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ADVERTISERS' INDEX

	Page
J. Birkett	531
British National Radio and Electronics School	530
Colomor Electronics Ltd.	531
Datong Electronics Ltd.	529
Dewsbury Electronics	529
E.M.A.	530
D. P. Hobbs Ltd.	530
KW Ten-Tec Ltd.	528
Lowe Electronics Ltd. <i>inside front cover</i>	
P.M. Electronic Services	528
Quartslab Marketing Ltd.	528
F. G. Rylands	531
S.E.M.	494
Small Advertisements	530, 531
Stephen-James Ltd.	494
S.W.M. Publications. <i>inside back cover</i> <i>back cover, 528, 530, 532</i>	
Uppington Tele/Radio (Bristol) Ltd.	531
Reg. Ward & Co., Ltd.	530
Geoff Watts	531

CONTENTS

	Page
Editorial — <i>Six Metres</i>	495
Communication and DX News, by <i>E. P. Essery, G3KFE</i>	496
“Practically Yours”, with <i>Glen Ross, G8MWR</i>	498
Lowe Electronics Ltd.— <i>How It All Began</i> , by <i>Ken Michaelson, G3RDG</i>	500
Oblast Corner, by <i>Nigel Cawthorne, G3TXF</i>	502
Amateur Radio Computing, by <i>Rev. R. P. Butcher, G4NWH</i>	505
G3RJV's Workshop Notebook	506
The S.E.M. Ezitune Antenna Tuning Bridge — <i>Equipment review</i> , by <i>N. A. S. Fitch, G3FPK</i>	508
Contemporary Briefs	509
The “Radio Amateur Callbook” Story, by <i>Nigel Cawthorne, G3TXF</i>	510
50 MHz Receive and Tx Exciter for the Yaesu FT-707 Transceiver, by <i>Ian Keyser, G3ROO</i>	512
KW Ten-Tec Century 22 Transceiver, A Description and Use, by <i>E. H. Trowell, G2HKU</i>	514
VHF Bands, by <i>N. A. S. Fitch, G3FPK</i>	517
“When Morsing, Remember the Human Factor”, by <i>Jack Hum, G5UM</i>	522
“Beyond the Call” — <i>G6CWK</i>	523
Clubs Roundup, by “ <i>Club Secretary</i> ”	524

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Articles submitted for Editorial consideration must be typed double-spaced with wide margins on one side only of A4 sheets. Photographs should be lightly identified in pencil on the back with details on a separate sheet. All drawings and diagrams should also be shown separately, and tables of values prepared in accordance with our normal setting convention — see any issue. Payment is made at a competitive rate for all material used, and it is a condition of acceptance that full copyright passes to the Short Wave Magazine, Ltd., on publication.

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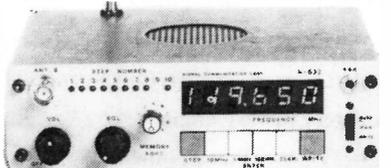
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COMMUNICATION and DX NEWS

E. P. Essery, G3KFE

The Bands

ABOUT as near as I got to them this time was the drawing-board, where I have spent my spare time thinking about aerials and supports at my new home.

As always, the letters reflect the conditions; and as we all know, conditions approach ever nearer to the sunspot minimum, with, of late, a smooth and steady decline. Days when no sunspots were visible totalled eighty-odd in 1985, and it is likely that they will exceed 100 this time round. Sunspot minimum, of course, means poor propagation and thus it is normal for few, if any, DX-peditions to come up at these times — we noted the trend in the last two minima as well.

Top Band

Firstly, G4OBK (Chorley) who used CW to reach W1-2-3-4-5-8-9-0. EA6ET, UL7OB, PY1MAG, UA0BL, UG6GAW, Y24DO, T77C, JW0A and RI8AA, the last-named for a new one. On SSB telephony, ZD7CW was a new one, high up the band at 1883 kHz; it was lucky that Phil had heard him announce on Eighty that he was going to 1883 kHz and so was able to be there and waiting to ensnare him.

G3BDQ (Hastings) doesn't think that things were as good this year as in previous years over the period in question; and John waxes strong about the gathering DLs on SSB at about 1832-1835 kHz, splattering all over the band and right on top of rare DX. That is bad enough, but when they do by some accident become aware of the presence of the DX the meal they make over working him is quite something—and of course the DX usually disappears as conditions change and no-one else gets a look in. This in fact happened with VU2GDG, with a coast station on 1839 kHz passing on New Year greetings just to complicate matters. G3BDQ worked 9H3EP, SV1PL, ZB2DX, ZB2FK, T77C, HV2CO, EA8YV, W1-2-3-4-5-9, VE1ZZ and VE2FYR; while in Asia there was UD6DC, UD6DKW, UG6GAW, RA9AA, UA9CBO, RW9HZZ, UA9KBY, UA9MR, UA9MS, UA9OCR, UA9SHP, UA9UCO, RA9YG, UA0AG, UA0BL, 4X4NJ, VS6DO; in Oceania VK6HD, and of course the Southern and Central Americans including PY1RO, PZ1AC for a new one, and FM5WD—not new but one for which a QSL is lacking.

G2HKU (Sheppey) seems to have been making quite a feed of things last month;

apart from the holiday doings there has been a sick washing-machine, spindrier, and domestic TV set to mend, and to add insult to injury both the home and the church Christmas lights tested as O.K. before erection refused once they were hung up. In between all these chores, time was found to work PA0PN on Phone, with CW sent out to OL8CQP, SP4EAK, UC2WAZ, VE1ZZ, UQ1GWE, LX1EA, GM3TMK, DL6ZZ, F81H/EA, OK2PEX, LA2UA, GM5PJ, and GW3KOR.

G0CJM (Fareham) sent us a nice card—thanks Roger—and in the course of the letter says that he listens to G3BDQ and the gang regularly but does wish they would pause and chat with a new boy who wants to start right. Comments please, from G3BDQ and the gang (Roger was G6XCJ and QTHR under that call).

Eighty

G2NJ (Peterborough) can break the ice this time; Nick noted a lot of OT G2 calls on the afternoon of December 28, including G2BY, G2DK, G2IZ, G2OU, G2WQ and of course G2NJ himself; and on 31st, ON4PAX was operating for the final day of the qualifying period for the PAX Award of the Ypres Radio Club, the start having been back in March. December 22 saw the QRP star of the month in the shape of G4GIQ (Northwich) who appeared on the TOPS CW net on the Sunday afternoon, with an all-home-brew one-watt rig.

Empire Broadcasting

G2NJ had a visitor in the shape of G3KPO, who was on his way back to the Isle of Wight from his visit to China; Douglas let him into the latest plan of the Wireless Museum which is to commemorate the early work on Empire Broadcasting by Gerald Marcuse, G2NM. G3KPO at the moment is seeking receiving equipment and other gear built for the reception of those broadcasts—offers of help to him *via* the Wireless Museum on the Isle of Wight, or to G2NJ (QTHR).

G3ZPF (Kingswinford) is still plugging away on SSB on this band and managed 8P6KY, YS1RRD, plus a CW contact to W1CFZ. An interesting one was with G4ZHC who has a keyboard; David was surprised to find he could just about copy G4ZHC even when the keyboard was turned up to 40 wpm—something that David would never have been able to do a few years back. It's surprising how the CW

speed creeps up unnoticed with regular usage! Incidentally, the YS1RRD QSO was made extra worthwhile by the fact that an EA8 (not known from Adam by G3ZPF) told the YS to "listen for the G station who has been calling you for a long time"—and no EUs in the pile-up had a G in their calls either!

Now we come to GW4BLE (Newport, Gwent) who says he will soon be QRT as there is a moving of house afoot; what he wants is a hill-top site with an acre of ground and a big house for under £40K..... optimist! Meantime, Eighty SSB produced FM5WD, LU6FAZ, HK4DMG, N2DHz/VP2V, HK5ISX, T18CBT, PZ1AP, W21IJ/6, JA2IVK/VP2V, K6NA, ZL1, ZL4; and the gotaway list included such as KH0AC at 2050z, with an S9 signal unfortunately covering all Europe(!), many W6/7s around 0800z, and W7IVX, W6NLZ and W6RJ at 1545z with a RS44 signal.

It was a QRP band for G2HKU; the little rig yielded CW contacts with G3ZNF and YT5T, at the four-watt level.

"CDXN" deadlines for the next three months:

March issue—February 6th
April issue—March 6th
May issue—April 3rd

please be sure to note these dates

Forty

The band most people love to hate! G4OBK was able to use the microphone for contacts with 9H4B, UM8QRD, YV5FCI, and HC1HC, but turned to the key mode for RF6QAI, SV1TY, C31ON, PY1FUL, SV1SQ/SV9, and 4K1ZZ (Mirny Base, QSL *via* UY5DJ).

Ten-meter addict G4HZW (Knutsford) has been building a Howes QRP transceiver project; the transmitter and the VFO all boxed into a nice Tandy box, and used with the Lowe SRX-30D receiver, which is hardly ideal for this band. So far, HA, PA, DL and UZ2 have been raised with three watts and an indoor dipole; Tony felt very satisfied to fulfil his long-held ambition to be on the band with a home-brew rig.

For GW4BLE the band was the vehicle for SSB contacts with TI2KD, YS1RRD,

long path JAs around 0730z; but most of the DX seemed to be tied to what Steve calls the "ZL2AAG fish-tank!"

New Bands

Although, as already indicated, G2HKU was attacked by Murphy's Law over the period (we didn't mention two neighbour's TV sets and a 'Walkman' that ate its own tapes!), Ted still found time to exercise his QRP rig at five watts on 10 MHz for a contact with OZ1VGO.

G6QQ (Hoveton) mentions that during December he heard several Ws on 10 MHz, in the afternoons, but nary a squeak could he get from them.

G4FLK (Corfe Mullen) found nothing on 24 MHz at all. 18 MHz gave G6HL, SM2PDW, F8FE, SM4AKZ and DF5MX on 12th December, plus ZM3RK and DJ3HW on 8th. As for 10 MHz, the first date showed with VK2DUY, FD6IE, F3NB, VK2NN noted on SSB, G4UZB, G4SKJ, YU1DX, DL6BBX, G4HUC, HB9CMN, DF5MX, DL1MMD, VK2BRA, G3AAK, OE7HL, I3BLF, VK2HC, DJ6FO, G3YY, ZM3RK; while the following day served up SM6AQQ, DJ6FO again, EA6XN, Y21ETO, G4HMD, I5JXT, I5OMH, G3AAK, IK2EYP, G5VQ, G4LNA, F/G4SKJ/MM, GM0AJP, Y24JN, DL7YD, ISOLYN, DJ2VK, LA2IR and DJ3HW.

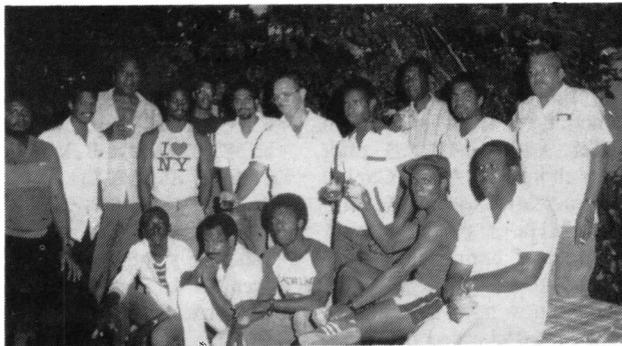
Now to G2ADZ (Chessington) who says he didn't bother with 10 MHz. On 18 MHz there was ZM3RK four times, a rather one-sided contact with VK5BJF in which G2ADZ was a mite too weak, ZS1XR and V2ACW (QSL to WB4OSN), plus quite a few EU stations. Gotaways included ZS6AVM and TU4BP. As for 24 MHz, Bill noted an opening on December 13 when he heard N4SU, but the latter just wouldn't come out and play!

Bits & Bobs

In February, the weekends 1/2nd and 22/23rd are set apart for the RSGB 7 MHz contest. Everyone who operates 7 MHz competitively will know all about it; the British Isles working the world sums it up, and all entries are to be single-operator; but there is an SWL section. Note that unmarked duplicates will be penalised at ten times the claimed points. Phone entries by March 31 and CW ones by April 21, to RSGB Contest Committee, Box 73, Lichfield, Staffs. WS13 6UJ.

The RTTY Journal contest for keyboard addicts is down for February 22—again the RTTY enthusiasts will already have the word.

Now we come to the CQ WW 160 SSB contest which is scheduled for February 21-23, 2200z Friday to 1600z Sunday, and there are no changes from last years format, repeated in the October 1985 issue of *CQ Magazine*. Note that it is strongly recommended that split-frequency working is used, and the DX Window observed. Contest logs are to be posted by March 31;



Richard Jolliffe, G3ZGC/MM, sent us this picture taken at the Dominica Radio Club's Christmas party, to which he was invited when his ship docked in Roseau. Apparently it was a three-day event, which included a meal attended by the Prime Minister of Dominica and ended with a beach barbeque! Top row, left to right, J73LG, BD, PA, HA, DC, CS, PD, CB, MJ, SB, AF; in front, left to right, J73AU, RM, SK, BS, PB.

send to Don McClenon, N4IN, 3075 Florida Avenue, Melbourne, FL 32904, U.S.A., and indicate CW or SSB on the envelope.

Finally we must mention the ARRL DX Contest; February 15-16 for the CW leg, and March 1-2 for Phone, 0001z Saturday to 2359z Sunday. Rules as per last year, and log sheets also; all bands 1.8-28 but *not* 10 MHz. Aeronautical or maritime mobiles are not good for credit points. The categories include single-operator-single band, single-op multi-band, multi-op multi-band one Tx, and two Tx, or multi-transmitter. Also a QRP all-band section too. Note the final statement — "disqualification regulations will be strictly enforced." Mailing deadline for all entries is April 1, to go to ARRL DX Contest, 225 Main Street, Newington, CT 06111, U.S.A.

On a different tack, we notice that two new prefixes will have appeared by the time you read this — ZF8 for Little Cayman and ZF9 for Cayman Brac.

We see that the DXCC desk turned their noses up at a QSL from VU7HMD/VU7, and it is also noted by *TDXB* that there seems to be no hope of getting a QSL out of the first Laccadive operation back in December 1983.

Aruba will be a separate DXCC country from January 1, signing with prefix P4; KQ2M was hoping to have been there for a week during January.

ZL1AMO ran into problems with his ZK3RW activity, in that he wasn't able to get a boat from Samoa to Tokelau. We hear he is planning to try again in March.

There seems to be a problem with the recent Sable Is. DX-pedition in terms of the QSLs, although the word we have is that VE1ASJ is the correct route.

Those who have DXCC applications in should be ready for a wait; it seems that the DXCC desk at the moment is under a new chum who doesn't hold a call and is scratching a little at the task—patience please, he'll learn!

During the CQ WW contests in the autumn, it seems both BY1PK and BY4AA were active, but still using their old long-winded methods on Forty—and no one has reported contacts.

That BV0BG signal out of Taiwan was the group led by Barry Goldwater, K7UGA, and the QSLs go by W3USS, says *DXNS*.

From the same source we hear that when JR1AIB visited the YI1BGD station, he found over 2000 QSL requests, with airmail envelopes, awaiting cards for which a government grant was awaited. The DX Family Foundation promptly sent them 3000 cards. We will now await results, but knowing the YIs, one has doubts as to whether anyone will pick up the chore of filling the darned things in! We must just hope!

On the subject of the Clipperton expedition last year, several G stations report having their cards back marked "not in log"—but they are all certain that they worked the real station and not a pirate.

Ten Metres

GW4BLE looked in at the ARRL Ten-Metre contest and made more QSOs than the previous year at 168, but only got 29 multipliers this year. Some DX was worked, with A22, some ZSs, 9J2, EA8, TU, LU, CE, and a couple of TIs in T12KD and T12CF. Most of the other multipliers were from EU, with quite an intense Spor-E opening on the Saturday. ZC4 from the Sovereign Base was an all-time new one, though Steve admits that he is *sure* he worked one before even though no reference appears in the files! GW4BLE uses a TS-930S plus SB-220 into a TH-5 at 45 feet, a 7 MHz loop and an 80m. dipole.

Turning to real hard-line 28 MHz addict G4HZW, Tony stuck at it with his TS-820 and two-element Quad at 35 feet; his patience resulted in contacts with Y25OE, HB9, F6, DL1, EA3 and F6, all on

December 14, plus HB9 and DM3 on 21st. An interesting event occurred on January 6 when Tony was listening to 7 MHz when signals went all 'fluttery.' This is always a sign that something's afoot and so it proved on Ten with SM3RAB and OH9VC, both well into the Arctic Circle, SM2CTN, and indications of an Aurora opening on 144 MHz. The band stayed open for a couple of hours with weak Auroal GM signals to be heard.

G3NOF (Yeovil) now takes up the tale, but a short one it is: "checked the band regularly but heard nothing."

G6QQ looked in at the ARRL Mixed-Mode shindig, and found some contacts: SSB to F, I, LA, OK, UQ, YU, plus CW to DA, HA, HB, I, LA, OH, OK, OZ, SM, UB, UQ, UR, YU, and Y23, with ZS and 9J as gotaways. All this was on the first day, but on the second day (15th) nothing at all was to be heard.

Just one peep at 28 MHz was enough for G2ADZ, when he worked ZS6USA; but oddly enough GB3SX was very weak and at the same time GB3RAL well up. . . odd conditions.

Fifteen

G4OBK has first bite; Phil tried SSB and managed to work J28EL, VK6VB and a few EUs.

Steve, GW4BLE, found PJ3JHH on Aruba, a week before its new country status came into operation, YV5AEM, PZ1BU, VK4KAC and a couple of JAs via long path on the morning of December 17, after which a CQ netted nothing!

G3NOF noted that the earlier part of the period was better than the latter half; SSB contacts were made with A22TJ, CX8BX,

FM5WD, G3KQL/TT8, HH2CF, JG1FVZ/5N0, TA2G, V44KAC, VE3FXT/ZS4, V13KMA, V18NPT, VK2NBB, VK3CWD, VK3KXW, VK3NJS, VK3VXV, VK3VYE, VK6VB, VK7NCH, VK8NGP, VP2MR, W2-4-5-9, ZC4AP, ZS1AAX, ZS1DL, ZS4BA, ZS5ZA, ZS6OQ, ZS6USA, 3D6QL, 7P8CM, and 7P8DF.

The only highlight for G6QQ was December 7, when he used SSB to work VK3KMA, CV0U, 7P8CM, J28EL, and W2GM.

Twenty

During the latter part of the month, notes G3NOF, the signals from Australia have been somewhat down, but at the same time the ZLs have been rather better; VS6s have been heard regularly, plus BV, DU and KH2. SSB contacts were made with AH2BE, CV0U, JA5RH, K1CTK/TU, K6YRA, KB0NL (S. Dakota), N2DHz/VP2V, N7FSW, OE5HTL/YK, PYs, T77C, T18CBT, VE7ATP, VE7KS, V15BEG, VK2BPN, VK2ECR, VK2JY, VK2OG, VK2RH, VK2UT, VK3CN, VK3AGW, VK3DYL, VK3MO, VK3OM, VK3RV, VK3XV, VK4BAY, VK4LC, VK9NM/Lord Howe Is., VP8BGO, VP8LP, VP9LE, VS6CT, VS6CX, VS6DO, W4HHB/5N3, W6PU, XX9AL, XX9WW, ZB2JB, ZD9CI, ZD7CW, ZL1BD, ZL1BMU, ZL2BCG, ZL2JL, ZL2TT, ZL3OP, ZM7AA, ZS1AU, ZS1SL, ZS4FG, ZS5DE, 5Z4MR, 5H3BH, 5H3CE, 5H3HM, 7P8KG, and 8P9AF.

Over to G6QQ, who made CW go to PZ1AV, K4BAI, and KB1DA, plus an SSB contact with K2HPR.

For GW4BLE there were contacts on Phone with H44IA, 3X0HAB, 7P8KG (the Yasme, Lloyd and Iris Colvin expedition), also CW to 3D6QL, J73HA, KH0AC, BV0BG, BV0CRA, and BV2B, HL4CCM, KS0C/KH2, AH2BE, 8Q7PA, 8R1RPN, V44KAC, 4K1HK in the Antarctic, ZS3BI, J73HA, ZL and JA by long path, and N2DHz/VP2V; gotaways were VK9ZG apparently taking phone-patch traffic into VK from Willis Is., and P4DO — the new Aruba prefix who was attracting a large Stateside pile-up, but not offering to work anyone else.

G4OBK tried both Phone and the key; on the former mode he worked HV2VO, J37AH, G6ZY/EA6, RD6DZ, 3XOHAB, JW0A and V85GA, while the CW accounted for IQ8RAI, UA0s, PJ2LS, 3D6QL, LB5FC, FT8XB, and JH4E1Y/5N1.

For G2HKU, the ZL skeds have always been the attraction, but although the SSB got to ZL3FV at the beginning of the period, the sked was broken later on; as consolation there were CW contacts with NY6M/KH2 on Guam, UM8MFB, W3VT and RD6DEX.

Finale

Thanks to the delay of a misdirected packet of mail this piece has had to be somewhat shorter than usual; so if we have missed any part of anyone's report, please forgive us.

The deadline for your letters — and the more the better — for next time is to arrive by **February 6**, addressed as always to your conductor, "CDXN," SHORT WAVE MAGAZINE, 34 High Street, Welwyn, Herts. AL6 9EQ. And — thanks for all the cards and the good wishes!

● ● ● "Practically Yours" ● ● ●

with GLEN ROSS, G8MWR

AN article in this series which described RF filters mentioned the fact that a completely different approach was taken to the design of filters for audio frequencies and this has brought in several requests for more information on the subject. Another article gave tabulated information on the values to use when constructing attenuators. Many people commented on the fact that it was easier to construct using "look-up" tables rather than having to get down to the maths and work the values out for oneself. Bearing these ideas in mind the present article gives tabulated values for low and high pass filters covering a wide range of frequencies.

Filter Types

Filters can be of four types. First, low pass, in which all frequencies below a defined frequency are passed. Second, high

pass, which reverses the operation and pass frequencies above a defined one. Third, band pass, in which a range of frequencies lying between two defined points are passed and, fourth, band stop types in which frequencies lying between two defined points are heavily attenuated. It is normal to quote the defining points as the frequency where the response is 3dB down on the pass band response.

Pros and Cons

The traditional design of filters has been based on the use of inductance and capacity and the filters are usually chosen from three main types, each of which exhibit certain properties. The Butterworth type has a virtually flat response over the passband with a reasonably sharp cut-off. The Chebyshev types give a sharper cut-off but at the expense of some ripple in the pass band.

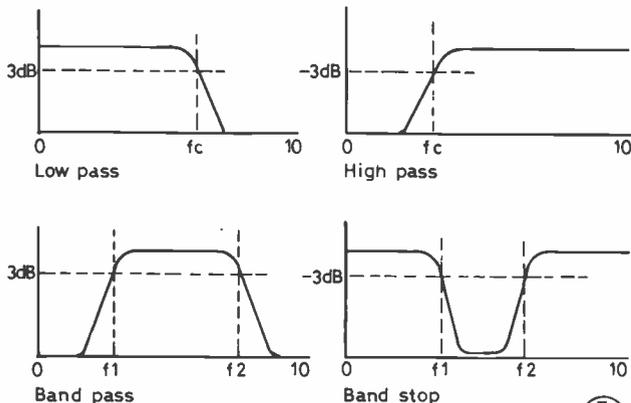


Fig.1 BUTTERWORTH FILTER RESPONSE CURVES (E 666)

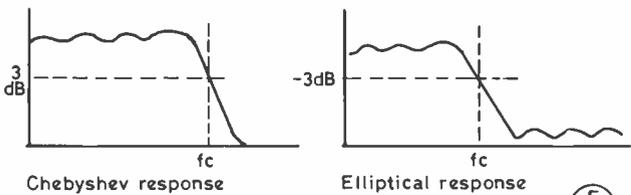


Fig. 2 Chebyshev response and Elliptical response (E 667)

The ultimate cut-off rate is given by the Cauer-Chebyshev (or elliptic) types but these exhibit ripples in both the pass and stop bands. The number of ripples in both types depends on the number of poles in the filter. At frequencies close to cut-off the Chebyshev types all have some overshoot and a higher group delay than the Butterworth type and so should be avoided where it is required to have minimum distortion of a waveform, say in a RTTY decoder. The various diagrams illustrate the points raised.

Simple System

The problem with the traditional inductance and capacitance design has always been that, whilst the parameters are flexible, the values required are nearly always very non-standard and usually involve hand winding the coils. There is an easy way round this and that is to use what is known as an "active filter". Two circuits are shown for what are, in effect, three pole Butterworth filters with a maximally flat response in the pass band and a cut-off attenuation of 18dB per octave. A low and high pass unit could be

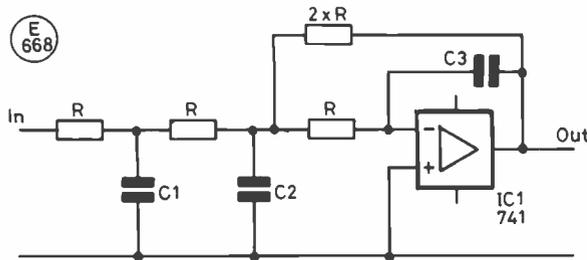


Fig. 3 LOW PASS FILTER CIRCUIT (E 668)

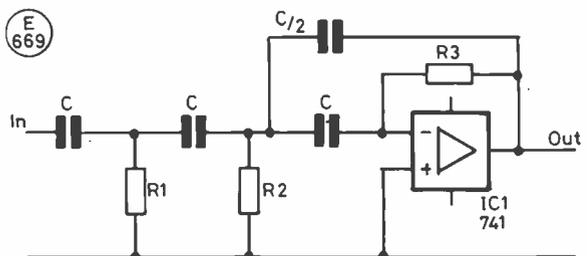


Fig. 4 HIGH PASS FILTER CIRCUIT (E 669)

Low pass values

Freq. (Hz)	R (Kohm)	C1 (μF)	C2 (μF)	C3 (pF)
100	10	.39	.33	30700
200	3.9	.5	.43	39400
300	12	.1	.1	8500
400	8.2	.12	.1	9370
500	2.2	.35	.3	27900
600	6.8	.1	.08	7530
700	10	.05	.047	4390
800	2.2	.22	.2	17400
900	2.2	.2	.17	15500
1000	3.9	.1	.08	7880
1500	2.2	.12	.1	9300
2000	3.9	.05	.04	3940
2500	3.9	.04	.033	3150
3000	12	.01	.01	850
3500	2.2	.05	.043	4000
4000	8.2	.011	.01	940
4500	3.9	.022	.02	1750
5000	3.3	.023	.02	1860
5500	5.6	.012	.01	1000
6000	5.6	.011	.01	910
7000	4.7	.011	.01	930
8000	8.2	.005	.005	470
10000	10	.003	.003	300
12000	8.2	.003	.003	380
15000	6.8	.003	.003	300
18000	6.8	.003	.002	250
20000	5.6	.003	.002	275

High pass values

Freq. (Hz)	C (nF)	R1 (ohm)	R2 (ohm)	R3 (ohm)
100	68	9535	17400	122000
200	68	4700	8700	60600
300	100	2200	3950	27460
400	47	3500	6300	43800
500	47	2760	5000	35000
600	47	2300	4200	29200
700	22	4210	7690	53500
800	15	5400	9870	68650
900	22	3275	5980	41600
1000	15	4300	7900	54900
1500	47	920	1680	11690
2000	47	690	1260	8750
2500	22	1180	2150	15000
3000	22	980	1800	12500
3500	33	560	1000	7140
4000	15	1000	2000	13750
4500	15	960	1750	12200
5000	22	580	1068	7490
5500	22	536	1000	6800
6000	10	1100	2000	13700
7000	10	926	1700	11770
8000	15	540	987	10200
12000	10	560	1000	6800
15000	10	432	790	5500
18000	10	360	680	4600
20000	15	220	390	4200

cascaaded to give a band pass response but it is not possible to simulate a band stop action in this way because the high pass section would have nothing to pass once the earlier low pass section has done its job.

The Tables

The values are given for a wide range of frequencies and have been chosen so as to come close to normal values; however some juggling will still have to be undertaken. The major problem is in the high pass unit and here most of the resistor values are probably best obtained by using a pre-set of the next highest value and setting it using an ohm meter.

Lowé Electronics Ltd

— How It All Began

One of a Series

KEN MICHAELSON, G3RDG

ONCE upon a time . . . well I suppose that is as good a way as any to commence a story. The central character in this tale is one Bill Lowe, who was, believe it or not, a fully qualified mining engineer working in the North West Territories of Canada, gold mining. Bill was an enthusiastic radio amateur and in 1964 came back to this country for a change of scenery. He was operating at the time under the callsign VE8DP, and while he was here in England, he looked for some new radio equipment. He could not find any radio retailers who were the least bit interested in him or his wants, let alone the servicing of his equipment, and after discussions with other amateurs, (including incidentally Alan Whitford and John Wilson, both of whom eventually joined the firm. but more of that later), he decided to start up his own business.

Bill had a position at that time as manager of a local mine close to Matlock, and it was in Matlock that he started. Like all good businesses, operation was first of all part-time from his garage, and it is a surprising fact that when any research is done into the beginnings of a large company, a great percentage of them have commenced from the garage of the present managing director! The two brands of equipment that Bill handled during those years were the well-known National NCX-5 and the Sommerkamp FR-100B. I believe the NCX-5 was the first transceiver to have a rudimentary digital readout, being of a mechanical type, so there was a good demand for the unit.

Since Bill had gone into business, albeit part time, on the basis of giving good service, this attitude was paramount in the company's operating, and it naturally attracted other amateurs as customers who were also fed up with the casual approach and 'take it or leave it' attitude of most of the other retailers in the amateur market. One of these who flitted by like a fly into a spider's web (!) was John Wilson. John was looking round the selection of items, and saw Bill struggling to repair a piece of gear. John paused, looked at the unit and in no time at all diagnosed the trouble, and cured the fault, much to the relief, I am sure, of Bill Lowe. It appears that John Wilson had been in communications all his life and was familiar with the quirks of radio gear in the matter of faults. Bill, never wasting an opportunity, telephoned



Lowé's Service Department.

John shortly afterwards and asked him if he would like to undertake the servicing for Lowé Electronics on a regular, although part time, basis. John agreed to this and he too commenced using *his* garage as a workshop! He lived in Huddersfield at the time, and the arrangement was that Bill would call every Friday evening with the new jobs for servicing and collect the ones which had been repaired during the previous week.

All this had been part time for Bill up to now, but in 1965 the owners of the mine managed by Bill decided that it had ceased to be a viable operation, and without much notice or warning closed it down. Bill then had no alternative other than to commence business in the amateur retail market on a full time basis, and to that end opened his first shop in Wellington Street, Matlock. Business steadily improved during 1966 and '67 with John Wilson still carrying out the servicing in Huddersfield, until one day another character came into the story, namely Alan Whitford.

Alan was living in Eastbourne at the time and he met Bill in more or less the same manner that John Wilson had done, being recommended to Lowé Electronics by other amateurs. A few weeks after this he received a telephone call from Bill who said that another amateur who lived near Alan was interested in the same model that Alan was using. Would Alan be good enough to demonstrate the equipment to him, and if a sale resulted Bill would pay him a commission for his trouble. This was concluded satisfactorily, and then Bill was on the 'phone again. "Look", he said, "if an amateur is interested in a piece of equipment, he doesn't want to wait a week while I send it down to him. Have you got a spare room where you might be able to hold some stock and demonstrate it on a part time basis?". This was in 1968, and Alan agreed, as he too intended to use his garage. The very next day Bill was down with a van load of equipment, and this arrangement continued to the benefit of both of them until 1971.

At the same time, 1968, Bill came to a similar arrangement with Sim Weir, GM3SAN who lived in Glasgow, to act as his Scottish agent. Over the years the business in Scotland progressed, until in October 1982 Bill decided that the turnover justified the opening of a shop. The Glasgow shop, situated in Queen Margaret Road, Glasgow is now ably managed by Sim who has had 17 years of the business. Alan Whitford, in the meantime, had been continuing to act as Lowé Electronics southern agent still working from his garage, living in Eastbourne and working for the Electricity Board, but in 1971 he was offered a promotion by the Board to be an operations engineer but he would have to go and live in



Lowé Electronics Ltd. showroom.

Brighton. At this time Bill moved into larger premises in Cavendish Road, Matlock and offered Alan a directorship in the company. And so a choice had to be made. Either to continue with the S.E.E.B. or join Lowe Electronics. Alan chose Lowe and told me that he has never regretted it. Bill in one of his more humorous moments, commented that Lowe Electronics was "spreading like the Black Plague all over Matlock!" Hardly a Black Plague, but more of a benefit to the town, I would have thought.

Lowe Electronics is well known today as a main dealer for Trio equipment but at the time we are talking about, this hadn't come to pass. They were sharing the Yaesu distributorship with another company in the U.K., which itself later split into two separate companies; hardly the most comfortable of arrangements. About this time Trio appeared, being distributed in this country by B. H. Morris in London. B. H. Morris became involved in amateur radio equipment because they handled Trio hi-fi units. As part of the arrangement with Trio, they had to take the amateur radio gear, but their sales efforts were concentrated in the large audio field, and Trio must have known this because in 1975 the Japanese directors arrived in this country without much warning and went the rounds of the various dealers. They were obviously looking for an outlet which provided excellent service facilities allied to a personal touch, and it was evident that they found these attributes at Lowe Electronics because few days after their visit to Matlock, Bill received a telephone call asking him if he would be interested in handling the Trio agency. Bill agreed to take the agency and the firm has never looked back.

While all this was happening, the business was expanding and John Wilson, who had been involved as a consultant since 1965 on a part time basis, joined the company as technical director in 1973, as I mentioned above. This expansion took place mainly in the field of amateur radio, but as time passed marine communications and professional test equipment were added to the range. Trips to the Far East by the directors found the organisation further valuable agencies and as things got busier, they started to run out of space again, a habit that the company seems unable to break. The outcome of this expansion was that the company started to look for new premises again. I asked Alan if he could tell me in a few words how it was that the company had expanded so quickly, and the answer came back without any hesitation: "By getting off our backs and flying out overseas, and working, lets say, *very hard*."

There were a number of government grants available to try and tempt them away from Matlock, but in the event they couldn't



A photograph taken in the early 1970's of Bill Lowe, left, with the late Austin Forsyth, G6FO, editor of *Short Wave Magazine* from 1938 until 1977.

quite bring themselves to leave, so they decided to forego the grants and try to find a local site. Eventually such a site was obtained on Chesterfield Road, where a petrol station had once stood. Planning permission was granted and the building was completed in 1980. The development is an outstanding example of how good design can insert quite a large building into a residential area without being in any way an eyesore. In fact, when I first arrived at the premises I wondered whether I had come to the right place, so well did the building blend into the scene.

The natural contours of the site are used to give an unobtrusive single storey look facing the main road, the workshops and stores being placed neatly on a lower storey at the rear. The uncluttered design looks a lot better than the petrol station which preceded it, according to local opinion.

There are no service facilities at the various shops since both Alan and John believe that the fault finding and servicing of present day equipment has become so technical in nature that it is beyond the capabilities of the ordinary serviceman. All the servicing jobs beyond the simple blown fuse say, or obvious replacement of the power amplifier valves where fitted, are returned to Chesterfield Road where a very large array of sophisticated and highly specialised test equipment is available. I was taken over the service department on my visit and John told me that there was well in excess of £100,000 worth of test gear available for the use of the department. The company's engineers are specially trained in the use of the equipment and, in fact, promising school leavers are taken from the local school and financed through technical college with a view to employing them as full time service engineers when their training is completed.

At the present time there are 28 in staff at Matlock and six managers for the shops making a total of 34. Quite a fair record for a company which is only 20 years old., I would say. And talking about records, John tells me that the average value of a single shipment from Trio is of the order of £200,000. I was also shown the stockrooms, and the variety of spares held is mind boggling. Most of this expansion has come from the Trio agency which has now been held by Lowe Electronics for ten years. This expansion is confirmed by the annual turnover figures, being approximately £50,000 in 1971 rising to £3,000,000 in 1983.

I have come to the end of my story of enterprise and work, and the proven result, and the only disappointment was that I did not meet the central character, Bill Lowe. He is now chairman of the board of directors and is semi-retired. However, there's no holding a good man down because when I was at Matlock, Bill was in Bournemouth acting as manager for the shop there while Colin had a holiday! I was sorry to leave Alan and John after my very interesting visit, and am only sad that Matlock is not nearer to London, otherwise I should be visiting Chesterfield Road very frequently. All I can do is to thank them both for an enjoyable morning and wish them and the company every success in the future.



Some members of the Lowe team, left to right, Bill Lowe, David Monkhouse, John Wilson and Alan Whitford.



OBLAST CORNER



NIGEL CAWTHORNE, G3TXF

FEBRUARY marks the beginning of the second year of "Oblast Corner". Last year we began with a table of oblasts, which can be used as an operating check-list. This year we are doing the same (see Table 2), but the identifiers for the RSFSR oblasts have been simplified.

The USSR is divided into 184 administrative regions called 'oblasts'. The oblast from where a station is operating can, in most cases, be identified directly from the callsign.

For HF operators and SWLs, 'chasing oblasts' provides an interesting challenge particularly during a sun-spot minimum when there may not be much DX to work on the higher bands. Simple antennas and low power can be used for making HF band QSOs with stations only one ionospheric hop away. This includes many of the more westerly Russian oblasts.

Oblast chasing enables newcomers and HF operators with limited facilities, to enjoy a specialist form of DX-ing.

1986 In-Year

Two check columns are included in Table 2; one is for "All-time" and the other for "1986 In-Year". The "1986" column is for keeping a record of those oblasts heard/worked during the year. Everyone starts off at "zero" on January 1st, 1986. Old-timers and newcomers alike start out the year on an even footing!

If you took part in last year's table, use your own last year's score as your target for this year. For those that did not take part last year, you can join in the table by sending in your figures.

All-Time Maximum: 184

For the "All-time" listing, deleted oblasts should be ignored. The "All-time" maximum score is therefore 184. There is a total of seven 'deleted' oblasts (11, 32, 35, 61, 116, 171 and 172), but in order to make the 'full-house' of 184 an achievable goal, the deleted oblasts are not being included. Don't include any deleted

oblasts (in particular 171 and 172 which were deleted only in 1984) in your All-time" figure.

Oblast Identification

For all Russian republics other than the Russian SFSR (i.e. 15 republics listed in Table 1) it is the letter before the number and the first letter after the number in the call that together give the unique oblast identification: e.g. UH8EA is in oblast 44 (as identified by the 'H-E' in the call). This is the "letter-letter" identifier.

For the Russian SFSR (European and Asiatic UA), it is the number in the callsign (i.e. 1, 2, 3, 4, 6, 9 or 0) in combination with the first letter of the suffix that identifies the oblast: e.g. UZ2FWA is in oblast 125 (as identified by '2F' in the call). This is the "number-letter" identifier.

The Russian SFSR identification ("number-letter") applies whether the prefix used is UA, RA, UV, RV, UW, RW, UZ or RZ. The RSFSR also includes the older UN1 series (oblast 88).

Exceptions

Several heavily populated oblasts use more than one identifier. A-A and A-B are both 101. P-B and P-P are both 38. Moscow oblast 170 can be 3A or 3B.

Old (pre-1971) two letter calls (e.g. UA1DZ, UB5OE, UF6CR, UA0TO, UT5WI) are a problem to identify as they do not strictly follow the same system. These include calls in the series UN1 and UY5.

Geoff Watts' useful Oblast List (35p plus s.a.s.e. from Geoff at 62, Belmore Road, Norwich, Norfolk NR7 0PU) includes information on these older calls as well as the current series.

Club Stations

Club callsigns are those six character calls which end with two letters in the series WA to ZZ: e.g. UZ1BZO, RL8PYL. In the

Identifier Letter	USSR Republic	DXCC (See note)	Examples of Callsigns with oblast number
A-N-V-W-Z	Russian SFSR	UA UA9/0	UA1NAY (88), UZ2FWA (125), RA2FC (125), RZ3AM (170) UV9AX (165), UA0UBA (166), EY0Z (128), RA0FA (153)
B-T-Y	Ukraine	UB5	UB5MCI (59), UT4UJ (186), RB5IA (73), UB1RR (81)
C	Byelo-Russia	UC2	UC1AWZ (188), RC2AA (188), UC2OBA (7), EM0CWN (6)
D	Azerbaijan	UD6	RD8DX (1), UD6DKW (1), UD7DWZ (1), RD8DX (1)
F	Georgia	UF6	RF3V (13), RF0FWW (12), UF7FWW (12), UF6VAQ (13)
G	Armenia	UG6	UG6GAW (4), RG6G (4)
H	Turkoman	UH8	UH8EA (44)
I	Uzbek	UI8	UI8ZAA (56), UI8TAA (52), EU8I (51)
J	Tadzhik	UJ8	UJ8JA (40), RJ6R (42)
L	Kazakh	UL7	UL7RAO (178), RL8PYL (23)
M	Kirghiz	UM8	UM8ML (36), UM9MWO (36)
O	Moldavia	UO5	UO5OO (39), UO4OXV (39)
P	Lithuania	UP2	UPIBZO (38), UP7A (38), EU2P (38)
Q	Latvia	UQ2	UQ1GXZ (37), UQ2GDQ (37), EU2Q (37)
R	Estonia	UR2	RR2RU (83), UR1RWX (83), EU1R (83)

Table 1. Oblasts (184 in total) can usually be identified directly from the callsign. The USSR is divided into fifteen republics, each of which counts as a DXCC (ARRL) country with the additions of Kaliningrad (UA2), Franz Josef Land and the splitting of the RSFSR into European SFSR (UA) and Asiatic SFSR (UA9/0). There are 18 DXCC countries in the USSR.

<i>Oblast</i>	<i>ALL TIME</i>	<i>1986</i>									
1A	169		6P	96		B-E	60		I-F	47	
1C	136		6U	115		B-F	70		I-G	54	
1N	88		6W	86		B-G	78		I-I	51	
1O	113		6X	87		B-H	71		I-L	48	
1P	114		6Y	102		B-I	73		I-O	50	
1Q	120		8T	174		B-J	67		I-Q	185	
1T	144		8V	175		B-K	72		I-T	52	
1W	149		9A	165		B-L	77		I-U	55	
1Z	143		9C	154		B-M	59		I-V	181	
2F	125		9F	140		B-N	57		I-Z	56	
3A	170		9G	141		B-P	58		J-J	40	
3D	142		9H	158		B-Q	64		J-K	182	
3E	147		9J	162		B-R	81		J-R	42	
3G	137		9K	163		B-S	74		J-S	41	
3I	126		9L	161		B-T	79		J-X	183	
3L	155		9M	146		B-U	65		L-A	179	
3M	168		9O	145		B-V	66		L-B	16	
3N	132		9Q	134		B-W	68		L-C	28	
3P	160		9S	167		B-X	62		L-D	29	
3Q	121		9U	130		B-Y	82		L-E	25	
3R	157		9W	84		B-Z	69		L-F	27	
3S	151		9X	90		C-A	188		L-G	190	
3T	122		9Y	99		C-C	9		L-I	17	
3U	123		9Z	100		C-I	8		L-J	19	
3V	119		0A	103		C-L	5		L-K	24	
3W	135		0B	105		C-O	7		L-L	26	
3X	127		0C	110		C-S	10		L-M	22	
3Y	118		0D	111		C-W	6		L-N	31	
3Z	117		0F	153		D-N	2		L-O	20	
4A	156		0H	106		D-D	1		L-P	23	
4C	152		0I	138		D-K	3		L-Q	18	
4F	148		0J	112		F-F	12		L-R	178	
4H	133		0K	139		F-O	15		L-T	21	
4L	164		0L	107		F-Q	14		L-V	30	
4N	131		0O	85		F-V	13		L-Y	176	
4P	94		0Q	98		G-G	4		M-M	36	
4S	91		0S	124		H-A	191		M-N	34	
4U	92		0U	166		H-B	180		M-P	177	
4W	95		0W	104		H-E	44		M-Q	33	
4Y	97		0X	129		H-H	43		M-T	184	
6A	101		0Y	159		H-W	45		O-O	39	
6E	109		0Z	128		H-Y	46		P-B	38	
6H	108		B-A	75		I-A	189		Q-G	37	
6I	89		B-B	76		I-B	53		R-R	83	
6J	93		B-C	80		I-C	49		T-J	187	
6L	150		B-D	63		I-D	173		T-U	186	

Table 2. Operating aid and checklist for oblast chasing. Use this list to keep your "All-time" and "In-Year 1986" oblast records. Send your "All-Time" and "In-Year 1986" totals to G3TXF to appear in the next "Oblast Corner" in the April issue. Deadline and address at the end of the article.

RSFSR, club stations use the prefix UZ: e.g. UZ3AWO, UZ9AWA.

The oblast of special event or contest calls can also usually be

identified by the "number-letter" or "letter-letter" technique. RF3V has the "letter-letter" identifier 'F-V' and is therefore in oblast 13.

OBLASTS 'WORKED' TABLE

Station	All-Time	
	1985 (max 184)	Time (max 191)
G3BDQ	150	—
G3TXF	139	173
G4AYO	139	173
G4OBK	137	147
G4MQC	127	136
G4OII	116	137
G2DAN	114	115
G4VCO	113	113
G4UNH	104	124
G4TNB	103	114
G4WSX	102	110
G4PWA	100	173
G4ZSQ	97	100
G3YRW	—	100
G4XRX	95	125
G3UD	94	109
G4TWX	72	110
G8KP	70	167
GW4PXQ	65	94
G0AMH	65	—
G4XTM	63	83
G4EZA	62	122
G4LZZ	57	76
G3RJB	55	159
G4ZFE	54	54
G3URA	45	76
G4VFG	43	56
G3LQI	39	124
G4VDX	39	56
G4YIR	26	32
G4GOF	25	115
G4YWG	23	36
G4VXU	23	150
G3DOP	19	—
G3ICG	18	95
G4ARI	2	61

OBLASTS 'HEARD' TABLE

Station	All-Time	
	1985 (max 184)	Time (max 191)
BRS1066	149	175
SWL Frank Dunn	138	172
BRS87156	112	112
BRS37186	107	119
BRS25429	106	151
SWL Arthur Miller	104	161
SWL Philip Davies	101	101
BRS87259	98	98
BRS28198	86	86
9HI-15357	85	110
BRS86766	76	76
BRS32601	73	148
BRS44984	46	92
G14386	—	108

Table 3. Send your entries for the new '1986 in-year' and 'All-time' tables to reach G3TXF by February 26th for the April issue. From now on the 'All-time' table will also be based on current oblasts only (max 184).

CQ Worldwide CW

Last November's CQ WW CW Contest saw several interesting USSR prefixes being aired including RD8DX, RF3V, RF0FWW and UP7A.

Got a Yuri Gagarin QSL?

From Tom, K1KI comes the news that the world's first spaceman, Yuri Gagarin, held the call UA1LO. If you were active around 1962, check your QSL's to see if you have one from UA1LO.

Over the Limit?

A sobering thought comes from the September '85 issue of *Radio*, in an article entitled "Drunkenness and Sport — Incompatible".

Amateur radio is classed as a 'sport' in the USSR. The article describes how "in some places it has become a tradition to organize so-called comradely suppers following (radio) meetings or competitions, at which the use of spirits is certain".

In warning his Soviet readers against the unsportsmanlike conduct of mixing drink and radio, the writer describes what happened at the "radiomen mixed events championship" in Kaluga last year.

Apparently the team from Tula got so drunk before the contest that it was disqualified for being incapable of showing up at the opening of the event. "For this conduct, the team captain lost his 'Master of Sport of the USSR' title, and his fellow-drinkers lost their right to take part in radiosport competitions."

Low Band DX

The last few days of 1985 provided some good Asiatic USSR openings on 3.5 CW. The following were heard or worked around the Christmas/New Year holiday: UD6KBL, UF6FAL, UF6FJ, UI8IF, UI8LB, UJ8BQ, RL6GC, RL7DGR, UL7's, UM8's, RW9HZZ, UA9's, UA0's, AGB, ALI, BAP, SAU, WBJ and UZ0AB.

UV100 in Franz Josef Land (QSL via UA9LBR) has been heard and worked on both 3.5MHz and 7MHz CW.

Table Winners

Congratulations to John, G3BDQ, on coming out on top of the '1985 worked' table. We'll have to work harder to convince John to dig back through his 39 years of logs to work out his All-Time score!

Congratulations also to Brad, BRS1066, on winning the '1985 heard' table. Brad's all-time totals now stand at 1.8MHz: 113; 3.5MHz: 107; 7MHz: 137; 14MHz: 160; 21MHz: 100; and 28MHz: 96.

Table Entries

Send your entries for the "All-Time" and "1986 In-Year" oblast heard/worked tables to reach G3TXF at Holt Cottage, Kingston Hill, Kingston-upon-Thames, Surrey, KT2 7JH by February 26th to appear in the April issue.

Many thanks to Tom K1KI (USSR *Tidbits*), IARU/ARRL and Dex W4KM (translations from *Radio*) for items extracted. *Good hunting es DSW!*

Amateur Radio Computing

A Bi-monthly Feature for All Those with a Radio Station and a Computer

REV. R. P. BUTCHER, G4NWH

ABOUT a year ago, I acquired a copy of the G3WHO AMTOR program and have been using it with great pleasure ever since. About the same time I was lent a copy of the G4BMK (Grosvenor Software) program for the Dragon which provided some interesting comparisons.

Before going much further, let me give a very simple explanation of what AMTOR is and how it works. "Amateur Microprocessor Teleprinter Over Radio" uses a microprocessor such as you find in every home computer to control the sending and receiving of text. Two elements of the system combine to give virtual error-free copy under almost any workable band conditions. First, the CCIR 476 code which it uses generates an arrangement of four 'on' bits and three 'off' bits for each standard teleprinter character ('A' is represented by 100 0111, 'B' by 111 0010, and so on). Thus, although the arrangement for each character is unique, a hasty check for exactly three zeros in the seven-bit pattern will confirm whether a received character is valid or not. The chances of interference causing the receiver to 'hear' a character which is valid but is not the one transmitted are most remote. Secondly, the system provides for the correction of characters received which are not valid. Under good working conditions this can be achieved simply by repeating each character sent. By leaving a gap between the transmission and the repeat the system allows for minor changes in QSB, QRM, QRN, etc. Under this "Forward Error Correction" (FEC) mode, the alphabet would thus be transmitted A*B*C*EAFBGC . . . etc., the * representing an 'idle' character. Even more reliable is the "Acknowledge or Request" (ARQ) mode. Here the text is sent in blocks of three characters. After each block, the 'transmitting' station switches to receive and the 'receiving' station sends a single character which either acknowledges safe receipt of three valid characters or else requests a repeat of the block. After switching back to its 'correct' role, the transmitting station can then either repeat the block or move on to the next. It is this 'transmit' and 'acknowledge' pattern which gives AMTOR its characteristic 'chirping' sound.

If you already have a BBC micro, the G3WHO program is well worth getting. It has an excellently clear set of instructions and, being ROM based, is instantly accessible. The screen display is as clear as 80 columns can be. In the bottom half of the screen is space for typing a message ready for transmission; this can be entered directly from the keyboard or assembled from messages stored in six of the 'function keys' (and these messages can be recorded and recovered through the disc or cassette systems). When transmitting, the characters stored in the bottom half of the screen are transferred to the top as they are sent. Received messages also appear in the top half of the screen. At the very top is a 'status line'; this includes a two-dot phasing display which as well as indicating whether the program has locked onto or is trying

to lock onto a signal, also enhances whatever other tuning indication you may have in your hardware system.

Hardware is required for both the G3WHO and the Grosvenor Software programs and, as far as I am aware, for all other systems. Firstly, you require a terminal unit capable of discriminating the standard RTTY tones. However, the timing of the AMTOR system is so critical that the internal clocks of most microcomputers are not sufficiently accurate and so an external crystal clock is required as well. Details are supplied with the G3WHO program of the G3LIV Terminal Unit/Clock which is most satisfactory.

Many of you may already have an RTTY terminal unit and most of them perform quite satisfactorily with AMTOR. However, if you have a TU but don't have a microcomputer, then the Grosvenor Software program may offer you a very interesting opportunity. As I mentioned at the start, the program I tested was for the Dragon, a microcomputer now as extinct as the beast it is named after! However, the identical program is available for the Tandy Colour Computer with 16K extension and Colour Basic. At the time of writing this article, this computer is being sold by Tandy's at £69.95 at which price one could seriously think of buying the computer as a dedicated AMTOR unit, although, of course, you could apply it to all its other uses as well. The program has an easy-to-read screen with large characters. Like the G3WHO program it also has a 'type-ahead buffer' which allows you to prepare text while receiving or while transmitting text prepared earlier. Although only the last line of this buffer appears on the screen, text is transferred to a nice, clear inverted video on transmission so that you can see what's going on. The status display at the bottom of the screen is clear and helpful — I particularly liked the way that the display showed the number of valid data blocks received during synchronisation as this made it easy to see how close the program was to capturing the received signal. The only significant disadvantage of the system I tested was that it required an additional piece of hardware, namely a discrete tone generator, while the G3WHO program uses the BBC micro to generate the mark and space tones for transmission.

AMTOR is a very satisfying mode to operate, at least I find it so, and I hope that many of you who have not yet considered it will join the growing throng of AMTOR stations. Either of these two programs will give you an easy and excellent way into the mode. There are, of course, programs available for a very wide variety of microcomputers. Grosvenor Software supply AMTOR, RTTY, SSTV and CW programs for Tandy and Commodore machines (but not all programs for each machine — check with them!) and I should mention ICS Electronics who claim to have been the first to introduce AMTOR to the world market. They sell a widely acclaimed "Intelligent Terminal Unit" — the AMT-2 — which is considerably more expensive than the hardware I mentioned earlier but does a great deal more. With the AMT-2 they can provide software for VIC20, CBM64, BBC-B, Apple and IBM-PC computers. I have not had the opportunity to try out the AMT-2 but those who have speak well of it.

Finally, I cannot end an article on AMTOR without mention of Peter Martinez, G3PLX, who did so much to develop AMTOR out of its commercial equivalent back in the late '70s. Without his work we wouldn't have the mode and all the fun it has brought.

As a late flash, G4INP tells me that John Branegan's well known HF propagation predictor WOTSON is now available for the Sinclair QL as well as a comprehensive satellite predictor program. Details from G4INP (QTHR) for the customary stamped addressed envelope.

Addresses:

G3WHO: Dr. P. Harris, 10 Appleby Close, Great Alne, Alcester, Warwicks.

G3LIV (hardware): J. Melvin, 2 Slater's Court, Gosforth, Newcastle, Tyne and Wear.

Grosvenor Software: 2 Beacon Close, Seaford, East Sussex BN25 2JZ.

ICS Electronics: PO Box 2, Arundel, West Sussex BN18 0NX.

G3RJV's

WORKSHOP NOTEBOOK

MY RESISTANCE IS LOW

I MUST be one of the few radio amateur constructors that I know who does not own a digital multimeter. Although they are, without doubt, nice little things, with their lovely dancing numbers and high input impedances, and cheap too these days, I have not felt the need to buy one. I probably will one day. The main reason is that for what I do, I see little use for one. They doubtless give relatively accurate readings of voltage, current and resistance but I don't often seem to need to make those sort of readings. I may need a few voltage, current or resistance readings from time to time but rarely do I require highly accurate static readings. More often I merely want to know that the parameter in question is of the right order. My most frequent use is measuring changes in conditions in a circuit, either when tuning up a stage or adjusting DC conditions. For these applications a digital meter seems wholly unsuitable. It is much easier to watch a needle swing to and fro than attempt to follow rolling numbers.

Mine was in a small wooden box with a curious smell from its unknown previous purpose. It was without the luxury of range switching — I could not afford a multiway wafer switch — nor did it have an impressive row of terminals. The bottom edge of the box sprouted a line of brass bolts each with two nuts to trap the test leads onto the appropriate range. Multirange test meters are rarely built these days — perhaps that is not a bad thing!

The price of decent large moving coils meters is such that it is as cheap to buy a ready made multimeter. However there are some applications which do merit building a test meter and perhaps this article describes one. I say "perhaps" because the little instrument I am about to describe is only really worth building if a cheapish meter of around 1mA full scale deflection is available. Many multimeters have several resistance ranges but often the ability of the meter to measure low resistance values is limited. This instrument describes two ways of measuring DC resistance, one of which gives useful low readings.

In most multimeters the unknown resistance is placed in series with the meter, a battery and a zero setting variable resistance. This gives a reverse reading scale which can be very wide, many reading from 0 to about 40,000 ohms on one non-linear scale. This instrument uses two techniques for measuring resistance and allows two scales to give greater accuracy to the readings. For low resistances the unknown resistor forms a shunt across the meter, and for higher resistances the unknown resistance is placed in series with the meter.

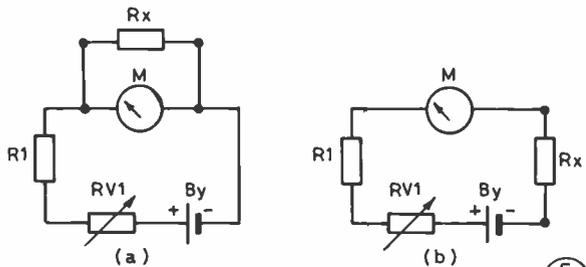


Fig.1 LOW READING OHM-METER

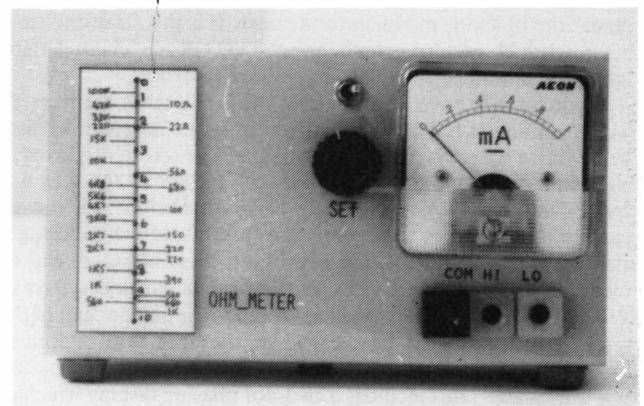
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662

The Circuit

Fig. 1(b) shows an unknown resistance, Rx, placed across the meter as a shunt. Before explaining the action of the resistance

All of the above is of little lasting technical interest, except to say that I would always advise someone new in the hobby buying a multimeter, to begin by buying an analogue type (one with a needle). A digital meter can be added later, if required, but for general use around the amateur workshop the analogue meter seems to be more useful.

Now moving into my "wise old man of the hills" guise, I muse upon the fact that these days not only do we have a choice of types of meter, but that most people can afford to buy either, or both. Now when I were a lad (as they say in these parts) . . . we made multimeters for general measurement. Pretty awful things most of them were too. They usually sported the largest ex-government meter we could lay our hand upon. The original scale readings (R.P.M., pH, gallons per minute, chickens per cubic foot . . .) were blotted out and replaced by pasted on scales. The availability of accurate series resistances often ensured unusual full scale deflection figures. In my case the amount of what resistance wire I could sneak out of the school physics lab determined the current



Front view of the Ohm-meter.

measuring principle, one has to understand the function of a meter shunt.

The milliammeter, M, has only one full scale deflection (FSD) range. Placing a shunt across the meter will alter the FSD by bypassing a fraction of the current through Rx. The meter has an internal resistance Rm; therefore the total current to be measured, I, divides between Rm and Rx. The current I splits up into two parts Im and Ix. This can be expressed as:

$$I = (I_m + I_x)$$

$$\text{or } I_x = (I - I_m)$$

The total voltage is the same across the shunt and the meter if the voltage is expressed as V, and we use Ohms Law $V = IR$. Then:

$$I_x \cdot R_x = I_m \cdot R_m$$

$$\text{or } R_x = \frac{I_m \cdot R_m}{I_x}$$

But from the above $I_x = I - I_m$

so
$$R_x = \frac{I_m \cdot R_m}{I - I_m} = \frac{R_m}{I/I_m - 1}$$

The ratio of the total current to the current passed through the meter will be the number of times the FSD has been increased. This can be expressed as $I/I_m = \text{Number of times FSD is multiplied} = N$.

Therefore
$$R_x = \frac{R_m}{N - 1} \text{ Ohms}$$

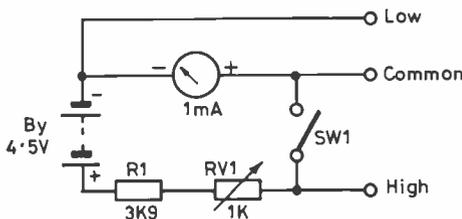


Fig. 2 CIRCUIT DIAGRAM

E 663

Table of Values

Fig. 2

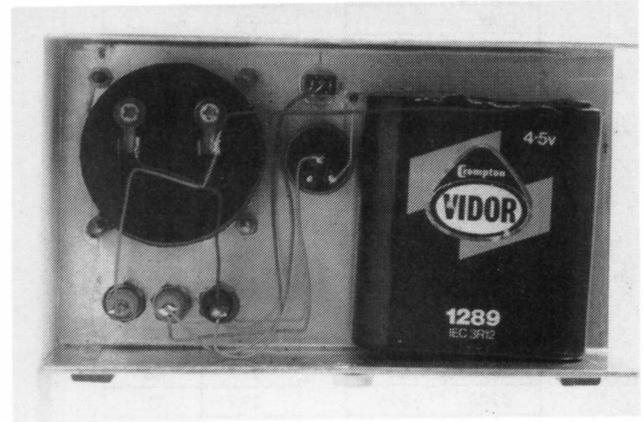
- R1 = 3K9, 1/4W
- VR1 = 1K linear pot.
- B = 4.5V battery, type 1289
- SW1 = 1-pole on/off miniature toggle switch
- Meter = 1mA moving coil meter (see text)

Also: Minifordd Engineering aluminium box type A25; 3-off 4mm sockets; small knob.

Two things will be noted from this formula: the shunt resistance Rx, needs to only be quite low to increase the FSD of the meter, and as Rx increases the meter will read higher. These two facts give the basis of a useful instrument. If Rx is an unknown resistance, and the meter can be calibrated, we have a meter for the forward reading of low resistance values.

In the circuit in Fig. 1(a), R1 with VR1 can be arranged to make the meter read FSD without Rx in the circuit. VR1 is variable to set the meter and allow for changes in the battery voltage. This arrangement is a simple low resistance measuring instrument.

Fig. 1(b) shows a more conventional ohm meter circuit. The unknown resistance, Rx, is placed in series with R1 and VR1 within the meter and battery circuit. R1 and VR1 are arranged so that with Rx shorted out (no resistance) the meter can be adjusted



Inside view of the Ohm-meter, showing wiring

photos: Jo-Anna

to its FSD. Since R1, VR1 and Rx are in series the total resistance in the circuit, when Rx is present, is $R1 + VR1 + Rx$. Therefore the higher the resistance of Rx, the smaller the current flowing in the meter and the lower the reading on the scale. The circuit functions as a reverse reading ohm meter — FSD is zero resistance and no reading on the scale indicates an infinitely high resistance. The readings around zero on the meter are so cramped that in practice it is impossible to read resistances over several hundred thousand ohms. It is possible to work out the calibration of the scale using known high tolerance resistances.

The circuit in Fig. 2 shows both circuits of Fig. 1(a & b) combined to form one unit. If an unknown resistance is connected between COMMON and LOW and SW1 is closed, the circuit of Fig. 1(a) is made and the unknown resistor becomes a meter shunt. When an unknown resistance is connected between COMMON and HIGH and SW1 is open, the circuit formed is Fig. 1(b) and the unknown resistor is in series. The low range reads resistance forwards on the meter scale and the high range reads resistance backwards on the scale.

Construction

The Ohm meter is very simple to build. Assuming that a similar size of meter to mine is available, it can all go into a Minifordd A25 Aluminium Box. Do not think that I paid the proverbial "arm and a leg" for a lovely looking meter. The one I used was bought for 50p because it was faulty — it just required five minutes' work to free the movement. All the components are mounted on the inside of the top of the box, which then becomes the front of the instrument.

The wiring follows the layout of Fig. 3. The whole arrangement is uncritical. Why not use a cheaper type of switch? A slide switch or a large toggle switch might make it cheaper. The wiring is all point-to-point around the fixed parts of the circuit. The battery is held onto the front panel by a blob of Blutack.

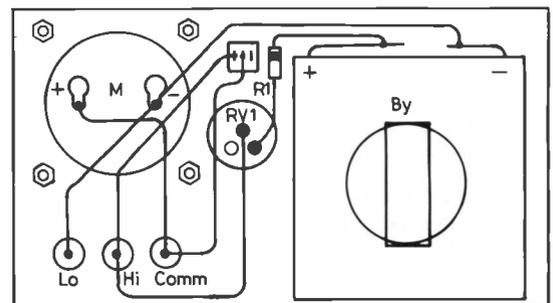


Fig. 3 LAYOUT

E 664

LOW		HIGH	
2R2	.025	100K	.05
10R	.1	47K	.1
22R	.2	33K	.13
56R	.39	22K	.18
68R	.43	18K	.25
100R	.54	10K	.34
150R	.64	8K2	.375
220R	.71	6K8	.425
270R	.76	5K6	.48
390R	.825	4K7	.52
560R	.88	3K9	.57
680R	.90	2K7	.66
820R	.925	2K2	.71
1K	.94	1K5	.79
		1K	.85
		560R	.925

Fig. 4 DUAL RANGE OHMMETER RANGE SCALES

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665

Operation

The operation explains itself. To read resistances in the order of 1 to 1,000 ohms the unknown resistor is connected between the COMM and LO sockets and the switch is set on LO. To read higher resistances, say from 1K to 100K, connect between the COMM and HI socket and switch the range to HI.

Before it is used the meter requires calibration for both ranges. This is best done by using a set of 5% or even 1% tolerance resistors. The calibration chart I obtained with my meter is shown as Fig. 4. It would be possible to draw a graph but such a graph on linear paper is cramped at one end and perhaps the chart is a better way to use the meter. I pasted a small copy of the chart on the front of the meter.

An important point is to remember that there is no on/off switch on the instrument. So when it has been used leave it "parked" with the switch in the HI position.

This may not be the ultimate in test equipment but it is the second time I have built this item and it has been useful to have around on the bench for those times when resistances of a low order have to be checked or compared.

EQUIPMENT REVIEW

The S.E.M. Ezitune Antenna Tuning Bridge

NORMAN FITCH, G3FPK

THERE can be few HF bands operators who have not suffered, at some time or other, from that perennial pest who insists on tuning up his transmitter on top of a QSO. These "A-a-a-r-h's" and carriers often go on for ages, the perpetrator being unconcerned about, or oblivious of, the nuisance he or she is causing. However, it is quite possible to tune up an antenna system to present a 50 ohms impedance to the transmitter without radiating any signal at all. The device reviewed here will enable this to be achieved and is the *S.E.M. Ezitune Antenna Tuning Bridge*.

The Circuit

The circuit is basically a noise bridge in which one arm is a fixed, 50 ohms resistor and the opposite one is formed by the antenna system, *i.e.* the antenna, its feeder and the antenna tuning unit. The noise is generated by a zener diode and amplified by a multi-stage RC-coupled wideband amplifier which uses BC238B NPN transistors. This noise signal is fed across the bridge and the device requires a nominal 12v DC supply. No circuit diagram was

supplied, only a single A4 sheet describing how to connect and use the bridge for (i) adjusting the antenna system to 50 ohms, (ii) finding the resonant frequency of an antenna and (iii) adjusting an antenna to the desired resonant frequency.

Construction

The 28 components plus relay are fixed to a single-sided fibreglass PCB measuring 70 × 45mm. The case is made from 1mm. plated steel in two, U-shaped sections. The front panel accommodates a miniature on/off toggle switch and the rear panel has two SO-239 sockets and a phono socket for the DC supply. The case is 80mm. wide, 58mm. deep and 42mm. high finished in black satin with switch and sockets clearly marked.

Installation

A phono plug is provided for the DC supply and was wired up to the 13.8v pin on the accessory socket of the IC-730 transceiver. The socket marked "Transmitter" was connected to the IC-730's antenna socket and the one marked "Aerial" to the ATU. The manufacturer suggests that the *Ezitune* can simply replace an external VSWR bridge.

Method of Use

With the transceiver in receive mode the *Ezitune* is switched on resulting in a loud hissing noise in the loudspeaker and an S9-plus reading on the S-meter. Normally the user would have a rough idea of the settings of any switches and knobs on the ATU for each particular band. A few seconds spent juggling the Cs and Ls should result in one setting where the S-meter reading drops to zero and the noise all but disappears. This can be a quite critical setting and occurs when the bridge is balanced, *i.e.* the antenna system looks like a 50 ohms resistor. If a null cannot be found then the system is incapable of being resonated at the desired frequency.

Once a balance has been found the *Ezitune* is switched off which de-energises the internal Omron relay, switching the RF straight through from one SO-239 socket to the other. In theory, the transceiver should now be matched to the antenna.



Test Programme

At 13.8v DC, the unit drew just over 50mA. Both the IC-730 and the ATU used incorporate VSWR bridges so it was possible to check if minimum noise coincided with the lowest VSWR. However, on 20m. for example, when the ATU was adjusted to give a perfect null, the VSWR reading on transmit was 1.1:1 on both meters. A subsequent slight adjustment of the ATU produced a unity VSWR on transmit but on receive, the noise came up to 12 μ v compared to 120 μ v with the ATU way off tune.

The actual noise output into the receiver was checked with nothing connected to the "Aerial" socket on the *Ezitune*. It varied from about 15 μ v at 29.7 MHz to about 3mV at 3.5 MHz, a variation of 46dB. The noise output dropped an average of 8dB when the ATU was connected. The noise output fell off at the HF end by about 20dB per octave, so it would suggest that the device would not be of much use on 50 MHz.

The next test was to check the resonant frequency of an antenna and the station's 10/15/20m. ground plane system was used. The system was first checked with an Omega-T Systems Model TE-7-01 Antenna Noise Bridge which showed resonance at 14.125 MHz and a 48 ohms impedance. A complete null was found with the *Ezitune* at 14.109 MHz, a miniscule difference of 0.1%. Similar tests were carried out on 15m. and 10m. where the Omega-T bridge revealed impedances at resonance of 33 and 80 ohms respectively. Consequently, as the *Ezitune* is a fixed impedance device at 50 ohms, a complete null was not obtained. Even so the resonant frequency was quite obvious.

No tests were carried out to "prune" an antenna to a desired resonance, but the method suggested in the leaflet is quite sound. Care and patience is required when searching for resonance of a system from scratch since the actual frequency is very critical, particularly with short, loaded antennas such as whips for mobile use on the LF bands.

Conclusions

The *Ezitune* is a very useful device for setting any antenna system to resonance at 50 ohms impedance and it does this job perfectly. Two cautionary comments, though. First, *always* ensure that the device is *switched off* before transmitting since otherwise it could be damaged.¹ It is easy to overlook this if the noise has been nulled out completely. Second, it must be appreciated that the setting up of the ATU to resonate the system to 50 ohms is done using the *receiver RF stage* in the transceiver, but that the transmitter output stage is not being matched at all. However, most modern transceivers are designed for a 50 ohms output impedance, so this *Ezitune* approach is valid. As it is unlikely that the transmitter's output stage will be exactly 50 ohms impedance over all bands, there will be a slight discrepancy which will show up as a VSWR greater than unity as was found in the tests. Even so, it should be remembered that a VSWR of 1.2:1

at 100 watts forward power only results in about three-quarters of a watt of reflected power, and the tests bettered that anyway.

There are still many stations equipped with "separates" from the 1960s era in which the transmitters had valve PA stages featuring plate tuning and loading controls. These sets are more versatile than the modern ones as the PA can be matched to a wide range of impedances without an ATU. Obviously, the *Ezitune* cannot be used to match such PAs to 50 ohms. The sociable way would be to tune the antenna system to 50 ohms with the receiver and to tune up the transmitter into a 50 ohms dummy load for a 1:1 VSWR. When the dummy load is replaced by the antenna, only the minimum tweaking of the loading control should be needed to achieve a satisfactory match.

The *Ezitune Antenna Tuning Bridge* is made by Messrs. S.E.M. of Union Mills, Isle of Man. (Tel. No. 0624 851277). The complete model reviewed here costs £39.50 including VAT and postage. A case-less version is offered for fitting inside the Company's *Tranzmatch* at £35.

¹ The manufacturer states, however, that if it is not switched off, both the *Ezitune* and the transmitter are protected by the RF switch in the *Ezitune* and, because there is no delay in the circuit, the rapid cycling of the relay provides an audible reminder to switch off.

CONTEMPORARY BRIEFS . . .

A NOTHER large catalogue has been received for review, the **Maplin 1986 Buyer's Guide to Electronic Components** published by *Maplin Electronic Supplies Limited*. It follows the familiar thirty section format of the 1985 issue, which was reviewed in the February, 1985 issue of this Magazine. These annual catalogues are published in November and the prices printed on the page are valid till February 15. Thereafter, quarterly revisions will be sent to purchasers if so requested by sending back the appropriate form.

Maplin claim to have reduced the prices of over 3,000 items and this trend is most noticeable in the 90 page *Semiconductors* section. A few typical examples include: a 6802 microprocessor at £4.95 (5.45); a Z80A CPU at £2.98 (3.95); a 2764 EPROM at £5.95 (10.45); a 4116 CMOS 16K dynamic RAM at £1.15 (2.25) and a 6264 64K CMOS static RAM at £6.50 (42.95). The figures in parentheses are the old, 1985 prices. There are plenty of new lines, which are identified, while others have been dropped.

A prominent feature of this catalogue is the 50 page *Projects and Modules* section which includes many projects of interest to radio amateurs and which have been fully described in issues of the *Maplin Projects Books*. Examples include microphone amplifiers, speech processors, audio filters, etc. A comprehensive range of *Heathkit* products is listed ranging from complete multiband transceivers to small accessories.

Most of the *Maplin* business is by mail order from their Rayleigh, Essex, address, but there are five retail shops in Southampton, Hammersmith, Birmingham, Manchester and Southend. The prices are the same but there is a flat 50p postage charge for mail order goods of any value. The 448 page **Maplin 1986 Buyer's Guide to Electronic Components** is now available from larger Newsagents at £1.45. It also contains a wealth of circuit diagrams and applications data and is well worth buying.

N.A.S.F.

The "Radio Amateur Callbook" Story

NIGEL CAWTHORNE, G3TXF

SWLs and newcomers to amateur radio soon get to hear of the RSGB's *Callbook* which lists all U.K. (and Irish amateurs), but there is another much larger (but less well known in the U.K.) set of radio amateur callbooks published in the U.S.A.

The "Radio Amateur Callbook" is published in two volumes and is a worldwide directory of radio amateurs. One volume includes all U.S. stations (the 1985 edition has some 438,007 listings) and another volume ("DX listings") covers the rest of the world. The 1985 edition of "DX listings" has 447,257 amateurs listed in every country of the world (except the U.S.).

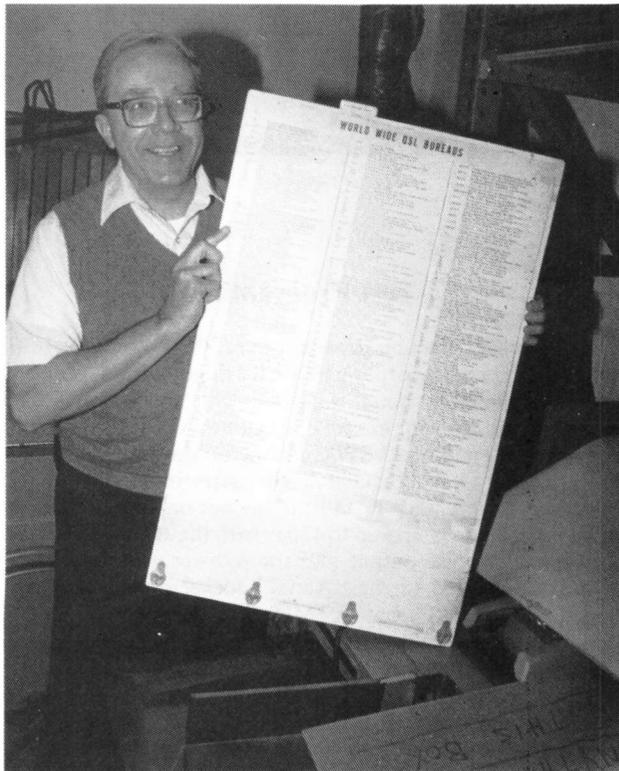
The Callbooks are published by a small specialist company on the outskirts of Chicago run by Herb Nelson, W9IGL. First published 65 years ago in 1920, the Radio Amateur Callbook has become a tradition in amateur radio. Walk into a DX-er's shack anywhere in the world and the chances are that you'll find a copy of the Radio Amateur Callbook somewhere on the shelves. It might not be the most up-to-date copy, but there is nearly always one there!

So why do we need a Radio Amateur Callbook? The most common use of the Callbooks is as an aid in QSL-ing. Where the DX station does his own QSL-ing, the Callbook gives you the full address to write to. QSL-ing 'direct' is done when a QSL card is needed for a particularly rare or special contact or in cases where the DX station can only QSL 'direct' because he/she does not have access to a bureau.

Many rare DX stations use a 'QSL manager' in the U.S., Europe or Japan. The quickest way to get a QSL for a DX station that uses a QSL manager is to send your QSL direct to the QSL manager's address. This is where the Callbook comes in handy. During the QSO, the DX station might say "QSL viaf W9XYZ". You can find the address of the QSL manager in the Callbook.

Remember that when you QSL direct, either to the DX station or to a 'QSL manager', it is essential that you make sure of a few basic points, if you want a prompt reply. Make sure that the QSO data on the QSL is accurate, that you have enclosed a self-addressed envelope with either IRC's (or possibly mint stamps of the QSL manager's country to the correct value). Also make sure that your return envelope is large enough to accommodate at least an average sized (9x14cm) QSL.

As well as a source of valuable address information for QSL-



Before computer type setting techniques were used, the artwork for the production of the Callbook was pasted onto large boards.

photo: G3TXF

ing the Callbook also contains much useful general information on amateur radio worldwide including a country-by-country census and lists of QSL bureau addresses. The Callbook is a unique source of information and data on amateur radio worldwide. Collecting, checking and preparing this information is a full-time task for the specialist staff at the Callbook's Chicago headquarters.

The main volumes are published once a year. The two 1985 volumes each required almost 100,000 changes in listings compared with the previous edition.

Herb and his staff use different sources for their information depending on the country. In the U.S., the information on U.S. hams is provided by the FCC (the U.S. licensing authority), directly from the FCC's own computerized records. However, preparing the nearly half-a-million U.S. listings requires much more than just running the FCC computer tape! The FCC does not have any in-house quality control procedure on amateur radio licensing records. It relies on the licensee pointing out any errors. For example there is no key-stroke verification of data typed into the computer, so there may be obvious errors and omissions in the records.

The Callbook uses a number of special error checking procedures to highlight mistakes that occur in the FCC listings. A computer at Callbook Inc. is used to check last year's listings with this year's and where differences show up these are examined.

Gathering accurate information from countries around the world is a continuing challenge to the Callbook team. In some



Callbook Inc's specialist staff use the latest computer techniques for checking the 900,000-odd calls published in the two-volume Callbook.

photo: G3TXF

countries such as the U.K., there is an established and regularly published national callbook. The U.K.'s callbook is published by the RSGB, the national society. The U.K. callbook contains details of all U.K. amateurs, whether they are members of the RSGB or not. Information from national callbooks, such as the RSGB's, finds its way into the DX Callbook.

However, the national society in some countries publishes only a list of their members. In these cases the DX Callbook has to complete this information from other sources. The Callbook has a network of amateurs around the world who help them gather the information.

In other countries call information is available, but in a script such as Greek, Arabic or Cyrillic. Here the Callbook have to make special arrangements for transliteration of the addresses into the English alphabet.

Japan presents a special challenge to the Callbook. Japan has one of the largest amateur radio populations in the world, but many JA callsigns have been issued to low power stations that do not make international contacts.

The Callbook makes special arrangements so that any Japanese QTH which is available in an English transliteration is included in the DX Callbook. Japanese magazines regularly give full instructions on how JA's can get their callsign listed in the DX Callbook. JA DX clubs also take part in helping out with QTH information. The DX Callbook does not contain all JA callsigns (if it did, it would probably need a whole volume devoted to Japan alone) but only those stations that have provided a transliteration of their address. You can be sure that any JA that is interested in DX-ing either as an operator or as a QSL manager, will be in the Callbook.

A surprise find in the DX Callbook is a listing of USSR stations. This is based on a callbook which is occasionally published in the USSR. Unlike call information in other parts of the world, the USSR listings do not include the full address. The Callbook arranges at its own expense to get the USSR callbook transliterated.

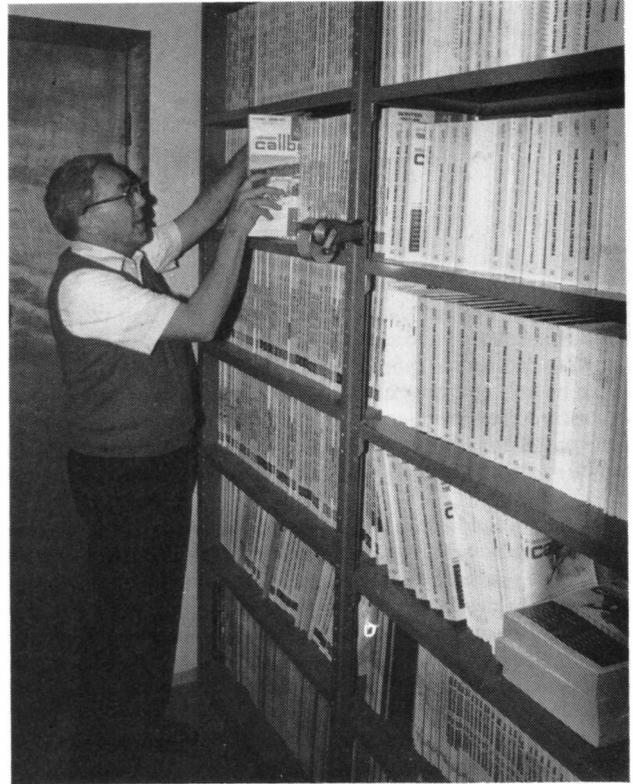
The success of a publication such as the Callbooks depends on quality control and attention to detail. The advent of the computer has eased some of the data storage, handling and checking procedures. In the early days the Callbooks were produced by using index cards and 'paste-up' methods. However, the sheer volume of entries has increased many times over since the early editions.

The 1923 edition of the "Citizen's Radio Call Book", as it was called then, lists some 650 entries under the heading "English Amateur Stations". Closer inspection of the addresses given for these "two letter, no prefix" calls (beginning with 2, 5 or 6), such



Callbooks are shipped around the world direct from the packing facility at the Chicago HQ of Callbook Inc.

photo: G3TXF



Herb Nelson, W9IGL, publisher of the world-famous Callbook treasures a unique collection of Callbooks dating back to 1923.

photo: G3TXF

as 2II (Southport Wireless Society), 5FZ (Lincoln Wireless Society) or 6JB (Wimbledon Radio Society) shows that they were not all "English". There are several Welsh and Scottish stations in the list! But of course this was in the days before G, GM, GW, etc. came into use.

Interestingly it appears from the 1923 Callbook that several U.K. operators had more than one call. For example the Manchester Wireless Society is listed as 5MS and 5MT, and Mr. E. W. Wood is listed as 2TV and 2TW.

Today's Callbooks are of great value to any amateur who is active as, or interested in becoming, a DX-er. Just browsing through the DX Callbook can be fascinating in itself. The listing for a particular country will give you an idea of how 'rare' a DX country is. However, an important part of the quality control at the Callbook is to make sure that the Callbook does not contain too many 'cob-web' or stale entries. If an operator was active from a rare location several years ago, and no longer returns there, the Callbook will delete the entry.

As a further aid to QSL-ing the Callbook also includes lists of QSL managers. These are useful for operations which may have taken place some time ago. But for recent operations, you will need to watch the DX columns in the various magazines and DX news sheets for 'QSL manager' information. But once you have the callsign of the QSL manager of that rare station, you will then need the Callbook to get his address.

The Callbooks are not something you will probably want to buy every year, but it's certainly worth investing in the occasional issue. No DX-er should be without an issue of the Callbooks that is not more than a couple of years old!

The latest 1986 editions of the Callbooks are available from "Short Wave Magazine" Publications Dept. at a postage/packing included price of £17.20 for the International Listings ('DX Listings') and £17.90 for the North American Listings ('U.S. Listings').

50 MHz Receive and Tx Exciter for the Yaesu FT-707 Transceiver

IAN KEYSER, G3ROO

HAVING decided that I wanted to be ready to receive the new 6 metre band as soon as we were allowed onto it (which is now! — *Ed.*) some thought had to be put into how the station was to be arranged to accommodate it. The idea of transverters was discarded as, having tried them in the past, I was fully aware of the problems involved. I am not saying that they are not a good way of getting on a band, but not the method that I would use again.

The next solution considered was a complete rig, and as a new rig was already being built (an all-mode all-HF band unit), it would have seemed a logical choice as large chunks of the circuit were already designed and working; however, the additional component costs for a single band rig somehow did not seem worth it. After prolonged thought the only answer seemed to be to put the long suffering FT-707 onto 50 MHz. . . could it be done? It was obvious that the PA stages would not be any good, but even on receive and as a Tx generator it would be very useful indeed.

There were many other problems: would the pre-mixer amplifier be wide band enough? What about the RF stage? The problems were horrific, but being an obstinate bloke I decided that I would have to try! I decided to use one of my 'old style' FT-707 RF boards for two reasons: if it was to be damaged beyond repair while messing about I would rather it be done to one of the less important boards and, secondly, as the only difference, apart from the component numbering, between the new and old style boards as far as this conversion was concerned was the input tuned circuit, anyone wishing to convert one of the later boards would only have to wire the input circuitry to include only one tuned circuit.

My biggest problem was that my test equipment is decidedly dedicated to HF use and not VHF. Obviously I would have to improvise considerably just to find out how well the conversion could be done. The first thing to confirm was that the pre-mixer amplifier could handle 59 MHz. This was done by feeding a signal in from the signal generator and checking what came out the other end in comparison with the signal on 10m. Results were down a little but I was sure that there would be no real problem that an additional FET amplifier could not fix. Delving in the junk box I found a crystal on 53.965 MHz — this would give a suitable output when mixed with the VFO except that the analog dial would read in reverse, not that that would be any great disadvantage as the digital dial would be correct; after all, this was

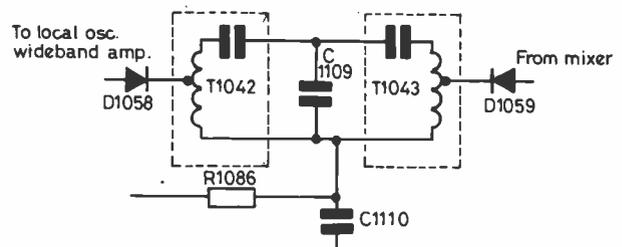
only a test to see if the set could be made to work that high in frequency. The 17-metre band crystal, X3013, was removed and replaced by the new one; T3011's 82pF resonating capacitor C3125 situated alongside the can was removed and replaced with an 18pF ceramic capacitor to get the crystal to oscillate.

Having completed that part of the operation attention was turned to the RF PCB; T1042 and T1043 were removed and rewound with four turns each and tapped at two turns. With

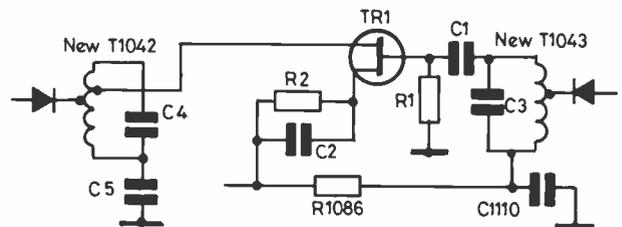
Table of Values

Fig. 1

C1, C2, C5 = 0.01 μ F ceramic plate R2 = 220R, 1/4 W or 1/8 W
C3, C4 = 33pF ceramic plate TR1 = 2N3819
R1 = 22K, 1/4 W



Original FT-707 circuit for "local" filter



New FT-707 circuit for "local" filter/amplifier

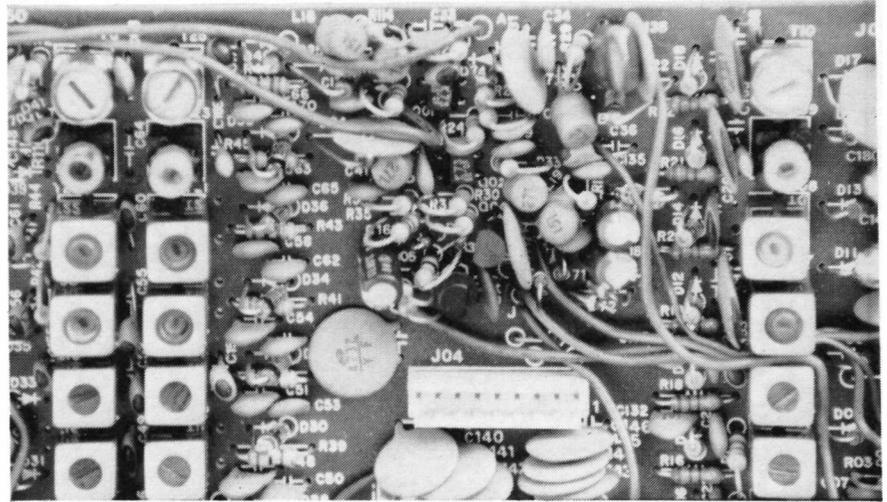
Fig.1

E
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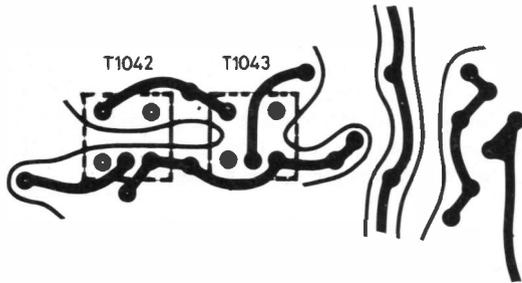


The Yaesu FT-707 as never seen before!

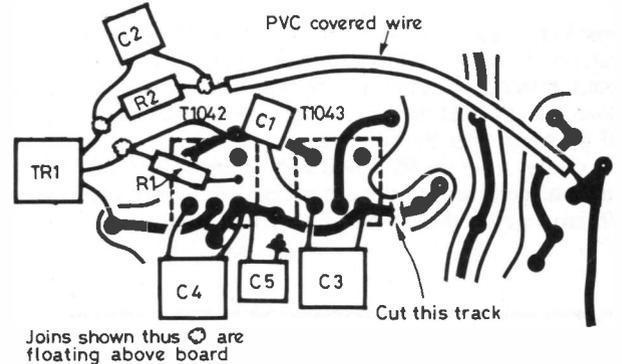
The RF tuned circuits; note lack of screening cans. 50 MHz and 160m. input at right, 50 MHz and 160m. output at left.



E 657



(a) Section of RF pcb of FT-707 near T1042/T1043
Fig. 2



(b) Modifications and component additions to include amplifier to filter

C1109 at 45pF the resonating capacitors turned out to be 33pF. On testing, as feared, there was not enough drive to make the display read properly. A quick check with the signal generator onto the input of the receiver mixer showed that the set was receiving 50 MHz signals with comparable sensitivity to 10m. signals, so all that was required was to boost the oscillator signal sufficiently for the dial to read. It was decided that the practical way to do this was to mount a small amplifier 'birds nest style' on

the underside of the board situated between the two filter tuned circuits. Positioning it here meant that all the existing switching could be used and power for the FET amplifier could be extracted from the switching circuit. The first amplifier tried was in grounded gate mode as this could be done with the addition of only one FET and one resistor; in practice, however, the gain was still insufficient. Grounded source was then tried and this worked perfectly from switch-on, giving a good solid display reading and plenty of drive to the receiver mixer. The circuit of the new filter is given in Fig. 1. and the layout can best be seen by studying the photo in conjunction with Fig. 2. Another check with the signal generator onto the mixer input showed that the receiver was still working as well as the 10m. band receiver with a signal injected at this point.

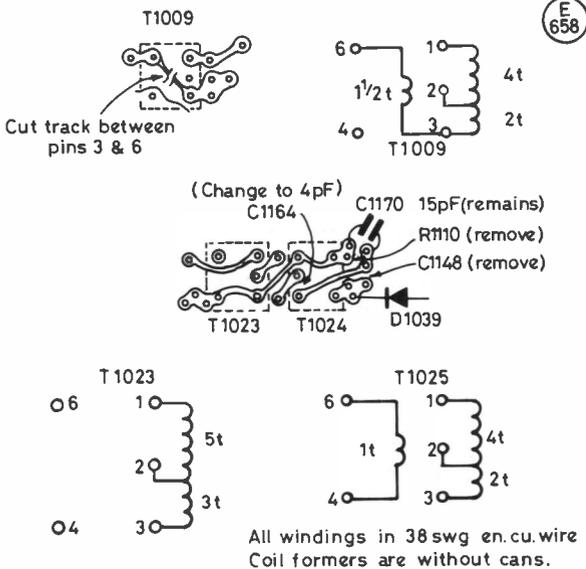
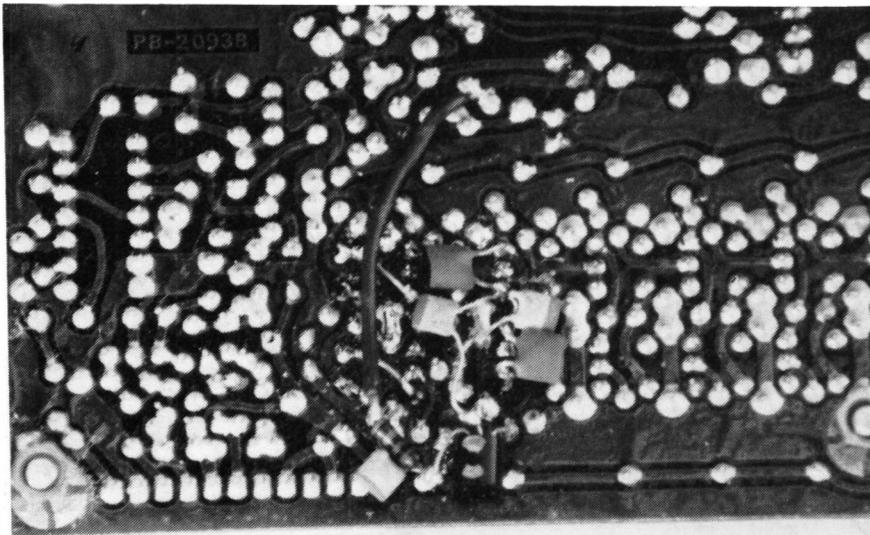


Fig. 3 RF PCB LAYOUTS IN VICINITY OF T1009 AND T1023/T1024 AND REPLACEMENT COIL DETAILS

The next part to attack was the RF stage. I removed T1009, T1023, and T1024 and put them on one side. Taking some 7mm. coils from the junk box I removed the old wiring and rewired them as in Fig. 3. (I'm being a bit coy here — in fact these coils were wound many times to get the best results!)

When tuned up the set was tested. The results were 6dB down on the overall receiver gain in comparison with the 10m. signals. This loss of gain appeared to be in the RF amplifiers and no amount of fiddling could improve it. The signal-to-noise, however, was still as good as 10m. with a minimum detectable signal of 0.1µV— that is if my signal generator is to be believed! No six-metre aerial was available so the HF beam was pressed into service. On tuning to 50.050 MHz there was the beacon bleeping away just on the noise level, and a quick call to Roy of MET Antennas confirmed that as a typical signal level in my local Dover area. On tuning across the band I was very pleasantly surprised to find that there were no serious in-band birdies using the crystal from the junk box, and the three audible were all way below the equivalent 1µV level.

To check on transmit the first thing was to confirm that the PA



'Birdsnest' style amplifier on base of 'local' filter. See also Fig. 2(a) and 2(b).

stage gain was as poor as feared . . . it was! There was gain in the unit, but it was only about 10dB and so not really worth worrying about. It was decided to leave the unit as a receiver and a transmit generator, it would then be a simple matter to drive an amplifier off the converter RF output socket on the rear of the FT-707. The output from the RF board seems fairly reasonable and only marginal increase in output can be obtained by increasing the cut-off frequency of the low pass filter L1001, C1010 and C1012.

Conclusion

At the present time no stations have been heard, the main reason for this is the time of day these stations come on the air. When I am up and free to get to the rig at sunrise I am too busy searching 160m. for DX to waste time on a very poorly populated band, and the only morning I did listen I missed a ZL who was being heard at 559 in the south of England!

KW Ten-Tec Century 22 Transceiver A Description and Use

E. H. TROWELL, G2HKU

ONE of the latest products of Ten-Tec Inc., of Tennessee, U.S.A. is their Century 22 Model 579 transceiver available in this country only from *KW Ten-Tec Ltd.*, of Chatham, Kent. This CW-only solid-state transceiver is the successor to the earlier Century 21, being much smaller in physical size, the dimensions being only 4" high, 10" wide and 10½" deep and weighing a mere 6lbs. It contains 28 transistors, 24 diodes and 7 IC's mounted on 5 separate printed circuit panels, 7 if the optional calibrator and keyer are fitted. The panels, which are easily removed, are interconnected by cables with identified plug and socket fittings—and obviously not assembled by robots, being built in the usual first class Ten-Tec manner with access for servicing or adjustment in mind.

The appearance is up to normal Ten-Tec standard, the case being made of aluminium, back, top and bottom with a moulded front panel and a rigid metal chassis. The speaker is fitted in the bottom of the cabinet and compression loaded; thus, if the stainless steel tilt bail is in use, the sound quality can be improved by standing the unit on a hard surface. The sound output is 1 watt and quality is adequate in any position.

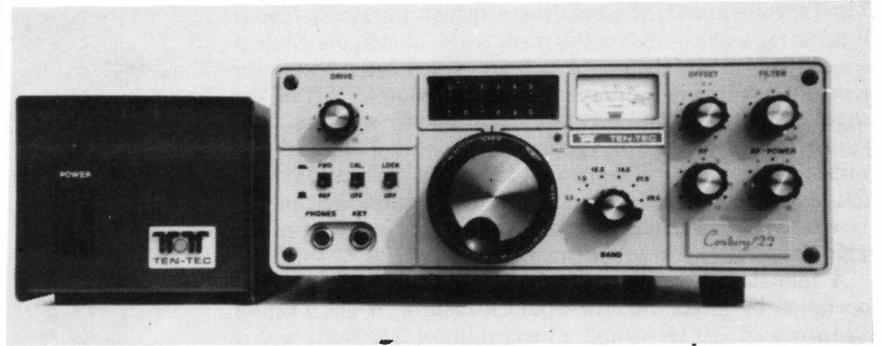
Frequency coverage is 3.5–4, 7.0–7.5, 10.0–10.5, 14.0–14.5, 21.0–21.5, 28.0–28.5 MHz, with an overlap of approximately 40 kHz at each band edge, the six bands being

selected by a band change switch with a nice positive feel sensibly situated to the right of the main tuning knob.

The transceiver is a double direct-conversion type with AGC allowing reception of SSB signals also and performance is claimed to be comparable to that of the conventional superhet. Full break-in is standard with an input power of 50 watts maximum and an output RF power of 20 watts for an SWR of less than 3:1 on all bands. The power requirements at 13.5 volts DC being 500 mA on receive and 5 amps maximum on transmit.

The front panel controls, as is normal with Ten-Tec equipment are positioned with the operator in mind and no difficulty was experienced in their operation. The DRIVE control is situated in the upper left corner of the panel and below this are three push button switches being FWD/REF power, CALIBRATOR on-off and LOCK on-off. Below these switches are standard ¼" jack sockets for headphones and key respectively. Next to the main tuning and adjacent to the dial is the ALC indicator LED. An illuminated S-meter is electronically switched to read 'S' units in the receive mode and RF power on transmit, and below this is the six-position band change switch. To the right are the four remaining controls: OFFSET (receiver only), FILTER (audio), RF gain, and AF-POWER being combined audio gain and push/pull on/off switch. Rear panel connections are POWER socket, two 12v DC accessory sockets, KEY jack (phono type in

The KW Ten-Tec Century 22 Transceiver and Power Supply.



parallel with the jack on the front panel), ANTENNA connector (SO239), and GND terminal.

The pitch and volume of the sidetone may be adjusted by inserting a small screwdriver into either of their respective holes in the left side of the cabinet. The sidetone level is constant irrespective of the band in use. The main tuning knob skirt is calibrated in 1 kHz divisions used in conjunction with the 100 kHz segments displayed by the illuminated bar-graph LED type slide rule dial above. As in the Corsair and earlier Ten-Tec models the dial skirt may be set against a calibrator or other marker by holding the tuning knob with one hand and rotating the skirt with the other. The upper scale is used on all knobs except 3.5–4.0 MHz when the lower one should be read. One revolution of the tuning knob is approximately 17 kHz. The dial pointer may be adjusted to zero set by means of a knurled disc which protrudes from the bottom of the case between the tuning and band change knobs. No difficulty was encountered in any of these operations and the tuning system was smooth and positive.

The RF gain control should normally be in the maximum position unless the received signal is below S8. Should the meter be reading full scale *i.e.* against the stop, overload may occur with the possibility of spurious signals appearing. Reducing the RF gain should clear this situation. An interesting point to note here is that when the control is turned anti-clockwise a PIN diode attenuator is positioned in the receiver aerial input circuit. Further rotation of the control increases the degree of attenuation and reduces the susceptibility to overload in the presence of very strong signals. This arrangement proved effective when strong European signals were present while trying to work DX stations on 3.5 and 7 MHz.

The VFO is permeability tuned operating from 6.0 to 6.5 MHz using separate switched crystals for mixing each band. This method favoured by Ten-Tec produces a stable clean signal with

no noticeable drift or pulling and does not seem unduly affected by normal temperature changes in prolonged operation.

For reception only, the OFFSET control provides a little more than 2 kHz movement above and below the transmitting frequency with a central indent position at which the two frequencies are common. However there is more to this control than is usual in other transceivers as it is used to provide the necessary beat note to enable CW to be resolved when the transmitter frequency is exactly zero beat with the received signal (*i.e.* at the detent position). Should the beat note increase when the OFFSET control is moved towards the detent position then the main tuning should be adjusted until the note decreases. No matter to which side of zero beat the transceiver is tuned the correct position is only when the beat note decreases as the OFFSET control is moved towards its central position. This appears much more complicated in print than in practice and one soon gets the hang of it. It is also sometimes possible to reduce an interfering carrier by receiving on the opposite beat note. This method of tuning and adjustment may seem somewhat alien to those more recent operators accustomed to automatic tuning and the multiplicity of associated functions, but it will be remembered with nostalgia by the older generation as being somewhat similar to using a "straight" receiver and separate transmitter.

The S-meter is lively and easily read, the RF gain control should, of course, be in its maximum position for the most accurate reading. In the transmit mode the meter will read relative power output on the bottom scale with the FWD/REF switch depressed and SWR when released. To determine the SWR the transceiver should be in the key down or LOCK mode and with the DRIVE control advanced until the ALC LED just glows, the SWR can then be read.

Although the radio amplifier is designed for an 8-ohm load the Phones jack will accept headphones of any impedance, in fact

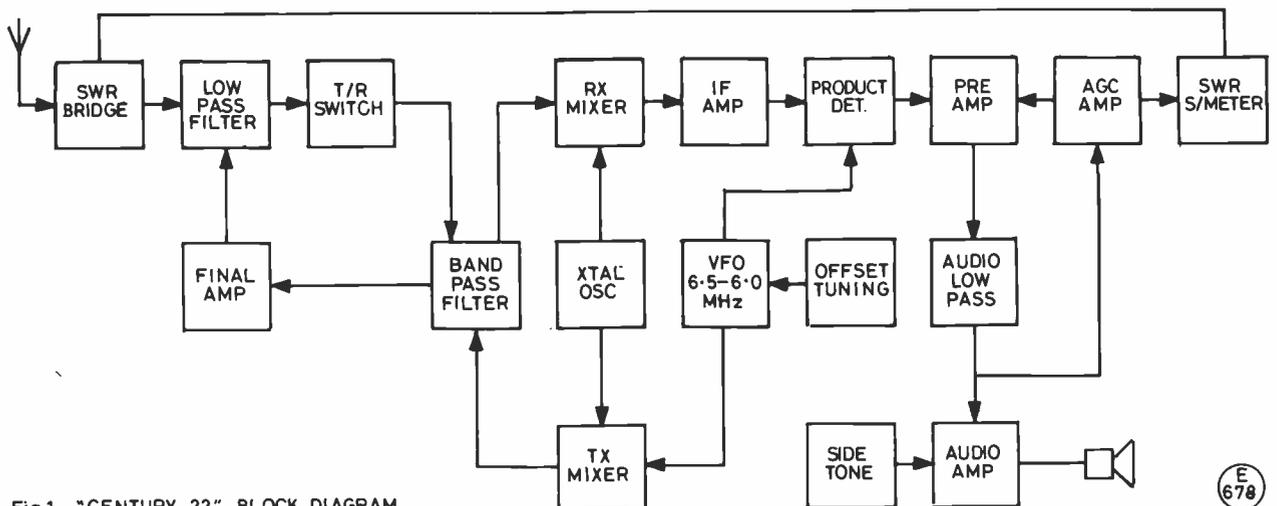


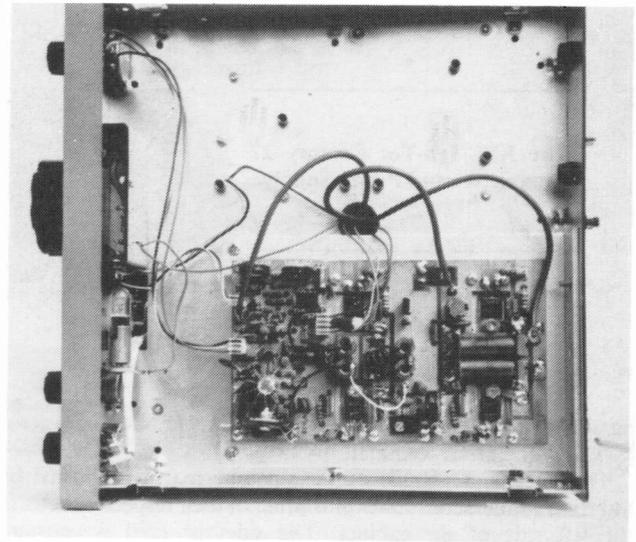
Fig.1 "CENTURY 22" BLOCK DIAGRAM

Ten-Tec recommend the use of those with high impedance. This is because the audio output at this point is also used as the external speaker output and the use of high impedance headphones will reduce this output to a more comfortable listening level. Ten-Tec suggest however, that in order to obtain a better signal-to-noise setting of the AF control, low impedance headphones be used with a simple resistive attenuator of 15 ohms in series and a shunt resistor of 2.7 or 3.3 ohms across them. The resistors need only be ¼-watt types and could be contained within the jack plug cover. This idea works quite well in practice.

A four-stage tuneable audio bandpass filter is brought into operation by rotation of the FILTER control. It has a centre frequency of 750 Hertz and a bandwidth of 200 Hertz and is remarkably effective in use. A point to note here is to use the filter with the knob in its central position as this peaks the signal in the middle of the filter passband. It is then possible to reduce interfering signals by turning the knob towards its lowest reading. Conversely the filter will be removed from the circuit when the knob is moved to the opposite end of its range.

Correct use of this filter makes a world of difference to the ease of copying a station. As an instance of its use, if one calls CQ with the filter in its sharpest position it is quite possible to miss hearing a reply should the calling station be slightly off frequency. Therefore, if conditions allow it is better to use the filter in its widest position until the contact is established and then adjust it as required in conjunction with the OFFSET control. A little practice with the two controls working together soon produces results similar to those found in much more expensive equipment.

As is normal with Ten-Tec transceivers, full QSK is a feature of this model and in practice works very well indeed. There is none of the 'pumping' action found in some of the more esoteric (and costly) imports which claim break-in is available. As Professor Joad so often remarked, "It all depends what you mean". As defined in the ARRL *Handbook*, "break-in (QSK) is a system of radio-telegraph transmission in which the station receiver is sensitive to other signals between the transmitted keying pulses". Note that the qualifying phrase is "transmitted keying pulses". In other words if the operator touches his key while one is sending, it should be possible to hear him even between keyed characters. This the Century 22 will do. During the course of both local and overseas contacts stations were asked to comment on the keying and note. No adverse remarks were received. The keyer in use during the tests was the Heathkit 1410 modified to use a reed relay instead of transistor keying. Ten-Tec warn that some types of electronic keys are unsuitable for use with the Century 22 as it requires a very low resistance keying path to chassis. Keyers with low saturation NPN keying transistors are ideal, but those using



Above chassis view showing (top) area for keyer and calibrator mounting and (bottom) final amplifier assembly.

series diodes are not recommended.

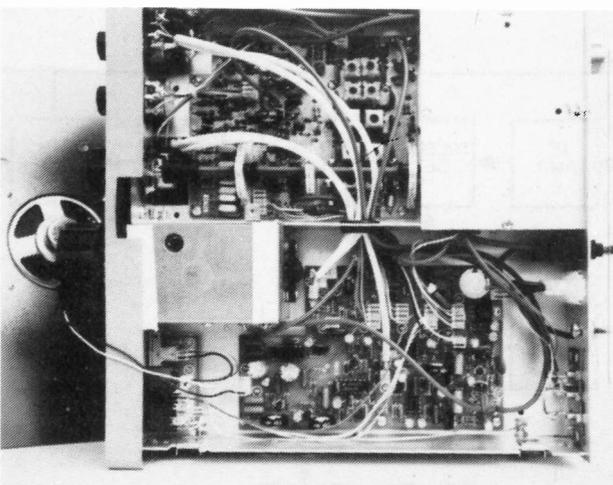
In the transmitting mode the LOCK push button will short the keying line for measurement or adjustment purposes when depressed. Although the transceiver features instant band change it is wise to reduce the DRIVE control prior to keying or using the LOCK position. Then to advance the DRIVE control to the required output power which will be at maximum when the ALC LED just glows. The reason for this is that it was found when changing bands the power supply trip would sometimes operate due to overload caused by too much drive or aerial mismatch. Should the trip operate it is only necessary to use the power supply on-off switch to be instantly back on the air. The DRIVE control increases the power in a logarithmic manner to the final amplifier and takes a little getting used to. However for QRP operation the control can easily reduce output to virtually zero if required with no problems.

The KW Ten-Tec Model 979E voltage regulated power supply was used in the tests being specially designed for use with the Century 22 and incorporating over-current and over-voltage protection. It was found that hum could be induced in the transceiver if the power supply was positioned too close to it. Should the transceiver be used with a power supply that does not incorporate an over-current trip, or if used on a 12 volt battery supply, the use of the Model 1179 circuit breaker is strongly advised. This special fast acting (in milli-seconds) magnetic current sensitive device resembles, and can be fitted in a manner similar to, the standard toggle switch. For mobile use a slightly different Model 279 is available incorporating a whine filter.

Available separately are two printed circuit panels which mount on the top left side of the chassis. Model 226 crystal calibrator provides easily recognised pulsed 25 kHz marker signals across all bands. The other panel is Model 679 electronic keyer (identical to the actual unit incorporated in the complete Model 670 keyer) requiring only an external paddle to operate.

The manual supplied is an operators version and although providing detailed instructions, photographs and circuits does not contain actual voltage readings, nor servicing procedures as, for instance, was provided with the Corsair. However KW's expect to have a more detailed version available.

No difficulties were experienced in installing or operating the transceiver and it was a delight to use. There was no trace of TVI during careful checks at full input on each band, the rated output being easily maintained. For anyone with an interest in CW this model can be recommended as being well up to the enviable standard set by KW Ten-Tec Ltd.



Under chassis showing (top) oscillator/mixer/bandpass assembly with switched low pass filters within shielded compartment on right, (bottom) Rx control assembly, and (middle left) the VFO box.

VHF BANDS

NORMAN FITCH, G3FPK

Six Metres

THERE was just time to include a *Stop Press* sentence in the January editorial about the release of the 50 MHz band and by now, most everyone will be aware of the conditions. The main points are that the band 50-50.5 MHz is available to all Class A licensees on a 24 hours a day basis from 0001 on February 1 at which time the 100 special permits will be withdrawn.

The *RSGB* and the *DTI* spent many hours discussing the conditions, and the history has been concisely chronicled in the January issue of *RadCom*, but for those who have not seen this, the conditions are:—

- 1) It is a primary allocation within the U.K.
- 2) Initially only Class A licensees will be permitted access to the band.
- 3) The maximum power at all times will be 14 dBw ERP carrier and 20 dBw ERP *p.e.p.*
- 4) Maximum transmitting antenna height to be 20 metres above ground level.
- 5) Antennas shall be horizontally polarised.
- 6) No mobile, portable or "temporary premises" operation will be allowed.
- 7) There will be no restrictions on modes of operation.
- 8) No repeaters will be allowed in the band.
- 9) Existing permits will be withdrawn.

To comment on these various conditions, strictly speaking the U.K. does not include the Channel Islands and the Isle of Man. Nevertheless GJ, GU and GD are included. There is no disguising the fact that many Class B licensees feel they have been unjustifiably discriminated against. Many have been licensed for many years and are among the most respected members of the VHF fraternity. Yet they are denied the use of the band whereas a newly licensed G0 who has just passed the *RAE* and Morse test qualifies. The *DTI* explains that this course was taken to "effectively reduce the number of interferers by about 50%". There is also a more subtle reason relating to the proposed two-class, European amateur radio licence.

Concerning what some think are very low power limits, it must be thoroughly

understood that there is no 50 MHz amateur band allocation in *ITU Region 1* generally. Nevertheless, national administrations can allocate what they like provided such services do not cause interference to the services of neighbouring countries. The power levels allowed take this factor into account and are based upon methods of calculation in the Radio Regulations. Our radio neighbours, such as Belgium, are satisfied that, under normal propagation conditions, their broadcasting services will be adequately protected.

Every 50 MHz operator must make their own ERP calculations taking into account the gain of their antenna over a dipole and offset by feeder, relay and connector losses. To take a likely example of an installation using a 5-ele. *Tonna Yagi* with 100 feet of RG-213 feeder (URM-67), the antenna gain is claimed as 9 dBi or 6.85 dBd. The cable loss for brand new feeder is 1.55 dB/100ft. Thus, the antenna system gain is $6.85 - 1.55 = 5.30$ dB. Thus, on CW or FM, the Tx output power is $14 - 5.3 = 8.7$ dBw equivalent to 7.4 watts. On SSB mode, the Tx *p.e.p.* output power would be 14.7 dBd or 29½ watts.

In the interference calculations, the *DTI* has assumed the average amateur installation. Obviously, those living on hilltops will do better than those living in valleys or surrounded by tall buildings in cities. The nearest TV Tx is the Belgian one on channel 2 serving Antwerp with an ERP of 100w from a vertical antenna.

The exclusion of mobile and portable will eliminate the possible interference from deliberately well-sited stations and the same applies to repeaters. It is to be hoped that this band, even if it is extended in the future, will not become infested with repeaters. It would seem to be an inappropriate part of the VHF spectrum for such relays of which there are surely more than enough on 2m. and 70cm?

It is now up to Class A licensees to exploit this new band. One aspect worth exploring will be the reliability of low power MS communication. The *DTI* has invited the *RSGB* to re-open the topic of the initial restrictions after a year, when the cumulative experience of operators will have revealed if there really are any interference problems. For this year at least, your scribe does not propose to include 6m. in any of the tables. In view of the experimental nature of the next twelve months, it does not seem appropriate to introduce any competitive element. Your reports of activity are eagerly awaited, particularly the results of any longer term experiments enabling us to get a feel for this new band.

The *RSGB* has published a U.K. Band Plan for 6m. which is:— 50-50.1 MHz, CW only; 50.1-50.4 MHz, narrow band modes; 50.4-50.5 MHz, all modes. Within this concept, 50.02-50.08 MHz is assigned to beacons; 50.1 MHz is the worldwide DX

calling QRG; 50.200 MHz is the SSB activity centre; 50.300± the CW MS and 50.350± the SSB MS QRGs. It is gratifying to see that the plan has been kept simple with no recommendations about specific frequencies for FM, RTTY, SS/TV, Data and packet radio transmissions. It would seem sensible to see how usage evolves and, in the light of such experience, then consider whether any more detailed band planning is desirable or wanted.

VHF Convention

The *RSGB's National VHF Convention* is a "must" for the VHF/UHF and microwave fraternity and this year it is on a Sunday. March 16 is the date, the venue being the *Sandown Park Racecourse* at Esher in Surrey. It will follow the established pattern of an all day trade show with three afternoon lecture streams. It is hoped to have an equipment test facility but at the time of editing, this had not been fixed.

"VHF Bands" deadlines for the next three months:—

March issue — February 5th
 April issue — March 5th
 May issue — April 2nd

Please be sure to note these dates.

The lectures start at 1415. The "A" stream begins with "VHF/UHF Propagation and the Weather" by Jim Bacon, G3YLA, who used to be seen regularly on BBC TV. At 1515 Ken Willis, G8VR, will give his "History of VHF" talk followed at 1615 by a VHF Contests Committee Forum. The "B" stream starts with Ron Broadbent, G3AAJ, on behalf of *AMSAT-UK*, presenting "AMSAT. Future Developments and the Way Ahead". The next talk is by David Butler, G4ASR, on "Optimising your VHF/UHF Station" and at 1615, Ray Cracknell, G2AHU, offers "50 MHz. Results and Expectations for the Future". The "C" stream is for the microwave folk beginning with Chris Smith, G8LMW, on "Equipment for 1.3 and 2.3 GHz", followed by Bob Harris, G4APV, on "Microwave TV". The last talk is by Charles Suckling, G3WDG, on "Getting the most out of your Dish".

Usually, it is necessary to vacate the lecture areas quickly so that the staff can prepare for an evening function. However, this will not apply this year so the lectures can go on till 1745.

The 1985 Tables

Last year saw a record entry of 60 participants in the Annual VHF/UHF Table with 29 Class A and 31 Class B entrants. Six of you scored over 200 points, the overall winner being Kelvin

Weaver, GW4TTU, with 265 points, who was the 1984 winner. In second place again was Keith Hewitt, G6DER, with 258 points. Martyn Jones, G4TIF, was third with 232 points.

Coming to the individual bands, fourteen readers again used 4m. the clear winner being Jerry Russell, G4SEU, with 70 points. G4TIF with 54, was runner up and Dave Lewis, GW4HBK, was third with 51. On 2m. Haydn Barker, G6XVV, worked 101 of the possible 104 British Isles countries which, with his 30 countries, made him last year's winner with 131 points. Only two points behind was GW4TTU, the 1984 winner. In joint third place were Jack Charnock, G4WXX, and Bob Nixon, G1KDF, each with 114 points. 10 readers scored 100 points or more and 57 took part.

On 70cm. G1KDF was the winner with 95 points while G6DER scored 92 working 22 countries in the process. GW4TTU was third with 86 and 33 readers entered for this band. 14 contributors operated on 23cm. and G6DER was the winner, by a good margin, with 64 pts. Keith's total included 17 countries, something of a landmark. GW4TTU was second with 50, closely followed by Philip Ruder, G6MGL, with 48.

28 readers entered the Annual CW Ladder. Using only 2m., Dick Phipps, G4TWD, won with 666 different stations worked. In second place was Colin Smith, G3GHY, with 640 from 2m. and 70cm. operation, while Dave Cater, G4WHZ, was third with 533 points from 2m. and 70cm. QSOs. GW4TTU came 6th and Kelvin's entry was remarkable in that he did not include *any* 2m. figures. His 318 points comprised 262 on 70cm. and 56 on the microwave bands. Who thinks there is little CW activity on these bands?

There are no rule changes for the 1986 tables. A reminder that the counties are the 78 in G, GD, GI, GJ, GM, GU and GW, plus the 26 in the Irish Republic. The countries are the DXCC ones *plus* GM/Shetland and IT9/Sicily. Your scribe is unaware if, when the metropolitan counties like the GLC and Greater Manchester are abolished later this year, we will revert to the old counties; nobody seems to be sure. However, for simplicity, we will assume they will still exist for the 1986 tables.

Award News

Two more readers have joined the 144 MHz QTH Squares Century Club. QTHCC certificate no. 61 was issued to Bernard Zweifel, HB9RO, (DG34h) on January 2 and his confirmed total is 117 out of 122 worked in 33 countries. Bernard is the VHF Manager of the Swiss society the USKA and has achieved his score with only 50w and no MS operation. Five QSOs were on CW, the rest on SSB. 97 were on tropo., 4 *via* Aurora and 16 by *Sporadic E*

TWO METRES ANNUAL TABLE

Final Placings at December 31, 1985

Station	Counties	Countries	Total
G6XVV	101	30	131
GW4TTU	95	34	129
G4WXX	90	24	114
G1KDF	93	21	114
G6DER	76	26	102
G0CUZ	81	21	102
G4YCD	78	23	101
G6ECM	77	23	100
G3FPK	80	20	100
G4TIF	80	20	100
G1IZO	79	19	98
G4HGT	69	24	93
GW6OFI	65	21	86
G6HKM	65	20	85
G4SEU	70	15	85
G4VXE	68	16	84
G1EGC	64	19	83
G1EZF	64	19	83
G4MUT	60	20	80
G1DWQ	58	20	78
G4NBS	65	12	77
G8XTJ	59	17	76
G4YIR	57	17	74
G6AJE	61	13	74
G6XLL	61	13	74
G4VKE	64	10	74
G1EHJ	58	14	72
GW1JCB	56	15	71
G6XRK	53	17	70
G6MGL	50	17	67
G0CAS	52	13	65
G4ARI	53	12	65
GW6VZW	51	13	64
G6YIN	54	9	63
G1HGD	51	10	61
G8RWG	50	10	60
G1JOU	50	10	60
GW4VVX	47	12	59
G1LAS	49	10	59
G3BW	36	22	58
G6WZO	50	8	58
G6XSU	43	12	55
G2DHY	48	7	55
GW3CBY	46	8	54
G6OKU	46	8	54
G4EZA	45	6	51
G4WJR	39	7	46
G4WHZ	38	7	45
GM4CXP	34	10	44
GM0BPY	31	10	41
G1INK	32	9	41
G0BPS	30	7	37
G4CMZ	23	4	27
GW1ODV	12	14	26
G6SIS	19	5	24
GM4WLL	13	5	18
G6CSY	13	5	18

FOUR METRES ANNUAL TABLE

Final Placings at December 31, 1985

Station	Counties	Countries	Total
G4SEU	63	7	70
G4TIF	49	5	54
GW4HBK	46	5	51
G4MUT	41	4	45
G3BW	34	5	39
GW3CBY	34	5	39
G4HGT	32	4	36
G4NBS	28	2	30
G4CMZ	26	3	29
G4WND	25	2	27
G4ARI	16	1	17
G2DHY	12	2	14
GM4WLL	9	2	11
GM4CXP	5	2	7

mode. Bernard's QTH is Cheseaux/Lausanne.

Jack Charnock, G4WXX, (YN37d) from Worsley Mesnes in Greater Manchester, was issued with certificate no. 62 on January 13 and he has exactly 100 confirmed. He was licensed in March, 1984 and his station comprises a Yaesu FT-290R, *Microwave Modules* 100w amplifier and a 14-ele. MET Yagi 15m. a.g.l. His QTH is 28m. a.s.l. 98 QSOs were on SSB, the others on CW. 88 were on tropo., five *via Es* and seven by *Ar* mode.

Joe Brincat, 9H1CG, (HV13b) from Marsaskala in Malta, was awarded his "175" sticker for certificate no. 50 on December 23. 16 QSOs were on SSB and the other nine on CW. MS accounted for seven, with nine each on tropo. and *Es*. Joe has now worked 276 squares in 39

DXCC countries. From his list, it seems that I7OXH/MM is quite active having been worked when in FX, FY, GT and GU squares in the Mediterranean Sea.

Jerry Russell, G4SEU, has forwarded details of the *Great Britain Four Metre Award* the purpose of which is to promote activity on 4m. There are three categories, Basic, Silver and Gold which are related to a points system in connection with the GB4MTR project. For a copy of the rules, send an s.a.e. to either G4SEU or G4WND who are both QTHR.

The Satellites

Once again, not a word from any reader concerning satellite activity. Ron Broadbent, G3AAJ, the secretary of AMSAT-UK and editor of *Oscar News*, is likewise convinced that only a tiny proportion of the 2,000-plus members are regularly active on this mode. In its 36 pages of news and technical articles comprising the December issue of *O.N.*, there is not one word from any member that anyone has contacted anybody else *via* satellite. This issue includes a contribution from James Miller, G3RUH, entitled, "An Oscar-10 Almanac 1986" one of those why-didn't-someone-think-of-it-before? articles.

Some snippets of news from recent *UoSAT Bulletins*. Soviet satellites *RS-9* and *RS-10* are now complete and ready for launch any time. *RS-10* incorporates a 15m. up/2m. down transponder which will be a novelty. Its 40 kHz bandwidth is indicated by beacons on 145.957 and 145.997 MHz. It is possible that a Russian radio amateur may be one of the cosmonauts on the *SALYUT-7* space station and that AR operation from it might be possible.

AMSAT-France's *ARSENE* satellite is reportedly progressing towards a future launch by an *ARIANE* vehicle. The mechanical structure has been completed and tested while the prototype spacecraft electronics are performing to specification. Work is in progress on the antenna and solar array deployment mechanisms, command and telemetry systems and new apogee kick motor.

Contest Diary

The next two legs of the 70 MHz *Cumulatives* are on Feb. 9 and 23 from 1000 to 1200. These are one section events in which QTH information has to be exchanged as well as the locator. The 144 MHz CW contest on Feb. 2 is from 0900 to 1500 as guessed last month. This is another one class only affair but no need to exchange QTH information. The 432 MHz Fixed contest is on Feb. 16, 0900-1500 and is a two section event — Single-op. or Multi-op.

Four Metres

Tim Charles, G4EZA, has resolved, "... to build something for 50 MHz and

70 MHz . . ." At present, he is only QRV on 2m. Dave Robinson, G4FRE, (SFK) enquires, "Is any one 'up north' interested in 4m. MS skeds?" He knows about the GM4ZUK activity periods but has not yet heard this station. In response to G6XSU's suggestion that table participants include station details, G4TIF (WKS) reveals he uses a *Trio* TS-520 and home built transverter running 10w p.e.p. output, the antenna being a 3-ele. *MET Yagi* with 20m. of UR-67 feeder. Martyn's antennas are on an *Altron* SM-30 mast at 9m. a.s.l.

G4SEU has supplied further details of the GB4MTR operation. From June 18 through July 15, GI3ZTL (LDR) will be using the call, and from Sept. 10 to Oct. 7, G3YKP (NOT) will be the operator. Jerry is liaising with other volunteers in HPH, HWR, HFD and ESX and with a Scottish group in Grampian region. Dates will be published later. He reports plenty of activity on Jan. 5 with at least 20 stations heard in Nuneaton, including GB4MTR (LEC) who was in demand.

John Jennings', G4VOZ, (LEC) report was very informative. He mentions G4NFU, (WKS) running QRP to a dipole, and G3NRW (BFD) back on the band after a long absence, also G4VVZ (NOT) contacted on Dec. 16 on CW. G8LM is the call of the *Leicestershire Metrewave Group* since 1975. The original call was held by *Murphy Radio* (HFD) in 1937, the "LM" being Les Moxon's, now G6XN, initials. He was then the company's chief designer. G8LM was operated from G4VOZ's QTH on Dec. 15 in the CW Contest when six stations were worked. John supports the idea of a 4m. All-time Table so perhaps other 4m. enthusiasts might care to indicate if they would, too.

Ian Parker, G4YUZ, (HFD) complains of strong QRM from illegal cordless telephones, quoting 70.185 MHz as a much used QRG. G4VOZ mentioned this in his letter and says his local *Radio Interference Department* staff will act but have limited time. In these cases, it helps if any telephone numbers are heard being quoted are noted down.

Two Metres

Joe Brincat, 9H1CG, writes that the 1985 *Es* season in the Mediterranean was quite good and he never remembers hearing so many openings in June, but so few — only two tiny ones — in July. His best DX was UA3RFS (UM) and other Russians included UG6AD, UP2BH and RQ2GAG. Nearly 400 QSOs were logged compared to just over 300 in 1984 and just over 500 in 1983. Joe was disappointed with the August *Perseids* meteor shower in which only two out of twelve skeds came off within very reasonable distances. Although there were a few long bursts, he found signals very weak.

Colin Morris, G0CUZ, (WMD) is now QRV on CW MS using speeds up to 1,000 l.p.m. and expects to be quite active this

ANNUAL VHF/UHF TABLE

Final Placings at December 31, 1985

Station	FOUR METRES		TWO METRES		70 CENTIMETRES		23 CENTIMETRES		TOTAL Points
	Counties	Countries	Counties	Countries	Counties	Countries	Counties	Countries	
GW4TTU	—	—	95	34	69	17	39	11	265
G6DER	—	—	76	26	70	22	47	17	258
G4TIF	49	5	80	20	61	17	—	—	232
G6XVV	—	—	101	30	57	18	18	3	227
G4SEU	63	7	70	15	45	14	—	—	214
G1KDF	—	—	93	21	79	16	3	1	213
G4NBS	28	2	65	12	53	16	37	9	192
G6MGL	—	—	50	17	43	16	34	14	174
G4HGT	32	4	69	24	35	9	7	7	173
G4MUT	41	4	60	20	36	11	17	4	172
G6HKM	—	—	65	20	55	19	—	—	159
G0CUZ	—	—	81	21	48	8	—	—	158
G4YCD	—	—	78	23	45	8	—	—	154
G6WZO	—	—	50	8	50	14	21	5	148
G4VXE	—	—	68	16	42	11	—	—	137
G6AJE	—	—	61	13	50	10	—	—	134
G1EHJ	—	—	58	14	43	12	—	—	127
G1EZF	—	—	64	19	38	6	—	—	127
GW3CBY	34	5	46	8	24	8	9	5	125
G3BW	34	5	36	22	—	—	13	5	115
G4WXX	—	—	90	24	—	—	—	—	114
G6ECM	—	—	77	23	—	—	—	—	100
G3FPK	—	—	80	20	—	—	—	—	100
G6XLL	—	—	61	13	21	4	—	—	99
G1IZO	—	—	79	19	—	—	—	—	98
G6XSU	—	—	43	12	31	9	—	—	95
G6YIN	—	—	54	9	25	5	—	—	93
GW6OFI	—	—	65	21	—	—	1	1	88
G1INK	—	—	32	9	37	8	—	—	86
G8RWG	—	—	50	10	23	3	—	—	86
G1EGC	—	—	64	19	—	—	—	—	83
G4ARI	16	1	53	12	—	—	—	—	82
G8PNN	—	—	—	—	26	12	32	10	80
G6OKU	—	—	46	8	21	3	—	—	78
G1DWQ	—	—	58	20	—	—	—	—	78
G8XTJ	—	—	59	17	—	—	—	—	76
G4YIR	—	—	57	17	—	—	—	—	74
G4VKE	—	—	64	10	—	—	—	—	74
G6CSY	—	—	13	5	31	9	13	2	73
G2DHV	12	2	48	7	2	1	—	—	72
GW1JCB	—	—	56	15	—	—	—	—	71
G6XRR	—	—	53	17	—	—	—	—	70
G0CAS	—	—	52	13	—	—	—	—	65
GW6VZW	—	—	51	13	—	—	—	—	64
G1HGD	—	—	51	10	—	—	—	—	61
G1JOU	—	—	50	10	—	—	—	—	60
GW4VVX	—	—	47	12	—	—	—	—	59
GM4CXP	5	2	34	10	6	2	—	—	59
GM0BPY	—	—	31	10	9	9	—	—	59
G1LAS	—	—	49	10	—	—	—	—	59
G4CMZ	26	3	23	4	—	—	—	—	56
G4EZA	—	—	45	6	—	—	—	—	51
GW4HBK	46	5	—	—	—	—	—	—	51
G4WHZ	—	—	38	7	4	1	—	—	50
G4WJR	—	—	39	7	—	—	—	—	46
G4WND	25	2	—	—	14	4	—	—	45
G0BPS	—	—	30	7	—	—	—	—	37
GM4WLL	9	2	13	5	—	—	—	—	29
G6SIS	—	—	19	5	1	1	—	—	26
GW1ODV	—	—	12	14	—	—	—	—	26

Three bands only count for points. Non-scoring figures in italics.

year. His first success was in the *Quadrantids* with OKIMAC around 0200 on Jan. 4. The shower was good from 1300-1600 on the 3rd, then seemed to peak between 2300 and 0300 on the 3rd/4th. Reflections in the *Geminids* seemed to be best on Dec. 13, 2000 to 2130, and again on the 14th, 0300 to 0400, but no contacts were made. On tropo. mode, Colin worked five EAs on Dec. 15 between 2000 and 2330. The next evening, at 1940, brought F6KCM (BG) on SSB and at 0020 on the 17th he contacted HB9BZA (DG) on the key.

Dave Ackrill, G0DJA, ended 1985 with 104 stations on CW, 66 of whom were worked when he was G6VMQ. He now finds it much easier to make QSOs in the CW-only part of the band and has been using just 2½w from his *Yaesu* FT-290R and 4-ele. *Yagi* from Birmingham. He

found the licence variation idea gave him much confidence in receiving and sending Morse under "live" conditions.

Bob Nixon, G1KDF, (LNH) thought November and December were very poor months apart from Dec. 15, when he worked EA1OD (XD) and EA1TA (VD) who was best tropo. DX at 1,283 kms. so far. On the 16th he worked F6EYM (ZJ), F6CCH (ZG), EA1ED (VD), F6ETZ (ZH), EA1BLA (VD) and FC1GXX (ZF). He caught an *Aurora* on Dec. 19 and worked GM6LXN (YS) in Caithness at 1950.

John Hunter, G3IMV, (BKS) made a few *Quadrantids* skeds and completed with HG7PL (JH) and with OH6OI (LX) at the second attempt on Jan. 3. Nothing was heard from OH8UV (NY), UA3MEE (TR), UZ3AXJ (SP) and only one burst was received from OH7NA (PW), all on

the 3rd. Pat Billingham, G4AGQ, (SRY) is a new contributor who made an eleventh hour entry into the Annual CW Ladder. Operation is mainly in contests as he works away from home, so has limited time available.

Tim Raven, G4ARI, (LEC) started off 1985 with every intention of improving his activity. However, he was bitten by the *AMTOR* bug so spent much less time on CW but nevertheless ended the year with 197 different CW stations worked. For Peter Atkins, G4DOL, (DOR) it was a case of patience rewarded on Dec. 17 when after listening to white noise for an hour or more, he then worked 4U1ITU at 0043. At the time, operator Geoff Grayer, G3NAQ, was S9 in the Exeter and Torquay areas but a paltry S1 in Weymouth, at best. In gale force winds on Dec. 20, Peter worked Fs in AF, ZF and AG, plus F1BPK (AD) in between "general chit-chat" with EA1CYE who was working over to PA. All G4DOL's *Geminids* skeds were failures on SSB.

G4EZA (LDN) says his countries total last year was the lowest since 1976 when he managed five using 10w of FM and CW to a dipole. Tim concludes it was not conditions but that he was in the wrong place at the wrong time. Ron Wilson, G4NZU, lives in the Nottingham bowl so, even in the famous October lift, much of the DX landed behind his local hill. He did eventually get to SM5BUZ (IO78MM) and SM6CYZ (IO66MK) on CW, also to EA1CYE (IN83) for his first Spanish QSO on SSB.

A brief note from Dave Dibley, G4R GK, (BKS) advised of CW MS completions with I6WJB (HC), SP9EWU (JK) and HG8VF (JG) in the *Geminids* on Dec. 13, and with UR1RWX (MT), OE3UP (IH) and HG7PR (JH) on Jan. 3 in the *Quadrantids*. Again for G6XSU's benefit, G4TIF reveals his 2m. station comprises a *Trio* TS-700G with BF981 preamp., 100w *p.e.p.* output to a 9-ele. *Tonna Yagi* using 20m. of *Pope* H-100 feeder.

Sue Frost, G4WGY, (LDN) ended 1985 with exactly 300 different stations on CW and says she thoroughly enjoyed the challenge. Bob Ainge, G4XEK, (SFD) found F6IPG (YH) for a new square on Dec. 16 and also worked EA1TF (VD) and EA1OD and EA1NU in XD. He heard stations in the south working 4U1ITU after midnight, but nil copy in Cheadle. A faulty PSU in June Charles's, G4YIR, station meant she could not use her PA which incorporates an Rx preamp., but she did get DH8NAA (EJ) on CW on Dec. 16 using 10w. She is still looking for a Lancashire contact, by the way.

Martin Lowe, G4YCD, (AVN) enjoyed his first year as a table entrant and reckons it gave him something to aim for, as well as being good fun. About the *Geminids*, he found things very quiet up to the 13th, with no skeds completed. In the early hours of

23 CENTIMETRES ANNUAL TABLE

Final Placings at December 31, 1985

Station	Counties	Countries	Total
G6DER	47	17	64
GW4TTU	39	11	50
G6MGL	34	14	48
G4NBS	37	9	46
G8PNN	32	10	42
G6WZO	21	5	26
G4MUT	17	4	21
G6XVV	18	3	21
G3BW	13	5	18
G6CSY	13	2	15
GW3CBY	9	5	14
G1KDF	3	1	4
G4HGT	1	1	2
GW6OFI	1	1	2

70 CENTIMETRES ANNUAL TABLE

Final Placings at December 31, 1985

Station	Counties	Countries	Total
G1KDF	79	16	95
G6DER	70	22	92
GW4TTU	69	17	86
G4TIF	61	17	78
G6XVV	57	18	75
G6HKM	55	19	74
G4NBS	53	16	69
G6WZO	50	14	64
G6AJE	50	10	60
G6MGL	43	16	59
G4SEU	45	14	59
G0CUC	48	8	56
G1EHJ	43	12	55
G4VXE	42	11	53
G4YCD	45	8	53
G4MUT	36	11	47
G11NK	37	8	45
G4HGT	35	9	44
G1EZF	38	6	44
G6CSY	31	9	40
G6XSU	31	9	40
G8PNN	26	12	38
GW3CBY	24	8	32
G6YIN	25	5	30
G8RWG	23	3	26
G6XLL	21	4	25
G6OKU	21	3	24
GM0BPY	9	9	18
G4WND	14	4	18
GM4CXP	6	2	8
G4WHZ	4	1	5
G2DHV	2	1	3
G6SIS	1	1	2

the 13th and 14th he completed with SP6FUN (IL) in six minutes and later with I5MZY (FD), IW2BNA (EF) and EA3BTZ (AB), plus IW0AKA (GB) on random. I4YRW (FE) remained to be confirmed. He found reflections on the random frequencies strong but thought activity low.

John Lemay, G4ZTR, (ESX) has a very awkward neighbour who suffers TVI yet refuses to agree to any investigation which could lead to a cure. On Christmas Day John was talking to your scribe running just one watt and this person complained. Consequently, the only enjoyment he gets is when out portable with his *Yaesu* FT-225 as he was on Jan. 1 in north Essex. This operation provided QSOs with GM4YPZ (YQ), G4KUX and GM4LIP/P (WP) on Islay.

Graeme Caselton, G6CSY, operates portable from AL51g in Kent and recent QRP QSOs include GM0BQM/P (YP), GB2WQ (WQ), GM8AHT (YR) and F6DPH (BI). Keith Hewitt, G6DER, (YSS) gives his station details as 330ft. *a.s.l.* in ZN33c, 250w to a 14 ele. *Yagi* at 30ft. Ela Martyr, G6HKM, (ESX) is now, "the proud owner of a *BNOS* 160w amplifier which works very well with the *Trio* TR-9130."

Richard Mason, G6HKS, (NOR) completed with TK5EP and YU1EV on Dec. 14 in the *Geminids*, the former giving

him a 38 report on 144.222 MHz. On the 15th and 16th, QSOs included EAs 1TA, 1OD and 2SW (XD), F6EYM (ZJ), F1FHI, F6GEX and F6APE in ZH, F6CCH and F6KCM. F6BSJ (CG) was worked on 2½w. DF1CF (FH) was also worked on the 16th. Having raised the topic last month, Roy Gibbons, G6XSU, (HFD) says he uses an *Icom* IC-202 with 25w amplifier, an Rx preamp. and 4-ele. *Tonna Yagi* 9m. *a.g.l.*

Haydn Barker, G6XVV, (YSS) worked 14BXN (FE) in the *Geminids* using just 10w. Other shower QSOs were Y28OL (GL) and YU1MWP (JE). In an *Ar* on Jan. 6 between 2040 and 2142, he worked GM8PNP (SLD), GM6WQC (HLD), GM6LXN, GM1LAV (WIL) and G1LMZ in ZP square at QTEs 5-20°. In the Great October Lift, Haydn's best DX were UQ2GKI (KQ) and Polish stations in KL and KM. Approximately 85 SM, 10 LA, 25 SP, 57 F stations were worked, plus six EAs, three OKs and five OEs.

Chris Easton, G8TF1, (GLR) found conditions rather flat on Dec. 1 for the 144 MHz Fixed contest with DL2OM (DL) best DX. His group managed 1,700 QSOs between the five. John Fitzgerald, G8XTJ, (BKS) runs 50w *p.e.p.* from his 650ft. *a.s.l.* QTH. However, the antennas are a 4-ele. *Yagi* at 15ft. and a 7-ele. *ZL* design at 13ft. On Dec. 16, he worked EA2SW and on the 17th, square no. 90 thanks to FC1GXX (ZF). A squirt of switch cleaner on a couple of tiny relays in the transceiver has restored GB3VHF from S7 to S9-plus.

Clive O'Hennessey, GW4VVX, (GWT) ended 1985 with 156 different CW stations of whom 68% were Gs. 16% GWs, 2½% other UK people, the rest being foreign. 23% were G2, G3 or G6-plus-2, 11% were new GOs, 2% were Class B folk. Only nine of those in the table were worked. Paul Baker, GW6VZW, (GWT) used a borrowed *IC-202S* and 15w amplifier in the December tropo. opening; he contacted 3 Fs in ZH, F6BCK (AJ), EA1CYE (YD), EA1OD and FC1GXX, the last two being new squares.

Last, but by no means least, Nick Peckett, G4KUX, (DHM) sent copies of 13 pages of his log covering the period Oct. 13 to 27. The DX therein could well take up most all this feature and there is no doubt that this must have been one of the finest tropo. openings for many years from northeast England. To summarize, on the 13th stations in D, F, HB, I, LX and OE were worked. On the 16th, D, EAI, LA, OK, OZ, SM, SP and Y. On the 20th, OK, OZ, RC2, RP2, SM, SP and Y. On the 23rd, D, OZ, SP and Y. On the 24th, LA, OK, OZ, SM and SP. On the 25th, RB5, SM and SP. On the 26th, OZ, SM, SP, UP and Y, and on the 27th, OK, OZ, RB5, SP and Y.

A fascinating feature is how widespread were the openings on some days; *e.g.* on the 16th he worked northern Spain,

Poland and Sweden. The event produced 18 new squares, the first tropo. QSOs with Italy, and UC2 and RB5 for two new countries. Nick did not have any QSOs in the *Geminids* shower but did operate in the *Quadrantids*. Two of his four skeds came off, OK3CBU (JI) and I4YNO (FE). RB5AO (QL) was rather ambitious but some extremely weak reflexions were heard. He heard nothing from YU3TS, though.

Seventy Centimetres

During the mid-December tropo. opening, G0CUZ took time off from 2m. to work EA1OD and EA1NU on SSB on the 15th, as did G1KDF. On the 16th, G1KDF contacted F1FHI and F6ETZ in ZH, FC1GXX (ZF) and EA1BLA (VD) at 1,184 kms., Bob's best DX on the band. G3IMV worked EA1OD on the 16th for a new square. Tony Collett, G4NBS, (CBE) finds the band quiet outside of the *Cumulatives*, in the last leg of which on Dec. 19 he got GM8MJV/P (I085IS) in Borders. G4WDL (CHS) was also worked in what seemed to be slightly above average conditions.

For the record, G4TIF's 70cm. station is a *Trio* TS-700G with *MM* transverter, 50w *p.e.p.* output to a *Tiger*, 14-ele. Silver-70 antenna fed with 20m. of H-100 cable. G4WGY ended the year with 15 CW QSOs and Sue is looking for more activity here this year. G6CSY was out portable in the *Cumulatives* in AL51g and worked GW4MGR/P and GW8ACG/P and Graeme wryly inquires, "Does anyone live in Wales or do people just pass through?" (Better ask GW4TTU). In the second session on Oct. 24, LA3VW (ES) was a new country and square worked on 5w, a QRB of 979 kms. Other new squares and/or countries were DL7QY (FJ), PE1HNR (DM), ON6OO (CL), GW3KJW (XM), EI7BJB (WN), GW8ELR (XL), DJ6XV (DL), DJ9RX (EN), DG9YN (EL), DL9AAK (FL), HB9MIN (DH), PA3BCF (DN), DH0FAP/P (EL) and DL6NAA (FK).

G6DER, who came second in the 70cm. 1985 table, runs 60w from a 2C39A PA with a 21-ele. *Yagi* at 42ft. *a.g.l.* G6HKM found EA1OD (XD) calling "CQ" on the calling QRG on Dec. 16, which was activity night, so this gave E1a a new square. She mentions that this opening seemed to take some operators by surprise. G6HKS found conditions much better on 70cm. than on 2m. to Spain on Dec. 16. EA1OD was S2-3 on 2m. running 200w but was S9 on 70cm. using only 6w. Richard used 400w on 2m. but only 20w on 70cm.

G6XSU's station comprises an *Icom* IC-402 with 10w amplifier and Rx preamp. Roy's antenna, a *MET* 19-ele. *Yagi*, is 10m. *a.g.l.* and his QTH 85m *a.s.l.* Some reasonable DX, from OZ, through HB to EA, has been worked. In a QSO with your scribe, Dave Storrs, G8GXP, (YSW) referred to the October lift in which he

ANNUAL CW LADDER

Final Placings at December 31, 1985

Station	4m.	2m.	70cm	μ Wave	Points
G4TWD	—	666	—	—	666
G3GHY	—	629	11	—	640
G4WHZ	—	502	31	—	533
G4NZU	19	303	3	—	325
G4UKM	6	295	24	—	325
GW4TTU	—	—	262	56	318
G4WGY	—	300	15	—	315
G4YIR	—	283	—	—	283
G4SFY	—	244	—	—	244
G4ARI	7	197	—	—	204
G4ZTR	—	177	—	24	201
G4AGQ	—	157	2	—	159
G0CUZ	—	144	14	—	158
GW4VVX	—	156	—	—	156
G4ZVS	—	152	—	—	152
G4VXE	—	127	7	—	134
G4CMZ	39	92	—	—	131
G4EZA	—	128	—	—	128
G4OUT	—	105	—	—	105
G0DJA	—	104	—	—	104
G2DHV	29	46	1	—	76
GW4HBK	66	—	—	—	66
GM4CXP	3	38	1	—	42
GM4WLL	8	22	—	—	30
G4LVE	—	23	—	—	23
G0CAS	—	22	—	—	22
G4PSS	—	10	1	—	11
G0BPS	—	11	—	—	11

No. of different stations worked in 1985.

worked 60 squares and six countries. The tally included 3 EAs, 2 HB9s, LA, OZ, SM, SP, Y, OH0 and the first OK. He has a terrible take-off to the east, though.

The Microwaves

G1KDF is QRV on 23 cm. transverting via a *Trio* TR-9130 running 10w to a 55-ele. *Tonna Yagi* at 27ft. Bob will be looking for contacts on 70cm. John Wilkinson, G4HGT, (YSW) has a home made transverter on 23cm. and will be joining the fray on the band this year. G4NBS thought the last two legs of the *Cumulatives* were blessed with slightly better conditions, though activity was sparse. On Dec. 3, in addition to the "usual" contacts, Tony got G4PEC (TWR) and G1HGJ (TWR). On the 19th he worked PE1EWR (JO11SL) with whom he had an interesting chat after the event. On the 29th he worked G8FUO in Berkshire, where he used to live. These QSOs on 23cm.

G6CSY's plans for 1986 include getting going on 13cm. G6DER lists his 23cm. gear as "BLU93 to two 7289s??" apparently suggesting Keith does not know the output power. His antenna is a 140cm. dish, 36ft. *a.g.l.* G8GXP is back on 23cm. with an *MM* transverter, LDF4-50 cable and mentioned four new squares worked.

G8TFI concentrates on the microwave bands from the home QTH and worked 18 countries on 23cm. last year, without GI and EI. Highlight of the autumn was working SM6HYG (FS) from GW8TFI/P on 23cm. and 13cm. in the *Cumulatives* on Oct. 16. It was the first GW/SM on 13cm. The same night, a QSO with DK2NH (FN) on 13cm. was a claimed first GW/D contact. Although 70cm. conditions were good from the home QTH in October, the

lift did not always extend to the microwave bands. However, on Oct. 26/27, OK1KHI/P and OK2BWY/P were worked on 23cm. Berlin stations were "end stop" on 70cm. on Oct. 27 but only just audible on 23cm.

Meteor Scatter

The *VHF/UHF Newsletter* is promoting activity periods in 1986 on the random MS calling QRGs. The next ones are Feb. 8, 2200-2400; Feb. 23, 0600 to 0800; March 8, 2200-2400 and March 23, 0600-0800. Use 5 min. periods on CW on 144.1 MHz and one min. periods on SSB on 144.4 MHz. Your scribe will pass the reports of stations worked or heard to G4ASR.

DX-Peditions

Clive O'Hennessey, GW4VVX, plans to be active from XS square as GM4VVX from July 26 to Aug. 9 with 400w, two 13-ele. *Yagi* and masthead preamp. The *Five Bells DX-Pedition Group* was formed from a VHF Contest Group and comprises David Johnson, G4DHF; Julian, G4YHF; Keith Tatnall, G4ODA and Ian Cripps, G1DXI. David has sent a most interesting account of the history and activities of this group, which can always be relied upon to perform extremely well. This year, more GM activity is promised at the end of July and full details will be published later.

Who is Oscar?

In this month's post bag was a letter, one paragraph of which referred to, "... strange voices (American) on 145.950 MHz." One was heard giving a call sign WHAQ mentioning a call? box in Michigan. There may be others who may have discovered this phenomenon without knowing what it is. The portion of 2m. from 145.800 to 146.000 MHz is allocated to the amateur satellite service and is used both to send signals to satellite and receive signals from them. Over the years, various satellites have been designed and built by radio amateurs and launched by U.S., Soviet and European space agencies' vehicles. What the listener heard was W8AQ, who was transmitting to satellite *Oscar-10* on 70cm. his signal being received by its Rx, then transponded to 2m. and relayed down to Earth. These activities are covered in the *Satellites or Space Scene* sections of *VHFB*.

Finale

All finished for another month. Next issue the 1986 tables will start so don't forget to send in your claims, however modest. The deadlines are in the box, so please ring the future dates in your nice, new diaries. As usual, everything should go to: "VHF Bands," *SHORT WAVE MAGAZINE*, 34 High Street, WELWYN, Herts. AL6 9EQ. 73 *de* G3FPK.

“When Morsing, Remember the Human Factor”

advised Old Fangler

JACK HUM, G5UM

SMARTING somewhat from the sensation produced at a previous meeting — quite unwittingly — by that quiet American, Cyrus B. Clickmeister, about how telegraphy was used Stateside, the club members assembled in critical mood for “The Annual Inquest”.

Not at all as cadaverous as it sounded from its title, “The Annual Inquest” was the meeting of the year when the Club looked back on its performance in The Great Annual Transmitting Contest, decided what went wrong (if anything), what went right (if anything) and How to do Better Next Time.

Mister Chairperson set the temper of the meeting when, recalling That Contest, he said that although the weather was good, the grub was good, the logging was good, and the equipment good (for most operators, even if some felt there were too many confusing bells and whistles on the front panel), there was one area which was *not* good: “Our telegraphy performance was lamentable, and I’d like to ask what you all think can be done about it well ahead of next time.”

To the surprise of all, The Man at the Club spoke up at once to say quite forthrightly: “What can be done about it? Why, refrain from entering at all next year! Telegraphy is an outmoded form of communication anyway.”

Coming from one known to have served twenty years as a seagoing operator this observation was received with what is sometimes called a stunned silence. Then, from an atomic cloud of tobacco smoke at the rear of the room emerged the quiet bass voice of Highly Technical Gent:

“With respect, TMC, I think that remark of yours to be defeatist, to say the least . . . and I speak quite dispassionately as a Class-B ancient of two decades’ sitting who hasn’t the slightest interest in your dit-dahs.”

The stunned silence was broken again, this time by Virginibus: “I wonder what Cyrus B. Clickmeister would have to say about that!” he piped: “Pity he’s had to move on to Gotterdammerung or was it Garnisch-Partenkirchen?”

“Garnish *what?*” roared Ethelbald: “That’s what they do down at the Chinese takeaway.”

“H’m, we *are* getting international” murmured Old Fangler “. . . what with Germany, China and our dear American friend.”

Detecting that the discussion was wavering woefully away from the specified bandwidth Mister Chairperson attempted to pull it back on frequency:

“International . . . a buzzword if ever there was one. And ‘Morse’: another buzzword if I may say so.”

Nobody could decide if this reference to Morse was an intentional pun or an unintentional one. At any rate, everybody was too polite to laugh. Then —

“Please speak, Old Fangler” invited Mister Chairperson: “*You’ve* been pounding brass and diddling bug-keys longer than most of us. Do *you* feel we fell down during The Great Transmitting Contest because we weren’t good telegraphists?”

Never a one to be cornered, Old Fangler gave it as his opinion that some of the Club members were good telegraphists for some of the time but not all of them for all of the time. He felt he ought politely to dispute TMC’s suggestion that telegraphy was an outmoded mode. Warming to his theme as he so often did when roused he went on:

“Remember with CW you are putting all of your transmitted power into a single note in the distant listener’s receiver. You don’t do this with even the best generated SSB. Your voice spreads out that note from cycles wide to kilocycles, and from what I’ve heard a lot of it splatters far beyond the 3½ kilocycles it ought to occupy.”

“He means hertz not cycles” came an anonymous comment from somewhere in the middle of the room. Ignoring it, Old Fangler went on:

“If you think about it you won’t deny that telegraphy is the most efficient means of sending information that you could want — and I think Cyrus B. demonstrated this to us at the last meeting.”

Rarely did O-F expatiate at this length. “He’s proper wound up” was Ethelbald’s stentorian opinion. Then through a Battle of Jutland smoke screen at the rear of the room came the thunder of a heavy cannonade: it was Highly Technical Gent to say:

“You can’t substantiate that claim, Old Fangler. With respect to your many years and to your dear old bald pate I would suggest that any form of data-processed transmission gives you a higher efficiency in terms of information impartation than your old up-down brass pounding ever could.”

“Impartation . . . I must remember that one” murmured Mister Chairperson to Mister Moneybags in the next seat: “You don’t think he meant *importation*, do you.”

“He could have meant *implantation*” came the whispered reply.

Young Virginibus of the sharp ears, overhearing these sotto-voce exchanges quickly chipped in:

“All this data processing stuff is a bit off-beat. Let’s get back to real Morse. What I’ve noticed is that lots and lots of people are very, very keen to use it. And six thousand of them are those Class-B people who asked for that variation in their licences to be made to let them get pounding!”

With a snort that could have been congestion of his tobacco pipe but probably wasn’t, Highly Technical Gent gave it as his opinion that the noble six thousand had requested the Morse facility solely to speed the day when they could get away from those boring omni-directional QSOs on ‘Two’ and instead talk to the world on aitch-eff phone. “If you believe they want to mug up the Morse to talk to each other on ‘Two’ you’ll believe anything, young Virginibus”, he declared.

“Spread a little charity, HTG” requested Mister Chairperson: “It’s just possible that the six thousand and lots of others like them do genuinely believe CW to be the best mode there is, and that’s why they’re mugging it up. I’m confident they’ll continue to use it even when they’ve graduated to Class-A and aitch-eff.”

“Hey, they don’t graduate!” snapped HTG: “May I remind you what I’ve said here before, that a Class-B system is demonstrably more efficient than a Class-A one?”

A groundswell of assent and dissent rose from the assembled members like the sussuration of a charged cloud when the antenna is turned upon it. Mister Chairperson felt it was time to effect a discharge.

“Thanks, all, for your opinions” he began in an S4 voice, hand raised.

No effect on the assembled company.

“Ordah, ordah!” he called at about S6 in his best emulation of

that other chairperson in Another Place whom he had heard when Radio 4 went to SW1.

Still no effect. Accordingly, at S9-plus:

“Will you lot darn’ well listen to me!” They did.

“Chair, please, gents” from Mister Moneybags as the dissent diminished by a dozen decibels, punctuated only by a sudden “Cor’, now you can ’ear an aitch drop!” from Ethelbald.

Proceeded Mister Chairperson: “We’ve made no progress on our Annual Inquest, so where do we go from here?”

“I’ll tell you” ventured The Man at the Club: “Don’t let’s have an inquest at all. Instead, let’s have a local CW contest to see just how bad — or good — we are. . . and I know of at least six Class-B men in the room tonight who would be ready to have a go.”

“That we will!” The six chorussed almost in unison.

“That’s very big of you, TMC” quoth Virginibus: “Only ten minutes ago you said telegraphy was an outmoded and inefficient way of talking over the air — and *now* listen to you!”

The Man at the Club hung his head in mock humility: “Remember, Virginibus, I did my professional brass pounding for money, and in my years at it I reached the conclusion that there must be better ways of transmitting intelligence. Suggestion: ask someone who did it for love, not for money, how *he* feels about it.

Speak up, Old Fangler!” “Please do”, added Mister Chairperson.

Old Fangler rose to his feet, adjusted the old timer’s badge in his lapel, and drawing a deep breath said:

“When we started our inquest this evening, fellers, we agreed that on the day of The Great Annual Contest everything was A-okay — the gear, the grub you grabbed when you came off operating-watch, the logging. Then why didn’t we win? Mister Chairperson has told you. It was because our Morse technique was lamentable. Why? Because we didn’t pay enough attention to the human factor. Morse-sending, and even more important Morse-receiving, are controlled by the human brain. Put all those automatic digital senders and receivers to work if you like, but they’ll never do something only the human brain can do and that’s to winkle out those weak ’uns seven layers below the QRM when you almost need to apply your imagination to what they are saying to you. We’ll learn how to do this if we have that local CW contest suggested by TMC. Then p’raps we’ll stand a chance in next year’s Great Annual. That’s enough from me.” And O-F sat down.

“Were Cyrus B. Clickmeister here this night!” murmured Mister Moneybags as they all trooped out to the tea bar.

“Beyond the Call”

G6CWK

IAN Hopwood, G6CWK, got involved with ‘the wireless’ at the tender age of 12 when he built a crystal set. He tried to get more volume by connecting a loudspeaker but found that it did not work! A couple of years later he was given a 1-valve receiver kit for Christmas which was built under parental control of the large copper bit soldering iron, heated in the fire; none of your 15-watt PCB jobs then.

By this time the construction bug had bitten and Ian built a three-valve TRF receiver for the medium wave band. As has happened to so many of us, the coil winding did not work out too well and he found himself listening to the local amateurs on the Sunday morning nets. All on AM in those days, of course.

After a break of a few years for courtship, marriage and family, Ian became interested in long distance TV reception and having also got an old Eagle SX30 receiver, with a BFO, he discovered amateur sideband. The bug really got to work now and the RAE was passed in 1979.

He started on two-metres but soon got tired of fighting the pile-ups and so decided to get himself equipped for 70 cms. He enjoyed operating but the thing he missed was the home construction of earlier years, so he built a 10 GHz transceiver system and is now an enthusiastic advocate of the band.

He has for many years been a member of the Stratford-on-Avon club and served on the committee. He was also very active in the fight to stop the BBC erecting a huge overseas broadcasting station on the outskirts of the town. He is a firm believer in the idea that one should try and maintain the standards of the hobby



and that you should also try to put something back into it. He has been involved in many demonstration and special event stations, including the massive three-day event held at the Royal Showground every year. He is also the area representative for the RSGB.

His future ambitions are to push those Gigahertz higher and also to find a fool proof way of quickly learning Morse!

CLUBS ROUNDUP

By "Club Secretary"

FIRSTLY, a reminder about the 'rules' for contributing to this column; any amateur radio club, RSGB affiliated or not, can contribute—providing that we are given the necessary data. This in essence is the Hon. Sec's name and address, with his telephone number if possible (we won't print the latter if you don't want us to—but it gives us a quick contact with you in case of a query) plus the address and other needful details on the club Hq, and of course as much as you can tell us of the programme. If yours is a club which doesn't settle the programme that far ahead, then the meeting routine—every third Monday, or the third Monday in the month, or whatever—will be enough. But, do be careful to distinguish between, for instance, the fourth Monday in each month and every fourth Monday . . . one club didn't and nearly lost a new member because of it!

This time, we have extracted the February goings-on from the mail which reached us by December 19.

The Mail

We lead off with **Abergavenny & Nevill Hall** where the venue every Thursday evening is the room above Male Ward 2 at Pen-y-Fal Hospital, Abergavenny. There are various activities, and Bert the friendly Morse man does his thing on most club nights. More details from the Hon. Sec.

February 18 is the date for the **Acton, Brentford & Chiswick** crowd, at the Chiswick Town Hall, High Road, Chiswick, London W4. There will be a demonstration of members' equipment.

AMRAC was formed to promote the use of computer techniques in amateur radio, and caters for the area around Bishops Waltham in Hampshire, where they are to be found at "The Crown" on every fourth Friday at 8 p.m. The next dates, we note, are February 7 and March 7.

February 3 at **Basingstoke** is set aside for *Wood & Douglas* to come along and demonstrate their various items; the venue is Forest Ring Community Centre, Sycamore Way, Winklebury, on the first Monday each month.

For details on the **Biggin Hill** meetings in February, we must refer you to the Hon. Sec.—see Panel. However, we see that they have again changed Hq and now get together at Downe Village Hall.

On to **Bishops Stortford** where the main meetings are on the third Monday of each month at the British Legion Club at the top of Windhill. However, there are informal sessions on Thursday evenings at "The Nag's Head" on the A120 Dunmow Road, near the hospital and golf club. The lads usually contrive to corner the bay window area of the saloon bar.

Another 'third Monday each month' routine is at **Borehamwood & Elstree** where the venue is "The Wellington" pub, which is at the Elstree station end of Theobald Street, Borehamwood. February has the AGM.

For the **Braintree** gatherings they have returned to their old Hq at Braintree Community Centre, Victoria Street, which lies next to the bus station. Doors open at 7.30, meeting formally starts at 8 p.m. February 3 was still not finalised when they wrote, but on February 7 they have the company of G8UYN and G6FQE of *B.N.O.S.*, to demonstrate their equipment.

Parkwood Community Centre, Parkwood Green, Rainham, Kent, is the home of the **Bredhurst** club; we have the March and April programme but for February all we can say is that they are in

session every Thursday evening. Their Hq, by the way, is within five minutes of the M2 off junction 4.

Bristol City RSGB foregather in the Small Lecture Theatre, University Walk, University of Bristol, Clifton on February 24, when the speaker will be Les Hawkyard, G5HD, chairman of the RSGB's EMC committee.

Bristol (Shirehampton) are at Twyford House, Lower High Street, Shirehampton, on Fridays at 7.30 p.m. Their letter indicates they have an interesting programme of events booked for 1986, of which we await details.

BT (Reading) draws its members in the main from the BT staff in that area. Details can be obtained from the Hon. Sec.—his details appear in the Panel.

At **Bromsgrove ARS** they meet on the second and fourth Tuesday of each month; on February 11 they have a talk on the Severn Valley Railway, and on 25th a club night, by which we assume an informal gathering. Both are at the Hundred House, Stourbridge Road, Bromsgrove.

Turning to **Bury** we must mention their Hamfest event, which will be on Sunday, February 9, at Mosses Youth and Community Centre, Cecil Street, Bury, which is also the Club Hq each week. Admission to the Hamfest is 50p per head, with a talk-in on S20.

On now to **Cheltenham**; this means the Stanton Room, Charlton Kings Library, on the first and third Friday. This is a club that invariably has something going on, and we expect the committee elected which this piece was 'in the system' will be hard at work getting the programme for 1986 together.

Now to **Cheshunt**; this group is based on the Church Room, Church Lane, Wormley, near Cheshunt, and they go there each Wednesday evening.

Chester Rugby Union Club is the home also of the **Chester** amateur radio gang; they meet on February 11 for a talk by G3EWZ on HF aerials, and on 18th for G3VYB from *Microwave Modules*. February 4 is a committee meeting and on February 25 they will, we assume, have an informal—they will certainly be in session.

Deadlines for "Clubs" for the next three months—

March issue—January 31st

April issue—February 28th

May issue—March 28th

June issue—April 25th

Please be sure to note these dates!

The **Chichester** dates are the first Tuesday and the third Thursday of each month, at the Fernleigh Centre, 40 North Street, Chichester, starting at 7.30 p.m. They usually seem to be in the 'Green Room' there.

Colchester Institute, Sheepen Road, is the venue for the **Colchester** gatherings. February 6 is down for a talk on the early days of radar, by Mr. B. T. Neale of Marconi; February 20 is a talk about the Canadian Rockies, from G4PAY.

February 6 is the date for the **Cornish** club to have its gathering at the Church Hall, Treleigh, on the old Redruth by-pass; G1AJB will talk about impedance matching.

We think the **Crawley** meeting is on the fourth Wednesday by extrapolating the previous meeting routine, but we aren't certain. Thus before you head for the Trinity United Reformed Church in Ifield, it is suggested you contact the Hon. Sec.—see Panel. Alternatively, try the club net on Friday nights on S22.

February 15 is the AGM and Constructional Contest for the **Crystal Palace** group, at their Hq in the All Saints Parish Rooms, opposite the IBA mast at the junction of Beulah Hill and Church Road, Upper Norwood, London.

The weekly meetings of the **Denby Dale** crowd are every

Wednesday evening at the Pie Hall in Denby Dale. Our programme details unfortunately don't go past January, when they had their AGM—for the rest, contact the Hon. Sec., see Panel.

February at **Derby** includes a junk sale on 5th, and a talk on 12th about electronics and surveying. On February 19th they have a talk about Antarctic operations by G4UUQ, for which you are advised to wrap up well! G2SP will have the stage on February 26, to talk about 50 MHz. All are at the usual club Hq at 119 Green Lane, where they have the whole top floor as their own. Incidentally, Derby club is celebrating its 75th Anniversary in 1986 and there will be various celebrations throughout the year, among which we note a booking of Queen Street Leisure Centre over the period February 10-15.

Now we head for **Dudley** and here the meetings are down for February 10 and 24 at the Allied Centre, Greenman Alley off Tower Street; the first date is a surplus sale, and the latter one is G8MWR and "What's Cooking".

The **Edgware** group newsletter is always of interest, and this time includes part 1 of G3MNO's forty years in the hobby — plus of course the details of meetings on the second and fourth Thursday of each month at Watling Community Centre, 145 Orange Hill Road, Burnt Oak, Edgware.

The list we have from **Fareham** is said to be provisional but we know that their Hq. address is as near permanent as it will ever be, at Portchester Community Centre, Westlands Grove, Portchester, where they are to be found every Wednesday evening; they alternate between formal sessions and evenings devoted to nattering and operating the rig.

The annual **Farnborough** club magazine is always the best effort to arrive on your scribe's desk — a pity it is only once a year. Perhaps they would write us a piece on how it is done for other clubs' benefit? The group has the second and fourth Wednesday at the Railway Enthusiasts' Clubroom, 103 Hawley Lane, Farnborough. February 12 has a series of talks on members' favourite bits of gear, and on 24th it is an open evening.

Up to **Fyde** now, where the locals are at the Kite Club, Blackpool Airport, on a combined sub. to give full access to the Kite Club facilities at all times. The radio meetings are on February 4 for a talk on amateur television, and there is an informal plus Morse on 18th.

For details on the **Glenrothes** meetings we must refer you to the Hon. Sec. — see Panel for the required details. However, we can say that the club Hq. is at Provosts Land, Leslie, Fife.

Now the **G-QRP** Club; this club is devoted primarily to the interests of the low-power operator, but it is also attracting many members who are interested in the arts and crafts of home-brewing their station equipment. Get in touch with the Hon. Sec. — see Panel for his address.

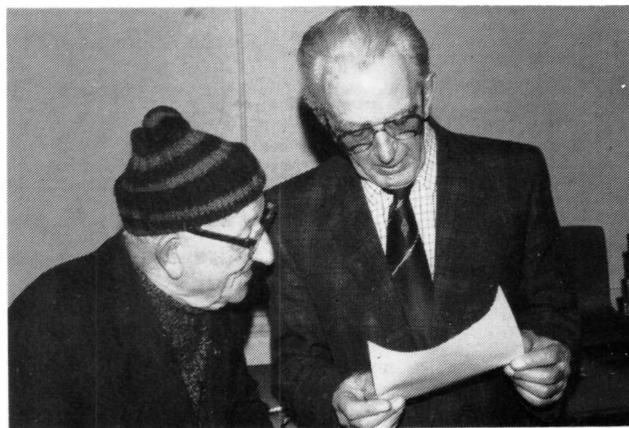
The **Grafton** crowd has moved its London QTH again, and they now are to be found at Haringey Sea Cadets *TS Wizard* in White Hart Lane, towards the Great Cambridge Road end. The new arrangements call up a meeting on every second and fourth Friday of the month.

Greater Peterborough members foregather on February 27 for a talk by G4DHF on VHF DX-peditions, at Southfields Junior School, Stanground, Peterborough.

February 6 and 20 seem to be the main meetings of the **Grimsby** chaps at Cromwell Social Club, Cromwell Road, Grimsby; but we gather there are often gatherings on the 'between' nights. February 6 is part 2 of a talk on aerials, while the February 20 programme was being rearranged when they wrote.

Harrow is usually in the Roxeth Room at the Harrow Arts Centre, High Road, Harrow Weald. every Friday with activity nights alternating more educational stuff. February 7 is a SGM to discuss rule changes. and on 14th they have a Valentine's Day junk sale.

The **Hastings** main meeting is on the third Wednesday, at West Hill Community Centre, Croft Road, and every Friday evening they have a chat night at Ashdown Farm Community Centre, Downey Close.



Reg Baker, G6QN (left) was first licensed in 1922 and has held his present callsign since 1932. Now 87 and a white-stick operator, but still active on the HF bands, he has been appointed honorary member of the Wimbledon and District Amateur Radio Society Committee in recognition of his long service to amateur radio. The picture shows WDARS president Pat King, G3PVA, reading the letter of appointment to G6QN. photo: G3ESH

February 5 is a surplus equipment sale at **Haivering**, and on 19th they have a talk on contest operating by a group of members. February 12 and 26 are informals, and all are at Fairkytes Arts Centre, Billet Lane, Hornchurch.

The Civil Defence Hq. County Control, Gaol Street, is the Hq. of **Hereford**, where they meet on February 7 for the AGM and 21st for an informal.

At **Ipswich** their magazine is almost a 'clubs' listing in itself, this group is at the "Rose and Crown", 77 Norwich Road, Ipswich, on the second and last Wednesday of each month, and often in between too, unless there is a Martlesham club meeting on.

I.R.T.S. is the national society of Eire, and as such is probably the best place to aim enquiries about amateur radio in that country. Contact the Hon. Sec. — see Panel.

The **Kidderminster** members are based at the Vice-Presidents Club, Harriers Football Ground, Hoo Road, in Kidderminster; it looks like first and third Tuesdays. February 4 is a talk on the GB3KRC repeater, and on 18th they have a surplus sale.

February 5 is a committee meeting/social session, and on 19th they have an RSGB film show of the VU7 DX-pedition, at **Maxwelltown**; the Hq. is the Tam o'Shanter Inn, Queensberry Street, Dumfries.

Now to **Midland** where they have moved to Unit 5, Henstead House, Henstead Street, which is near the junction of Bristol Street and Bromsgrove Street, in Birmingham. Monday is RAE night, and the third Tuesday is the main meeting. Wednesday is Morse night, Thursday is a night-on-the-air, and on Friday there is an open night.

Next we turn to the **Morecambe Bay** outfit; February 3 for a talk on *Wood and Douglas* kits and on 10th they have a Morse class. February 7 is a film show, and on 24th it is back to the Morse. Summing up, it is Mondays at the canteen of the Luneside Engineering Company, Mill Lane, Halton, near Lancaster.

The **North Wakefield** meetings for February are at the "White Horse", East Ardsley, on Thursdays. February 6 is a social night, and on 13th they will get on the air. February 20 is down for a coach trip to Jorvik Museum at York. and on 27th they have the monthly formal meeting.

Thursdays are also favoured by **Nottingham**, at Sherwood Community Association, Woodthorpe House, Mansfield Road, Sherwood, Nottingham. On February 6, G3IQM talks about fibre-optics, and on 13th they have a junk sale. February 20 is for a guest speaker to talk about operating overseas, and on 27th they have their forum night.

The **Oldham** club Hq. is Moorside Conservative Club,

Names and Addresses of Club Secretaries reporting in this issue:

- ABERGAVENTY: J. B. Davies, GW4XQH, 109 Croesonen Parc, Abergavenny, Gwent NP7 6PF. (0873 4655)
- ACTON, BRENTFORD & CHISWICK: W. G. Dyer, G3GEH, 188 Gunnersbury Avenue, Acton, London W3 8LB. (01-992 3778)
- AMRAC: T. J. Tugwell, 50 Mayridge, Fareham, Hants. (04895 81032)
- BASINGSTOKE: D. A. Birleigh, G4WIZ, 14 Winchfield Gardens, Tadley, Basingstoke, Hants. RG26 6TX.
- BIGGIN HILL: R. Senft, G0AMP, Mill Hay, Standard Road, Downe, Kent BR6 7HL. (0689 57848).
- BISHOPS STORTFORD: S. Mammett, G6HKK, 11 Twyford Gardens, Bishops Stortford, Herts. CM23 3SH. (0279 52297)
- BOREHAMWOOD: The Hon. Sec., c/o 140 Aycliffe Road, Borehamwood, Herts. HA8 8JG.
- BRAINTREE: D. Willcombe, 355 Cressing Road, Braintree, Essex CM7 6PE.
- BREDHURST: A. S. White, G4EGH, 7 Hanover Drive, Wigmore, Gillingham, Kent. (Medway 0634) 388760)
- BRISTOL CITY (R5GB): C. R. Hollister, G4SQQ, 34 Battersby Way, Henbury, Bristol BS10 7SU. (0272 508451)
- BRISTOL (SHIREHAMPTON): R. G. Ford, G4GTD, 2 Jersey Avenue, St. Annes, Bristol BS4 4RA. (0272 770504)
- BT (Reading): T. Hackwill, G4MUT, 59 Rivermead Road, Woodley, Reading RG5 4DH.
- BROMSGROVE (ARS): A. Kelly, G4LVK, 8 Greenslade Crescent, Bromsgrove, Worcs. B60 1DS. (021-445 2088)
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- CHESHUNT: R. Frisby, G4OAA, 2 Westfield Road, Hoddesdon, Herts. EN11 8QX.
- CHESTER: A. Warne, G4EZO, 113 Queens Road, Vicars Cross, Chester. (Chester 40055)
- CHICHESTER: C. Bryan, G4EHG, Marmanet, Salthill Road, Fishbourne, Chichester PO19 3PZ. (Chichester 789587)
- COLCHESTER: F. R. Howe, G3F1J, 29 Kingswood Road, Colchester. (0206 70189)
- CORNISH: N. Pascoc, G4USB, Bosuathick Farm, Constantine, Falmouth, Cornwall. (Falmouth 40367)
- CRAWLEY: D. L. Hill, G4IQM, 14 The Garrones, Worth, Crawley, W. Sussex RH10 4YT. (Crawley 882641)
- CRYSTAL PALACE: G. M. C. Stone, G3FZL, 11 Liphook Crescent, London SE23 3BN. (01-699 6940)
- DENBY DALE: G. Edinburgh, G3SDY, 37 Westerley Lane, Shelley, Huddersfield, HD8 8HP. (0484 602905)
- DERBY: Mrs. J. Shardlow, G4EYM, 19 Portreath Drive, Darley Abbey, Derby DE3 2BJ. (0332 556875)
- DUDLEY: J. F. Tinsdale, G4NRA, 12 Digby Road, Kingswintford, W. Midlands DY6 7RP. (0384 278300)
- EDGWARE: J. Cobby, G4RMD, 4 Briars Close, Hatfield, Herts. (Hatfield 64342)
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- HAVINGER: D. St. J. Gray, G1HTQ, 6 Devonshire Road, Hornchurch, Essex RM12 4LQ.
- HEREFORD: F. Cox, G3WRQ, 35 Thompson Place, Hereford. (Hereford 54064)
- IPSWICH: J. Tootill, G4IFF, 76 Firecroft Road, Ipswich, Suffolk IP1 6PX. (0473 44047).
- I.R.T.S.: G. Gervin, EI8CC, 185 Elton Court, Leixlip, Co. Kildare, Eire.
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- MAXWELLTOWN: C. D. S. Rogers, GM4NNC, 5 Elder Avenue, Lincluden, Dumfries DG2 0NL.
- MIDLAND: N. Gutteridge, G8BHE, 68 Max Road, Quinton, Birmingham B32 1LB. (021-422 9787).
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- NORTH WAKEFIELD: S. Thompson, G4RCH, 2 Alden Close, Morley, Leeds LS27 0SG.
- NOTTINGHAM: I. Miller G4JAE, 93 Boxley Drive, West Bridgford, Nottingham NG2 7GN. (0602 232604).
- OLDHAM: Mrs. K. Catlow, 137 Haven Lane, Moorside, Oldham, Greater Manchester. (061-624 7354).
- PLYMOUTH: A. Veale, G4SCA, 26 Manor Park Drive, Plympton, Plymouth PL7 3HT.
- PLYMOUTH (Poly): D. Slater, G1ERM, 92 Alma Road, Pennycomequick, Plymouth PL3 4HD.
- PONTEFRACT: C. Mills, G0AAO, 27 Pendennis Avenue, South Elmsall, Nr. Pontefract, W. Yorks.
- QTI-TNA: Hon. Sec., c/o 2 Cartmel Walk, North Anston, Sheffield, S. Yorks. S31 7TU. (0909 566301)
- RAIBC: Mrs. C. Clark, G1GQJ, 9 Conigre, Chinnor, Oxford, OX9 4JY.
- RAOTA: G. R. Jessop, G6JP, 32 North View, Eastcote, Pinner, Middlesex HA5 1PE.
- READING: C. Young, G4CCC, 18 Wincroft Road, Caversham, Reading, Berks. RG4 7HH.
- REIGATE: T. Trew, G8JXV, Hoath Meadow, Church Hill, Merstham, Redhill, Surrey.
- ROYAL NAVY: M. Puttick, G3LIK, 21 Sandyfield Crescent, Cowplain, Portsmouth, Hants. PO8 8SQ.
- SKELMERSDALE: G. Crowhurst, G4ZPY, 41 Mill Dam Lane, Burscough, Ormskirk, Lancs. L40 7TG. (0704 894299).
- SOUTH BRISTOL: L. Baker, G4RZY, 62 Court Farm Road, Whitchurch, Bristol, Avon BS14 0EG.
- SOUTH CHESHIRE: C. Wiseman, 14 Whiteridge Road, Whitehill, Kidsgrove, Stoke-on-Trent, Staffs. ST7 4TH. (Kidsgrove 73185).
- SOUTHDOWN: T. Rawlance, G4MVN, 18 Royal Sussex Crescent, Eastbourne.
- SE KENT YMCA: A. Moore, G3VSU, 42 Nursery Lane, Whitfield, Dover, Kent CT16 3HG. (0304 822738)
- SOUTH MANCHESTER: D. Holland, G3WFT, 32 Woodville Road, Sale, Greater Manchester. (061-973 1837).
- STEVENAGE: F. E. Wilson, G4ISO, 15 Byrd Walk, Baldock, Herts. SG7 6LN. (Baldock 892765).
- SURREY: R. Howells, G4FFY, 7 Betchworth Close, Sutton, Surrey SM1 4NR. (01-642 9871)
- SUTTON & CHEAM: A. Keech, G4BOX, 26 St. Albans Road, Cheam, Surrey.
- THAMES VALLEY: J. Pegler, G3ENI, Brook House, Forest Close, East Horsley, Leatherhead KT24 5BU.
- TODMORDEN: Mrs. J. Gamble, G6MDB, 283 Halifax Road, Todmorden, Lancs. OL14 5SQ.
- TORBAY: B. Wall, G1EUA, 48 Pennyacre Road, Teignmouth, TQ14 8LB. (Teignmouth 78554)
- VALE of WHITE HORSE: Mrs. J. Baker, G4SYL, 68 Wessex Road, Didcot, Oxon. OX11 8BP.
- UK FM GROUP (Northern): J. P. Laughton, G4UNA, Claremont, Main Street, East Ardsley, Wakefield, Yorks. WF3 2AP.
- VERULAM: H. Clayton-Smith, G4JKS, 115 Marshalswick Lane, St. Albans, Herts. (St. Albans 59318).
- WACRAL: L. Colley, G3AGX, Micasa, 13 Ferry Road, Wawne, Hull, Yorks. HU7 5XU.
- WELWYN-HATFIELD: D. Fairbanks G0AII, 2 Sandpit Road, Welwyn Garden City, Herts. AL7 3TN.
- WIMBLEDON: G. Cripps, G3DWW, 115 Bushey Road, Raynes Park, London SW20 0JN.
- WOLVERHAMPTON: K. Jenkinson, 10 Avondale Road, Wolverhampton, WV6 0AI.
- WORCESTER: D. Batchelor, G4RBD, 14 Oakleigh Heath, Hallow, Worcester. (Worcester 641733).
- WORKSOP: Mrs. C. Gee, G4ZUN, 100 Plantation Hill, Kilton, Worksop, Notts. (0909 486614).
- YEOVIL: E. H. Godfrey, G3GC, Dorset Reach, 60 Chilton Grove, Yeovil, Somerset BA21 4AW. (0935 75533).
- YORK: K. R. Cass, G3WVO, 4 Heworth Village, York.
- 308: D. Davis, G6YQD, 13 Maple Road, Surbiton, Surrey.

Rippondon Road, Moorside, Oldham, and the group is there every Thursday evening.

On the first and third Monday of each month the **Plymouth** group heads for the Plymouth Albion RFC ground, Beacon Park, Peverell, Plymouth, for a 7.30 p.m. start. February 3 is down for a talk on crime prevention and on 17th the St. John Ambulance Brigade are on the stand.

For all the details of the **Plymouth Polytechnic** club, we refer you to the Hon. Sec. — see Panel.

Every Thursday evening the top floor of the Carleton Community Centre, Carleton, is filled with **Pontefract** members; on February 13 they have a project evening and on 20th a talk on

antennas by G3HCW, 27th is a committee meeting and on March 6 they have a natter session — leading to March 13 for the final arrangements for the Components Fair which is itself on March 16th. Details on this last from the Hon. Sec. — see Panel.

QTI-TNA is the name of the Talking Newspaper group of radio amateurs, who read amateur radio magazines on to tape for the benefit of blind amateurs. This is a worthy cause to support indeed — details from the Hon. Sec. at the address in the Panel.

Next **RAIBC**; this is the one for all radio amateurs and SWLs who are blind or invalid — and which of course needs those who can spare a little time to help, too. Details from the Hon. Sec. — see Panel.

RAOTA is the club for the Old-Timers, defined for this purpose as those who have been involved in the 'Art of Amateur Radio' for 25 years or more. Details from the Hon. Sec. — see Panel for the needful details.

For **Reading** we must direct you to the "White Horse" at Emmer Green, off the B481 Reading-Nettlebed road, on alternate Thursdays. We know the Hon. Sec. has resigned his office, but to date we have no news of his successor.

The Constitutional and Conservative Centre, Warwick Road, Redhill, is home to the **Reigate** club, where they will foregather on February 17 to hear G3IEE giving his talk on old radio equipment.

The **Royal Navy** group is open to all who are serving or ex-RN or MN types, with associate membership open to members of foreign navies too. Details from the Hon. Sec. at the address in the Panel.

The **Skelmersdale** crowd meets every Thursday evening at the Beacon Park Centre, Dalton Lane, and seems to have a prepared programme which alternates between formal sessions of talk, films or whatever, and informal activity or project nights.

On to **South Bristol** and here we are talking about Whitchurch Folk House, East Dundry Road, Whitchurch, every Wednesday evening. On February 24 we notice they have G5HD talking about EMC.

For all the details of the **South Cheshire** club, we must refer you to the Hon. Sec. — see Panel for his details.

The current issue of *Airtime*, the magazine of the **Southdown** group, indicates they have their main meeting on the first Monday of each month at Chaseley Home for Disabled Ex-Servicemen, Southcliff, Eastbourne (or the second Monday if the first is a Bank Holiday); and they also have Tuesdays and Fridays at the Clubroom, Wealden District Council offices, Vicarage Fields, Hailsham.

SE Kent YMCA is the name of what is really the Dover club, getting its name from its Hq. at Dover YMCA, Godwynehurst, Leyburne Road, Dover, where they are to be found every Wednesday evening; they alternate natter nights with more formal dates.

On to **South Manchester** where the Hq. is at Norris Road Community Centre, Norris Road, Sale, where they meet every Friday at 8 p.m. Programme details from the Hon. Sec. — see Panel for the needful.

Over to **Stevenage** where they now meet at Sitec Ltd, Ridgmond Park, Telford Avenue, Stevenage; February 4 is a construction evening, and on 18th they have a junk sale.

February 3 is the Sid Morley, G3FWR, Memorial lecture for **Surrey**, the speaker being G2KU, the venue as usual will be *TS Terra Nova*, 34 The Waldrons, South Croydon, on the first floor mess deck. Meetings are normally on the first and third Monday of each month.

The **Sutton & Cheam** Hq. at Downs Lawn Tennis Club in Holland Avenue, Cheam, has just been redecorated; February 3 is a natter night, with February 21 for a junk sale. In addition we gather they have the Annual Dinner on February 15, at the Stoneleigh Inn.

On the first Tuesday of every month, the **Thames Valley** group heads for Thames Ditton Library, Watts Road, Thames Ditton; for details of what goes on in the next month or so we must refer you to the Hon. Sec. — see Panel.

At **Todmorden** the Queen Hotel is the place and the first and third Monday the dates. Details from the Hon. Sec. — see Panel.

A new **PRO** writes in for **Torbay** and he indicates that their usual Friday spot has had to change to an alternation each week between Thursdays and Fridays to avoid a clash with the skittles group. However, attendances are still good, and the business meeting is set for February 22 and includes a talk by G3YAR on TVI and RFI. The Hq. is the ECC Social Club, Ringslade Road, Highweek, Newton Abbot. Looking forward a little on March 8 they have the Dinner and Dance at the Templestowe Hotel in Torquay, the tickets being available from G1EUA.

The **Vale of White Horse** group is based on "The Waterwitch",

Cockcroft Road, Didcot where they get together on the first and third Tuesday from 8 p.m., although members are often found in the bar from 7.30; details from the Hon. Sec. — see Panel.

UK FM Group (Northern) now, and they have February 2 and March 2 booked at the Royal Hotel in Barnsley at 7.30 p.m. Contact the Hon. Sec. — see Panel — for the programme details.

On the second and fourth Tuesday of each month the **Verulam** meetings are held at the R.A.F.A. Hq. New Kent Road, off Marlborough Road, in St. Albans. Again details from the Hon. Sec. although we know they alternate an informal natter date with a lecture evening.

Now to **WACRAL**; this is the group for practising Christians, of whatever denomination, anywhere in the world. Details of membership from the Hon. Sec. — see the Secretaries' Panel.

The **Welwyn/Hatfield** group is to be found at Knightsfield Scout Hq. in Welwyn Garden City, where they go on the first and third Monday of each month. On February 3 G0BXH will talk about conversion of 11-metre gear to 28 MHz, and February 17 is down for an informal chat about construction projects.

The St. John Ambulance Hq, 124 Kingston Road, Wimbledon, London SW19, is host to the **Wimbledon** club; they foregather here on the second and last Friday of each month.

The Wolverhampton Electricity Sports and Social Club is home to the **Wolverhampton** group these days; February 4 is down for a talk on transmitter testing, and on 12th there is the committee meeting night, followed on 18th by a discussion night. To round the month out, February 25 sees them having a night-on-the-Air.

The Oddfellows Hall in New Street, **Worcester**, will be the scene of a lecture by G3PQR on February 3, while the informal is down for February 19.

On February 11, the **Workshop** members will listen to a talk by G6DCT on the arts and crafts of QRP, while on 25th, G3ZVG will give a 'mystery' talk. This group is at the Sub Aqua Club, The Maltkins, Gateford Road, Workshop.

The **Yeovil** group is nowadays to be found at the Recreation Centre, Chilton Grove, Yeovil; on February 13 G3MYM will explain how to plot the JFET characteristics, while G3GC will talk about the use of relays on 20th. The natter night is on February 27, and on March 6 G3MYM is to talk about semiconductor diodes.

York seems to be a happy crowd, meeting in the United Services Club, 61 Micklegate, York every Friday, from 7.30 p.m.

Finally, **308**, named after the room in which the founders studied for the RAE; they meet at the Coach House, Church Hill Road, Surbiton, Surrey. The only contact name we have is no longer active in the club, but doubtless he can stir up some information on what goes on — and maybe get us the details we need for the Panel!

Finished!

We've found the bottom of the pile again, and the time has come to mention deadlines — they are in the 'box' in the body of the piece and are the dates for arrival of your letters, addressed to your "Club Secretary", **SHORT WAVE MAGAZINE**, 34 High Street, Welwyn, Herts, AL6 9EQ. 'Bye now!

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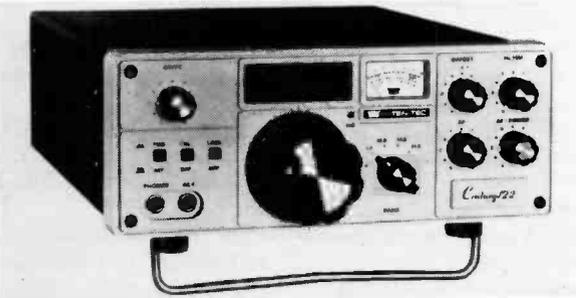
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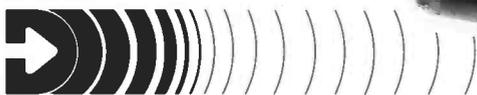
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