of an 813!

As for a better-than-average aerial system, let it just be remembered that the chap with the bit of wire is, as compared with the chap under, say, a tri-band beam up in the clear, a prisoner of both the skip and the conditions. To the chap with the wire, the bands open later and close earlier—and, worse, it has to be a good opening before he even notices it! Against this, the chap with a good aerial in the clear will be logging stuff inaudible to the wire-bound man, and if his aerial is rotatable, chances are he will learn to use the directive properties of his beam as a QRM-reducer, thus improving his chances still more.

The Correspondence

Our opening letter is from *P. Goff (Towcester)*, and his theme the lack of response to his QSL's, which were sent complete with IRC's. The root cause of this lack of response is probably that the Goff offerings do not provide the *incentive* to respond. An SWL report on a DX station, for instance, should cover a series of QSO's, give relative strengths of other stations from the same part of the world, and probably indicate how the signal strength and quality held up during the period of the report. In addition, such data as the SWL station equipment, receiver, aerial, ancillaries, and so on is appropriate; and to this can be added notes on any other data which may be of interest, and perhaps a few personal comments including special reasons why the sender wants a QSL, plus even a photograph. It all helps to make a communication the chap will *want* to answer.

A fine example of the sort of thing we have in mind is sent in for interest's sake by G3ADZ, he having received it from *SWL Nick Bainbridge*. This includes a graph of signal strength and another of readability plotted against the time covered by the SWL report; plus a half-page of carefully-written notes, a brief description of the weather conditions at the receiving end, and so on. Quite an expenditure of time and effort, but your conductor is ready to bet SWL Bainbridge has a *very* good record of return QSL cards.

S. Cole, of *Newport*, seems to spend much of his time raking over the 3·5/7 MHz bands, and, indeed, the hearing of ET3ZU/A on Eighty brought up the score for that band to 127 countries. To help things along, a new receiver, probably an FR-DX500, and a Hy-Gain vertical 18-AVT/WB are in the offing as part of Stephen's serious preparation for the day when he gets on the air with his own ticket.

New Entries

An interesting first list is put in by *J. Iredale (Llandudno)* but, alas, there is no mention of the gear used to winkle them all out.

It is not usual to get a first entry in the CW-only list from a member of the younger set, but *R. Mortimore (Cardiff)* makes his bow this way. He first started on the G3HSC Morse Course about four months ago, and has used his time to such good effect that he is already up to the 20's, and digging-up the DX to be found at the low end of Twenty. The receiver is a Trio 9R-59DS, coupled either to an end-fed or a 14 MHz dipole.

J. Gravell (Burry Park, Carms.) has for long been a listener to the short-wave BC bands, but of late has "found" the amateur bands, and now has his 640 receiver tuned to them for most of his listening. For aerial, Jeffrey has a forty-metre dipole.

Another long-time listener is *M. J. Wayland*, who is an architectural student at Leicester Polytechnic—an

occupation that tends to hold down his listener hours, particularly when one considers he is also booked-in at the local R.A.E. class. On the receiving side there is a Heathkit HR-10B for 10-80, and a TCS-12 does duty for Top Band.

Talking of old-timers, *L. Tagliaferro* (*Eastbourne*) must be nearly the "daddy of 'em all," with his start way back in 1925—and he still has a couple of bright-emitter valves and a slider-tuned inductor to prove it! Leslie is looking forward to retirement from the Post Office Engineers just before Christmas, after 32 years' service, so that he can turn his *full* attention to the B.40 in the shack!

After reading our comments on the desirability of joining a Club, *I. Brown* (*Newtownabbey*) went to Belfast YMCA—but regrettably, GI6YW has had to suspend their meetings while the troubles are going on. Irwin is still scratching around for the materials for his tower, but by the time this is in print he will probably be the proud owner of a shiny new Trio JR-599. On a different tack, Irwin would like to pit his skill against other SWL's, and wonders whether there are, in fact, *any* other SWL's in GI-land! (Of course there are!—*Editor*).

From the new entries we now must progress to

The New Licensees

To all of these, our regret at losing them is tempered by the pleasure of knowing they have achieved their ambitions—so congratulations!

T. George (*Penzance*) has G4AMT, and is active on all bands 10-80, using his Viceroy transmitter and a Trio 9R-59DE receiver. Reports, G4AMT says, are welcomed, particularly on the CW signal he puts out on 3·5 and 7 MHz; Terry promises he will QSL any correct reports.

S. Rawlings (*Reading*) is, as G4ALT, going great guns on Top Band and Eighty; operations have been enormously helped by feeding his end-on 132-footer against an earth entirely divorced from the mains earth; this has completely disposed of the TV line-timebase harmonics which so plagued him before.

Talking of examination results, *Z. Parmigniani* (*Whaley Bridge*) passes over his crop of O-Levels with the comment that "now we can concentrate on more important things!" Zorro is hanging on to his long-wire and his vertical aerials for the moment, but plans are in hand for rotatable dipoles for 14-21-28 MHz. On a different line, one of Zorro's exam. passes was in Spanish, but he admits to finding the South American stations speak too fast for him to translate easily. Yet another point he makes concerns the current trend, particularly on the part of SM and W stations, of sending, not a QSL in reply to a card with s.a.e. but a chain-letter, of all things. Now, it doesn't need us to say that this is one of the oldest rackets in the world; it might be a good idea to write to the operator sending the chain-letter and point out in no uncertain terms just how *stupid* he is being.

After all the gripes about studying getting in the way of listening, it is a bit of a suprise to hear of someone—*H. Goodwin* (*Streetly*)—who says that as he has now started work the "lazy years of studentship are over!"

The main interest for *E. Parker* (*Hove*) of late has been the contrast between the performance of his end-fed against a resonant dipole on 21 MHz, both being compared on that band, of course. Incidentally, Ernie has a caustic wit—"nothing more to say, so (unlike the characters who haunt Eighty) I will refrain from saying it!"

At the time this is being written, *J. R. Cowan* (*Rochford*) will be settling in to the first few days of his two-year training course to be a radio officer in the Merchant Navy.

S. Wessely (*Sheffield*) has received some interesting QSL's, among them 5W1AU, CR4BS and FR7AJ, Indicentally the last two arrived OK even though the address was only given as "Simon Wessely, S7-1NZ." Maybe that postal code *does* serve a useful purpose, after all.

A longer-than-usual letter from *J. Fitzgerald* (*Gt. Missenden*), who has got his receiver back in service. John seems quite startled at the number of people who *still* believe that to put a gainy preselector in front of a good modern receiver is a way of finding more DX; but with his Trio 9R-59, John feels a preselector of low gain might be a help in reducing image troubles on the HF bands with a receiver which is of the "classic" old style of single-conversion design with 465 kHz IF.

R. Philpot (*Shenfield*) wonders where FG7XF is located, Robin having found two islands named Guadeloupe. The one you want is that in the Caribbean area, and is spelt as above—if you look carefully, the one off

HPX LADDER

(All-Time post war)

SWL	PREFIXES
PHONE ONLY	
S. Foster (Lincoln)	1234
J. Singleton (Hull)	1115
A. W. Nielson (Glasgow)	1093
R. Shilvock (Lye)	1030
J. Fitzgerald (Gt. Missenden)	923
G. S. Taylor (Rugeley)	892
I. Brown (Newtonabbey)	876
T. Rootsey (Ilford)	844
R. A. Treacher (Eltham)	830
M. T. Hyder (Southampton)	824
N. Henbrey (Northiam)	810
R. Carter (Blackburn)	799
M. J. Quintin (Wotton-under-Edge)	794
W. Moncrieff (Hampton)	789
J. G. Ayton (Sunderland)	788
M. Fisher (Bradford)	758
D. Rodgers (Bolton)	757
J. P. Scragg (Stockport)	755
K. Kyezor (Perivale)	753
H. Alford (Burnham-on-Sea)	736
S. Proud (Letterston)	734
B. Hughes (Worcester)	712
T. W. Hyder (Southampton)	708
A. Mercer (Wigan)	694
H. M. Graham (Harefield)	688
M. Williams (Sleaford)	675
P. L. King (Ryde, I.o.W.)	662
E. W. Robinson (Bury St. Edmunds)	656
E. Parker (Hove)	645
D. Robinson (Birmingham)	642
N. Askew (Coventry)	624
G. W. Raven (London, S.E.23)	614
S. Wesseley (Sheffield)	591
A. Judge (Bishops Stortford)	585
Mrs. S. Singleton (Hull)	582
J. R. Cowan (Rochford)	547
J. H. Sparkes (Trowbridge)	545
K. C. Webb (Slough)	535
D. J. Browning (Bishops Stortford)	533
I. Forse (Saltash)	533
C. J. Deacon (East Ham)	523
R. Bence (Cardiff)	522
J. Dunnett (Luton)	518
A. R. Holland (Malvern)	514
T. George (Penzance)	511
CW ONLY	
A. Glass (Plymouth)	746
J. Dunnett (Luton)	645
G. Proud (Letterston)	562
H. Wright (Pontefract)	495
W. B. Taunton (Meopham)	431
J. Halden (Newcastle, Staffs.)	407
T. Grimbleby (R.A.F., Digby)	305
D. Rodgers (Harwood)	243
T. Thornton (Wargrave)	238
R. Mortimore (Cardiff)	223
T. George (Penzance)	207

Starting score, 500 for Phone, 200 for CW. Listings include only recent claims. Rules for HPX as given in this issue. The DX Zone Map and latest Prefix List, 85p post free from Publications Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

the coast of W6, or rather XE, is spelt without an "o" after the "l," and is Mexican territory.

An interesting case is postulated by *R. Carter* of *Blackburn*, who wants to know whether one should report the hearing of a distress call that was apparently going unanswered. Surely—to the local Coastguard if one is near the sea, or to the police if one is located inland. Incidentally, at the time of writing, your J.C. has just been listening to the TV discussions about the risk of an exceptionally high tide around October 5, and people on TV remembering the 1953 floods; it all recalls that there was at that time just such a case, due, if memory serves aright, to a Coast station having its landlines to the transmitter-house out of action, where an amateur was able to render considerable help—it was all written up in the columns of the *Magazine* at the time.

A nice new KW-202 receiver has replaced the Trio at the shack of *D. A. Shepherd* (*Kingswinford*), and is compared by its proud owner to the KW-2000B in its performance. Additionally a change of aerial has been made, and a "kinky" 132-footer now adorns the garden and shuts out the sunlight, in accordance with the old proverb which says "the less the sunlight that can get into the garden, the better the DX worked!"

Tony Judge (*Bishops Stortford*) has some private jokes with your J.C. about the sudden activity of an amateur of our mutual acquaintance, who we claim has filled *one page* only of a logbook since he was first licensed about four years ago! Practically, Tony is building the Printset valve two-metre converter, and has a dipole prepared for the band, thanks to G8BTK's encouragement and assistance.

For those interested, *M. Marsden* (*Ilford*) mentions the W/MM's that are often to be heard at the high end of Twenty, handling what the Americans euphemistically call "traffic"—meaning third-party messages put through phone-patches on to the landline network in the States. This sort of message-handling is confined to a very few countries, mostly U.S. and her colonies, luckily; no one minds third-party traffic of the sort taken by RAEN or its equivalent in other countries, but this handling of messages whose priority is so low that they do not justify the originator in writing a letter or using the telephone network in the normal (chargeable) manner, is a rank waste of our over-crowded amateur bands.

For *M. Williams* (*Sleaford*) the great news is that attempts are being made to form a Club in Grantham on the one hand, and that an R.A.E. class is in fact being started at St. Hugh's School, Dysart Road, on the other, the latter having been mentioned in our list on p.430 of the September issue. This means that Maurice is now able to tackle the theory *and* the practice of transmitting, the latter by watching the locals on the air, which SWL Williams considers, rightly, as quite as important as pure theoretical knowledge, not to mention also getting some help with the business of learning his Morse.

It's all happening, as the younger generation say, to *K. Webb* (*Reading*), who has now settled in his new place there, albeit the aerials have still to be planned and put up in the nice long garden available for the purpose. However, that does not exhaust the problems by any means—before much serious listening can be done there is a small matter of some accountancy exams. to be dealt with to the satisfaction of all concerned.

An unusual activity for an SWL is mobile operation, but this is what is keeping *P. L. King* (*Isle of Wight*) amused—he has a Codar T28 in the car, and a G-whip on the rear wing. A long trip recently was all the way up

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 callsigns.
(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 MP4AK- which count as one prefix.
(6) Only calls issued for Amateur Radio operation may be included. Undercover and pirate callsigns 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 separately 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 subsequent lists, it is sufficient to quote the last claimed score, with the new list of prefixes, and the new claimed total. Give your name and address on each sheet, to "SWL," SHORT WAVE MAGAZINE, BUCKINGHAM, if possible to arrive before the SWL deadline for that particular month.
(9) Failure to report for two consecutive listing, *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, dated December 1970, and with the current edition of the *DX Zone Map*.

NOTE: The *DX Zone Map* costs 85p and includes the latest Prefix List. The *Prefix List* alone, by countries, prefixes and zones, alphabetically both ways, costs 13p. Prices are post free. Publications Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

to the Derby Rally, with G3XFD, equipped for mobile working on Top Band, Four and Two metres to keep in touch on the journey.

This chap Mercer, *Alan Mercer* of *Wigan*, doesn't miss much of the action on Top Band. Since he got his AR88LF, Alan has heard two W's, one KV4, one MP4, one ZD8 and a PY, not to mention Europeans. Since the MP4 was in Asia, that means Alan only needs to find a VK or ZL to be able to say he has "heard all continents on Top Band." Since the VK activity is sure to be there this season it seems a foregone conclusion that he will complete the set this winter.

H. M. Graham (*Harefield*) is one of the correspondents who provide so much of the "background" information to build up our picture of what happens around the bands. This time Maurice takes as his theme the old-timers on the band—the result of hearing CX2CO on Twenty, as this laddie was the first CX he ever heard, 'way back in 1936. Another one is W1JFG, Willard, always a big signal, and CT1AY. Then there was W2ZC of Little Silver, N.J., who always sported a signal, like the present-day W2ONV, the size of a BC station. Maurice heard UK9CAT and wonders where he is—answer is Sverdlovsk area in Zone 17. Looking at the Graham all-band report confirms your conductor's view that for the run-of-the-mill SWL without a beam, the band to be on over the recent period was undoubtedly 14 MHz, with 21 MHz as second choice for the chap who could be on at the right time.

For *P. Scragg* (*Stockport*) much of the new prefix list came to hand by way of the odd listen round the LF bands and hence the filling in of blanks in the prefixes available locally, such as G2DNH/M. Phil also noted DFØIFA, a Radio and TV Exhibition station in Berlin.

S. Proud (*Letterston*) doesn't write long letters as a rule, but he packs some queries into his few lines! First off comes TB6NX, asking for QSL's *via* TA1NX and claiming to be on an island 40 miles off the TA coast—a doubtful one as far as J.C. is concerned. EQ2 for EP2 is quite OK, and has been around quite a bit. ET3ZU/A's DXCC status next, and as far as your scribe is aware. unless ARRL say otherwise, it is a country as far as DXCC is concerned.

Having heard what he believes to be the only real PA1 station extant, PA1GRE on Twenty, August 3, *D. Lowe* (*Manchester*) sent off his first QSL card to the chap, and to the SM he was working as a second. Both came across with a card, so Dave is now on the way to a "collection of wallpaper."

P. Harris (*Surbiton*) commences by correcting an error in J.C.'s records and his HPX listing, and goes on to say that he has found conditions quite good for the few days after his holiday and before the deadline, as a pleasant change to the situation before he went away. For aerials there are a single-element Quad for 21 MHz, and a slightly bent 28 MHz dipole, both of which live indoors and are now—a great improvement—fed with real coax instead of the gash stuff used previously.

It's odd how one can go for months without a new country and then suddenly pick up a couple in a few minutes; this in fact happened to *H. Alford* (*Burnham-on-Sea*) with ST2 and TY1, both on Fifteen.

* * *

NEW HPX LADDER

(Starting January 1, 1971)

SWL	PREFIXES	SWL	PREFIXES
PHONE ONLY		*PHONE ONLY*	
P. Harris (Surbiton)	469	J. Iredale (Llandudno)	340
W. B. Taunton (Meopham)	441	M. Marsden (Ilford)	334
D. A. Shepherd (Brierley Hill)	435	J. W. Jarvis (Rickmansworth)	312
P. Goff (Towcester)	432	T. Thornton (Wargrave)	295
Rev. L. Turner (Dudley)	428	K. A. Hastie (Jedburgh)	265
J. Woods (Woodbridge)	418	Z. Parmigniani (Stockport)	265
K. Plumridge (Southampton)	416	R. Philpot (Shenfield)	264
J. V. Parker (Newcastle-on-Tyne)	400	P. Reeves (Burton-on-Trent)	252
S. Rawlings (Twyford)	386	R. Impey (Brentwood)	252
H. R. Goodwin (Streetly)	356	W. M. Bell (Bristol)	249
Miss L. Hyder (Southampton)	353	M. J. Wayland (Leicester)	240
		J. Gravell (Burry Port)	228

Listings include only recent claims. Starting score 200. Rules as for HPX. Zone Map and latest Prefix List, 85p post free from Publications Dept., Short Wave Magazine Ltd., 55 Victoria Street, London, S.W.1.

Although he had a very pleasant business trip to the States recently, and met a couple of the W4's, the pressure of work in the Akron and Baltimore areas was so much that pre-arranged visits had to be cancelled, reports *K. Kyezor* (*Perivale*); but nonetheless the return home enabled him to put in a nice long list of prefixes as the Table shows.

V. Lindgren is at present in *Cardiff*, although in December he will be returning to his home in Hull. Vic used to be a contributor to "SWL" around the time when your conductor first took over the piece, but since then he has been serving in the R.A.F. as a wireless operator, which means that, while R.A.E. needs studying for, Morse will be no problem. In Cardiff, Vic has a Trio 9R-59DS fed by twenty feet of wire draped around the floor of his room, a combination which has yielded W's on Top Band and such as VK on Forty CW. For a final comment, Vic notes the decline in manners on the bands, both on CW and SSB. Agreed, and while we could wish for people to exercise a bit more self-control on the air, we can't blame them for the sad fact that in most cases they were just not taught good manners by their parents. However, there are strong signs that the present crop are setting a fashion by decrying the ill-manners and rebellion of their immediate predecessors as being no longer "in fashion."

Quite a long time since last we heard from John *Singleton* (*Hull*) and his XYL Shelagh; however all seems well with them and they have been doing much decorating in preparation for the latest addition to the family, all of which has reduced their time on the rig.

Conclusion

Once again, that's the lot. For all those pleasant letters, your scribe's thanks; and he looks forward to the next crop, as much for the private wisecracks as the publishable parts. The deadline for next time is first post on **November 22,** addressed "SWL," SHORT WAVE MAGAZINE, BUCKINGHAM. And since this is his last chance, J.C. snatches this opportunity to wish all a very Merry Christmas and a Happy New Year.

THE MONTH WITH THE CLUBS

By "Club Secretary"

(Deadline for December issue: November 5)

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

WITH MCC upon us, it is time for settling those last-minute details. The rig, of course, goes without saying, as does the aerial. But don't forget the ruled log sheets (Rule 6) or—it has been done!—the key. Or unplugging the microphone from the transceiver. We hope the Contest will be the usual hard-fought but sporting battle it always has been, and above all we hope this year we don't have to disqualify anyone for infringements—least of all for over-driving transceivers. Since several Clubs are entering more than one station, and there are also newcomers in our midst, a Supplementary List of Ident. Codes appears on p.563 opposite.

But it's time now to look at the reports once again, so here we go—

No Home Ground

WAMRAC's founder-secretary, G3NGF writes to say his address has changed yet again, and he is now settling in at Tebay—the address is in the Panel—although he can no longer join the net on Sundays as a service falls exactly on sked time. As an alternative, Wamrac members should note that G3NGF will be on 3665 kHz, at 0930 to 1000, and 2030 onwards, every Wednesday, looking out for Wamrac people.

Now to **RAIBC**, who also have their meetings by way of nets; they are somewhere between 3650 and 3700 kHz, depending on the QRM situation, 1000 on Tuesdays, 1400 Wednesdays, both clock time, and of course the excellent *Radial* brings more news of members doings each month.

Nets and Newsletter provide the contact for all the members of the **Royal Navy** group—and there seems to be quite strong activity on those nets too, as we note that at least one session produced no less than 21 for the log.

For **B.A.R.T.G.**, which cares for the interests of the RTTY wallahs, the event of the month is definitely the AGM; this is being taken in London and a large attendance is expected.

A final entry in this category is the one from the **Nigerian** A.R.S., their *NARS News* being as always a nice blend of personal chat and matters of general interest, the latter being this month in the form of a note of the WWV broadcast format changes.

The North

Every Thursday evening the **Nottingham** lads get together at the Sherwood Community Centre, Mansfield Road, at 7.30. A Junk Sale comes up on November 4, and Films are down for the 11th. On November 18, they will have a natter and some will fire up G3EKW, which leaves November 25 for G3YCT and G8CXK to talk about their recent expedition to Scotland.

The **Bolton** chaps are probably by now just beginning to see the comic side of their exhibition-station and its problems, at St. James Church, Breightmet, where they had been installed for the gala day *inside* the church, with the aerial up the tower—but as it happened the tower, like so many church towers, contained sufficient lead cladding to make sure the aerial wouldn't radiate! So it has to be taken down and slung to a nearby tree! For November 3 they have a Junk Sale at Hq., the Recreation Club, Kensington Place.

November 9 is the date for **Bury** and **Rossendale,** and G3NOM the speaker, the theme being Aerial Matching Techniques. Looking forward a little, they are coming up to a 25th anniversary soon, and a dinner dance is planned for January 29—December 14 is also important, being the AGM. Normal meetings are at the George Hotel, Market Street, Bury.

Always a model of brevity is the **York** hon. sec.—"Every Thursday, in the British Legion, 61 Micklegate, York."

One has heard of Junk Sales being given "prestige" titles—it happens every month—but the **Northern Heights** description of their effort on November 24 is a new one. They call it a Flea Market! November 10 is their other date. Both events are at the Peat Pitts Inn, Ogden, four miles north of Halifax Town Centre.

On to **Spen Valley,** whose Hq. is at the Grammar School, High Street, Heckmondwike. For November 10, there is a visit to Batley and Spenborough Observatory, Batley Park, and on November 18 the meeting is open, nothing being down on the programme. However, on November 25, G3DAR will be showing his Transistorised SSB Transceiver.

With an XYL as Secretary, for **Hull** it just had to happen—November 5 is down for "Make Do and Mend!" November 12 sees G3MVO explaining how to make a start on Top Band with valves, and on the 19th—the SWL's night—there is a local D/F event. That leaves November 26 for G3PQY, who continues the Top Band theme but with transistors.

A recent highlight for **Otley** members was the

MCC—November 6/7

Rules p.497, October issue. Club identification lists and scoring procedures pp.500-501, October. Closing date for log entries, November 19. Results January issue.

Construction Contest, for the Peter Fox Memorial Trophy, won by Keith Pickard with a digital clock. For the latest details on the Club doings, and how to get to their Hq., we must refer you to their Secretary at the address in the Panel, p.564.

The Midlands

Wolverhampton had their AGM in October, but have still an organised programme for November. The 1st is down for both a film Show and showing of members' slides. Natternites takes up both November 8 and 29, with the 22nd as a committee evening. That leaves November 15, when the informal session will discuss the evaluation of contest results by computer.

While many clubs are meeting on November 5, only one marks the occasion in their programme—**Coventry,** who have a Bonfire Night Social. Nights on the air, with the club KW-2000, take up November 12 and 26, leaving just November 19, when G3UOL talks about his recent VE holiday. For all these, the venue is the Coventry Scout Hq., 121 St. Nicholas Street, Radford Road.

Now to **Midland,** who have a Surplus Equipment Sale down for November 16, but are no doubt looking forward even more to December 21, when they are having the presentation of cups and awards, and old-timers Night, with the ladies present also, all rolled into one big Christmas Party event. Sounds great! The Club Hq., incidentally is the Midland Institute in Margaret Street, Birmingham.

South Birmingham have their place at Hampstead House, Fair Fox Road, West Heath, where they may be found on the first Thursday in each month; we understand that a representative of the Post Office will be coming along to the November session to lecture on Interference and its Suppression.

Solihull run their formal meetings at the Manor House, High Street, and have November 16 booked for films to be shown having radio interest. Of late they have also run an informal natter, which comes this time on November 2, in the rear bar of the Malt Shovel hard by Hq., at 2100 clock.

At **Worcester** the whole way of life seems to have changed with the move of Hq. to the Crown Hotel, Broad Street. However, the *Newsletter* which is currently on file does not cover the programme as far as November, except for the Annual Dinner on November 27; so it is necessary for any intending visitors or potential new members to contact G3WUI—*see* Panel—for all the latest information.

The **Peterborough** Secretary is so pleased with his first stab at their Mobile Rally since being in his office, that he completely forgot to tell us the programme details for November! However, from his account and from that of others who attended, it seems to have been a pleasant and enjoyable event, with G3HFW being presented with the G2NJ cup by a 17-year-old YL, G8FDE, the daughter of G8EBI near Ely. As G3HFW came from near Scarborough, one gets some idea of the distance over which it was "pulling the crowds." For all the details on this club, contact the secretary, address as Panel, p.564.

Over to **Hereford,** where the next date to note is November 5, for a Film Show—but check with the hon. sec. as there are thoughts about moving it to November 4, to clear Firework Night for the Dads. November 19 is a firm date, informal at the time of writing but with a hint that there may be something fixed up later.

Heading northwards now, we come to **Mid-Cheshire,** in their Hq. at Winsford Verdon Comprehensive School, Grange Lane, Winsford, where they are available to receive visitors or new members on any Wednesday evening. This crowd have compromised over the question of practical work, by making the period between 1900 and 2000 free for Morse, constructional activities, and operating the Club station, leaving 2000 to 2130 open for the main activity, such as a talk or films or whatever. Sounds a good idea.

Fridays at Sale Moor Community Centre, Norris Road, Sale, is the form for **South Manchester** Club. G4AFT is to talk about VHF Contest Operating on November 5, with the Annual Dinner on the 12th, at Woodcourt Hotel, Manchester 23. November 19 is down for 4Z4IX to discuss DX'ing as seen from 4X4-land, while on November 26, G3ZKO is to describe his Phasing-type SSB Exciter.

GW, GI, and the West of England

If you are in **Saltash,** you look for the Burraton Toc H building, on the first and third Friday in each month. November 5 is a Natter Nite, and on the 19th there is a requirement for everyone to turn out for the AGM.

At **Yeovil** they seem to have a weekly meeting—Thursdays at the Youth Centre, 31 Park Lodge—with a lecture on the first session in each month. For November 4, the lads have booked G6CJ's tape-and-slide lecture, entitled the "Human Machine as a Radio Operator."

Not so long ago we mentioned the formation of a group at St. Lawrence's Hospital, **Bodmin;** we now hear that they have a call, G4AJL, with four licensed lads and another seven working at R.A.E. classes. The general plot seems to be meetings on Tuesday evenings and Sunday mornings, with guests, either SWL or licensed, all welcome.

On to **Plymouth,** who have their meetings on the first and third Tuesday, at Virginia House, Bretonside; and this month there is an extra, in the form of the annual dinner at the Davie Hall, Plymouth.

Our only GW customer at the moment of writing is **Conway Valley,** where GW3JGA has November 14 to talk about "The Digits." This one is at the Parade

CLUBS IN MCC

SUPPLEMENTARY IDENTIFICATION LIST

Durham Contests Club	*B81*	Horsham "B"	*L86*
Northumbria Contest Group	*B82*	Adur Contest (Sussex)	*L87*
Catterick	*B83*	Purley "B"	*L88*
East Riding Group	*B84*	Purley "C"	*L89*
Leyland Hundred "B"	*B85*	Echelford "B"	*L91*
Manchester Contest Group	*B86*	Isle of Purbeck	*L92*
		Edgware "B"	*L93*

Above identifications are additional to those appearing on pp.500-501, October. Though further identifications may be issued on request before Contest date, of course they cannot now be published.

Hotel, Llandudno, with December 9 at the same place for a junk sale. The annual dinner is on December 17, this time at the Colwyn Bay Hotel, Colwyn Bay.

In GI, we have the **Bangor** group, who have recently changed their Hq. and now foregather at the Borough Gymnasium, Hamilton Road, in the first Friday of each month. As for November 5, this is *really* firework night, with the junk sale which attracts buyers from all over the district. In addition they hope to operate in MCC.

For November in Cornwall, the **Cornish** group have G3PPT to talk about Electronic Computers, and also a junk sale. The meeting is at the SWEB clubroom, Pool, Camborne; and in addition there is a Newquay sub-group, who have November 3 booked at Treviglas School, Newquay.

Southern England

This, taking in the London dormitory area as it does, is nearly always the largest group, and this time is no exception.

Bedford have a place at the Dolphin, Broadway, where they are to be found weekly on Thursdays. November 4 is a demonstration of the KW Atlanta, by proud owner G3SOA, with "Vic's Van of Goodies" by G4AAA on November 11. November 18 falls to G3XNG, who is to explain the mysteries of Radar. Finally, there is a "special" on November 25, G8EIG's lecture, subject not given but quite clearly being looked forward to by the membership.

Stony Stratford is the home town of the North Bucks. crew, whose Hq. is at Wolverton and New Bradwell Youth club, on the second and fourth Wednesdays in every month. It is not at the time of writing known just what the programme is, which is not very surprising as the current *Newsletter* reports the AGM and the committee meeting then called to discuss the coming year's activities and doings.

Cray Valley is a club that always makes sure we "get the message" by way of a copy of the *Newsletter* and a page of notes as well. Thus, we see they have a 25th anniversary celebration set up for November 4, at the Congregational Church Hall, Court Road, Eltham. This is also the venue for the other November session, a Natter Nite on the 18th.

Another crowd who believe in publicity is the **Verulam** group centred on St. Albans. November 17 is their booked date, at St. Albans Town Hall, Council Chamber, for K.W. Electronics to come along and demonstrate their range of products to the lads. Visitors, of course, very welcome.

The **Echelford** *Newsletter* this month amused your scribe no end, starting with G3BIA and his description of a Panda Cub, new in 1956 and apparently under almost continuous modification ever since and continuing with the "Introduction to Transistors" which was quite definitely written tongue-in-cheek. However, it

Names and Addresses of Club Secretaries reporting in this issue:

ACTON, BRENTFORD & CHISWICK: W. G. Dyer, G3GEH, 188 Gunnersbury Road, Acton, London, W3-8LB.
BANGOR: E. R. Sandys, GI2FHN, 25 Moira Park, Bangor, Co. Down.
BASINGSTOKE: P. Sterry, G3CBU, Ashley, Orchard Road, Salisbury Gardens, Basingstoke, Hants.
BEDFORD: J. Bennett, G3FWA, 47 Ibbett Close, Kempton (*2427*), Bedford.
BISHOPS STORTFORD: A. Stanley, G3WUR, 43 Havers Lane, Bishops Stortford (*57251*), Herts.
BODMIN (St. Lawrence's Hospital): W. F. Swain, 32 Northey Road, Bodmin, Cornwall.
BOLTON: E. Longden, G3ZQS, 8 Gregory Avenue, Breightmet, Bolton, Lancs.
BRIGHTON (Technical College): R. J. Henley, G2CMH, 35 Wilmington Way, Brighton, BN1-8TH.
B.A.R.T.G.: G. P. Shirville, 2 Bradford Way, Toddington (*2740*), Dunstable, Beds.
BURY & ROSSENDALE: A. Cooper, G3VVQ, 411 Holcombe Road, Greenmount, Nr. Bury.
CONWAY VALLEY: K. Simpson, GW3RQV, Gwreiddyn, Moelfre, Abergele, Denbs.
CORNISH: J. Farrar, G3UCQ, Elm Cottage, Ventonleague, Hayle.
COVENTRY: C. G. Jaynes, 20 Belgrave Road, Wyken, Coventry.
CRAY VALLEY: P. F. Vella, G3WVP, 78 Hurst Road, Sidcup.
DARTFORD HEATH D/F: Mrs. M. Worbey, G3XVC, 13 Havelock Road, Dartford (*22889*), Kent.
ECHELFORD: R. Hewes, G3TDR, 24 Brightside Avenue, Laleham-on-Thames, Middx. (*Staines 56513.*)
GREENFORD: I. Jackson, G3OHX, 154 Ryefield Avenue, Hillingdon, Middx. (*Uxbridge 33861.*)
HARROW: R. H. Medcraft, G3JVM, 134 Dulverton Road, Ruislip Manor, Ruislip (*38726*), Middx.
HEREFORD: S. Jesson, 181 Kings Acre Road, Hereford (*3237*).
HULL: Mrs. M. Longson, 4 Chester Road, Wold Road, Hull.
MAIDENHEAD: H. Willis, G3ZPK, 207 The Parkway, Iver Heath, Iver, Bucks., SLO-ORQ.
MID-CHESHIRE: A. Greenwood, G3SIQ, 83 Ash Road, Cuddington, Northwich, Cheshire.
MID-HERTS: D. Storey, G8CYX, 70 Ventnor Drive, Totteridge, London, N20-8BS (*01-445 6757*).
MIDLAND: N. Gutteridge, G8BHE, 68 Max Road, Quinton, Birmingham, 32.
NIGERIA: E. A. Lomax, 5N2ABG, P.O. Box 68, Kaduna, Nigeria.
NORTH BUCKS.: P. Harman, G3WXO, 9 Calverton Road, Stony Stratford (*3346*), Wolverton, Bucks.
NORTHERN HEIGHTS: A. Robinson, G3MDW, Candy Cabin, Ogden, Halifax (*44329*), Yorkshire.
NORTH KENT: L. Randall, G4ACQ, 118 Brook Street, Erith (*40800*), Kent.
NOTTINGHAM: M. R. Harris, G3VUI, 20 Durham Crescent, Bulwell, Nottingham, NG6-9AH.
OTLEY: H. S. Johnstone, 12 Rumple Croft, Newall Carr, Otley, Yorkshire, LS21-2RE.
OXFORD: D. R. Ward, 2 Lincoln Road, Oxford (*47771*), OX1-4TB.
PETERBOROUGH: A. H. Jackson, 57 Peterborough Road, Caston (*353*), Peterborough.
PLYMOUTH: S. E. Martin, 32 East Park Avenue, Mutley, Plymouth, PL4-6PF.
R.A.I.B.C.: Mrs. F. Woolley, G3LWY, Woodclose, Penselwood, Wincanton, Somerset.
ROYAL NAVY: C/RS M. Matthews, G3JFF, H.M.S. *Mercury*, Leydene, Hants.
SALTASH: J. A. Ennis, G3XWA, 19 Coombe Road, Saltash (*3551*), Cornwall.
SHEFFORD: A. Sullivan, G2DGF, 12 Glebe Road, Letchworth, Herts.
SOLIHULL: J. Burnie, G3ZXO, 12 Buryfield Road, Solihull, Warwichshire (*021-705 4565*).
SOUTH BIRMINGHAM: R. J. Thompson, 23 Fox Hill, Selly Oak, Birmingham, 29.
SOUTH MANCHESTER: D. Holland, G3WFT, 7 Alcester Road, Sale M33-3GW.
SPEN VALLEY: J. Milnes, G8DSB, 19 Cliffe, Street, Staincliffe, Batley, Yorks. (*Heckmondwike 2433*).
VERULAM: H. Young, G3YHY, 93 Leaford Crescent, Watford, Herts., WD2-5JQ.
WAMRAC: Rev. A. Shepherd, G3NGF, The Manse, Kendal Road, Tebay, Penrith, Cumberland (*Orton 275*).
WOLVERHAMPTON: J. P. H. Burden, G3UBX, 28 Coalway Road, Wolverhampton, WV3-7LX.
WORCESTER: G. Spink, G3WUI, 1 Belvoir Bank, North Malvern (*3088*), Worcs.
YEOVIL: D. L. Maclean, G3NOF, 9 Cedar Grove, Yeovil, Somerset.
YORK: J. A. Rainbow, G8BOK, 14 Temple Road, Bishopthorpe, York, YO2-1QN.

The mobile rig operated by Harald Schreiber, DK3RJ, who signs GM5AVT/M on a reciprocal licence. He is well known to members of the Inverness club. The car is an Opel Rekord and the gear a Heathkit HW-100 transceiver, working into a tuned whip with interchangeable coils.

gives no detail of the November meeting, except that it will, as usual, be at St. Martins Court, Kingston Crescent, Ashford, Middx.

Mid-Herts. have the Welwyn Civic Centre for their regular meetings, which are always on the second Thursday in the month. For November they have booked a winner, particularly as the Club is very VHF minded—G6JP, George Jessop, is coming along, and will be taking a VHF subject.

Talking of winners, **Bishops Stortford** have one provisionally booked for November 15, when Lou Schnirr, G5AAN, will be making a return visit to the Club, which should guarantee a large attendance to see what magic G5AAN can wave over the intricacies of "Noise" to make his subject crystal clear even to the non-technical.

Oxford get together on the second and fourth Wednesdays in the month at the Cherwell Hotel club-room, Watereaton Road, and apart from any set subject time is always given over to a period of questions and answers for those intending to take the R.A.E.

At **Acton** (Brentford and Chiswick) on November 16, at Chiswick Trades and Social Club, 66 High Road, Chiswick, the entertainment for the evening will be a Film Show.

Now to **Shefford**, where we note G2DPQ starts the month with a talk on Safety in the Station, a subject which is rarely covered if our correspondence is any guide, but which is a natural for a lecture. Then, on November 11, G3TDW will explain how to go about "Sounding the Ionosphere." Frequency checking is next to be tackled, by G3VMI and G3EUS on the 18th, and on the 25th the lads have two things; first to sort out the final details for the annual dinner, and second to find the winner of the home-construction competition.

Basingstoke have just passed their tenth AGM; they are one of the few Clubs who meet on Saturdays; the first and third ones in each month are booked at Chineham House, Shakespeare Road, Popley, with a start at 1900 clock. November 6 sees them using the station and also practising their Morse, while November 20 is for G3CBU, who will be lecturing on "Oscillators."

Harrow are another of the weekly addicts; they have theirs at Harrow County School for Boys, Sheepcote Road, with practical nights on both November 5 and 19th, the latter also making room for a bring-and-buy sale. This leaves November 12 for G3NNG, who comes to talk about his VHF Receiver, and November 26, when G3RPE and G3HWR join forces to explain what its all about where the 3 cm. band is concerned—and who better, indeed?

There are dates for **Greenford** on November 12 and 26th, at the Community Centre, Oldfield Lane, but since the AGM is only just past, at the time of writing both these dates are "open."

Maidenhead have to report a change of Secretary, as G3FVC finds his professional commitments getting too heavy; he has been secretary for as long as your scribe can recall. The new incumbent is G3ZPK, whose address appears in the Panel, and he tells us the meetings are on the first Monday and the third *Tuesday* in each month, the first one being the natter, the Tuesday one being set aside for the formal programme; November 19 is for films of the club VHF NFD activity and a talk about the gear used.

Brighton Technical College made a good start to the season on October 4; the November 1 date is the ragchew night when they also put the Club station on the air. November 15 should be a very good one, as G3FXB will be coming along to try and pass on some of his own expertise in the field of DX and Contest operating at which he is an acknowledged dab-hand. He will be illustrating his talk with some slides taken during his tour of the States.

No November date appears in the **North Kent** *News Letter* this month, although it is understood the meetings fall on the second and fourth Tuesdays at the Congregational Church Hall, Bexleyheath.

Signing

That, good folk, is The Lot for another time. The deadline for December is **November 5** latest, with your December dates, *plus any important ones in January*, as the space normally given over to Clubs will in January be filled, as in previous years, with the MCC report and results.

So, there it is. *73.*

NEW QTH's

This space is available for the publication of the addresses of all holders of new U.K. callsigns, 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.

G3FCW, G. Denby, 31 Scotland Way, Horsforth, Leeds, Yorkshire. (*re-issue*).

GM3UA, S. Pairman (*ex-GM3OQY*), 5 Warwick, Calderwood, East Kilbride, Glasgow. (*re-issue*).

G4ADM, A. D. Maish, 48 The Crescent, Belmont, Sutton, Surrey. (*Tel. 01-642 1976.*)

G4ADS, J. C. Chisman (*ex-G8EBL*), 5 Shirley Avenue, Ramsgate, Kent. (*Tel. Thanet 55317.*)

G4AGT, H. P. Thoennissen, Horseplot, Stockland, Honiton, Devon.

G4AIH, F. Weetman, 23 Kenmore Road, Sale, Cheshire. (*Tel. 061-962 1904.*)

G4AJD, B. E. Dunckley, 33 Kitchener Road, Amesbury, Wilts. (*Tel. 09842 3254.*)

G4AJL, Amateur Radio Club, St. Lawrence's Hospital, Bodmin, Cornwall.

G4ALC, J. B. Balls, Kateshill, Park Lane, North Walsham, Norfolk.

G4ALV, J. M. Caw, 24 Oaklands Road, Bromley, Kent.

G4ALY, R. Bird, 119 Plymstock Road, Oreston, Plymouth, Devon.

G4AMF, J. Cresswell, 4 Hall Street, Hoyland, Barnsley, Yorkshire. (*Tel. Barnsley 743414.*)

G4AMJ, D. R. Evans, Sunlea, Wheal Speed, Carbis Bay, St. Ives, Cornwall.

G4AMT, T. R. George, Fernleigh, Penberth, St. Buryan, Penzance, Cornwall.

GW4AMV, S. K. Lamprey, 11 Broadacres, Leckwith, Cardiff. (*Tel. Cardiff 388086.*)

G4ANA, S. P. Cook, 104 Bagnall Road, Basford, Nottingham, NG6 OLB.

G4ANC, J. E. Hills (*VK2AJH*), 5 Clewborough Drive, Camberley, Surrey.

GW4ANO, B. Smith, Cim Farm, Abersoch, Caernarvonshire. (*Tel. Abersoch 2415.*)

G4IH, C. L. S. Cooper, 52 Marine Parade West, Lee-on-the-Solent, Hants. (*re-issue*). (*Tel. Lee-on-Solent 79954.*)

G8EDN, T. J. Gallagher, 24 Sunnybank Avenue, Whitley, Coventry, Warks.

G8EOC, R. Barnett, 25 Downhills Park Road, Tottenham, London, N.17. (*Tel. 808 6702.*)

G8EVG, M. A. Hickman, 53 Larkhill Lane, Liverpool, L13 9BL.

G8EWS, T. H. Shaw, 5 Langford Gardens, Bicester, Oxfordshire, OX6 8NA.

G8EZF, M. J. V. Rollins, South Park Hostel, Papworth Everard, Cambs., CB3 8QF.

G8FAS, S. M. Hotham, 208 The Avenue, Tottenham, London, N17 6JN. (*Tel. 808 6824.*)

G8FBP, P. J. Robinson, 2 Thornley Road, Ashmore Park, Wednesfield, Wolverhampton, Staffs. (*Tel. Wolverhampton 734367.*)

G8FBS, F. W. G. Hall, 4 Redhill Court, Palace Road, London, SW2 3NP.

G8FCA, R. Payne, 18 William Road, Hitchin, Herts. (*Tel. Hitchin 50519.*)

G8FCO, G. R. Onions, 2 Sqdn. 8 Signal Regt., Catterick Camp, Yorkshire.

G8FDI, G. W. Felton, 15 Rochester Avenue, Chase Terrace, Walsall, Staffs., WS7 8EN. (*Tel. Burntwood 2874.*)

G8FDM, E. H. Morton, 23 Collum Avenue, Scunthorpe, Lincs.

G8FDP, D. G. Simmons, 17 Berry Road, Stafford, Staffs. (*Tel. Stafford 55191.*)

G8FED, J. Argyle, 23 Edward Road, Kennington, Oxford, OX1 5LH.

G8FEN, R. G. Harris, 6 Chestnut Avenue, Lutterworth, Rugby, Warks. (*Tel. Lutterworth 2284.*)

G8FFE, H. J. Morris, Dwellys Drove House, North End, Creech St. Michael, Taunton, Somerset.

G8FFQ, K. Bull, 4 The Spinney, Finchfield, Wolverhampton, Staffs., WV3 9ER. (*Tel. Wolverhampton 62194.*)

G8FHB, E. S. Silvester, 60 Dean Road, Erdington, Birmingham, B23 6QF.

G8FHQ, H. Leach, 81 Dronsfield Road, Fleetwood, Lancs., FY7 7BN.

GW8FIG, C. J. Cole, 12 Calthorpe Drive, Woodlands Park, Prestatyn, Flintshire. (*Tel. Prestatyn 4460.*)

CHANGE OF ADDRESS

G3FHG, K. S. Martin, 5 Englefield Close, Rectory Road, Hawkwell, Essex. (*Tel. Hockley 3904.*)

G3ISD, E. J. Hatch, 22/24 London Road, Maidstone, Kent. (*Tel. Maidstone 58778.*)

G3KND, J. S. P. Hardy, 49 Highfield Gardens, Aldershot, Hants. (*Tel. Aldershot 22072.*)

G3VAD, R. A. Sinclair, Redcurrants, Hatfield Heath, Bishops Stortford, Herts.

G3VNP, P. Dowles, 45 Tyrells Way, Great Baddow, Chelmsford, Essex, CM2 7DP.

G3WCK, R. H. Godley, 15 Elm Court, 8 Richmond Road, London, E.8.

G3XSA, D. L. F. Standley, 35 Normanshire Drive, Chingford, London, E4 9HE.

CHRISTMAS IS COMING!

This is the time of year when thoughts begin to turn to present-giving, or getting. For the keen radio amateur, over many years now a subscription to SHORT WAVE MAGAZINE itself (£2·50, post free by surface mail, anywhere in the world) has been regarded as a very acceptable gift—this is not what *we* say, but what we are told by many recipients!

Apart from that, we have an exceptional range of book titles to offer and here is a suggested selection from which to choose. All prices are post free and delivery is from stock.

From 'way beyond the aerial, so to speak, *Sun*,

Earth and Radio (89p), reviewed on p.472 of our October issue, is an obvious choice. As regards antennae, the ARRL *Antenna Book*, 12th Edn. (£1·38) would be a very sound and popular choice—but we have several other good aerial titles, as the current advertising on p.524 shows.

An important buy—or a present greatly appreciated—would be a standard handbook covering the techniques, practices and constructional and design principles of amateur-band equipment—receivers, transmitters, power supplies, VHF and mobile gear, and all the rest. In this context we recommend the latest (1971) ARRL *Radio Amateur's Handbook* (£2·80), a thick volume, copiously illustrated, now in its 48th edition and of which over the years 100's of thousands of copies have been sold all over the world. (The current edn. was reviewed on p.216 of the June issue.) The British version of the same, the *Radio Communication Handbook* (£3·50) is a well-produced compilation in hard covers.

Other important titles for discerning buyers include the new edition of the RSGB *VHF/UHF Manual* (£1·75), reviewed on p.400, September issue *Magazine* and, for the /M operator, the *Mobile Handbook* (CQ publn.) at £1·38, covering the practicalities of mobile operation, construction and installation. In the SSB interest, we can suggest *Single Sideband for the Radio Amateur*, 5th Edn. (£1·65) and we have a few copies left of the 4th edition at £1·35 (if they are not gone by the time this appears).

* * *

Somewhat off the strictly radio amateur beat, we can now offer the latest (8th) edition of the famous *Foundations of Wireless & Electronics* (£2·00) by one of the most successful writers on radio, Marcus Scroggie—his book has run to many printings, has been regularly revised, and at the last count had sold something like 250,000 copies. The title exactly describes its contents and it should be regarded as an "Everybody's general reference book on radio". A great deal can also be learnt from the latest editions of books like the current issue of *Radio Valve and Transistor Data* (87p) now in its 9th edition.

For those with a positive interest in BC listening we have the incomparable *World Radio & TV Handbook* (£2·25), the standard guide to the BC stations of the world—LW, MW, SW, FM, VHF and TV—giving details such as frequency, power, geographical location, identification signal, main programme schedule, hours of operation and other relevant data, also including articles and information on BC listening. This book is used not only by keen BC listeners, but also by Govt. monitoring stations and the broadcast authorities' own monitor services, in many countries.

* * *

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OPPORTUNITY

ENQUIRIES Invited from keen radio amateurs interested in making a career in the profession of Amateur Radio journalism. Basic requirements are: Ability to write (and speak in public) fluently and coherently in the English language; possession of a current and active all-band AT-station licence; an understanding of the present-day techniques, practices and procedures of Amateur Radio; ability to judge objectively the written work of others in the sphere of Amateur Radio; an up-to-date knowledge of the current literature; and the capability of working independently, at home, within a broad directive without day-to-day supervision. Some practical knowledge of the actual processes of print production would be desirable.

Age limits for a suitable applicant would be about 28-38, preferably married and "established," with a good medical record.

Applicants should, in the first instance, write a letter taking in fully the foregoing requirements, with references to any published work in the Amateur Radio context, giving also educational details.

All applications will be acknowledged and treated as confidential. Applicants invited for discussion will have attendance expenses paid and will be required to give personal references. Write **Box X100, Short Wave Magazine, Buckingham.**

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FOR SALE: CR-100 receiver, overhauled, excellent performer, £15. Dantsu bug-key, £2·50. Class-C Wavemeter, £1·00. Hallicrafters S.38, small general coverage Rx, £7. Buyers collect.—Stampton, G3ZDR, QTHR, or ring Gravesend 63284.

WANTED: HRO Senior, not working, also CR-100 ditto, two of each.—153 Riverside Place, Ayr, Ayrshire, Scotland.

FOR SALE: Codar CR-70 receiver with matched speaker, price £18, buyer collects. (London area). —Box No. 5040, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: Trio 9R-59DE, with matching speaker, in mint condition, price £38.—Walsh, 21 Asquith Avenue, Thundersley, Benfleet, Essex. (Callers after 6.0 p.m., please).

SELLING: Trio 9R-59DE receiver, condition as new, price £28·50 or near offer.—Puttock, Bay Tree Cottage, St. Margaret's Bay (3243), Dover, Kent.

SWL Clearing Out: Marconi Wavemeter, coverage 100 kHz to 28 MHz, with PSU, £2·50. Monitor 'scope Type 101, with PSU, working but CRT poor, £4·00. Bendix TA-12D Tx, with 807's, etc. but no mod./PSU, £1·50. Two-metre Tx, 829 PA, no mod./PSU, believed working, £4·00. Advance PSU, 48v. at 1 amp., smoothed and stabilised, £2·00. Defunct R.107, 50p. Will accept any near offers, or £12 The Lot, buyer collects.—Ring Dungan, 01-467 2144 (South London), evenings.

WANTED: K.W. E-Z Match; Medco low-pass filter, 50 or 75 ohms; also handbook on National HRO-MX.—Cassidy, E15AJ, 64 College Park, Limerick, Eire.

SELLING: Sony Radio Model CRF-230, coverage AM/FM and short-wave bands; less than two years old and hardly used, list price £360. What offers? (Glasgow area).. — Box No. 5041, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

WANTED: Electroniques Transistor Qoilpax Mk. II and IF amplifier IFA/1·6/SSB Mk. II. Must be in perfect condition. Details and price.—Wallace, 13 Bellring Close, Belvedere, Kent. (Tel: Erith 34948.)

SALE: Jason audio generator, sine wave 10 Hz to 100 kHz, square wave 10 Hz to 50 kHz, in four ranges, 0·1 mV to 1 volt, in five ranges, in excellent condition, 200-250v. AC operation. Offers over £10.—Box No. 5042, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SELLING: Tech 20D signal generator, £5. Mains transformer, 1600-0-1600v., 300 mA, £5. Two 813's, with bases, £2·50 each. Capacitors and switches for linear, £1. Heavy-duty RF choke, 1 amp., £1. One mF 2500v. electrolytic capacitors, 40p. each. PSU in 17in. panel, 300v. 110 mA, 150v. stab., 6·3v., £10. PSU on sub-chassis, 300v. 200mA, 150v. stab., 6·3v., £5. Comprehensive junk box for experimenter, all good gear, £5. Buyers collect, please.—Corper, G3ZOJ, 54 Nightingale Place, Woolwich, London, S.E.18—4HG.

WANTED: Two-metre AM "Base" Tx/Rx, also two-metre mobile transceivers; must be in good order. SELLING: Murphy-designed 28-valve aircraft transceiver DME-153; motorised tuning over 150 to 300 MHz; motorised roller coaster ATU; compact, beautifully made and in excellent condition, £19.—Riordan, East Wing, Finnabrogue House, Downpatrick, Co. Down, Northern Ireland. (Office Tel: Belfast 34488, Extn. 505.)

SALE: R.C.A. TE-149 crystal calibrated Wavemeter, in transit case, £8·00. BC-221, with charts and AC/PSU, £15·00. General Radio Type 605B professional signal generator, £15·00. Heathkit MSP-1 stablised Power Supply, factory built, £12·00. Heathkit V-7A VVM, £7·50. Heathkit VF-1U VFO, £5·00. All carriage extra.—Margolis, G3NMR, QTHR, Tel: 01-550 0822.

SELLING: Trio TS-510 Transceiver, CW filter, with PS-510 and remote V50-5D, in mint condition, price £170, delivered reasonable distance, details on request.—Hayes, G3JBU, QTHR, or ring 0604-43020 (Northampton.)

SELLING Up! G4AHH (G8BBY) offers: Hammarlund HQ-180A receiver, in excellent condition, with matching speaker; companion HX-50 transmitter; two-metre transverter, as G3DAH design, with built-in oscilloscope monitor; good 70 cm transmitter, 4CX250B PA, 4CX250B tripler; 2/TT21 150-watt modulator, in console type rack; 100ft. tower 108-element 70 cm., 32-element two metres; 363 cables, cowl-gill rotator with desyn read-out. Much other gear, including cameras, monitors, 'scope, etc., etc., send s.a.e. for list.—Hayward, G4AHH, Marina Cottage, Watford Locks, Watford, Rugby, Warks., or ring Daventry 3974.

SALE: Receiver R4A, price £100. Buyer inspects and collects. (London area).—Box No. 5043, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: Collins TCS transmitter and spare Tx, with external PSU, speech amplifier and handbook, £14. Pye low-band "Reporter," unmodified, plus spare chassis, £5·25. R.C.A. AR88D, fitted S-meter, £30. Delivered North London, or call.—Martin, G3PWM, 255 Friern Barnet Lane, London, N.20.

SELLING: Star SR-200 receiver, all amateur bands and WWV for calibration; in perfect condition, price £33 or nearest.—Bean, 9 Groombridge Close, Welling, Kent.

OFFERING: Morse practice tapes, 600ft., 50p each, post free; s.a.e. for details.—Verrall, 9 Levett Close, Isle of Grain, Rochester, Kent.

SALE: In good working order, B.40C receiver, with headphones and manual, £20. R.209 Rx, 6-volt type, with manual, £7.—Halden, Park Farm, Baldwins Gate, Newcastle, Staffs., ST5-5ET. (Tel: Whitmore 237.)

WANTED: Bendix RA-1B receiver and Command Rx BC-454B, 3·0 to 6·0 MHz. SELLING: National SW-54 receiver, coverage 500 kHz to 30 MHz, in perfect order, with built-in speaker and PSU, for 110v. AC but with auto-transformer, price £10 or near offer.—Ballance, G3KNB, QTHR, or ring Stafford 62105.

EXCHANGE or SELL: For Transceiver in any condition, a Sphinx AM/CW/SSB transmitter, coverage 20-80-160m., with spare valves, p-t-t- microphone, Ae./CO muting unit, circuit diagram, etc., plus a 200-watt linear with PSU, £55 or near offer. R.C.A. AR88D, with spare valves, S-meter, realigned, cabinet, with handbook and headphones, £30. R.107A with spares, manual, phones, realigned, internal AC/DC PSU, £12·50 or offer. All with solid-state PSU's. Delivery no problem.—Leach, GD4AMZ, Walters House, King William's College, Castletown, Isle of Man.

SALE: Collins TCS-12 receiver and mains PSU, £8. RF-24 Unit, crystal-controlled for 10-15-20 metres, £1. Fidelity 4-track tape recorder, £10. Buyers collect.—Clark, Hillside, Butchers Hill, Shorne, Nr. Gravesend, Kent, DA12-3EB.

SELLING: New in June, Heathkit GR-78 solid-state general coverage portable receiver, maker-checked to full specification, price £49.—Ring Pegg, Leeds 654339.

WANTED: R.1475 receiver, with or without PSU, top price paid if in good condition.—Harrison, 43 Dorset Road, Palace Bks., Holywood, Northern Ireland.

SALE: Heathkit DX-100U AM/CW transmitter, in excellent condition and perfect order, with Ae. c/o, spare valves and manual, price £42·50 or near offer.—Standley, G3XSA, 35 Normanshire Drive, Chingford, London, E.4., or ring 01-529 2932.

SELLING: Hallicrafters S.108 receiver, with slide-rule type bandspreading across all amateur bands, excellent condition and appearance, £35; prefer buyer inspects and collects, or forward carriage extra. Also Geloso VFO-2 complete, £3·25.—Wright, GW3FEJ, 31 Terrace Road, Mount Pleasant, Swansea, Glam.

SALE: Telequipment Type 520 Oscilloscope, 5in. flat-face tube, 5 MHz bandwidth, in full working order, with spare CR tube and maker's manual; price £12, buyer to collect.—Harris, G3CCM, QTHR.

FOR SALE: No. 62 Set Tx/Rx, covers Top Band also 80-40m., AM/CW, in good condition, with internal 12v. transistor inverter, and in working order, price £10·50. (Midlands).—Box No. 5044, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: Marconi TF-390F RF signal generator, £12·50. VHF receivers R.1392 £6, and R.1132 £3. PSU Type P.234, £5. Preselector, matches Hallicrafters SX-24, £2. Carriage extra on all items. Various copies "QST" 1938-1952, offers?—Haseldim, G8EBM, 31 Ellesmere Road, West Bridgford, Nottingham, NG2-7DC. (Tel: Nottingham 23-1933.)

SALE: K.W. Match unit, £3·50. Radiovision pre-selector, £2. Engine 49 cc. two-stroke, £2·50. Home-built linear, 4/PL509 in grounded-grid, £20. Lafayette HA-230 receiver, coverage 550 kHz to 30 MHz, with noise limiter and Q-multiplier, £14.—Ring Reeves, G3OAB, 021-747 8489 (Birmingham).

WANTED: Complete set of IF transformers for CR-150 receiver; will pay £1 each if undamaged. Non-working Rx considered. All letters answered.—Austin, 21 Queen's Crescent, Putnoe, Bedford.

WANTED: National HRO-50 or —60 receiver, with manual.—Snowden, 1 Leslie's Avenue, Subway Street, Hull, Yorkshire.

WANTED: Heathkit HW-17A in good working order—any reasonable price gladly paid.—Elsworthy, 18 Bay Road, Dovercourt, Essex, CO12-3JZ.

SALE: Eddystone EC-10 Mk. I, with mains and battery PSU, external S-meter, as new, also S.S.M. Mosfet two-metre converter, IF 4·0 to 6·0 MHz, price £50 or would split. (East Anglia).—Box No. 5045, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SHACK Clearance: Creed Type 7B teleprinter with 80-0-80v. PSU, also motor supply, £15. No. 19 Set, with variometer, 12v. supply, mounting board, etc., £6. Pye "base station" Tx/Rx, blue cabinet, £15. BC-640 modulator, push-pull 811's £4. Pulse generator, Test Set Type 219, £5. Oscillator Type 37, 20 to 80 MHz, £4. B.44, £6·50. Wavemeter W.1649, £3·50. Loran receiver APN-4, £3·50. TR.1985, 100 to 124 MHz, £4. Pye base receiver, low band, £5. Pye base Tx, low band, £6. All items heavy so prefer buyers collect.—Heeley, G3SWU, 34 Worlaby Road, Scartho, Grimsby (77591), Lincs.

SELLING: Heathkit HW-17A, late model, as new, with DC/PSU, £65. Two-metre 10-element Yagi J-Beam, unused, £5. KW-2000A, £150. All items "or near offer."—Wilkinson, G3TXA, QTHR, or ring Royston 43941.

WANTED: Marine radiotelephone—Pye, Hamble, Ajax, etc. Also modern low-band FM radiotelephone.—Austen, 1 Valebridge Road, Burgess Hill (3409), Sussex.

MANUALS: For AR.8516L, Collins J4, SP.600JX, R.210 and R.216 workshop manuals, £2. Also AR88LF, B.40, CR-100, CR-150, CR-300, PTC.2107, RA-17 and S.770.—Brooks, 5 Farrant House, Winstanley Road, London, S.W.11.

FOR SALE: Complete 52 Set ground station, comprising receiver, PSU and transmitter—these three units being contained in a steel carrier; converted to mains input; coverage 1·75 to 16 MHz in three bands; Tx output 100/120 watts, AM/CW; in as-new condition, all working, complete with all ancillary gear, including spare valves, price £50. R.C.A. AR88LF receiver, good performer, £32. No. 19 Set mains PSU, built into 19 in. rack panel unit, constructed to supply both a 19 Set Rx/Tx and its associated high-power unit, £7. Also a mains PSU, giving 0-1200v. DC at up to 500 mA (Variac controlled) with 6·3v. tappings, built into 19 in. rack panel unit with voltage/current meters on front panel, high-power modulator also contained within unit, complete and in ventilated case, weight 120 lbs., price £20. Modulator, 25-watt, with PSU for 24v. input, £2. Pye marine-type PSU, mains input, supplying voltages for Pye Tx/Rx, overhauled 1969, weight 140 lbs., bargain at £10. An 813, brand new and unused, £3. Three VHF aerials, 50p each. All items carriage extra.—Britton, Dial Cottage, Julian Road, Bristol, 9. (Tel: Bristol 682845.)

DISPOSING: K.W. Vespa Mk. II, 6LQ6 PA, in perfect condition, price £85; delivery 100 miles. Going VHF.—Denman, G3MEW, 24 Ascot Road, Copnor, Portsmouth, Hants.

WANTED: Two cowl-gill motors in working order.—Foley, Hibernian Bank House, Keady, Co. Armagh, Northern Ireland.

WANTED: Collins accessory filters for 75S-3B, state bandwidth. Any Collins spares, quote all part numbers. Also Hy-Gain HT-18 hinged base assembly. Modern valve tester, brand new preferred. —Box No. 5046, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

WANTED: Transistorised two-metre transmitter, also Rx, preferably commercial but FB home-built considered; also wanted good quality portable tape recorder. (North-West).—Box No. 5047, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SALE: Trio 9R-59DE receiver, as new, with SP5D speaker, voltage stabiliser and xtal calibrator, price £32 or near offer.—Ballance, G3KNB, QTHR or ring Stafford 62105.

SALE: Eddystone 750 receiver, in very good condition, with speaker,. headphones and manual, price £35 or near offer. Ring Lance, Birmingham 706 0557.

FOR SALE: Hammarlund SP-600JX receiver in good condition, coverage 540 kHz to 54 MHz in six bands, price £70, buyer to collect.—Cave, 14 Clifton Way, Hutton, Brentwood (5724), Essex.

SELLING: Heathkit Two'er transceiver, with auto-transformer for 250v. operation, £18. Also R.209. £8.—Lincoln, G8DFX, 155 Green Lanes, Palmers Green, London, N.13. (Tel: 01-889 4253.)

STILL Required: Hallicrafters Sky Champion or Sky Buddy receiver, original condition preferred. —Litherland, G8CFB, 11 Birch Grove, Chippenham, Wiltshire.

WANTED: The mains transformer for a Minimitter Mercury transmitter. Selling marine band crystals, two at 2182 kHz (safety frequency).—McAlister, GI3UVX, QTHR, or ring Larne 3053.

SALE: FT-150 transceiver, with microphone and speaker, year old, perfect, original packing, price £160, h.p. available.—Jackson, G3CDE, QTHR, or ring Guildford 75236.

WANTED: Receiver EC-10, HA-600 or Mohican, in excellent condition. Full details, please.—Price, G8FIH, 32 Bournside Road, Cheltenham, Glos.

WANTED: VHF Rx tuning about 30 to 140 MHz, or more. SELLING: Almost new, mint and unmodified, JR-310 amateur band Rx, with original packing, £65 or near offer.—Johnson, GI3HCG, 6 Beechdene Drive, Lisburn (2473), Co. Antrim, Northern Ireland.

WANTED: Trio JR-500SE or Eddystone EC-10, Mk. I or Mk. II, with mains and battery units; must be in good condition. OFFERING: R.107 and R.208 receivers, exterior condition poor, but in working order—offers?—Holland, 4 Gilbert Road, Malvern, Worcs.

SALE: Signal generator Type CT.212, 85 kHz to 30 MHz, AM/FM, as new, with leads, manual, etc., £27·50. B.40, in excellent condition, with manual, £28. FR-100B, £90; AR-8516L, £165; both these items in mint condition and with manuals. Buyers collect. WANTED: Labgear LG.300 or similar Tx. (North-West area).—Box No. 5048, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SELLING: Communications receiver, £16·50; VHF Rx, VHF converter, £15. BC-221, £10. Type ZM-1/U Ohmmeter, 0-200 megohm, £8·50. Marconi ATU, £2·50. Collins broadband amplifier, 1 to 32 MHz, £2·50. Meters, RF, 20 microamp, 54 mV, £1 each. HRO PSU, 3-watt amplifier, £3·50. Two Panelscope AF/RF, £25. AN/URM-45, 50 to 11,000 MHz. Carriage extra, s.a.e. enquiries.—Wright, 249 Sandy Lane, Hindley, Wigan (55948), Lancs.

FOR SALE: Trio JR-310 receiver fitted 10AZ filter, in first class condition, £65. Codar PR-30X pre-selector, £6. Sentinel two-metre converter, IF 2 to 4 MHz, £7. (Liverpool area).—Box No. 5050, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

WANTED: Eddystone EC-10 receiver, Mk. II.—Hodges, French Mill, Claphill Lane, Rushwick, Worcester.

FOR SALE: Trio JR-500 amteur-band communications receiver, in excellent condition; bargain at £50. Would deliver in West Yorkshire area.—Box No. 5049, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: Receivers CR-100 and R.1155—offers?—Childs, 4 Elan Road, Llandudno, Caernarvonshire.

WANTED: SB-640 LMO for Heathkit SB-101. Also KW-600 linear amplifier. Details and price asked. —Savage, G3GDC, 33 The Broadway, Plymstock, Plymouth, Devon.

SALE: Hamgear PM-1 preselector, self-powered, with Minimitter MR-44/2 receiver and speaker, complete, £20.—Wilson, Orchard House, Sutton Green, Guildford (75783), Surrey.

EXCHANGE: Eumig S.709 sound projector, Bolex 155 Macrazoom camera, screen, stand, viewer and splicer, as new, FOR KW-2000B with mobile PSU.—Allen, 42 Quantock Road, Bedminster, Bristol, 3.

WANTED: Eddystone EA-12 receiver, Panadaptor for EA-12 and Wobbulator for 400-500 kHz.—Sturdy, 73 Rawcliffe Lane, York (27123), YO3-6SJ.

WANTED: Antenna Assembly AS-410/URD-2, three required. SELLING: APR-4 search receiver, £42. RDO search receiver, £18. RF Units, for sliding into APR-4/RDO, 39-95 MHz, 74-320 MHz, 300-1000 MHz and 975-2200 MHz, £6 each. RDO panoramic adaptors associated with APR-4/RDO receivers, £22. B.40 receiver, £16. Transceivers (walkie-talkies) URC-4, £5. R.209 Rx, £10. R.1155 receiver, £5. T.1154 transmitter, £5. B.46 receiver, £5. Transmitter 5-AH, requires modulator, £5. R.1132 Rx, £2. Capacity Bridge, General Radio Type 716, offers? Oscilloscope, 14in. screen, Cintel 15A, £35. Wide-band amplifier, 5 to 10 MHz, £2. RF Units, Type 26/27, £1 each. Teletype 19; page printer, transmitter-distributor, table, PSU, complete, £25. Wavemeter Type W.1310, 155 to 230 MHz, offers? CR tubes: VCR-97, 50p; 3DP1, 50p; VCR-131, 12in., £2; CV-262, £1. Photomultipliers, 50p.—Barry-Peters, Blue Coat School, Wavertree, Liverpool, L15-9EE. (Tel: 051-733 1407 or 051-724 4446).

FOR SALE: Heathkit DX-100U, in FB condition, price £40—would deliver in London area.—Ring Bean, G3TJQ, 01-874 1227, evenings. QTHR.

TELEPRINTERS: Model 7B, £15; Model 75, £25, by Creed. Teletype 15, or TG7A, £15. All machines run off 230v. AC and are in fine order.—Phillips, 155 Franklands Village, Haywards Heath (50265), Sussex.

SALE: Two-metre crystal-controlled Tx, 10-watt, with xtal, less modulator, PSU, £3. T.W. two-metre converter, IF 28 to 30 MHz, £8. J-Beam 4/4 two-metre converter, £2. Semi-automatic bug, £4. (South East).—Box No. 5051, Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

SELLING: Geloso-209 Rx, 12 new valves but does need trimming, £15. Two-metre valve converter, well built, IF 26 to 28 MHz, £9. PSU, 350v., 6·3v., 150v. stabilised, well smoothed, £2. Mains transformer, 450-400-0-400-450v. with many heaters, £3. SE.38 with Woden 110/250v. transformer, £5.—Truscott, 8 South Riding, Bricket Wood, Watford. Herts. (Tel: Garston 72105).

FOR SALE: Codar A.T.5, Codar PSU 250/S and Codar PR-30 preselector, £20 or near offer. Prefer buyer to see and collect, or carriage at cost. —Ayling, G3YUH, QTHR, or ring Thanet 21607.

SELLING: National HRO with 900 kHz to 30 MHz GC coil packs and AC/PSU, including K.W. amateur-band converter; in good working order, £15; would deliver locally. WANTED: Medium power Tx, 50 watts or so, AM/CW, coverage 10 to 80m., VFO controlled, W-H-Y?—Smith, G3ZQC, 161 Sandy Lane, Fair Oak, Eastleigh, Hants., S05-7GF.

SWAN 350, in mint condition and little used, includes crystal calibrator, price £165, terms could be arranged. Reason for sale, no time to operate!—Cross, G3OZD, QTHR, or ring Hatfield Woodhouse 693 (Yorkshire) after 8.30 p.m.

G2FUD Thinning Out The Gear. Clean **DX-100U,** factory-modified for RTTY/CW/AM and for SSB (with SB-10U, not provided), improved 160m. operation, manual, £52. Following **RTTY Equipment,** clean and complete. **Demodulators:** Marconi HU.11, PSU and built-in 80-0-80v., £12. ATM FSR.1.1X, £5. ATM FSY.1.1, £6. Redifon CFS and PSU, £2. Complete ATM installation: **Rare AFC/BFO Unit** FSR.4.1, Demodulator FSY.1.1, CR Tuning Indicator CRM.1, PSU FSR.1.2, **Regenerative Repeater** TRR.2. (All 3½in. rack panels), £39. ATM Frequency-shift Keying Unit and PSU FSK.2, crystals and LC circuits in oven, meter reads shift, £15. GNT Morse Reperforator 451, new with spares, £3. Creed Reperforator 7TR/3, 240v. AC, as new, £7. Creed friction carriage for 7B, £1. Polar Relay Testset, £1. Labgear Wideband Multiplier, £1·50. 80-10m. 813 PA, 1250v. PSU, £9. 450v. Tx PSU, £3. Current-model "Copymate" photocopier, £7. Inspection/collection preferred or transport arranged. **Two Free Teleprinters** given away to first buyers above.—Owen, G2FUD, 184 Hale Road, Hale, Cheshire. (Tel: 061-928 1321.)

SALE: Trio 9R-59DE general-coverage Rx, plus matching speaker SP5D and headphones HS4. All in perfect condition, with original packing, hardly used—offers invited.—Ring Mathews, 01-876 7868 (London, S.W.14.)

DISPOSING: K.W. Atlanta with external VFO, little used, £175. Trio JR-310 receiver, as new, £55. KW-2000B, as new, £165. Emsac two-metre transmitter, brand new, £40. Auto-transformer, new, 500-watt, £4. Heathkit dummy load, £4. K.W. low-pass filter, unused, £4. Hallicrafters SX-133 Rx, with speaker, brand new (retails £150), price £75. Swan 500C and PSU, with two-metre transverter running 240 watts p.e.p., as new, offers? Also Swan mobile PSU, £20.—Goodbody, G3YQE, 114 Lodge Lane, Collier Row, Romford, Essex. (Tel: Romford 61191, evenings, or 01-592 7800, office hours.)

DECEMBER issue SHORT WAVE MAGAZINE will appear on Friday, November 26. Single copies at 25p post free can be supplied to orders reaching us by Wednesday 24th for despatch on Thursday 25th, the day before publication. Orders with remittance to: Circulation Dept., Short Wave Magazine, Ltd., 55 Victoria Street, London, S.W.1.

FOR SALE: Drake TR-4 transceiver, with AC-4 PSU, RV-4 remote VFO, little used and in mint condition, £350.—Barry, 15 Fairlawn Court, London, W4-5EE. (Tel: 01-994 6931).

SALE: Hudson AM108 Mk. II mobile transceiver, three channels around 70 MHz, with integral PSU, pos./neg. earth, working and unmodified, complete with all crystals, handset, mobile mount and manual, price £8, carriage extra.—Michaelson, G3RDG, QTHR, or ring 01-455 8831.

FOR SALE: Heathkit DX-100U Tx, £40. Lafayette HA-600 receiver, £30. AR88LF Rx, £30.—Bushell, GW3OSV, Park East, Clarbeston Road, Pembs.

WANTED: Eddystone EC-10 Mk. II receiver, in mint condition; also a two-metre converter.—Davies, 21 Heol-y-Forlan, Whitchurch, Cardiff.

WANTED: KW-2000 transceiver or K.W. Vespa Tx. SELLING: CR-100 receiver with manual, £12. Geloso 4/102 VFO, will drive 2/6146's, never used, in original box, £6. RF-26 Unit, £2.—Ring Giddings, G3XLB, Formby 71968 (Lancs.).

WANTED: T.W. Communicator Two or T.W. Two-mobile, also Eddystone 888A receiver.—Ring Price, G8DDF, Aldridge 51017 (Staffs.).

FOR SALE: Star SR-200 amateur-band receiver, £32. Hamgear preselector PMII, three months old, £5. Pye "Ranger," crystal controlled on two metres, with one Rx crystal for 145 MHz, £8—Combe, G8AHO, 96 Rayne Road, Braintree, Essex.

EDDYSTONE EC-10 Mk. I transistorised S/W receiver For Sale. WANTED: Heath Mohican GC-1U receiver.—Hughes, 11 Henley Road, Ludlow, Shropshire.

WANTED: Pye F27AM, Cambridge, Bantams, Westminster, Motaphone. Also wanted, working and unmodified Walkie-Talkies on either 27 or 28·5 MHz.—Kates, G3UHS, QTHR, Caterham (Surrey) 46692.

WANTED: Joystick Aerial, complete with precision built variometer.—Leighton, Tangley Cottage, Wonersh, Guildford (66543), Surrey.

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