60p

The SHORT WAVE Magazine

VOL. XL JANUARY 1983 NUMBER 11

TR3500

COMPACT SIZE AND LIGHT WEIGHT
Measures only 66W x 168H x 40D mm,with a weight of 540grams including Ni-Cd battery pack.

LCD DIGITAL FREQUENCY READOUT
Easy to read in direct sunlight, or in the dark. Vitually no current drain (much less than LED's). Displays transmit and receive frequencies and memory channels. Display includes four "Arrow" indicators: "F. LOCK" (Frequency Lock), "REV" (Repeater Reverse), "PROG. S" (Programmed Scan), "MS" (Memory Scan).

TEN CHANNEL MEMORY
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No loss of memory in case of complete discharge (or removal of the Ni-Cd batteries. Current (approximately 1 microampere) to maintain memory supplied by built-in separate lithium battery, with estimated life of more than 5 years.

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Scans only those channels (maximum 10) in which frequency data is stored. Stops on "Busy" channel, resumes scan automatically approximately 2 seconds after signal goes off, or when "MS" key is pressed. The "STOP" key or the PTT switch may be used to cancel the scan function. LCD displays memory channel number and "MS" arrow while memory scan in use.

PROGRAMMABLE BAND SCAN
Scan bandwidth (lower and upper frequency limits) and scan steps of 5kHz and larger (5, 10, 15, 20, 25 kHz, etc.) may be programmed. Scan automatically locks up on busy channel and resumes approximately 2 seconds after signal goes off or when "PROG. S" key is pressed. "STOP" key or PTT switch cancels scan function.

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UP/DOWN manual scan in 5 kHz steps.

FREQUENCY COVERAGE
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TX OFFSET SWITCH
Selects simplex or repeater operation (operator pre-programmes repeater OFFSET MAX ±9.995 MHz).

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HI/LOW power output switch allows operation at 1.5W or, for extended battery life, 300 mW.

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BATTERY INDICATOR
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TWO "LOCK" SWITCHES
"F. LOCK" switch prevents accidental loss of chosen frequency when in "LOCK" position. "TX. STOP" switch prevents accidental transmission if PTT switch is accidentally pressed in handling.

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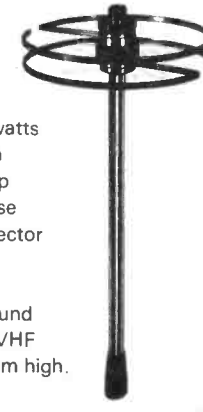

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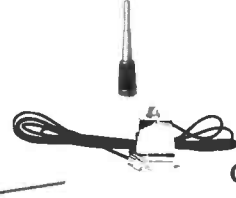

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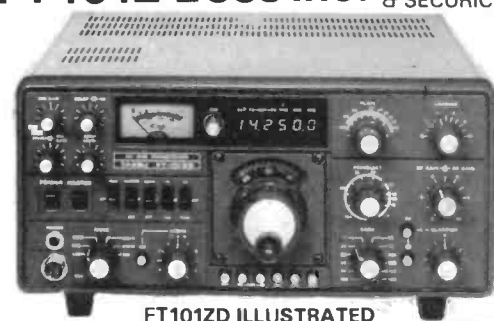

FT101ZD ILLUSTRATED

*Option

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AUTHOR'S MSS

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COMMUNICATION and DX NEWS

E. P. Essery, G3KFE

The Bands

WINTER'S come! Gone the autumn peak; by December the fallaway has, as usual, occurred. Why? Old hands have a good idea, but for the newcomers, it is simply a terrestrial seasonal thing, related to how many hours of the day in this or that part of the world the ionosphere is getting its daily dose of suntan, and hence, ionisation. At the equinoxes, when all the world is equally day and night (12 hours of each, no matter where), then all the world gets a fair crack of the whip. As for the difference between the spring and autumn equinox, take a look at the population distribution of the world and apply it to what you know. . . .

Towards the end of the period in question, there was some degree of lift in conditions at HF, and thus of deterioration at LF — but let's look at all the reports.

Twenty

Where much of the trade seems to stay, and where a new country will be found if all else fails. Our first reporter must be G3FPK (Purley) — our tame fugitive from the VHF bands. His main activity has been on SSB in the European VHF Net, and hearing a few late-evening watery Ws and S9 South Americans. On the preferred mode of CW, Norman notes contacts with JW6MY, KH6AK, NOZO/DU2, and 5T5TO.

GW4OFQ (Carmarthen) is in trouble with interference and has had to QRT for a month, but he did manage a few QSOs before the bar was put up; in the mornings CW to JA1BLX and KL7, SSB to ZL1HE and JA3HQG, while in the evenings it was all SSB, with such as D68AM, ZD9BV, KL7GKY, TU2JL, and ZL1ABO. Let's hope that next month we hear that Roger is free from problems again.

A new contributor now, in the shape of GW3NYY (Swansea) who is possibly best known in the Top Band field and at VHF. That doesn't stop Walt from having his bit of fun on other bands; Twenty SSB netted FM0GA and G4CTQ/ZB2 (who was previously 5N0SID), while a turn to CW raised UK9OAA/U8L which was a DX-pedition to Oblast 185, the QSL route being *via* UA9OBJ, VP2MM at 2200 one evening, and J28DP.

He's not done a lot on the bands this time, says G3PKS (Wells), largely because he has been playing with some rather natty aerial ideas — still based around his low horizontal loops but changing things by altering the feed methods, so as to alter the angle of radiation of the main lobe and be able to 'adjust' the range from the shack on the LF bands. A write-up for us is promised, once Jack has things nailed down to his satisfaction.

A nice thought, too, from Tom, G2BON (Aldridge), who sent a listing for a 'QSL Corner' and promises some more in future months. All good deeds get their reward, and Tom worked YI1BGD, 5T5AP, AL7DN, CEOEVG/Z on Juan Fernandez, ZL3AAA, WL7ATN, ZL1DL, ZL3AAT, JY5YK/OD5, and ZL1BEB. The YI contact was the first one we've had noted in *CDXN* for a long time.

Top Band

G4AKY (Harlow) Xeroxed his logs for the month, as he was rather busy, and then he marked off the juicy bits and the comic turns. DL0HSC/5B4 was worked a couple of times, UA9SJL, UA9FKW, UA0BAJ who slowly disappeared into the noise, UA9CPB, UH8DC, DJ6QT/CT3, FC9VN, ZB2EO, VE1BVL, UD6DLL, UF6FHC, UL7CAD, UA9FDU, UA9CTE, VO1HP, VE1BVL again, VE1ZZ, W2FJ, W1OO, HI8DAF (believed, call not completely copied), K1MM, W1CUL, UK9FCM, VE1BVL, W2BHM, N4IN, N4SU, 5N8ARY, UK2PCR/U6V, UM8MAZ, RI8DAA, UK2BAS/U6G, EA8QO, UA9SJL, UA9AJC, UA9FKW, DJ6QT, EW6V, 4X4NJ, SP1DAM, RG6G, EA8AK, and of course the small fry from Europe. The comic relief was given during the QSO with RI8DAA, who first copied Dave as GI4AKY, then as GI4TKY. He still hadn't got it right when along came UT5BN; after a little by-play, the latter, who obviously saw the funny side, came to rescue G4AKY, and continued with a QSO himself. At the end of this, says G4AKY, UT5BN had made the RI8 station aware that he had worked G4AKY and no other, but for all his efforts he couldn't get his *own* UT5BN call over to the RI8! It must have been a bit wearing to all three operators.

SSB on Top Band for G2HKU (Sheppey) gave PA0PN, HB9AMO, DK2QL, DK0DX, EA8AK, PA0SE, and PA3ACQ; then a flip of the switch to CW accounted for UL7CAD, DL0HSC/5B4, LA2IG, OE8LKK, UQ2GKM, UA3PFN, GI3ALT, ZB2EO, GW3JI, GM3LWS, OZ5RM, YU3EF, OH2TI, OH3TQ, F9KP, DL8CM, OZ1W, GM3WTA, GM3ZSP, DL1YD, EA9EU, 5N8ARY, F3AT, GU3TXF, RG6G, LA4O, 4X4NJ, OH0W, DJ2TI, LX2BQ, and EA2OP.

Our next offering comes from G3OUC (Newbury) who has been up on Wallbury Hill, operating portable with a box-kite aerial support system; this activity on a Sunday morning seems well able to stir up activity to the tune of at least 100 miles radius with the old AM mobile gear in daylight. The new home-brew SSB tackle is almost ready and then watch things hum! At home, the local QRM is slight as G4MLG is suffering from a surfeit of work and some problems with his home-brew transceiver. The biggest bind locally is the rash of 'cordless telephones' which are set up to transmit at around 1.950 MHz when speaking in one direction, the return path being believed to be on VHF. The answer to this one is very definitely a formal complaint laid to British Telecom — and if in any doubt as to whether they will react send a copy of the letter to the responsible Minister.

Long before your scribe took over this piece after the death of G6QB, while he was still an SWL and wet behind the ears, he used to read what in those days was called "DX Commentary" in *S.W.M.*, and marvel at the exploits of such as G3GUM, G3BDQ, G2DC, and an SWL who later turned into G3NOF, and wonder what sort of magic these chaps wielded. How nice then to hear again the call letters G3BDQ, and still from the Hastings area. When G6QB died, John went VHF for many years but in the last couple he has gently sidled back to the old haunts, first with home-brew gear and latterly with a TS-530S; Top Band aerials were first re-erected some six weeks before his letter — say mid-October — a ⅜-wavelength top, fed against an earth plane made of three quarter-wave radials and some 600 feet of buried wire. An hour or so playing in the WW SAB contest one evening resulted in Phone QSOs with UA3, YU, UP2, UB5, HBO, OK, UK2, EA9, UT5, RG6, UC2, OHO, and F. This naturally led to the deduction that to plug in a key would extend the horizon a little. VK6HD was raised, and VK4MK, both around 1850 kHz simplex. Other stuff worked on the band on CW included UL7CAD, UL7TBM, LX1YZ, FC9VN, ZB2EO, OE9JKH, OE7, UA9SJL, OY7ML, UK2BAS/U6G (Armenia), UK9AAN, 5N8ARY, lots of EUs, not to mention SPs, 4X4NJ, RG6, EA9EU, EA8AK, 4U1ITU, 4N1UB, 4S9s, and VE1BVL; and John does not burn the midnight oil, albeit he will on occasion be up in the mornings for the DX. G3BDQ still retains the knack, pretty obviously!

GW3NYY was able to use the superb aerial-farm at GW4IOI during November — the relevant bit is a 270 foot wire at 200

feet, with a remote controlled tuner at the 200-foot level and coaxial feed downwards. Walt tried this is in the 2nd RSGB Top Band contest, November 13/14; it was noticeable for a complete absence of Russian signals but some 164 contacts were made in 45 counties and 14 countries, including LX1YZ, FC9VN, ZB2EO, and LA4O as highlights of the evening. One week later comes the Austrian contest, for which Walt has a soft spot; this made a poor start but livened up around 2130, so GW3NYY finished up with 154 QSOs in 73 different prefixes and three continents, the best being 5N8ARY, EA9EU, EA8AK, UA9MR, and EA3AQS. Plenty of Russians on for this one, but no QSOs because they were all calling WSEM in some internal Russian shindig!

Ten

Our first reporter on this band is G4HZW (Knutsford) who still uses a TS-820 and two-element Quad aerial. Tony found the band good on occasion, but not as good as 1981; openings were shorter and conditions were disturbed a little more often. Mainly SSB, but with some CW, G4HZW connected with: 4D9RG, 5H3BH, A71AD, DU1PJS, HL2GS, HL1AHW, JAs, JT1KAI, KHOAC, PY3CB (at 0800 on long path!) UA9s, UA0UCW, VK2 to VK6, all W call areas, YI1BGD, Z21GL, ZL3ACT, ZL2AZU, ZS6UY; plus, during an *Ar* opening, PA, GM and southern G stations.

"CDXN" deadlines for the next three months:

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

Please be sure to note these dates.

We have to hand the 1O-UK Newsletter, which provides a forum for addicts of the band. Perhaps this is as good a time as any for us to point out that it is but courtesy for any stations on the band to keep clear of the area — say 29.3 to 29.6 MHz — where one may expect to find satellite downlinks, whether they be from *Oscar,* or the Russian *RS* series. For the rest, we go along very much with the 1O-UK admonition that if we don't use the band more, we stand to lose it, whether by Governmental action or by default to the CB-ers. To be fair, CB-ers either aren't aware of amateur radio to any extent, or, worse, are in fact trying to operate in a legal way against great odds in their own bands. Thus, while a bit of CW to 'zapp' an offender out of the band — especially if he is in the CW bit — is fair enough, there is much to be said for the idea of a little bit of work on converting them to our way of thinking.

G3FPK, on this subject, comments that although his local 'taxi-service' is still a pain in the neck, its gear is not well able to cope with a few watts of CW — and it isn't very popular with the local CB lads either! Norman didn't find much paydirt here, PYOZZ on Fernando do Noronha being one and W4GSM/HC8 being the other; the latter reckoning to appear with special prefix during the contest for which he was preparing.

G2BON sticks to his SSB and his G5RV aerial, and this seems to have made the grade to 7X2CR, PJ2WG, J3AH, PJ9EE, 4D9RG in the Philippines, DJ6QT/CT3, OH3DB, VK1MM, VU9YOU, TG9NX, 6W8AH, mainly around lunchtime or when the tea was brewing.

G3OUC takes his ten watts of SSB out portable on occasion, and he managed two-way contacts with G3ZGC/MM, KB2QN, KC3W, K2TV, K9KQ, W2RP, WA4BBI, N4EBZ, JY9RV, JG1II, E8ADY(?), UO5OEP, VE3KDT, UA9LCV, RA9CEM, 4X4IA, Z21DF, ZS6AVQ, VE1BYY, W1CUX, SV1JG, and SV0AN; these last four were worked by going to the top floor of a local multi-storey car park in Reading. On a different tack, Pat wants to know if anyone has data on conversion of CB rigs to our ten-metre band.

GW3NYY, like your scribe and others, noted the advertisement in American magazines for a 'Woodpecker Filter' — and reflects that it's an ill wind that blows nobody any good! During the CQ WW CW contest, Walt tangled on SSB with 9Y4W, VP2VDH, ZS3HL, PZ1CC, ZS3HL, DJ6QT/CT3, N1GL/6Y5, ZF2FL, VP5B, VP2EC, WA6ZVO/PJ4, and V3DX, this being a new prefix for Belize.

Oddments

Quite a bit here; 5N4BPC is a long-time reader of the *Magazine* — we recall him indeed as an SWL — and he is now getting interested in the idea of taking up RTTY with the help of a ZX81 or similar home computer. *Ergo,* Brian says, why don't you (meaning G3KFE) get some articles into print for this: computer usage for RTTY and SS/TV. A Great Idea! We would be pleased to receive any offerings of this sort, from 5N4BPC or elsewhere, and we would note that the SARUG group of Sinclair users in amateur radio is *not* now defunct, but still operational — maybe they could offer something?

G8UYD reminds us of the Sherwood Forest Award, which was set up some long time ago by the Mansfield club. For all the details on this rather nice wallpaper, get in touch with Graham Ridgway, G8UYD, 83 Moor Street, Mansfield, Notts.

Remember the GB2BT station to celebrate the first year of British Telecom? It was part of a set-up which seems to have been very effectively showing members of the Reading BT staff and others just what a wide range of activities there are in Amateur Radio, with some help from various traders with demonstration set-ups. We congratulate them on a good job well done. Some may have laughed at the idea of a first birthday for BT celebration, but the point was its imaginative use as an excuse to show the Amateur Radio flag, which is another matter altogether.

We have a little note and QSL card from regular reader F6EYK — hi there, Bernard! — who has managed to get sight of the BY1PK QSL cards, and sent us copies. Rather nice, particularly that the card to JH1WIX has the 'remarks' bit written in Japanese. Someone in BY1PK is taking trouble to remind us all that the QSL and what goes on it is the ultimate courtesy of the QSO.

Another different tack now. The question of 'Suitland' is taken up by G4GAR after our remarks a while back. John finds 43N 155W very close to the 5000 metre depth contour according to an atlas published in 1967. The only Suitland in the *Gazetteer* is in the state of Maryland and is a suburb of Washington DC. No other 'Suitlands' have been picked up in other gazetteers. The US Navy Hydrographical Office was situated in Suitland in 1952 and may well be still there. Thus John suspects that Suitland will rank for DXCC with the Lost Continent of Atlantis. Over to the DXCC desk at ARRL!

Next we have the invaluable W1WY Contest Calendar to look at. Firstly we have results for the 1982 CQ WW CW contest, and here we must congratulate GW3NYY on doing eighth in the single-op category, in which NP4A was the leader. Turning to the multi-op category, the Top Ten includes G3RPB top, GM3IGW fourth; turning to the Phone leg, the top G was GW4IOI at sixth, with G3XTT seventh and G3LNG eighth. Scoring was remarkably consistent for both modes — if you had a score around the 100K mark you were going to be somewhere 'in the ball-park.' Congratulations to all mentioned.

The 1983 Top Band CQ WW has its CW leg over January 28-30 and the SSB leg February 25-27, starting time 2200 GMT on the Friday and finishing 1600 GMT on the Sunday. The Rules have been changed this year, and so we suggest you contact *CQ* magazine first.

Xtal Ball

Snag — no Wicked Witch to drive it! However we have a couple of Good Fairies in the shape of *DX News Sheet* and *The DX Bulletin.*

Both the Good Fairies report BY8AA, this one is sometimes on in the mornings working Europe and is notable for quite a chirp, caused by, it is understood, poor power-line regulation; CW of course. The VE7BC activity from BY1PK made about 700 QSOs, and we understand the cards are coming to hand in about three weeks from the QSO date and are numbered — which should be a help in keeping the

bootleggers off this rare country.

As for TT8LM, we have word both that it is coming shortly and that it has been postponed indefinitely!

The Heard Island DX-pedition — Jim Smith's effort — is still needing some donations and at the time of writing needed another operator, so if you have 3K dollars to spare, telephone G3GIQ and you might still be able to join the party.

Commencing in January, both K4YT and K4DDA are setting off independently for longish DX-peditions; the former hopes to include YI, AP, VU, 4S7, HS, 9M2, XW, 9V, YB0, DU and BY, while K4DDA says his itinerary will include JY, A4, A7, A6, A9, 9K, HZ, ST, 4W, SU and YK. We keep fingers crossed.

The ZA operations of DL7FT came to nothing, but it is understood that he hopes to go again next year, with DJ0UJ, who is an Albanian national, which should make the getting of a licence a little easier.

About the time this is being written Lloyd and Iris Colvin will be on from Abu Ail for a short spell, the call being G5ACI/AA. *DXNS* quotes the Yasme Foundation as saying this is the most difficult operation these two have ever mounted.

The October 2 date saw the S.M.O.M. operation completed, and cards are in the printing. It is understood that there will be no more operations from this country at any time in 1983.

This unseasonal picture shows Bob Savery, F08HG, in his shack on Tetiaroa. Tetiaroa, which belongs to Marlon Brando, is a cluster of twelve islands and coral atolls in French Polynesia, and Bob is the resident radio engineer there. Part of his regular routine is to pass daily weather reports to the French administration in Papeete. F08HG is very active on the amateur bands and has a regular sked with G5BSW in Harrogate.

photo: Rose Tilly

Fifteen

Time closes in on us apace this month, so we must press on.

G3FPK's make-shift of an aerial only tunes up on the band in a driving rain-storm, which doesn't help much; but VD3GCO in Canada was raised on CW.

G2BON doesn't seem to have put in much time on the band, as his SSB only managed JR6YAH and JR4MQB.

A short list from GW3NYY too; he made it on SSB to VP2MR, HZ1AB and DJ6QT/CT3, all around 1700z.

Another one with a short list is G2HKU, who found his CW good enough to raise JA5RH and JA2WAC.

80 and 40

Not given a lot of notice by many of our reporters this time. GW4OFQ offers JA6BJI, JA6IEF at teatime, 4X6CA and A71AD around 2000, then at 2200 4X6DK, and hour later ZB2EO, and VP2CP at midnight. The best time seems to have been between midnight and dawn, when he found and raised AP2ZR, C6ABG, C31VC, EA9IB, VP2MCK, 6Y5IC, 4X4UH, PT7BH, 6Y5MJ, 3A2EE, and plenty of US stations.

G3ZPF (Dudley) has not been smitten with the band for DX this season, as only UA9 and UAO have been heard. ZC4 and SV both slipped through his fingers while he was realising he needed them both, and as for the 5B4 QSO that came to a sticky end: "Murphy put down his pint, walked over and turned off the conditions!"

G4BUE ended up putting in a QRO entry for the CQ WW CW contest, after his plans for an all-band QRP entry were disrupted by a work commitment at the last moment. The first night was punk — with half the aerial not connected but no change to the VSWR(!) After that was set to rights, the second night went much better and lots of DX was raised, although it was annoying to hear the Eastern Bloc working loads of JAs Chris couldn't hear! On a different tack, some time back Chris wrote a little note in the QRP Club magazine about 'sloper' aerials, with which he is much enamoured — so much so that he has been doing some more work on them as a compact HF-band beam aerial arrangement, and he wonders if we would like an article. We would — and so would *all* of us with no room for ordinary beams.

The LF Bands are the next stop for G3FPK, who has just rumbled that he has two cypress trees at 132 feet apart, albeit their magnetic QTF is 298/118 degrees. Making a due allowance for variation, and hoping that deviation is in one's favour this could turn a not very hopeful looking alignment into something quite interesting. Suck-it-and-see seems to be the motto here!

G2NJ (Peterborough) mentions hearing the SP prefix on Eighty; in addition around 1450 he heard SM7DLZ working JAs, although they were not audible at G2NJ — this is a repeat performance of the happening last year in November, and it is a bit frustrating to know the skip just doesn't get quite enough!

G2BON looked on Eighty SSB to find EA8PP, D44BC, 5T5TO, and 6W8DY, while on Forty the tally included 6W8DY again, CX8AC, VE2FU, PY2ESK, and EA9KF.

QSL Corner

All this thanks to G2BON.

6W8AH to CSS, PO Box 2031, Dakar; JY5KK/OD5 to OE3YLK; YB0ACL to WA4RRB; 4D9RG to DU9RG; AL and DN to KL7GNP; 5T5AP to CT4UW; VU9YOU to K4YT; CEOEVG/Z to PO Box 3016, Vlaparaiso, Chile; ZF2FL to N6RJ; HH2WW to N4WW; 9NIMM to N7EB; FM8CD to F5VU; FMOHOR to K6YRA; TU2LE to F6ESH; 6W8EX to PO Box 35, Ziguinchor, Senegal; EL8N to SM4CY; YI1BGD to Box 5864, Baghdad, Iraq; TU2JT to F6CXV, TR8CR to F6AQO; D44BC as for old call D4CBC; J6LB to P.O. Box 732, Castries, St. Lucia; S79MC to AK3F; VP8LP to G3VPW; P29CH to Box 496, Port Moresby; C53CG to K4YT; VK9NYG/AX9NYG to VK6NE; JT1BG to P.O. Box 158, Ulan Bator, Outer Mongolia; VK9NS, to P.O. Box 90, Norfolk Island; 5T5TO to F6BUM; A71AD — was A7XD; 7Q7LW to P.O. Box 24, Makataka, Malawi.

Finis

Where we say farewell for another month, the deadline for next time being in the 'box'; and that is the date for it to arrive, addressed as always to your conductor, "CDXN", SHORT WAVE MAGAZINE, 34 High Street, Welwyn, Herts. AL6 9EQ. Mind how you go!

A MICROPROCESSOR CONTROLLED MORSE DECODER, PART II

Peter Lumb, G3IRM

The Memory Board

THE memory used in the decoder is much larger than needed but has been used for the following reasons:

1. It costs only a little more than a number of smaller ones.
2. Additional memory space is available if needed.
3. It is interchangeable with other circuits built by the author.
4. By adopting one type of memory as a standard future constructional projects are simplified.
5. It is easier to wire up one IC than interconnecting several smaller ones.

The circuit used is well known and has appeared in print on more than one occasion with slight modifications. Inputs on CMOS devices should never be allowed to float so resistors are connected to each input, any value between 10K and 100K can be used; due to the number involved it is advisable to use the smallest wattage available. It might also be mentioned that thin connecting wire should also be used and 28 *swg* tinned copper wire covered with 0.8mm. *p.t.f.e.* sleeving is recommended. The use of IC holders is also strongly recommended as there is nothing more annoying than wondering if an IC is faulty and not being able to replace it without considerable unsoldering.

When power is connected the four gates in the CD4071 are opened allowing signals to pass into the memory which is a 6116. (The standard 6116 was used originally in this design but was later changed to the special low power version intended for battery back-up systems). At the same time the nicad battery is trickle charged. When power is again switched on the battery is disconnected but maintains information in the memory when no power is available. In this way an R/W memory can be used as a ROM but data can also be altered as the program is being run.

Construction is quite straightforward, but it must be remembered that the connections to the sockets must agree with those in the programmer. The Minicon sockets are glued to the edge of a piece of *Veroboard* and connections made to the copper strips to form a plug-in board. Although CMOS devices have static protected inputs it will do no harm to repeat the warning given by the manufacturers not to handle them more than necessary, and to avoid touching the pins as much as possible.

Testing the Programmer and Memory Board

The writer is a firm believer in checking as much as possible as construction proceeds and it is now possible to program the memory and verify the program entered. The program will, of course, only be a short simple one as there is no need to fill the memory as it can be assumed, at least for the time being, that if part of the memory can be programmed the whole of it can.

There are four systems of numbering which are common in computer use, namely binary, octal, decimal and hexadecimal and it will be assumed that anyone who may wish to construct digital equipment will at least know what is meant by binary and decimal. Of the two other scales, the octal one is the most useful so far as the 8085A microprocessor is concerned as the instruction codes are closely related to one another when written in octal. In octal there are no such numbers as 8 and 9. This simple program used to check the memory is not long enough to show the relationship between the scales, so the first 20 decimal numbers are listed in Table 1 together with their equivalents in octal and binary.

Table 1

Decimal	*Octal*	*Binary*	*Decimal*	*Octal*	*Binary*
1	001	00001	11	013	01011
2	002	00010	12	014	01100
3	003	00011	13	015	01101
4	004	00100	14	016	01110
5	005	00101	15	017	01111
6	006	00110	16	020	10000
7	007	00111	17	021	10001
8	010	01000	18	022	10010
9	011	01001	19	023	10011
10	012	01010	20	024	10100

It is quite easy to convert binary into octal by dividing the binary number into groups of three from the right. As the data used in the memory is built up of eight-bit words, the following conversion of an eight-bit binary number into octal can be used as an example:

Binary	01/110/010
Octal	1 6 2

Treat each three-bit block as a binary number (maximum of seven) and translate each block into decimal; this gives 162 as the octal for the binary number quoted. The reverse operation is used to convert octal into binary. In addition to the octal coding used by the 8085A a list of mnemonics is also used by the makers to assist in programming. Each mnemonic has a corresponding machine code (binary) and either or both can be found in programs. The advantage of using mnemonics is that the meaning of the instruction is more obvious than in either binary or octal

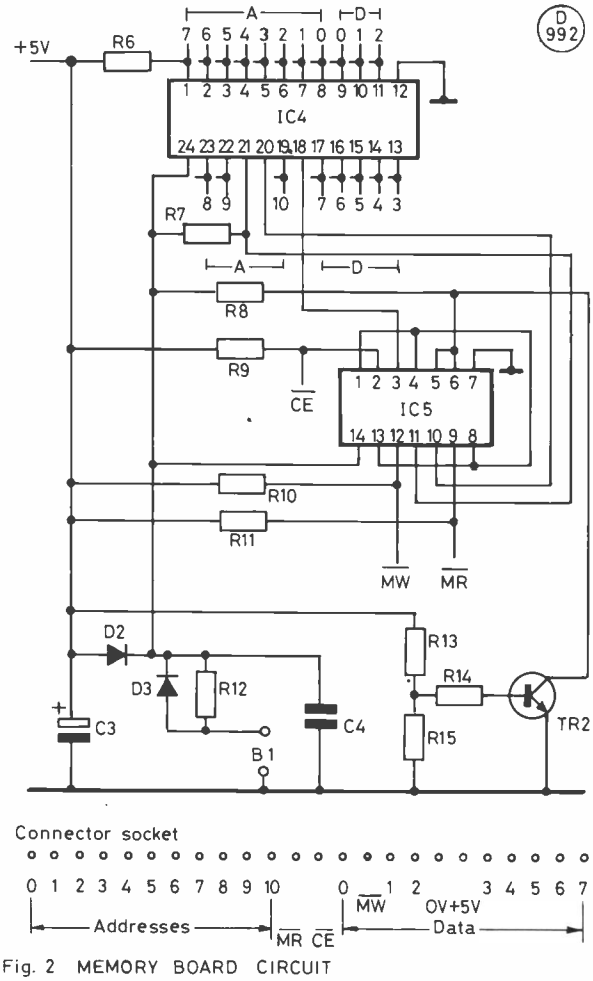


Fig. 2 MEMORY BOARD CIRCUIT

Tables of Values

Fig. 2

R6 = 10K to 100K
R7, R8, R9,
R10, R11, = 47K
R12 = 2K2
R13 = 270R
R14 = 1K
R15 = 56R
C3 = 4.7μF tant.
C4 = 0.01μF disc
TR2 = BC107 or similar
IC4 = 6116LP
IC5 = CD4071
D2, D3 = 0A47
B1 = 3.6v. 100mAh nicad

Note: R6 is duplicated on each address and data line marked 'A' and 'D' in the diagram.

Fig. 3

R16 to R22 = 470R
IC6 = CD4511
IC7 = DL704

code. They do, however, have to be translated into either of these codes for use by the microprocessor.

Programming the Memory

To program the memory first charge the nicad battery by means of a charger if this is available. If not the battery can be charged but at a much slower rate by soldering it in place, plugging the memory board into the rear row of connectors on the programmer, and applying 5v. to the power lines. Assuming everything is wired correctly the programmer can be left connected for some time to charge the battery. To commence programming, close the reset switch to Ov. and then release it. This operation sets all the address lines to 0 which can be checked at the appropriate pins of the 6116 with a voltmeter. Enter the data at instruction 000 by means of the switches and press the programming switch once, following this by pressing the addressing switch once. Data has been entered at address 000 and the programmer has moved to address 001 for the second data code to be entered. If a counter is available which will count single pulses it can be connected to either pin 12 or pin 13 on IC2 to keep track of the address being programmed.

The programmer described so far is about the simplest that will do the job though the addition of a counter is well worthwhile and is virtually essential when entering the main program — so much so that the construction of a special counter can be considered as an optional extra; a suitable circuit is shown in Fig. 3. Three of these units can be assembled side-by-side on a piece of board and

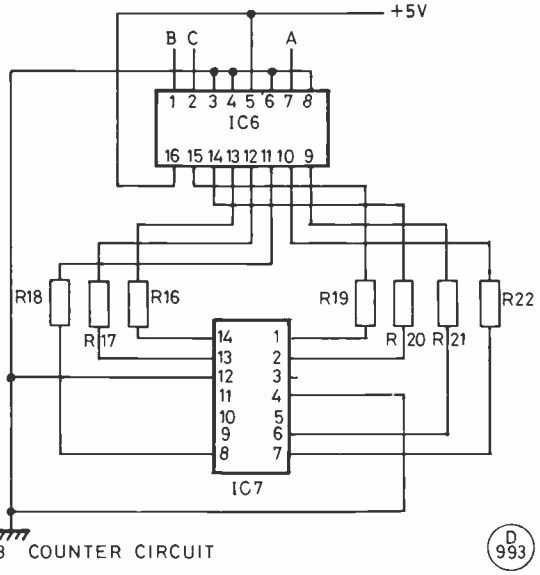
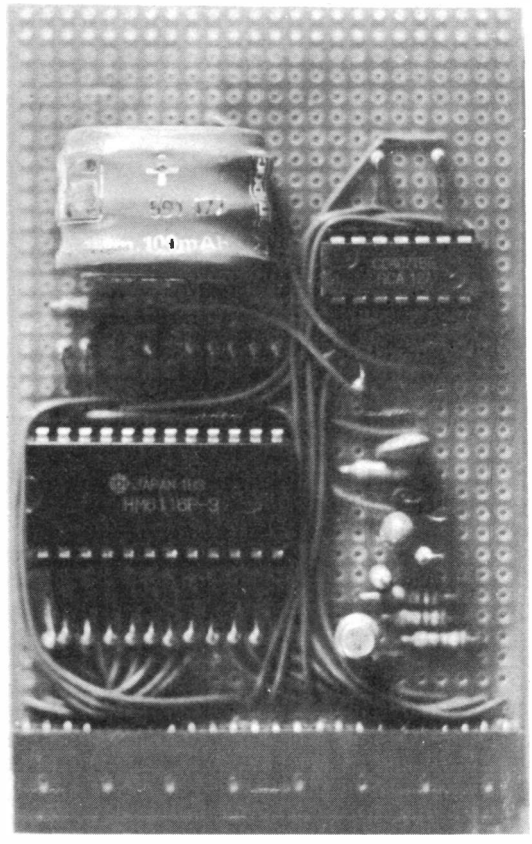


Fig. 3 COUNTER CIRCUIT

D 993



The memory board

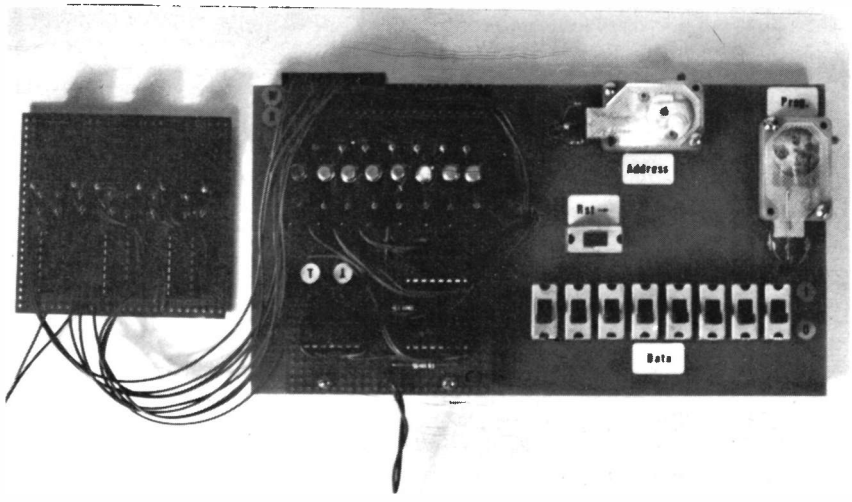
provided with two wires to connect the power supply. There are three inputs to each section labelled A, B, and C; these are connected to a Minicon socket by flying leads as follows:

Input	*R.H. display (most significant)*	*Centre display*	*L.H. display (least significant*
A	A6	A3	A0
B	A7	A4	A1
C	A8	A5	A2

The board to be programmed is plugged into the rear row of pins on the programmer so that the Minicon from the display can be inserted in the front row of address pins, such that the address pins on the display correspond with those on the programmer. During verifying these connectors are reversed. As the addressing switch is pressed the counter will count up in octal to a maximum of 777. If there is any doubt about the accuracy of the programming there is no need to check it immediately, just continue to the end, verify it, and keep a note of the addresses which have been programmed incorrectly. A similar display to that described above can be used in place of the diode readout, but as the switches used in programming are in binary it is convenient to have the readout in the same number system.

Table 2

Octal address	*Decimal address*	*Data octal*	*Data binary*	*Mnemonic*
000	0	076	00111110	MVIA
001	1	230	10011000	
002	2	323	11010011	OUT
003	3	203	10000011	
004	4	333	11011011	IN
005	5	200	10000000	
006	6	323	11010011	OUT
007	7	201	10000001	
010	8	166	01110110	HLT



Programmer with address display

It is fairly easy to be careful with a short program, but when the main program is entered extra care is needed to ensure everything is correct and the counter will be found almost indispensable. The short program given in Table 2 can be used. When the program has been entered, disconnect the power and transfer the board to the front connectors; reconnect the power and close and release the reset switch. The address counter will indicate 000 and the light emitting diodes will show the first data entered at this address. Press the address switch once and data at address 001 will appear, and so on. After address 010 has been reached there is no harm in continuing but what will be seen will be the miscellaneous information present in the memory. The last instruction in Table 2 is interesting as it instructs the microprocessor to halt. When this program is run almost anything could happen if the HLT was not included as the processor would continue into the miscellaneous information in the memory and do its best to interpret it; including the HLT instruction effectively isolates the rest of the memory and stops operation at address 010.

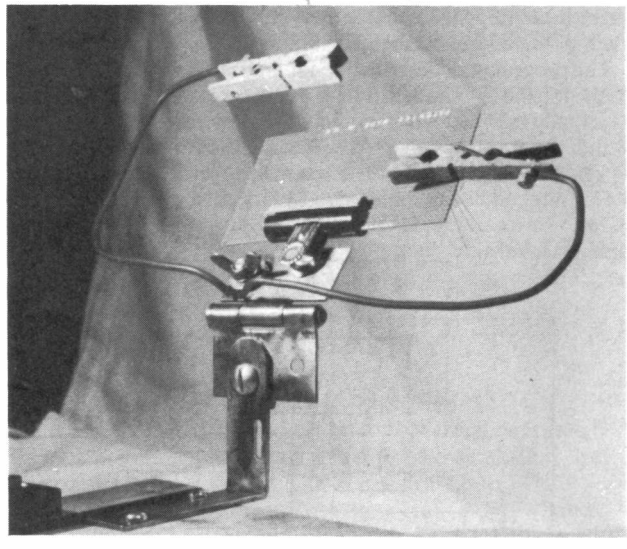
Provided the battery is charged the programmer can be switched off. Next time it is switched on the program entered will still be there ready for use. The memory board can, of course, be removed and replaced at a later date or transferred to the microprocessor for checking and subsequently, when fully programmed, for use in the Morse decoder.

to be continued

AN EXTRA HAND

A CHEAP AND VERSATILE PCB JIG

J. GERARD



As a constructor, I am well aware of the difficulty of holding PCB's whilst under construction. Described here is the solution I have found to this problem, which also enables the components necessary in board construction to be held. All the materials used can be bought at DIY shops or ironmongers.

The photograph shows the idea. The hinge is a common door hinge; it needs to be fairly stiff, and it can be made stiffer by squeezing the clasps in a vice or by giving the clasps a moderate tap with a hammer. The angle bracket can be any type as long as it has holes that can be used to mount the hinge, and also to mount it to whatever you find suitable — it could for instance be mounted to a piece of scrap wood 2″ x 6″ for portability.

All mountings (hinge-to-angle bracket, clip-to-hinge and component holders) are made with 6mm. roofing bolts, washers and wingnuts. This is to allow the circuit board to be worked on in as many attitudes as possible in either the component side or by flipping the hinge over to solder the foil side.

The component arms are made from 2.5mm. twin and earth house wiring cable; the wire is easily bent to hold most small components in position for soldering, and these are mounted on the hinge and flip over with it, an eyelet being bent in the centre of the wire to facilitate its mounting.

Spring-type clothes pegs are bolted to eyelets bent in the ends of the arms to hold components or accessories, such as a small magnifying glass. The grey outer insulation of the 2.5mm. cable is stripped and used in the jaws of the 'bulldog' clip to alleviate scratching the boards, providing a very good grip and allowing them to be tested in the holder. This can be slid into the jaws, or a drop of epoxy may be used to hold it in place.

This device came about because commercial PCB jigs are both expensive and limited in their use. The jig featured here is a cheap and versatile aid to the electronics constructor, which has proved itself invaluable.

• • • SWL • • • SHORT WAVE LISTENER FEATURE

By Justin Cooper

OUR first task must be to congratulate all those who have come up with RAE passes and/or Morse test successes — one of the sorts of news that makes this column worth while!

This leads on to the thought that the most important part of any shack is the 'nut between the ears'. And if he has, say, some 7-800 prefixes booked in, then it is a fair bet that our SWL has a good idea as to what he or she is up to. Many such have stations of the most simple — for example it was, we recall, John Fitzgerald who put in HPX lists to the tune of around nine hundred before he gave up his "two transistor portables helping each other" in favour of a simple communications receiver; and we don't remember any rise in the rate of acquiring prefixes between getting the communications receiver and getting the licence, either.

One area where individuals vary quite largely is in their definition of "heard". Some chaps will only claim a station for a new prefix after they have listened to him for several QSOs and assured themselves beyond all doubt that they have got him taped. Others won't claim a station until they have made 100% copy of *both* ends of at least one QSO; and most people do try to be quite sure they have identified their station and not the other end of the QSO . . . but there are some who are a bit less fussy. All we can say is that to make a fast rise up the table one needs the hours at the receiver — and so we generally know when somebody is putting in a shaky claim, and then we monitor it to be sure. 'Nuff said!

The Mail

J. Dunnett (Prestatyn) has passed his RAE and now the Morse, and is waiting for the Class 'A' ticket to arrive; meantime Jim is getting the station and aerials 'ship-shape and Bristol fashion' — an FT-101 which receives its inspiration from a 66-foot top fed with open-wire feeder from the centre, used for 7-28 MHz. Jim is not able to do much on 80 and 160m., though, as he doesn't like strapping the aerial terminals together and feeding the lot Marconi-fashion through an ATU for fear of TVI. All we can say is we've never had the chance to do anything better, and the only TVI we ever had was on Eighty and needed braid-breakers to cut up the 'outer circuit' of the TV feeders. This talk about end-feds and TVI is just another nugget of truth buried well out of sight by a soil largely comprised of hot air!

Learning CW is the current interest for *T. Kirby (Cheltenham)* who notes that there is a very definite relationship between one's state of mind and ability to copy the stuff — if the mind is relaxed the receiving speed is noticeably improved. Agreed, and we should go further — if one is really 'tight' then the ability to read copy falls away very badly indeed. The only answer is to try and be in a relaxed frame of mind always; and if the thought of taking the test is terrifying, then ask the doctor for something to take just before you take the exam. Tim has noted that sometimes he is reading the stuff while talking to a pal, but if he picks up paper and pencil then it all just goes. Oh, well — practice and more practice!

QRT for the summer has been the scheme of things for *N. Askew (Coventry),* and a further snag is that there often doesn't seem to be time for listening in the evenings.

B. F. Hughes (Worcester) is now on from the new site, and finds it a better site for SWL all round, even though it is such a short distance from the old place. The height, Bernard opines, it the thing.

That distinctive fist of *E. W. Robinson (Bury St. Edmunds)* now makes its appearance at the top of the pile, with quite an assortment of interesting prefixes heard to take him up to 2134.

J. R. Cox (Treherbert) wrote to us a while back on the subject of getting a start in SWL — our advice seems to be working as he now notes a string of VKs heard, including VK9NF on Norfolk Is., not to mention lots of Americans and other North Americans and HZ1AB.

Turning to *M. Law (Chesterfield)* we have it that Mike is now retiring from the HPX Ladder as his new call has arrived — he is now G8OKU.

The interest for *C. M. Lindars (Wallington)* of late has been in comparing receivers — in his case the FRG-7 and an SSR-1, and the problem now is to decide which one to keep and which to dispose of — difficult! Most people seem to get over this by keeping both, and calling one the 'standby'.

The WAB activity has been entertaining *J. Goodrick (Newport, I.o.W.)* somewhat of late, and John is well on the way for the basic award; but now, he says, for the moment he has other fish to fry. John's report is one of the few to cover all bands; on 24 MHz he heard OY7ML, CT3, DL and G, while on 18 MHz it was F9, DJ2, and Gs. 10 MHz has been very erractic but the activity is well up since the W and VE lads and lasses are to be heard. Plus of course the usual things on 14/21/28 Mhz, with all continents heard within 21 minutes on September 24, between 1720 and 1741z, on Ten.

J. Heath (St. Ives, Hunts.) reckons his U5YY should be deleted from his score as a misreading of YU5YY — OK, but we aren't all *that* sure! Seriously, it is easy enough in all conscience to miscopy a signal — but if the miscopy is such as to result in the call of a rare 'un, then one's own instincts must be the final arbiter — we don't know how it sounded in *your* ears! This can be important; for example, if the writer was on SSB and using the inbuilt speaker, any doubts would result in an immediate transfer to an outboard speaker of good sound quality before we would make a firm decision.

H. M. Graham (Chesham) has been on Top Band and heard 5N8ARY being called but couldn't find the 5N8; one wonders if Maurice in fact tried to listen down at the LF end of the band, as most DX operating is split-frequency on Top Band and the last place to look for the DX is where people are calling him. That being said, 5N8ARY didn't by all accounts work all that many stations, even though most of the Top Band 'regulars' seem to have known he was around.

On now to *B. A. Payne (Leeds)* who has an interesting list of prefixes among which we note JY1 — nice to know His Majesty is finding time to get back on the air once more.

Over the 1000 mark goes *H. Bale (Canton, Cardiff)* to join the others up there. During the early years of this piece, when one got over the 1000 mark one used to retire — but now one supposes the 'possible' is so high that a 2000 score is by no means a marvellous feat, although still a rare old bit of good-old-application, as indeed is the 1000 scored.

ANNUAL HPX LADDER
Starting date, January 1, 1982

SWL	*PREFIXES*		
R. Wooden (Staines)	496	A. Pilkington (Chesterfield)	368
B. Patchett (Sheffield S9)	493	P. D. Hunt (Woolwich)	310
T. Kirby (Cheltenham)	462	I. Blair (Swansea)	263
Mrs. C. Law (Chesterfield)	390	H. Smith (Sale)	204

200 Prefixes to have been heard since January 1, 1982, for an entry to be made, in accordance with HPX Rules, (p. 367, September issue). At score 500, transfer to the All-Time listings is automatic.

Talking of high scores, *E. B. Ward (Ruddington)* wonders what was the highest score on CW in the Ladder. As we said before, Noel Phelps it was — no-one prior to him ever carried it on that far, before losing interest or getting a ticket, which in fact is what Noel himsel did. All this is a preamble to noting that Barry has now busted that record well and truly, coming in at 1454 with some 96 new ones for this last period. However, as Barry remarks, it's all a matter of *time* — and he has, unfortunately, too much of that to spare, being rather homebound by disability.

Like most others, *R. Wooden (Staines)* found conditions rather patchy on the HF bands, but still had his mite of fun from them; best catches in the contest were ZF2FL on Cayman Is. on Twenty and FM7CD in Martinique on 21 Mhz.

B. Patchett (Sheffield) is well dug in to the RAE studies and then intends to apply himself to CW — he is 'only' copying 15 w.p.m. and intends to get to 20 w.p.m. before he sends in his test application! On a different tack, Bron wonders when the HPX idea first started in *SWL*. Back in the very early sixties is the answer, very shortly after we first began doing this piece. Don't know about reprinting an early issue though — we'll have to ask G3KFE!

R. Fox (Northampton) enters the lists on both CW and SSB, with an FRG-7700 plus FRT-7700 ATU and a long-wire aerial, plus a converted CB Quad aerial used on 28 MHz. To receive CW, Roy has a commercial Morse reader and a program for his Apple-2 home computer. As to the latter, we would be very interested to know just what he has done to achieve this, as apart from the program itself, he has doubtless done some work on the Apple to reduce its output of RFI in order to be able to run it direct off the receiver. What about an article, Roy? On the subject of listening hours, Roy listens at all sorts of times, as and when work and the RAE studies permit, but the most interesting period on 14 and 21 MHz have been the twilight hours.

After his lay-off, it was nice to run across *S. Foster (Metheringham)* again at Leicester, and to have another entry in the Ladder: this was provoked by his noting just how close to passing him Ruth Smith is!

We turn now to *H. Smith (Sale)* who has been presented with a 9R-59DS receiver, a Joystick aerial/ATU, and a Hamgear preselector by a neighbour who was emigrating. Herbert, having also obtained a large number of back-issues of *Short Wave Magazine,* is now settling down to getting a grip of it all, and finding it quite a good way of keeping a semi-invalid amused. He sounds like a very likely candidate for membership of the RAIBC and the South Manchester clubs, followed in short order by a 'ticket' in his own right. We shall be watching with interest!

"SWL" reader Bernard Hughes in his shack at his Kidderminster home.

B. Patchett (Sheffield) was denied his RAE course locally thanks to a bit of an over-subscribed class — but all's well that ends well, and Brian is now safely enrolled in a course at Rotherham College of Technology. As for the Morse, that is at 12 w.p.m. already, and it is hoped to get it well up by the time the RAE pass slip arrives, so that a start can be made with an 'A' licence.

R. Everitt (Bluntisham, Hunts.) notes the name of John Heath at the top of the Annual Ladder and wonders if some contact might not be beneficial. If John thinks so, Richard's address is 15 St. Mary's Road, Bluntisham. We hope they get together; we recall the fun the three Wizards of Bury St. Edmunds had.

N. E. Jennings (Rye) is distinctly chuffed, and so he might be — with all the snags he has managed to crack the 1000 on SSB. However, alas, he folded his last entry together so well that we didn't notice and take in his RTTY starter — but we make up for it this time. Sorry, Norman.

HPX LADDER
(All Time Post War)

SWL	*PREFIXES*
PHONE ONLY	
B. Hughes (Worcester)	2567
S. Foster (Lincoln)	2293
Mrs. R. Smith (Nuneaton)	2287
E. W. Robinson (Bury St. Edmunds)	2124
J. Worthing (Shrewsbury)	1668
H. M. Graham (Chesham)	1524
G. W. Raven (London SE13)	1441
M. Rodgers (Harwood)	1373
M. Toms (Barkingside)	1360
N. Askew (Coventry)	1279
M. Law (Chesterfield)	1268
D. C. Casson (Reading)	1089
N. E. Jennings (Rye)	1049
Mrs. T. Parry (Blackpool)	1037
B. A. Payne (Leeds 18)	1025
D. J. S. Williams (Wednesbury)	1024
H. Bale (Cardiff)	1015
P. Pyne (Bradford)	870
Mrs. J. Charles (Colchester)	844
R. Everitt (Bluntisham)	795
K. Cooke (Cardiff)	762
J. Dunnett (Prestatyn)	732
B. L. Henderson (Salisbury)	708
P. Lincoln (Aldershot)	702
R. Fox (Northampton)	671
A. J. Hall (Alvaston)	588
J. Heath (St. Ives, Hunts.)	560
CW ONLY	
E. B. Ward (Ruddington)	1454
J. Goodrick (I.o.W.)	1223
J. M. Dunnett (Prestatyn)	1125
H. Scott (Wetherby)	1074
A. F. Roberts (Kidderminster)	1072
P. L. Shakespeare (Foulness)	624
D. J. S. Williams (Romsey)	266
R. Fox (Northampton)	233
RTTY ONLY	
P. Lincoln (Aldershot)	306
N. E. Jennings (Rye)	292
J. M. Dunnett (Prestatyn)	287

Minimum Score for an entry: 200 for CW or RTTY, 500 for Phone. Listings to include only recent claims and be in accordance with HPX Rules, (p. 367, September issue).

The Ladies

Here at the top of the clip is *Mrs. T. Parry (Blackpool)* who has cracked the 1000 barrier. The OM continues his aerial-farming and at the moment is wondering how he can measure the impedance of his aerial feed-points, without the use of an SWR meter and a transmitter. Well, there are several possibilities, of which the most obvious are the use of a grid-dipper and a simple bridge of the Antennascope type suggested by W6SAI in his books. Another way is to use an antenna noise bridge, with the receiver as the detector; setting the receiver at the design frequency and turning the potentiometer of the noise bridge for a null in received noise. The recent RSGB book "HF Antennas for all Locations", by Moxon, (*S.W.M's* Publications Dept. has it in stock — and despatches by return) also has some useful ideas on this subject.

Mrs. C. Law (Chesterfield) notes that the OM has now got a call and adds that she hopes to be taking and passing the RAE next year herself; meanwhile she is content to enter a bumper bundle into the Ladder.

The two lists from *Mrs. R. Smith (Nuneaton)* take her up to 2287 in the Ladder, despite not having a lot of time for the hobby; although she does say the contest at October-end helped quite considerably.

Now to *Mrs. J. Charles (Colchester)* who seems to have spent lots of time collecting 'specials' of one sort and another, all of which have helped her score quite a bit.

Last Letters

H. Scott (Wetherby) comes into the CW listings at 1074; and he also adds a list of all the places given as QTH by various USA stations copied on the key — this last makes quite fascinating reading!

A photograph of his gear was sent in by *A. P. Lincoln (Aldershot)*. Peter has quite a set-up there, and it certainly seems to work well. He has especially nice words for the Datong FL2A board which has turned his FL2 into the latest FL3 and is a really fine bit of work. Peter has a Sharp MZ80K home computer with a floppy disk unit and he certainly seems to be making it work around the station — producing for example his letter, his HPX entry list, and his conversion of the sunset and sunrise times listing which we ran recently by G3ZPF (*Short Wave Magazine*, October 1982) — which Peter modified successfully to run on his own box. Next, a few lists-without-letters. These include *P. Pyne (Bradford 6); D. J. S. Williams, A. F. Roberts (Kidderminster); G. W. Raven (London SE13); A. Hall (Alvaston, Derby);* and *R. W. Roberts (Caernarfon).*

White Rose SWL Contest

Since November's column, the address to which entries for the contest should be sent has changed, and is now: White Rose Amateur Radio Society, SWL Contest, P.O. Box 73, Leeds LS1 5AR, West Yorks.

Finale

Which just about wraps it up for another time. Deadline for the March column is **January 20th** to arrive. Include your closing scores for 1982 if you are on the Annual Ladder, and we will take the first scores for the 1983 HPX table as well. The address, of course, is J.C., "SWL", SHORT WAVE MAGAZINE, 34 High Street, Welwyn, Herts. AL6 9EQ. Meantime, Happy New Year!

WHO'S AFRAID OF THE R.A.E?

PETER BUBB, G3UWJ

CAN *I* pass this exam? During sixteen years of preparing students, of all ages, for the RAE, this is usually the first and most frequently asked question. If you are asking this of yourself, the answer is Yes — you too can pass.

The Radio Amateurs Examination is not a means of preventing people from becoming licensed, it is the way to their licence.

Perhaps you feel that your arithmetic is weak after many years of neglect and that your knowledge of electricity is nil; if so take heart! You are in the company of thousands who share the same problem. Many of them have passed the RAE, many more will go on to pass.

Who are these people who succeed, and why? Leaving aside those who are professionally involved in electronics, the majority of candidates are ordinary men and women. They are people of all age groups and from a wide spectrum of society who are simply "bitten" by the communications bug. Radio waves seem to engender a sense of wonderment. Produced from the confines of one's own home they can travel around the world bringing the intimacy of conversation and fellowship to two people whose paths would otherwise never cross. It is the sustained enthusiasm for this magical concept of radio communication that produces successful candidates.

One thing I have learned over these years is that it is a steady continuous effort that results in that coveted pass. This means that you have to pace yourself, and be patient too. You should select the time that can be devoted to study and then work steadily and systematically through the syllabus towards the day of the exam. In this respect it is probably easier for the student who has an organised evening class available to him since this tends to impose the discipline of regular attendance each week. For those who are unable or unwilling to attend evening classes, it is even more important to establish a pattern of study, and then stick to it! It is not easy when you are on your own, and there are usually plenty of distractions at home to divert you away from your allotted study period. It can be done nevertheless, though it may test your enthusiasm for the attraction of the hobby. I know of one successful candidate who just could not find the necessary couple of hours for study in an already full business day. He felt that he should not be anti-social and ignore family and friends in the evening and so he got up two hours earlier each morning during the period of his preparation. Fresh from a night's sleep and during the quiet of those early hours he found this work period very effective.

This man succeeded and many more like him have done so too. Most people who have prepared conscientiously will pass at the first attempt, some will not and this is perhaps the biggest hurdle of all to overcome. If you fail you have to gather up your shattered pride and disappointment, put the experience behind you, start again preparing for the next one. It is the only way. There is no disgrace whatever in having to retake an examination and only you will know whether you put all the effort you could have into your study.

The examination system is not without criticism. On the one hand there are those who say there should not be one at all, the opposite point of view is that the RAE is too simple. There is also criticism of the syllabus and its relevance to current amateur practice. Then there is disagreement about the form that the questions, and their answers, take; ambiguity, for example. There is much that can be said from all points of view but this discussion belongs to another forum. Readers of this and other magazines will be aware that it is a continuing topic. The point is that the exam is there and we have to pass it in order to apply for an amateur licence.

The older candidate may feel uneasy about sitting examinations, simply because his age means that memory has had longer to go rusty and he is so much further away from his period of formal education. Again maths is usually the biggest worry here. It is as well to remember that this is a hobby exam, it is not a test of professional competence. It is to measure your general knowledge of radio communication. If we accept that this is the method chosen to test our knowledge of this subject then it helps to understand the examiner's problem. He has to pitch the severity of the test at the right level, and that is not a level which will allow everyone an easy pass. If, for example, we wanted to

know how far a group of people could run non stop, it would be no test to set a distance of 20 metres since all could complete it. However if a distance of 20 miles were set we could observe the distances achieved by individuals within that range. In the RAE test paper the examiners prepare questions which will allow the average student to achieve something like half marks. There will be those who fall behind this standard and fail; there will be those who do much better and achieve a 'credit' or 'distinction'.

The disabled candidate is in a somewhat more difficult position and obviously much depends on the nature of the disability. The examination can, however, be taken at home (or in hospital) by prior arrangement with the City & Guilds. If you are disabled, a very helpful organisation is the Radio Amateur Invalid and Blind Club.

The Radio Amateurs Examination is set and marked by the City and Guilds of London Institute. This honourable body examines a whole range of different subjects, of which the two components that we are interested in have the C. & G. reference numbers 765-1-01 and 765-1-02. They are held twice a year in May and in December.

In recent years the RAE has been set in the multiple choice mode; 95 questions in total, each have four alternative answers coupled with them. They are labelled *a, b, c* and *d,* and only one is correct. The chosen answer is indicated by marking a separate answer book (disabled candidates may be examined orally but the questions will be the same). This form of examination certainly removes the disadvantages that the previous method had which penalised the person who had difficulty in expressing his thoughts in writing. The answers being written out, you simply have to choose the correct one. This can lead to difficulties if the question is not clearly understood, so there is a responsibility on the examiners' side to write the question lucidly and unambiguously. The answers, too, should be clearly stated and there ought to be no doubt about the correct one if the subject matter is understood. I think, in common with many others, that there is still some room for improvement here. There is an equal responsibility on the part of the candidate to make sure he reads the question carefully and preferably two or three times.

Here are three examples of multiple choice question. It should be noted that they are *not* actual City & Guilds samples (which are copyright), they are taken from my selection of questions and answers. These have been compiled over the years by interviewing students immediately after their examination. They are fairly typical.

1) Which one of the following formulae gives the value of inductance in a parallel resonant circuit?

(a) $\dfrac{1}{4\pi^2 f^2 L}$

(b) $\dfrac{1}{2\pi\sqrt{LC}}$

(c) $\dfrac{1}{4\pi^2 f^2 C}$

(d) $2\pi fL$

This is one way of presenting the mathematical question without asking for calculations. Here we have to recognise the less familiar transposition of the formula for resonance. Notice that there is a similarity in all of the answers particularly *(a)* and *(c)* which might easily be confused after only a hasty glance.

2) Of the following information, which must be included in the main station log?
   (a) Name of the licensee.
   (b) Precise frequency.
   (c) Signal strength report.
   (d) Details of any CQ calls.

This is a straight forward licence condition question, about which there should be little doubt. Notice here that any one or all of the details could, and in many cases are, included in the log. Only one is obligatory. In these answers there may be confusion between *(b)* and *(d).*

3) The principle mode of long-distance propagation in the VHF and UHF bands is by:
   (a) Ground-wave.
   (b) Sporadic-E.
   (c) Tropospheric refraction.
   (d) Ionospheric reflection.

This is an example of the less definite type of question and answer. Unlike the previous one it is open to some interpretation. For instance what is meant by long distance, 40 miles? 400 miles? On this might depend what you consider to be the 'principle' mode. Basically the question is asking about refraction and reflection, *(c)* and *(d),* and the difference between propagation in the HF and VHF bands.

Much had been written in the amateur radio press about taking the RAE, what to do, what not to do, and a good series of instructional articles has appeared in *Short Wave Magazine.* Again, the most important thing is to have a proper planned programme of study. Another problem, when studying alone, however is obtaining guidance and monitoring progress. If at all possible have someone who is familiar with the syllabus test you with questions from time to time. It is also helpful to have someone to turn to when those inevitable explanations occur that will just not sink in. Usually when looked at from another viewpoint such obstinate facts can be driven home. For the same reason it also helps to have more than one source of reference so that you are able to seek out different explanations of difficult points. However, beware of having too many sources and too complex explanations. Some material, frankly, just frightens people off. In order to cover such a broad syllabus as the RAE inevitably means we can go only into the shallows of the subject. If it happens to stimulate your interest in electronics — fine, there is a lifetime to study this intriguing subject, but *after* you have passed the RAE.

You too then can pass the exam. After all we licensed amateurs are only human, no different from our fellows; there are good, bad and indifferent among our number. Make a resolution now that you will take the RAE and join us. Draw up a plan of action, decide how much study you can do each day, select the date you are going to aim for, make this your objective and stick to it.

It is an interesting but neglected fact that faith and determination are the main forces in contributing to the goals we achieve in this life. Why not start — NOW.

Publications:

"How to become a Radio Amateur", obtainable free from the Home Office.
"Radio Amateurs Examination Manual", 10th. ed. (RSGB).
"Amateur Radio" (Lutterworth Press).
The last two titles are obtainable from *S.W.M.'s* Publications Dept.

Addresses: Home Office, Radio Regulatory Department, Radio Regulatory Division, Licensing Branch (Amateur), Waterloo Bridge House, Waterloo Road, London SE1 8UA.

City and Guilds of London Institute, 76 Portland Place, London W1N 4AA.

Radio Society of Great Britain, Alma House, Cranborne Road, Potters Bar, Herts.

The Radio Amateur Invalid and Blind Club, 9 Rannoch Court, Adelaide Road, Surbiton, Surrey KT6 4TE.

Answers to questions: 1) *c*; 2) *d*; 3) *c*.

EQUIPMENT REVIEW

THE SABTRONICS MODEL 8610B FREQUENCY COUNTER

IT has always been a licence requirement that you have some means of determining your transmitter frequency with reasonable accuracy. Until the advent of digital frequency meters, this was usually met by using an analogue device, such as the popular BC-221 of W.W.II fame. Nowadays an increasing number of HF and VHF transmitters and transceivers incorporate digital readout of frequency. Even so, an independent means of measuring frequency is very useful, not only to comply with licence requirements, but also to use during development and servicing work, for setting up very accurate frequencies for meteor scatter and E-M-E schedules, etc.

My first dabble in DFMs was the 20 MHz design by G3TVU and G8BDO, which appeared in 1971. Although mine worked up to 32 MHz with a selected 7490 IC, it was very basic and is rather old hat now, so I decided it was about time I acquired a modern counter capable of operating at least to 500 MHz without an external prescaler.

The Choice

The advertisements in British and U.S.A. magazines revealed several companies offering suitable products. After carefully reading through the specifications and considering value for money, I decided upon a **Sabtronics** product. The reasons were:—

1) Eight and nine digit models are available.
2) They count up to 600 MHz.
3) They come either ready-built or in kit form.
4) They run off re-chargeable batteries or a mains adaptor.
5) The crystal oscillators are user-adjustable.
6) They are available from a U.K. source.
7) They look smart and have a tough case.

Getting it

An inquiry to the sole U.K. and Eire importers, **Messrs. Black Star Limited** of St. Ives, Cambridgeshire, produced a prompt reply to technical queries, a price list and confirmation that the model I wanted, the **8610B** in kit form, was available from stock. I ordered this nine digit, 600 MHz counter, four NiCad batteries and a mains adaptor. These were sent parcel post and arrived safely in a couple of days.

The Manuals and Components

Two manuals are supplied, one covering assembly, the other operating the counter. The Assembly Manual is a 16-page affair, 8½ by 6½ inches and contains a complete list of components, the customary hints on proper soldering and the step-by-step assembly instructions. The information is all there but the diagrams are a bit "amateurish" and the dot matrix type of printing does not make for easy reading. Pages 11 and 12 were transposed, so you have to do pages 10, 12, 11 and 13. This, and a few other amendments, were incorporated in an addendum stapled to the manual. There is a separate, 17 by 11 inch sheet one side of which is devoted to the circuit diagram of the main counter, the reverse to that of the prescaler and physical layouts of the PCBs, plus an "exploded" assembly sketch.

The components were packed in several sealed polythene bags. They came from several countries including Japan and Mexico, and are of satisfactory quality. The PCB material is single-sided fibreglass and the case is moulded in a very tough plastic material, light grey, with a "crackle" effect finish. Part numbers feature in the lists in the manual but not on the components. However, anyone capable of building kits would have no trouble identifying everything. There were no shortages and an extra 2N5771 transistor was included. It took 75 minutes to check through the 150-odd components, from the main PCB, to lengths of hook up wire. No solder was provided.

The Circuit

The early frequency counters used TTL devices and "Nixie" tubes for the displays. Each digit required a 7490 decade counter and 7441 BCD/decimal decoder, at least and the total current

Fig. 1. The completed counter showing the clean, functional layout of the controls. The tiny hole just discernable beneath the letter E in 'Model' was drilled to gain access to the trimmer for adjusting the crystal oscillator frequency to exactly 10 MHz. *photo: T. Traill*

consumption tended to be too great for battery operation. This approach is now quite archaic and modern counters use the 7216 LSI IC which comes in a 28-pin DIL package. It will directly drive eight multiplex common cathode displays from a 5V. supply. It will count to 10 MHz minimum and is the device used in the **Sabtronics** instruments.

An external 10 MHz crystal is connected across pins 25 and 26 of the 7216 and the internal oscillator frequency can be set exactly to MSF or WWV by a 5-35 pF trimmer. The 10 MHz signal is internally counted to give 0.1, 1.0 or 10 seconds periods and these switch selected gate times are verified by a small LED flashing at the appropriate rate. The incoming signal is applied to the count input, counted and stored internally. The 7216 contains digit and segment drives which are connected directly to eight of the nine seven-segment and decimal point display LEDs.

A 74S196 presettable decade ripple counter is used ahead of the 7216 in a divide-by-two/divide-by-five circuit enabling 100 MHz signals to be counted. The nominal input on the 10 Hz to 100 MHz ranges is 1M/100 pF. The signal is amplified by a 2N5486 FET and 2N5771, the output then being fed to a three stage ECL amplifier, each stage of which has a gain of about five. Positive feedback from the last stage is used to introduce about 5mV hysterisis in the input triggering levels to help in noise reduction. The ECL levels are translated to TTL levels by two more 2N5771 amplifier stages.

In the **8610B**, the prescaler enables frequencies of at least 600 MHz to be counted. It is on a separate, small board and uses an SAB1009 preamplifier IC driving an SP8680, 650 MHz decade TTL counter. In the 600 MHz range position, the output from the prescaler board is routed to the 74S196 IC, bypassing the ECL amplifier chain. The nominal input impedance is 50 ohms. A count exceeding eight digits stored is detected and results in a "1" in the ninth LED. The sensitivity of the counter is controlled by varying the gain of the ECL amplifiers using a single 100K "pot", the slider of which is connected to the 5V supply line. One end of the track goes to the bias line of the 10 Hz to 100 MHz ECL IC on the main PCB, the other end going to the preamplifier IC on the prescaler board. Thus maximum sensitivity on the 600 MHz range is minimum sensitivity on the 10 and 100 MHz ranges, and *vice versa*.

Circuit Board Assembly

For rapid assembly from a kit of parts, I select the components required for, say, twenty steps and put them in the edge of a length of corrugated cardboard bent into a circle. this way you double check that you have the right components. The first steps in the manual deal with the fitting and soldering of the nine LED displays. Thereafter, small groups of components are fitted and soldered until the board is completed. This main PCB was designed for MPS H-81 transistors but 2N5771s were supplied and which have a different outline. This requires the base and emitter leads to be transposed and this is adequately covered in the manual with diagrams. Sockets are provided for the three ICs on the main board. Everything fitted properly and there were no ambiguities apart from the 20 inch length of coaxial cable supplied from which you have to prepare one 2" and two each lengths of 4½" and 5½".

Care is needed when soldering the prescaler board as it is easy to damage the tracks if too much heat is applied. This is mentioned in the manual. Slightly puzzling was the illustration of three ICs, but it transpired that "Z2" was just a 56 ohms resistor in this model. (A divide-by-ten, 1 GHz IC is used in the 1 GHz model 8000 counter). The general layout of the instrument in various stages of assembly can be seen from the photographs.

Sabtronics 8160B Nine Digit Frequency Counter
SPECIFICATIONS

Frequency range:	10 Hz to 600 MHz in three ranges
Input impedance:	Input "A" 1M/100 pF. Input "B" 50 ohms
Sensitivity:	15 mV RMS, 10 Hz-100 MHz 20 mV RMS, 100-600 MHz
Input protection:	400 V peak-to-peak at 10 Hz declining to 3V P-P at 600 MHz.
Gate times:	0.1, 1.0 and 10 seconds, switch selectable
Display:	9-digit. 0.4 inch LEDs with automatic decimal point. Leading zero suppression
Maximum resolution:	10 MHz range 0.1 Hz with 10s. gate time 100 MHz range 1 Hz with 10s. gate time 600 MHz range 10 Hz with 10s. gate time
Time base:	Frequency 10 MHz Temp. stability ±1 p.p.m. 0°-40°C Setability ±2 p.p.m. Ageing rate <5 p.p.m. *per* year
Measurement accuracy:	1 Hz plus 1 digit plus time base error
Power requirement:	4.8 to 6.5V DC @ 300 mA.
Dimensions:	8" wide × 3" high × 6½" deep
Weight:	1.3 lbs. less batteries

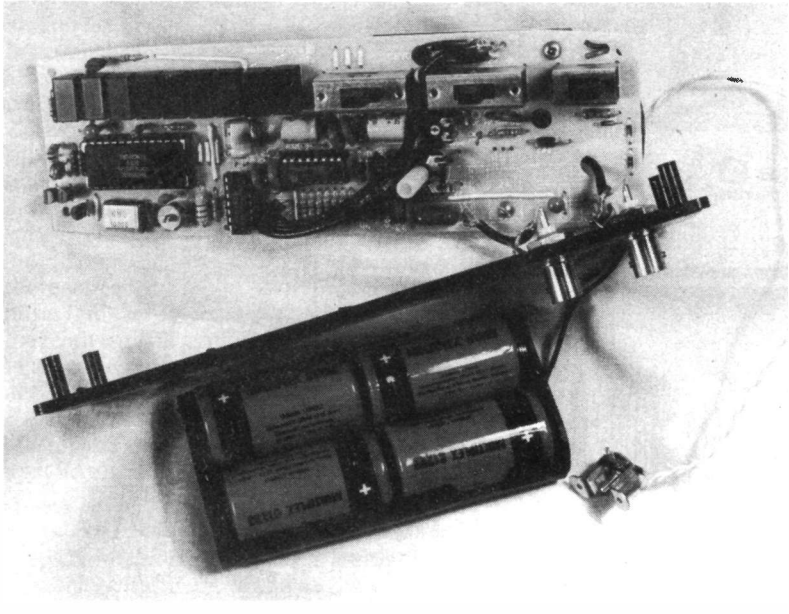


Fig. 2. Completed circuit board, front panel and battery pack prior to assembly into the case. The 7216 IC is below the nine display LEDs with the 10 MHz crystal below it.
photo: T. Traill

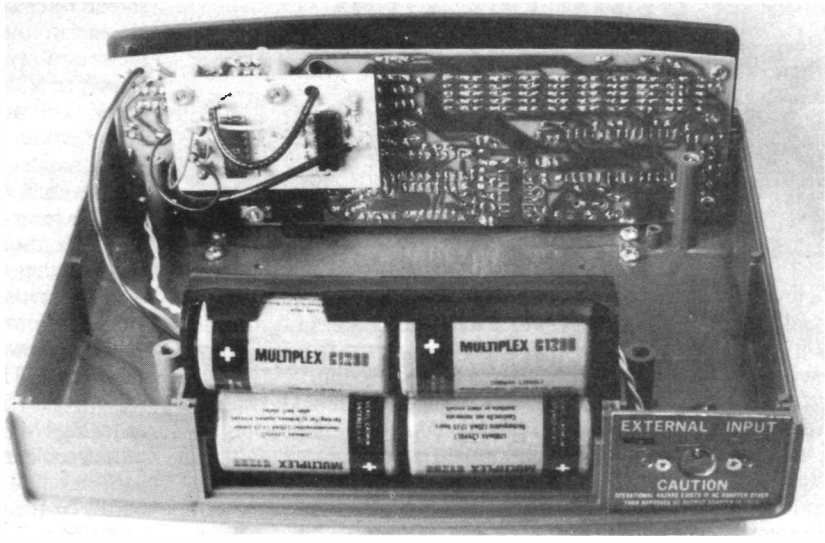


Fig. 3. Rear view of the counter installed in the bottom half of the case. The 600 MHz prescaler board is bolted to the left hand end of the main PCB. There is plenty of space inside the case for a small mains PSU if required. The battery holder comes with the kit but not the batteries. *photo: T. Traill*

Mechanical Assembly

The case came in two identical halves although the manual refers to a bottom half with four holes in it and a top half without holes. Holes had to be drilled carefully through the sleeves in the bottom half to enable the 1¾ inch self-tapping screws to be fitted and which join the two halves together. Also, you have to drill eight more holes to fix the feet and another three for the external power socket. The manual states that there is a hole in the front panel for access to the trimmer capacitor in the 10 MHz oscillator circuit. However, there was not, so one was drilled.

Testing and Calibration

To my great satisfaction, the counter in embryo form worked first time. This is unusual as, however careful I am, I often manage to omit a vital jumper wire. There are only two adjustments to make: the bias to the ECL amplifier has to be set to 3V as measured at a test point on pin 10 of the 10116 IC, and the crystal oscillator has to be set to exactly 10 MHz. The former must be done before the main PCB is attached to the front panel, but the latter can be done through the hole in the front panel.

There was some confusion concerning the ECL bias. The manual states one procedure but which was countermanded in the addendum. Black Star Limited included their own comments which took us back to "square one." Would-be constructors are advised to follow Sabtronics's addendum which ensures that the bias is set up correctly. Finally a check was made on the battery current consumption and with all nine LEDs on, it was about 250 mA.

Operation

The Operator's Manual is a 16-page companion booklet to the Assembly Manual. It includes sections on operating controls and features, specifications, theory of operation, operating suggestions, calibration and trouble shooting. The circuit diagrams are included, plus a sketch of the main PCB identifying various test points.

Reference to the specification shows that the counter is very sensitive, consequently some care and commonsense have to be exercised when using it. To avoid unwanted stray RF pick up when measuring low frequencies, input lines should be shielded and a low pass filter consisting of a series resistor and a bypass capacitor across the counter input, may be needed. Ringing of the logic level inputs can be a problem resulting in a false count and this can be alleviated by terminating both ends of the connecting cable with resistors equal to the cable impedence.

The counter has been used to measure everything from the frequency of the mains, to 70cm transmitter frequencies. Once the needs for proper measuring techniques were appreciated and adopted, unambiguous readings were obtained. For example, an intitial attempt to measure a frequency around 432 MHz simply by running an unterminated lead between the Tx and counter's 600 MHz input gave meaningless readings. Once properly screened and terminated leads were used, as described in the Operator's Manual, everything worked perfectly.

Conclusions

I am very satisfied with my choice of the **Sabtronics Model 8610B Frequency Counter** which is proving a most useful addition to the shack equipment. The manufacturer is **Sabtronics International,** 5709 N. 50th. St., Tampa, Florida, 33610, U.S.A., who produces a range of test equipment at reasonable cost, some of it in kit form. The sole U.K. and Eire distributor is **Black Star Ltd.,** 9A Crown St., St. Ives, Huntingdon, Cambs., PE17 4EB, who operates a 90 day limited warranty for kits, a technical consultation service in case of problems with the assembly or use of kits, and a repair and calibration service for which latter a fee will be quoted. The cost of the **8610B** in kit form at the time of purchase was £84 including postage, plus VAT; various accessories are available at competitive prices.

Finally, I would like to thank Ken Miles, G8GGK, for help in testing the counter at 432 MHz. We both learned how *not* to use it!

N.A.S.F.

PLUG IN YOUR SOLDERING IRON AND BEGIN HERE, PART VIII

A GUIDE FOR THE INEXPERIENCED IN THE METHODS, TECHNIQUES, PITFALLS AND FOLKLORE OF BUILDING EQUIPMENT, WITH PRACTICAL PROJECTS TO BUILD ALONG THE WAY

REV. G. C. DOBBS, G3RJV

TALKING the other day with an oldish G3 about the days when men were men, and women were ladies, radios were radios and lit up inside, and Newcastle Brown was one-and-tenpence a pint, our conversation turned to receivers of yesteryear. In common with many radio amateurs of that time we had both run ex-services general-coverage receivers with crystal controlled converters to give us better sensitivity and selectivity on the higher amateur bands. Oh, what we heard in 1959 with a ten-metre converter plugged into a BC-348! The last part of this series described a simple single-band superhet receiver for the 80-metre band. So thinking back to those days when converters were state-of-the-art, in this part we will consider a simple crystal controlled converter to add the 40 and 20-metre bands to the Superex receiver. Thus the converter could be added ahead of many receivers, and it may be that someone with an old receiver or a cheap general-coverage receiver that is adequate on 80 metres but poor on 20 metres, will want to build it to soup-up high frequency performance.

This is the final part in this series . . . phew! Readers who have followed the whole series should by now be familiar with the techniques of construction and capable of making up a printed circuit board to suit a given design. So the approach here is to offer the circuit, with just a little construction guidance, and leave the reader to get on with it. Component layouts suitable for making up a printed circuit board are given, although these may need modification to suit the physical size of individual components. As with all of these circuits it would be possible to build the boards using plain matrix drilled board, or to redesign it around the popular *Veroboard* with its copper strips. The circuit is reasonably non-critical and the constructor will probably be able to get away with murder — or at least light abuse — in the construction.

The principle of the receiver converter is simple. Recalling superhet theory, all one does is use a receiver as an IF (intermediate frequency) device and build what amounts to another receiver front-end to go ahead of it. This requires a mixer stage to change the required receiving frequency to the chosen IF and an oscillator to mix with the incoming frequency to produce the required IF output; an RF stage can also be added ahead of the mixer if this is required. Converters can be tunable, in which case the receiver remains on a fixed frequency and the local oscillator in the converter is tuned to give the required coverage. They may also be crystal controlled, the frequency of the converter local oscillator being a fixed crystal frequency and the receiver then acts as a tunable IF. The latter is the more common and is the method used here.

Simple Crystal Controlled Converter

Right — repeat after me. What are the rules when looking at the suitability of a circuit for home construction? The components should be *cheap* and are they *easy to obtain!* This, however, can be one of the problems of a crystal controlled converter. It requires a crystal, or crystals, and these may be expensive — doubly so if they are odd frequencies which need to be etched to order. The problem is perhaps not quite that bad as several manufacturers do produce crystals which will convert from the higher amateur bands down to 80 metres, but these are still several pounds each; they also give conversion frequencies which tune the bands in reverse on 80 metres. Assuming the receiver will cover 3.5 to 4 MHz, the low end of the converted band begins at 4 MHz and reverse tunes towards 3.5 MHz. This is not as odd as it might appear because the harmonic relationship of the HF bands does give rise to problems in converting to enable forward tuning on 80 metres, as we will discover later. This approach, although excellent, will not be used here because not only does it require an expensive crystal for each band but the Superex does not tune up as far as 4 MHz. It could be made to do so, but then we go into other problems such as providing a slow enough tuning rate for a half-megahertz wide band. Our little cheap epicyclic drives would hardly be adequate — and who wants a receiver that includes 3.8 to 4 MHz, anyway?

In the exact month 20 years ago that I received the G3RJV licence for the first time (what a day, I rushed home at lunchtime for my first QSO — 300 yards on Top Band CW!), ZL2AMJ published a converter design called the "HF Gem". The original circuit has remained something of an evergreen and in fact is still in print in a prodigious UK handbook. The circuit was a three band, 40/20/15 metres, converter using an 80-metre receiver as tunable IF. It had three valve stages including an RF stage, and the converter also functioned as a preselector on the 80-metre band. The circuit was popular because it used just one crystal to convert to all three bands and the three converted bands were not reverse tuned. It did, however, suffer from the severe restriction that this method presents.

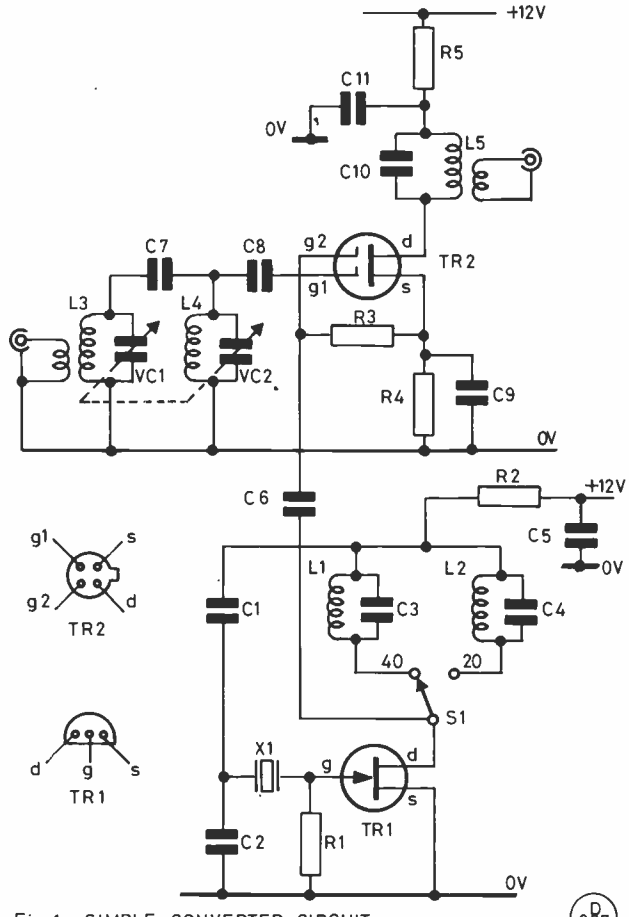


Fig. 1 SIMPLE CONVERTER CIRCUIT

Tables of Values

Fig. 1

R1 = 82K
R2 = 820R
R3 = 100K
R4 = 470R
R5 = 220R
C1 = 390 pF
C2 = 220 pF
C3, C10 = 200 pF
C4 = 100 pF
C5, C11 = 0.1 μF
C6, C7 = 10 pF
C8 = 500 pF
C9 = 0.01 μF
VC1, VC2 = 250 pF, 2-gang
X1 = 3.495 MHz crystal
TR1 = 2N3819
TR2 = 40673
S1 = single-pole, changeover slide-switch

Fig. 5

R1 = 1K
C1, C2 = 0.01 μF
RFC1 = 1.5 mH RF choke
TR1 = 2N3819

Think about it. To convert a 7 MHz signal to 3.5 MHz it has to be mixed with a 3.5 MHz signal so the local oscillator crystal frequency is exactly the frequency that the receiver will tune to receive 7 MHz. The local oscillator will batter its way through the mixer and appear as a "birdie", a juicy spurious signal, when the receiver is on 3.5 MHz — and it's "a biggie", as they say. I would not know if the reader has ever tuned in a large "birdie" on a receiver: suddenly you are tuning across the band and the receiver goes quiet and that is the sign — a biggie is on the way. The front-end dies and then it arrives like a heavy metal pop guitarist tuning up his instrument at full volume. It should ruin at least 5 kHz of the band.

The "HF Gem" has this problem on all bands as the conversion chart shows:

Converted Band	*Local Oscillator*	*Main Receiver Tuning*
7-7.1 MHz	3.5 MHz	3.5-3.6 MHz
14-14.35 MHz	10.5 MHz (3.5 x 3)	3.5-3.85 MHz
21-21.45 MHz	17.5 MHz (3.5 x 5)	3.5-3.95 MHz

The local oscillator frequencies are conveniently harmonically related so that one crystal can be used for three bands, but the birdies have the same relationship so appear on every band. What is worse is that in a simple overtone oscillator the harmonic output of the crystal is not exactly the multiple of the frequency and is often higher, giving a greater intrusion into the useful band coverage. What would help here is to use a crystal slightly lower in frequency so that the band is tuned a little higher on the receiver and the spurious output may then be completely out of the band. All this preamble is to lead up to explaining my pleasure when I found that *J. Birkett* of Lincoln sold a surplus crystal for £1.00 with a frequency of 3.495 MHz. With that a simple "HF Gem" type converter is possible without problems detailed above.

Fig. 1 shows the circuit of a simple converter based upon the principles outlined above. The circuit is very simple, being only a mixer and crystal oscillator, and covers two bands 40 and 20 metres. TR1 is a simple FET crystal controlled oscillator using the 3.495 MHz crystal. L1/C3 tune the fundamental frequency for 40 metres and L2/C4 tune the third harmonic for 20 metres. TR2 is a standard dual-gate MOSFET mixer circuit, with L4/C10 tuning out the 80-metre band for the required IF. L3 and L4 provide a

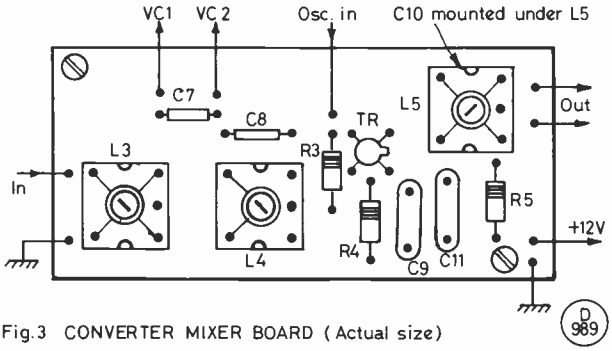


Fig. 3 CONVERTER MIXER BOARD (Actual size)

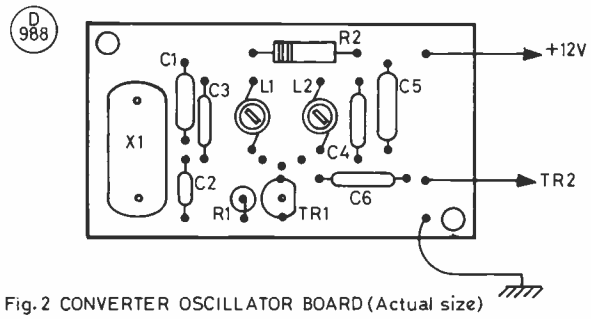


Fig. 2 CONVERTER OSCILLATOR BOARD (Actual size)

two-stage input tuning filter variable over both bands with VC1/2. Simple isn't it? I hope no one *technical* reads this magazine!

The Oscillator Board

The natural choice for the first section to build is the oscillator board as this can be tested alone. Fig. 2 shows the component layout used in the prototype as a guide for printed circuit board design. The crystal is an HC6U type and is soldered directly into the circuit board. The coils L1 and L2 are wound on the 3/16" diameter formers mentioned in previous parts of this series. In this application the formers were removed from the base mounting and glued directly into holes drilled in the circuit board, to save space. The switch, S1, which selects the desired band was soldered in place underneath the PCB with short direct leads to the underside of the board. The mounting of this switch is shown later in the enclosure drawing.

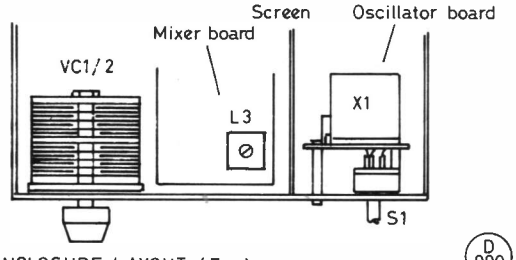


Fig. 4 ENCLOSURE LAYOUT (Top)

Once the board has been constructed and the wiring checked it can be tested as an oscillator. L1 and L2 are required to tune out the desired frequencies from the crystal, the fundamental and the third harmonic. It is helpful to be able to pretune these coils somewhere near the desired frequency before the final setting up is performed. This can be done with a GDO, a circuit for such an item appeared in *Part III* of this series, *Short Wave Magazine*, August 1982. The final tuning-up of the coils can be done with the RF Probe, which appeared in *Part IV* of the series, and a multimeter. A little care is required with L2 as this can be made to tune the fourth harmonic of the crystal by mistake. The final test is done with a frequency counter, if available, or the signals can be detected on a receiver. A word of warning about S1: this is a slide switch, although any suitable type can be used, and such switches are prone to poor contacts so check it with a meter before use — and check the action in use with the circuit.

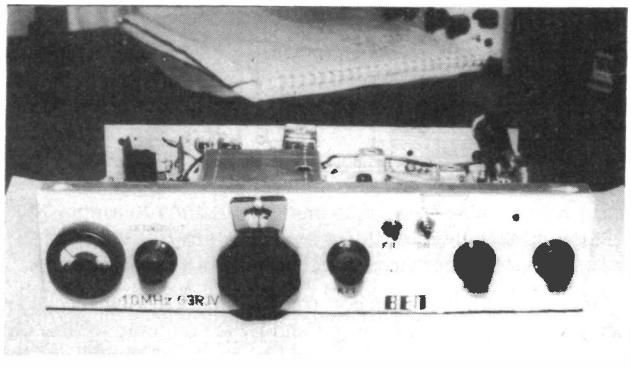
Converter Mixer Board

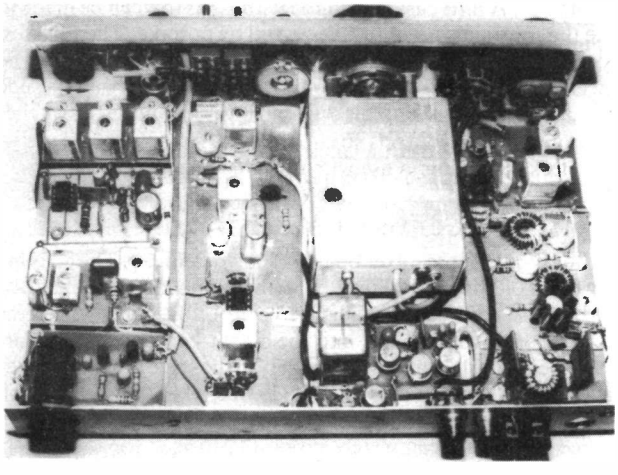
The layout for the mixer board is shown in Fig. 3. The coils are all wound on the 3/16" diameter formers with the screened cans used. These coils can be roughly set up on frequency with the GDO prior to wiring them into the circuit board. Try to ensure that the cores of L3 and L4 are roughly in the same position as they have to track when tuned by VC1/2, which is a ganged control. They also have to cover both bands; in practice I found the cores needed to be just completely inside the former for the correct

coverage. The tuning control VC1/2 is a two gang 250pF airspaced variable capacitor sold by *J. Birkett*. This is a good ¼" shaft variable at a reasonable price, although a polycon type taken from an old transistor radio would probably do the job.

Having completed the board it can be connected to the oscillator for a first testing. Those with signal generators can insert signals at 40 metres and 80 metres and see if they come out on the required 80-metre IF. Without a signal generator the converter will have to be set up using signals on the required band. L5 merely requires peaking, using the core, for maximum output and L3 and L4 need to be fiddled a little so that they will tune the bands at either end of the travel of VC1 and 2. A bench hookup will probably reveal one of the drawbacks of such a converter: IF breakthrough. Lashed up for a test without proper screening the converter may receive some of the louder signals on the 80-metre IF.

The converter requires a good screened lead, short if possible, between the output and the receiver and needs to be in a screened box. One of the techniques for housing equipment not so far discussed in this series is that of making boxes and enclosures out of printed circuit board. It is possible to make quite neat boxes from scraps of double-sided, or even single-sided, PCB cut to size and soldered into a box. The prototype converter was housed in such a manner; Fig. 4 shows the principle of the construction. A simple shallow box was made from pieces of double-sided PCB with a screen running between the oscillator board and the mixer board. The edges of the box are butt-jointed and soldered together. This can be done with large blobs of solder, or a neater way is to run a line of solder down the inside of each seam. Some exponents of this method like to lay a length of bare copper wire along the inside seam first then solder into this wire. S1 is shown in Fig. 4 mounted under the oscillator PCB: the board is mounted on the front panel with standoffs and S1 is placed under the board with short wires going to the appropriate places on the underside of the PCB.





Two views of "Ben", the G3RJV 10 MHz transceiver project which was described in *Short Wave Magazine*, January and February 1982. Above, the front panel layout. Below, a top view; the VFO is in the screened box, with receive sections to its left, transmit sections to its right, and changeover circuits to its rear.

photos by G3SEQ.

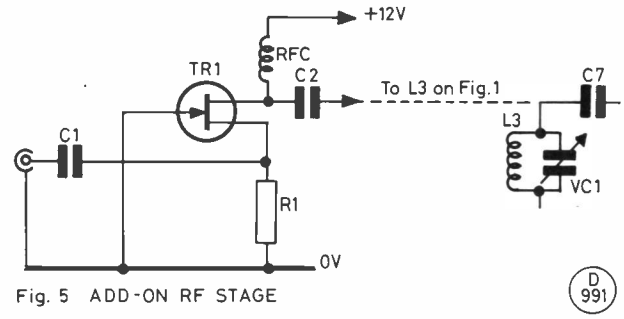


Fig. 5 ADD-ON RF STAGE

This little converter is not exactly state-of-the-art, but it does enable two useful bands to be received with the Superex or any other 80 metres receiver. The sensitivity is adequate but might be improved by an RF stage; Fig. 5 shows a very simple RF stage that can be added if desired. It is just a basic grounded-gate FET untuned circuit and added to the front end of the converter. Since the output impedance of this stage is high it is added to the top of L3 and not *via* the low impedance link winding. The stage is untuned and this could lead to problems. Like every circuit this is a compromise . . . and that includes a £1,000 receiver; electronic design is all about the best compromises. Experimenters might like to try it between L3 and L4 so that L3 tunes the RF stage and L4 tunes the mixer. Or they may like to try adding another tuned stage, but does one add yet another tuning control, or — not easy — look for a 3-gang 250pF capacitor? Just a few ideas to play with and if the reader has followed this series such ideas should be leading to modification and compromise.

That is what construction is all about. This is the last part in this series and by now the reader should be a "thinking constructor". The best projects are rarely those built directly from a single design as given, but an amalgam of bits from here and there to make up the desired whole. Avoid slavishly following an author, try variation and plagiarise from everywhere possible.

Odds and Ends

Many readers have written to me during the publication of this series of articles, most have been kind and some have offered further tips. I have been told of the advantages of using a magnifying glass to inspect the joints made on printed circuit boards; useful, but I never do it — perhaps I ought to. Another idea is to give a cleaned blank PCB a quick dip into ferric-chloride before the etch resist is applied; this ensures it is grease and dirt free and gives a better matt finish for applying the etch resist pen. Naturally the board will have been rinsed clean of the chemical before the pen is used. I haven't tried this, but I may.

I have had a couple of useful ideas for working on cases, or "Aluminium G.B.H." as we call it at G3RJV! Very often holes have to be added to a case when parts of the circuitry are already in place. This can lead to problems with metal shavings from drills and dust from filing. One simple procedure is to stuff the vacant space inside the case with old rag to take up the surplus metal so that it can easily be removed. Those difficult tiny scraps of metal that stick in the corners and edges of cases, like glue, can be removed with a pencil wrapped with some masking tape, sticky side out, and used as a probe.

That brings us to the end of this short series, but not to the end of the pleasures that can be had from the building of ones own equipment. That pleasure is endless. I shall continue to fiddle around with little circuits at home and hope to share them with *Short Wave Magazine* readers. I hope that in the months to come I will be able to offer useful ideas, capable of execution by the average amateur in his workshop, garage or on the kitchen table. To this end I hope to contribute occasional articles to the *Magazine* under the umbrella title, "Kitchen Table Technology". So good constructing and keep reading *The Mag*.

VHF BANDS

NORMAN FITCH, G3FPK

Awards News

HIGHLIGHT of the *Magazine* awards programme this month is the issue of the very first QTH Squares Century Club certificate for 432 MHz to Mike Lee, G3VYF, on December 6. His list of exactly 100 QSLs included cards from twenty countries. One GM square, YP, was worked *via Auroral* propagation, all the rest being *via* tropo. In his brief, covering letter, Mike wrote that he was ". . . now 100% QRT on all bands but will continue to operate for 'HADRABS' from time to time".

Sincere apologies are due to John King, G6ADH, from Horley in Surrey, whose election as member no. 21 of the 144 MHz QTHCC should have been announced last month. He is the first G6 to join the club and only the second Class "B" licensee. (It is, perhaps, worth mentioning that it is inevitably more difficult for Class B folk to work the DX since they cannot use CW, on which mode so much DX, especially from eastern Europe, is only to be worked). John's confirmed total is 100 squares.

Three more 144 MHz VHF Century Club certificates have been awarded. No. 351, dated Nov. 15, went to Neil Montanana, G8RWG, from Camberley, Surrey. He took the R.A.E. in May, 1975 but did not get his licence and some equipment till February, 1979. Neil started off with some home built 2m. FM gear and a 5-ele. *Yagi*. Successive equipment was a *Mizuho* SB-2M, *Trio* TR-7010 with 100w. *Microwave Modules* amplifier, and presently a much-modified *Yaesu* FT-221, with the 10w. from which, a large number of stations have been worked. Aerials have been a 9-ele. *Tonna Yagi,* a home made, 16-ele. G2BCX *Yagi* and now an 11-ele. *H.A.G.* at 40ft. *a.g.l.* G8RWG has quite a good location, but take-off eastwards is very poor. Current construction project is an 8874 triode amplifier and some changes to the FT-221's front end are contemplated.

Brian Joyner, G8ZYZ, from Dover in Kent, has certificate no. 352, dated November 23. His introduction to amateur radio, at the age of fifteen, was by participation in a "Jamboree of the Air". Brian's first Rx ". . . was an ex-government set which weighed a ton!", and, ". . . disappeared in a puff of smoke . . ." later. He signed up for the December, 1979 R.A.E. then signed up on a correspondence course run by the Dover club. The licence arrived the following February and the present station comprises an *Icom* IC-290E, *Tono* 80w. amplifier, 11-ele. *Cushcraft* aerial and *muTek* masthead preamp. An *Icom* IC-2E is used for portable and mobile operation. Brian is an active member of the Dover club, particularly in contests, and he plans to join *Raynet,* pass the morse test and get going on 70cm.

Graham Ridgeway, G8UYD, from Mansfield, Notts., is member no. 353, his certificate also being issued on Nov. 23. His interest dates back to the early 1960s when he used to contribute to Justin Cooper's column from various U.K. locations. Like G8ZYZ, Graham also sat the Dec. 1979 R.A.E. and got his licence in Feb. 1980. Initial operation was on 2m. FM using an *Icom* IC-215. Following a move to Mansfield in Sept. 1981, an IC-202S was acquired with a 10w. amplifier and 4-ele. *Quad* aerial. The majority of operation has been on SSB and he rarely feels the need for more than 10w.

The Tables

Next month, the final placings in the 1982 tables will be published so please make sure to send in your final figures by January 5. Anyone in, or wanting to join, the 23cm. All-time table may like to update their scores.

Satellite News

Another Soviet amateur satellite was hand-launched from *Salyut 7* at 0756 UT on Nov. 18. Known as *ISKRA 3,* its initial orbit had a period of 91.466 minutes with a *perigee* of 347 km. and *apogee* of 364 km. at an inclination of 51.6338°. The track separation *per* revolution was 23.453°. By Nov. 11, the period was reported to have reduced to 90.615 mins., the track separation to 23.037° *per* orbit, and the *perigee* and *apogee* to 328 and 331 km. respectively. This satellite carries a telemetry beacon of 300mw. output on 29.583 MHz and a 15/10m. transponder. The uplink band is 21.23 to 21.27 MHz and the downlink 29.58 to 29.62 MHz. The telemetry is showing very high temperatures which the Russian controllers cannot explain. A fault in a PA stage is causing the batteries to discharge rather quickly. Consequently, the need for re-charging dictates that the satellite is only working once every three or four days at the time of editing.

From London, orbits crossing the equator in *ascending node* between 15° and 154° west are in range. Soviet stations hold a net after every orbit on 3,644 kHz. Telemetry copy would be appreciated. Your scribe got his 15m. signal transponded on orbit no. 65 on Nov. 22, but no stations were heard on the 10m. downlink.

U-O-9 (UOSAT) is now working well. The *"Digitalker"* has been on reading out telemetry frames, and data and news bulletins have been transmitted at 1,200 *Baud* on both channels. The satellite has been completely de-spun and the gravity gradient boom should have been deployed well before this is read, and the HF beacons switched on. These are on 7.050, 14.002, 21.002 and 29.510 MHz. Each has its own crystal oscillator and can be operated independently, but a synthesiser network enables the 14, 21 and 29 MHz oscillators to be phase-related to the 7 MHz one for trans-ionospheric path analysis.

AMSAT-UK's *Computer Software Handbook* is now published and has proved so popular that a second printing has been ordered. The price to members is £3.00 (£3.50 to non-members) *plus* 40p for postage. A *Technical Manual* incorporating the second part of *"The Best of Oscar News,"* is in preparation. For full details of AMSAT-UK membership and services, send an *s.a.e.* to AMSAT-UK, London E12 9EQ.

There is no further news concerning the *Phase 3B* project and information about this satellite's aerials is still awaited. The six Soviet satellites, *RS-3* to *RS-8,* continue to function normally and seem reliable and well used. Nos. 3 and 4 are not transponders, but nos. 5 to 8 have 145/29 MHz transponders. Looking to the more distant future, the *Cablesat General Corporation* in the U.S.A., has sought permission to launch two geostationary professional satellites in 1985. The President of the business is a licensed amateur and plans to incorporate microwave transponders, known as *ARNET,* with uplink in the 5.6 GHz band and downlink around 3.4 GHz. If "stationed" no further west than 75°, *e.g.* about the longitude Philadelphia, one would just about be above the horizon from London. It is suggested that 10W. to a 2m: dish will produce the required *e.r.p.* for access.

Beacon News

Two more microwave beacons are now operational. GB3CEM is on from Sutton Coldfield (ZM31a) on 10.36888 GHz with 3mw. to an omnidirectional aerial. It sends its callsign and QTH locator. GB3GBY is on 10.400 GHz from Grimsby (ZN40c). It runs 10mw. to a slotted waveguide, 16-ele. aerial beaming to the south and it, too, sends its call and locator.

On 23cm., the Kent beacon GB3NWK, located at Chelsfield (AL51b) came back into service on Dec. 5. The height of the aerial is now 35ft. *a.g.l.* and better feeder cable has resulted in the *e.r.p.* being increased to 100 watts. Reception reports to G8BJG at 39 Baston Rd., Hayes, Bromley, BR2 7BO.

Repeater Notes

Trevor Day, G3ZYY, Membership Secretary of the *West Devon Repeater Group,* has written with news of the GB3WD relay which it is hoped to have operational early this year on Channel R4. The proposed site at North Hessary Tor, near Princetown on Dartmoor, is expected to give excellent coverage of north and south Devon and to fill in gaps in the coverage of existing repeaters GB3s BC, NC, TR, WR and WW. The hardware is now at an advanced stage so the Committee is looking to increase membership of the group. Interested readers should contact G3ZYY at 46 Beatrice Avenue, Saltash, Cornwall, PL12 4NG. Trevor's 'phone number is Saltash 5913.

The RSGB's Repeater Working Group has provisionally allocated Ch. RB13 for a proposed UHF repeater in the Breckland district of Norfolk. It has also accepted a proposal for a 2m. relay for Black Isle, near Inverness, and has allocated Ch. R5 provisionally. The Home Office has agreed to a site change for the Mid-Kent VHF relay, GB3KN, but the service area is not expected to be much different from what it was before. GB3OX on RB15 is now operating from Oxford and G8SIN would welcome reports.

Contests

The first event of the year is the 70 MHz CW contest on Jan. 16 from 1000 to 1500 and it is a single section affair. Entries and check logs to G3LCH at 49 Streathbourne Road, London, SW17 8QZ. The first leg of the 70 MHz *Cumulatives* is probably on Jan. 30 but, as happened last year, no times/dates/rules have been published yet. The 432 MHz Fixed Contest is scheduled for Feb. 6; more details next month.

Two Metres

Bill Hodgson, G3BW, says he does not have much recent news but had made a number of MS skeds for the *Geminids* and *Quadrantids* meteor showers which he hoped would bring him some new ones. Frank Howe, G3FIJ, (Essex) operated during the end-of-October tropo. lift and added OK1KPU/P (GK) for a new square and new 1982 country.

Dave Sellars, G3PBV, (Devon) was not available early enough to catch the *Aurora* on Nov. 23 and reckons the one the following day was poor in the south west. First reflexions were heard at 2140 and "came and went" over the next couple of hours. On CW, OZ1CLL, GM4IPK, GM3WTA, EI6AS, G4ITR and some other northern Gs were heard at no great strength. He concluded that, from past experience, they were not strong enough for him to work them. Nothing was heard of the Nov. 29 *Ar* in Newton Abbot.

Clive Penna, G3POI, (Kent) with a massive 391 squares to his credit, looks to be set for 400 before much longer. Naturally, his 160-ele. colinear aerial array has enabled him to work many stations *via E-M-E* to help boost the tally, and the quest to get the last fraction of a dB. reduction in system *noise figure* has obviously paid off. Recent MS new ones include LA1K (FW), LA6QBA (GV) and OH1ZAA (KV). Clive has made a number of trips to Gibraltar recently and seems intent on getting Jimmy Bruzon, ZB2BL, going on *E-M-E* this year. He has details of the various *N.B.S. Yagis* and, as some aluminium stock is available locally, may be able to do a *D-I-Y* on a few. He has the components for a QRO amplifier.

A short note has been received from Martin Blythe, G4HFO, from St. Austell in Cornwall, to up-date his Squares Table figures. His son, Julian, is G8ORP, and uses the same station and enters this table as well to create a little family rivalry. Because Julian can operate at times when Martin is not home, he has some squares which the latter has not.

Paul Turner's, G4IJE, (Essex) main interest these days is MS operating and he once confessed to your scribe of suffering withdrawal symptoms if too many days passed without an MS sked! However, he does come on when conditions are up and was in on the Nov. 24 *Ar* which yielded UQ2AO (MQ) for a new square. He started at 1417 and other QSOs, all CW, included Y22IC (GN), UP2BFR (LP), DL7YS (GM) and an HG7 in JH square. Paul was nearing the 300 squares total and no doubt the *Geminids* and *Quadrantids* will bring that landmark nearer.

ANNUAL VHF/UHF TABLE

January to December 1982

Station	FOUR METRES Counties	FOUR METRES Countries	TWO METRES Counties	TWO METRES Countries	70 CENTIMETRES Counties	70 CENTIMETRES Countries	23 CENTIMETRES Counties	23 CENTIMETRES Countries	TOTAL Points
G2AXI	56	7	73	24	50	19	*12*	*2*	229
G3BW	45	6	75	22	48	10	*6*	*4*	206
GD2HDZ	54	7	68	16	45	13	*3*	*2*	203
G3PBV	35	7	67	23	42	14	*14*	*6*	188
G8TFI	—	—	78	20	62	21	—	—	181
G4JZF	—	—	82	22	58	17	—	—	179
G8RZO	—	—	77	25	45	16	—	—	163
G8RZP	—	—	77	25	45	16	—	—	163
G6ADE	—	—	65	16	53	16	—	—	150
G3FIJ	42	4	54	18	25	3	—	—	146
G6ADC	—	—	67	14	46	14	1	1	143
G8HHI	—	—	61	19	33	13	14	2	142
G4MUT	15	4	53	19	38	12	—	—	141
G4ARI	40	5	72	23	—	—	—	—	140
G8ULU	—	—	61	22	37	16	—	—	136
GW3NYY	—	—	81	27	19	7	—	—	134
GW3CCF	—	—	62	12	35	7	14	3	133
G8VRJ	—	—	46	15	33	11	20	5	130
G8VR	24	3	62	36	—	—	—	—	125
G6DER	—	—	72	18	26	6	—	—	122
G6ADH	—	—	65	21	26	7	—	—	119
G4DEZ	—	—	77	41	—	—	—	—	118
G4NBS	—	—	44	9	43	7	11	1	115
G6ECM	—	—	80	25	—	—	—	—	105
G3FPK	—	—	76	25	—	—	—	—	101
G8KAX	—	—	42	12	24	9	10	3	100
GM8OEG	—	—	74	25	—	—	—	—	99
G8LFB	—	—	72	23	—	—	—	—	95
GM4CXP	8	3	51	21	6	3	—	—	92
GW3CBY	12	4	44	15	13	2	*4*	*3*	90
G6FSH	—	—	71	15	—	—	—	—	86
G8WUU	—	—	41	15	18	6	—	—	80
G8VFV	—	—	60	16	—	—	—	—	76
G4KLX	—	—	53	18	3	1	—	—	75
G4MEJ	—	—	51	23	—	—	—	—	74
G4NRG	1	1	37	15	12	6	—	—	72
G6CGY	—	—	51	14	4	2	—	—	71
G4FKI	21	2	23	10	9	1	—	—	66
G8RWG	—	—	54	12	—	—	—	—	66
G8XTJ	—	—	52	11	—	—	—	—	63
G6AJA	—	—	49	13	—	—	—	—	62
GW4HBK	35	7	14	5	—	—	—	—	61
GM4COK	—	—	28	20	5	6	—	—	59
GW8TVX	—	—	39	11	—	—	6	3	59
G8LXY	—	—	30	7	16	2	—	—	55
G8XHL	—	—	30	9	11	3	—	—	53
G4BVY	9	2	—	—	29	11	—	—	51
G6HDD	—	—	40	7	—	—	—	—	47
G8ZYL	—	—	35	8	—	—	—	—	43

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

QTH LOCATOR SQUARES TABLE

Station	23cm.	70cm.	2m.	Total
G4BYV	60	—	—	60
G3JXN	46	91	137	274
G3COJ	30	82	150	262
G3XDY	30	86	131	247
G8PNN	25	57	104	186
LA8AK	23	49	195	267
G3PBV	17	81	159	257
G8VRJ	16	38	101	155
G8FMK	16	57	71	144
G8ATK	15	81	129	225
G8KAX	14	52	80	146
G4NBS	13	58	91	162
GD2HDZ	13	46	91	150
GJ8KNV	12	76	191	279
G8HHI	12	70	132	214
G2AXI	9	72	120	201
G4BVY	9	72	—	81
G4GFX	7	40	103	150
G4BW	6	35	198	239
G4ERX	6	46	121	173
GW3CBY	5	16	79	100
G8KBQ	4	75	161	240
GJ8SBT	3	—	161	164
G8ZSU	2	18	65	85
GJ4ICD	1	102	223	326
G3VYF	—	117	307	424
G3POI	—	—	391	391
G3IMV	—	34	322	356
DK3UZ	—	—	304	304
G4IJE	—	—	289	289
EA3LL	—	30	252	282
SP2DX	—	—	280	280
G4IGO	—	19	245	264
G4ERG	—	16	235	251
G4DEZ	—	—	233	233
G8VR	—	3	224	227
G3CHN	—	—	224	224
G8RZO	—	75	148	223
G8RZP	—	76	147	223
9H1BT	—	11	210	221
GM4COK	—	26	194	220
GW3NYY	—	42	169	211
G4JZF	—	68	140	208
G4MCU	—	44	158	202
G4PCI	—	28	165	193
G3FPK	—	—	193	193
G8CXQ	—	48	144	192
GW4EAI	—	—	187	187
G3NAQ	—	58	128	186
G3KEQ	—	—	186	186
GM4CXP	—	26	159	185
G4OAE	—	26	157	183
G4NFD	—	36	138	174
G4HMF	—	32	140	172
G4HFO	—	59	102	161
G4NQX	—	46	111	157
G6ADH	—	29	124	153
G8ULU	—	62	91	153
G8LFB	—	—	147	147
G8WPD	—	19	120	139
G6ECM	—	—	138	138
G6ADE	—	64	70	134
G6DDK	—	11	122	133
G8TGM	—	—	122	122
G3FIJ	—	29	92	121
G4MJC	—	12	108	120
G4MUT	—	50	69	119
G8ORP	—	37	76	113
G8XIR	—	—	112	112
GM4IPK	—	—	111	111
GM8OEG	—	—	109	109
G4MEJ	—	—	105	105
G8SRL	—	21	83	104
G4GHA	—	—	104	104
G8WUU	—	27	72	99
G4MWD	—	—	95	95
G6ADC	—	34	58	92
G6DER	—	18	74	92
G6HKT	—	28	62	90
G8RWG	—	—	83	83
G6HTJ	—	17	66	83
G8XQS	—	4	76	80
G4KLX	—	5	74	79
G8WPL	—	—	79	79
G4NWT	—	22	55	77
GM8BDX	—	24	53	77
G8VFV	—	—	76	76
G6ABB	—	—	75	75
G4NRG	—	11	57	68
G6CNX	—	—	63	63
G8XMP	—	—	62	62
G8LXY	—	20	34	54
G4PEM	—	—	50	50
G8ZYL	—	—	46	46
G4LDY	—	3	41	44

Starting date January 1, 1975. No satellite or repeater QSOs. "Band of the month", 23cm.

Tony Collett, G4NBS, (Berks.) says he actually found and worked in an *Ar* on Oct. 31 when, at 1851, he contacted GM6PZ (XQ) for an all-time new square. However, nothing else was heard. He took part in the CW Contest on Nov. 6/7 and made 72 QSOs worth 317 points. Conditions seemed very poor with little coming in from the north, apart from G4KTP in Durham. Continentals included a DL, 3 Fs, a PA and 3 ONs. The *Verulam Club's* Contest on the 28th provided a few more counties for 1982.

Keith Hewitt, G6DER, (S. Yorks.) mentions the tropo. on Oct. 30 in which he worked HB9AEN/P (DG) and OK1KPU (GK) both new squares and countries. Other new squares were DK5GX/P (DI), DC2GY/P (EI), DL6NAQ/P (EK) and F6CVN (CI). The *Ar* on Nov. 24 brought DC3VW (DJ) for another new square, plus F1DQK, F1FHI and GM6KWF (XP) in Strathclyde Region.

Ken Willis, G8VR, (Kent) is another keen MS operator who uses this mode to good effect as will be obvious from his total of 36 countries so far this year. During writing this piece, he reported a successful *Geminids* CW QSO with OH4UC (NV). Martyn Jones, G8CXQ, (Warks.) missed most of the fine tropo. at the end of October, but did get home at 1900 on the 30th to work OK1KPU/P and Y21RN, both in new square GK.

Tony Prior, G8XHL, has just gone through the trauma of moving house and is now in Langham, about five miles north of Colchester in Essex. This has curtailed amateur radio activities but the home made 16-ele. G2BCX aerial is already up at 25ft. The transceiver is a *Trio* TR-9130 with which he is very pleased. Tony was on for the Dec. 5 contest and worked Co. Durham to bring the year's total to 30.

Arthur Breese, GD2HDZ, was on several bands during the October lift and added his 16th country for the year on the 30th, thanks to LX1GR, Ken Wood, GM3WCS, (Fife) in a QSO with your scribe on the 20m. VHF net, mentioned an *Ar* on Dec. 7 and another, better one the next day from 1630 to 2100. This yielded CW QSOs with RQ2GAG in MQ and OH1DP in LU, amongst the usual, nearer continentals. At G3FPK, the Dec. 8 affair was discovered at 1720 but only weakish GMs were heard, and it was still rumbling on at switch-off at 1930.

At G3FPK, the October tropo. lift provided a couple of new squares; OK1IBI/P (GK) on SSB and Y31QM/A (GL) on CW, on the 30th. On the *Ar* scene, a very weak event was noticed in the evening of the 21st Nov. Eddi Ramm, DK3UZ, telephoned at 1715 on the 23rd to report another event in EN square and a number of G, GI and GM signals were copied on SSB and CW but none were very strong. This was from about 1830 for half an hour.

Another event was heard from the start on the 24th at about 1340. On the 20m. VHF net, DF5HC (FN22d) was calling so was advised of the event and checked to confirm it was all happening. The *Doppler* shift was about 700 Hz high frequency. The event was very intense and QTF's peaked rather broadly around 40° but *Ar* were audible between 0° and 90° for much of the time. Best DX heard was UQ2GAJ (LQ06b) at 1600 and OH1DP (LU42j) at 1615. SM7DLZ (IQ53h) at 1734 was the sole new square.

In a subsequent inquest on the VHF net, DF5HC mentioned working stations in AL, BJ, FU, KQ, HT, NR and ZO squares. Another fact is that in these more southerly *Auroras,* the more northerly stations, *e.g.* the GMs, do not hear the Russians copied and worked by stations in the south of Britain.

The fixed contest on Dec. 5 saw a great deal of activity. The majority of signals were acceptable, a few outstandlingly clean and there were some real stinkers. Steve Marsh, G4BWG, (ZL60j) made 420 contacts. With six minutes left, the South Bucks. Contest Group, G4NXO, had made 402 QSOs. G3RQZ (AL51g) ended up with 343 and G8RZO was giving a serial number of 354 with about thirteen minutes to go. Andrew Kett, G8VLL, (Norwich) made 371 contacts in the Multi-op. section, so it looks as if it will be a fairly even battle for the top places.

John King, G6ADH, (Surrey) arrived home from the Middle East early on the morning of Oct. 30 to find the band full of OK and Y stations, all S9-plus. He worked fifty of them before succumbing to jet lag, the pick of the bunch including: OK2VIL/P (JJ33g), OK2KZP/P (LJ32j), OK1KKH/P (HJ06c), OK1KPU/P (GK29a), Y24XN/P (GK43f), Y38ZA (HN07c) and Y23LI/M (FK24e). There were many East Germans in GL and GM squares and "out of the blue" came SM6JMZ (GQ24a), the only Scandinavian heard. All the new squares have been confirmed already but John still awaits cards from several GMs and Scandinavians to whom he has sent *s.a.e's* and IRCs.

Seventy Centimetres

G3PBV reports that the only addition to his table score was the county of Berkshire and little DX was heard in his part of Devon in November. G4NBS took part in the *Cumulatives* and was glad at the increased activity even though conditions have been very poor. In the Nov. 1 session, Tony made 47 QSOs worth 205 points and on the 9th, the same number of contacts but 225 pts. This session included a QSO with G8PNN in Northumberland. On the 17th, 46 stations were worked, including G8REQ/P (Lancs.) for 160 pts., while the last session on the 25th gave 48 contacts for just 130 pts.

Cliff Jeffery has done very well on the band this year with 58 counties and 18 countries in the G6ADE log, from 72 squares. On Oct. 30, he worked OE2CAL

(GH16c), F1DZB (ZJ78a), F1EZQ (CH15d), F1FHR (BI12c), OK2VIL/P, F0GOH/P (DI76f), Y24XN/P and DK0NA (FK58b) from his Maltby, S. Yorks. QTH. His station comprises a *Trio* TS-770E transceiver, *MM* 50 watts amplifier, *Datong* speech processor and 21-ele *Tonna* beam at 35ft., 450ft. *a.s.l.*

G6DER lists G8EUX (Northants.) on Oct. 27 for a new county, DL6NAQ/P (EK) on the 30th, G8MFP (Warks.) on Nov. 6, G6CGY (Cleveland) and G8FUO (Berks.) on the 30th, and G8VZT in Shropshire on Dec. 2. Keith wonders why French QSLs seem to get through the bureaux so quickly, citing receipt of cards from the Sept. 26 *Ar* in about five weeks. G8CXQ, who missed most of the late October tropo., mentions just DB6NT/A (FK) for a new square on the band.

John Pilags, G8HHI, (Hants.) has been travelling around a lot lately which has curtailed activity, but he did participate in the Nov. 1 session of the *Cumulatives* which brought QSOs with G3TDG (Kent), G8REQ/P (Lancs.), G4APA/P (Staffs.) and GD2HDZ. Since his recent move, G8XHL has not been on the band but has an 88-ele. *Multibeam* ready for launch soon. He was hoping for a transceiver as a Christmas present! GD2HDZ could not raise HB9AMH/P on 2m. on Oct. 30 but did manage to contact Arnold on this band, along with LX1DB.

Gigahertz Bands

John Tye, G4BYV, (Norfolk) specialises in 9, 13 and 23cm. operation and now has a commanding lead in our Squares table with 60 worked. He has 21 worked on 13cm. and three on 9cm. and would welcome skeds on any microwave bands. In the Oct. 30 tropo., John worked OK1AIY/P (HK) on 13cm. the QRB being 1,027 kms. His previous 464 kms. record on 9cm. was broken by PA2DOL (CL) who worked over 500 kms. He reports, too, that G3AUS (Devon) worked an OK in JJ square on Oct. 30 to create a new 23cm. DX record of 1,576 kms.

G4NBS has at long last got his 23cm. transverter back from the mender's and tested it out on Nov. 24. All seemed well, but when used in the last leg of the *Cumulatives* — nothing! A check the following morning revealed that the *Heliax* feeder had gotten tangled up in the rotator bearing and is now in two pieces. "Murphy" never gives up! G8HHI operated in the 23cm. *Cumulatives* and lists G4APA/P at 220 kms., G4FRE/A (Suffolk) at 161 kms., G4KIY (Cambs.) at 147 kms. and G3TDG. John was only using one watt for these QSOs.

Highlight of the Oct. 30 opening on 23cm. for GD2HDZ was working HB9AMP/P with just one watt of SSB, for an RS53 report. This QSO was almost exactly seven years since Arthur's first contact with Arnold in October, 1975. Russ Clarke, GW3CCF, (Clwyd) is still only running 1½ watts on 23cm. but nevertheless did work some good DX on Oct. 30 into DJ, EI and EK squares. He has also worked into London on a number of occasions under normal conditions.

Operating Notes

Until relatively recently, it was usual for anyone getting an amateur radio licence to have spent some while as a short wave listener. This "apprenticeship" ensured that basic operating procedures and band plans were known so that when the licence arrived, the new operator would not make a complete ass of him or herself. However, this seems less likely to be the case today, a point mentioned in The RSGB's *Annual General Manager's Report* in the supplement to the November, 1982 *RadCom*.

Hardly a month passes when readers do not complain about people operating FM in a CW band, clobbering beacons or interfering with satellite communications. Much of this nuisance is simply through ignorance. As one colleague put it, "After they've let go the PTT button on the mike, that's probably the first time they have ever *listened* on an amateur band". A typical illustration of this syndrome occurred a few days ago, during the *Geminids* meteor shower when the 2m. Rx was tuned to the random MS CW frequency, 144.100 MHz. Two G6s were chatting away on SSB so your scribe chipped in to tell them the situation, asking them to QSY. They did, without delay, one remarking to the other that he thought he had heard some CW underneath the other's signal.

There seem to be three cases of inconsiderate operation. The first is by those genuinely unaware of any band plans and who see that their licence permits various modes over the entire bands. They have probably never been *s.w.l's* and probably are not members of the RSGB. or readers of this sort of column. Their main interest is likely to be chatting to local friends, little more than CB-ers, in fact, even though they have taken the trouble to get their amateur licence. A friendly chat about band plans and the various interests, such as MS, etc., in most cases puts them on the right road.

The second group comprises the more "bolshie" characters, less amenable to reasoned persuasion to respect band plans. Some of the excuses include: "Band plan? That's some RSGB rubbish and I'm not a member," or "My licence lets me transmit all modes all over the band . . ." Another one is, "I can't hear any beacons, the channel's free as far as I'm concerned". The third group are the pirates who could not care less about upsetting licensed amateurs.

The band worst affected is undoubtedly 2m. so no excuses for outlining the internationally agreed, *Region I Band Plan,* again. 144.000 to 144.150 MHz is *exclusively* CW. The bottom 10 kHz is for *E-M-E;* 144.050 is the calling frequency and 144.100 the random — *i.e.* non-scheduled — MS frequency. From 144.150 to 144.499 is SSB and CW, though little CW operation occurs in this part. 144.300 is the calling frequency for SSB and 144.400 the calling frequency for random SSB, although 144.200 is still very much in use, too.

144.500 to 144.849 MHz is basically for all-mode "DX" operation, with 144.500 for SS/TV calling, 144.600 for FSK RTTY calling, 144.700 for FAX calling and 144.750 for ATV talkback. 144.850 to 144.99 is the beacon band. Although there may appear to be a lot of unused spectrum space, many amateurs monitor specific beacons to assess random meteor activity, auroral propagation, etc.

145.00 to 145.80 is for local FM traffic including eight repeater channels R0 (145.000/145.600 input/output) to R7 (145.175/145.775). 145.300 is the AFSK RTTY calling frequency and 145.500 the general calling frequency. The section 145.800 to 146.000 is for satellite communications. Use of this part for terrestrial QSOs can result in one's signals being picked up by a passing satellite transponder and/or interference to local stations trying to copy weak downlink signals.

So much for the 2m. band plan. If everyone adheres to it, there will be no conflict of interest and everyone will get maximum enjoyment. One final plea, if you must adjust your Tx on the air, the calling frequencies are *not* the ones to use; "w-a-a-a-llows" and whistles are best performed well away from the more active parts of the band.

Deadlines

The very important deadline is **Jan. 5** if you want to get in your final, 1982 Table scores. The March deadline is Feb. 2; very early. Everything to: "VHF Bands," SHORT WAVE MAGAZINE, 34 High Street, WELWYN, Herts., AL6 9EQ. Thanks to those readers who sent cards and Season's Greetings and may I wish you a very Happy New Year with lots of super DX. *73 de G3FPK.*

A POWER SUPPLY FOR THE YAESU FT-707

IAN KEYSER, G3ROO

HAVING completed the 160m. transceiver and external VFO for the FT-707 (*Short Wave Magazine,* June and September, 1982, respectively) there were two other units which could be constructed to complete the range of accessories. These are a suitable ATU, and a power supply. Work started first on the ATU — but this project was shelved when the accumulator that was powering the station failed!

Top priority then became the power supply, and magazines were scanned to try and find a suitable circuit which could be 'cribbed' to save time, but it soon became apparent that although there were many good ideas all the units described either were built from the junk box, or suitable components could not be located. Having made this discovery, commercial units were investigated but that revealed that they were greatly over-priced, and I was sure that a comparable unit could be constructed using new components for little over half the cost. Indeed, taking into account retailers' profits and 'good old VAT', the cost of the power supply described here should be in the region of £60 for all new components.

Description

The heart of the power supply is of course the transformer, and here I have used a unit from *ILP Transformers*. These units are toroidal, and so before proceeding a few points about them should be made. They do tend to be a little noisy in use, and when the mains supply is badly loaded, and so non-symmetrical, the situation can be considerably worse with acoustic hum clearly audible. This would appear to be a general situation, and not peculiar to the *ILP* units. Having said that, the points in favour of the toroid are considerable: much reduced magnetic field, small size, the ability to be overwound easily, and low price which makes them desirable for amateur use.

For two reasons I wished to keep the voltage across the smoothing capacitors to just below 25 volts — firstly to keep the dissipation in the series pass transistors to a minimum, and secondly to enable me to use 25 volt working capacitors. Calculation shows that 18 volt transformers would develop 26 volts under no load conditions, and so too high, and 15 volt transformer would give 22 volts off-load. Thus the 15 volt unit was decided upon, but in practice an extra volt or so would prove to be an advantage. The final figures obtained with this transformer are: off-load output 13.6v; onset of ripple at 17A; 0.5v ripple at 20A; full load (20A) voltage 12.5v.

To obtain the extra volt an overwind could be added to the transformer. The transformer develops 0.5 volts per turn, so by adding three turns of stout enamelled copper wire (12 s.w.g.) capacitor voltage is brought to 25 volts — an almost ideal situation.

The rectifier used in my unit was made up from some very high power diodes from the junk box, but a suitable unit is marketed by *Radiospares*. Their 35 amp. bridge rectifier (part number 262-523) can handle surges up to 400 amps. The capacitors are also *Radiospares* items, 22,000 μF at 25VWKG (p/n 102-617), two of these being used to give a total of 44,000 μF. The next size capacitor is 33,000 μF at 40VWKG; these should just be able to fit into the case and would considerably assist in the regulation (p/n 102-137).

The regulator element is the old favourite, the 723. This has an output current of only 150 mA., so there has to be a current amplifier (TR1) to drive the bases of the three series pass transistors (TR2, TR3, TR4). These four transistors are mounted on a *Radiospares* heatsink (p/n 401-807) which has been cut in half to make two 3-inch heatsinks mounted on the rear of the case. For the main LT fuse I have tried to locate a source of suitable wire-up fuse holders, but without success. Instead I have used a

Table of Values
Fig. 1

R1, R2, R3, R4 = 0.1R, made from old fire element
R5 = 2K2, ¼W
R6, R7 = 3K3, ¼W
R8 = 3K9, ¼W
RV1 = 4K7 preset
C1, C2 = *RS* 102-617 or 103-137, *see* text
C3, C4, C5, C10 = 1000 pF s/m
C6 = 4.7 μF elec.
C7 = 10,000 pF cer.
C8 = 100 μF elec.
C9 = 10,000 pF s/m
TR1 to TR4 = 2N3055
D1 = *RS* 262-523
Heatsink = *RS* 401-807
Stick-on feet = *RS* 543-333
Mains input = *RS* 488-400
Mains plug = *RS* 488-393
SW1 = *RS* 388-305
Terminal posts = *RS* 444-775 (red), 444-781 (black)
T1 = *ILP* 300W 240V primary, 15V secondary
IC1 = 723
FS1, FS2 = *see* text

Note: T1 available from *ILP Transformers,* Freepost T4, Graham Bell House, Roper Close, Canterbury CT2 7EP.

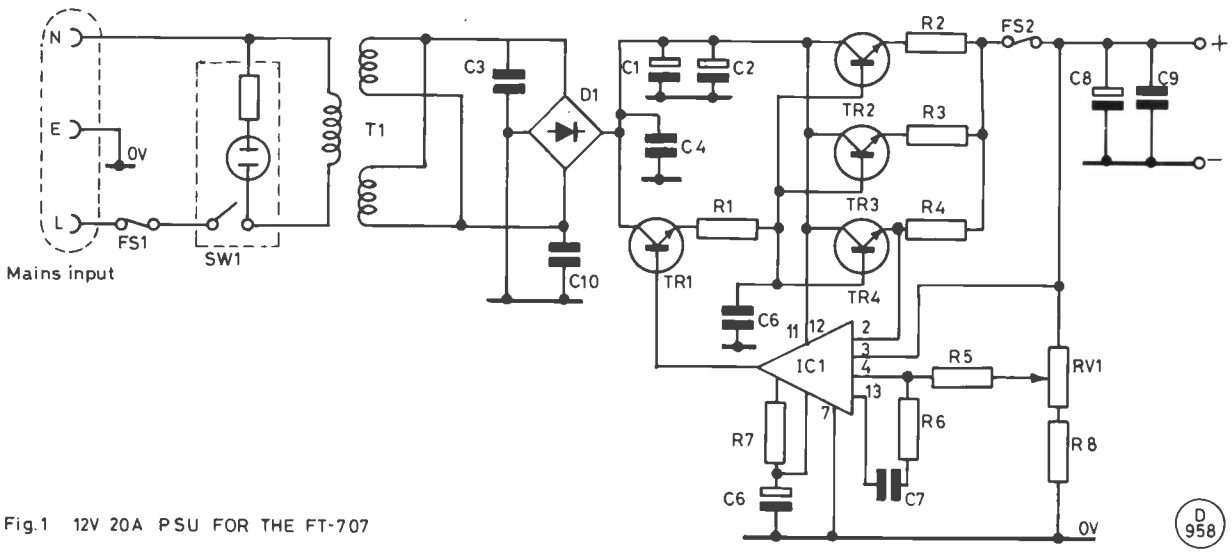


Fig.1 12V 20A PSU FOR THE FT-707

'Slidelock' unit from an old wartime PSU, but if one of these cannot be found I would suggest mounting a 20 amp. fuse on the rear of the positive terminal inside the case, along with the crowbar SCR. The SCR itself (which may prove a little hard to find) should be rated at 40 amps.

No PCB is given here as the regulator can easily be built on *Veroboard;* however one point must be observed, and that is if anything is mounted on the transformer top mounting washer, it must be insulated from the washer otherwise in effect there will be a shorted turn on the transformer which will cause overheating and bad regulation.

Finally, the metalwork: this can be obtained from *H. L. Smith,* 287-289 Edgware Road, London W.2.

Conclusion

Of course, no originality can be claimed for the circuit! It is very simple but, more important, it works. With a ready-made case and all the parts to hand it should be possible to complete, paint and use over a weekend, between all those domestic odd jobs which need doing.

The only thing I do miss about the old battery is the ability to go on the air during a power cut, but — thank goodness — we haven't had too many of those in the last couple of years.

A SEVEN-EIGHTH WAVE COAT-HANGER ANTENNA

H. R. Henly, C.Eng., MIERE, G3IHR

UNTIL the recent rail strike the 'joys' of 2-metre, and in particular mobile, operation had eluded the author. This was probably brought about largely by reading only the worst reports about the VHF bands and repeater operating practices and never sampling some of the less reprehensible activities. However, when faced with several weeks of commuting from the Sussex coast to the City of London by car, a colleague's suggestion that 2m. mobile operation would leaven even the worst traffic jam seemed worth a try.

For this venture a quarter wave-length vertical was used. This was a piece of 16 *swg* brass rod initially cut oversize (approximately 20 inches) and then trimmed to size using the set-up shown in Fig. 1. The quarter-wave was mounted in the centre of the car roof using a magnetic mount and the length was then reduced 0.5 inch at a time until the reflected power was as low as possible. This was found to be more reliable than a simple SWR reading but this was probably a characteristic of the author's SWR meter. It is necessary to make measurements at a few spot frequencies

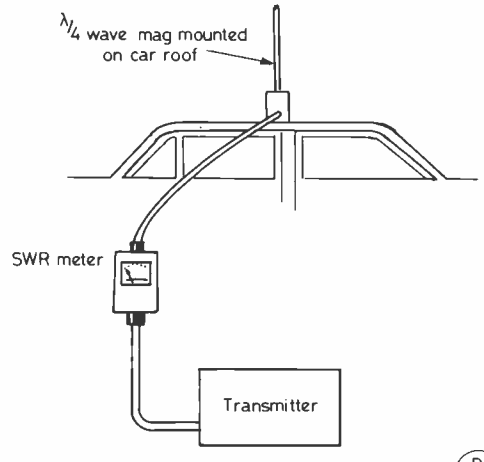


Fig. 1 TEST SET-UP FOR ADJUSTING ANTENNA (D 982)

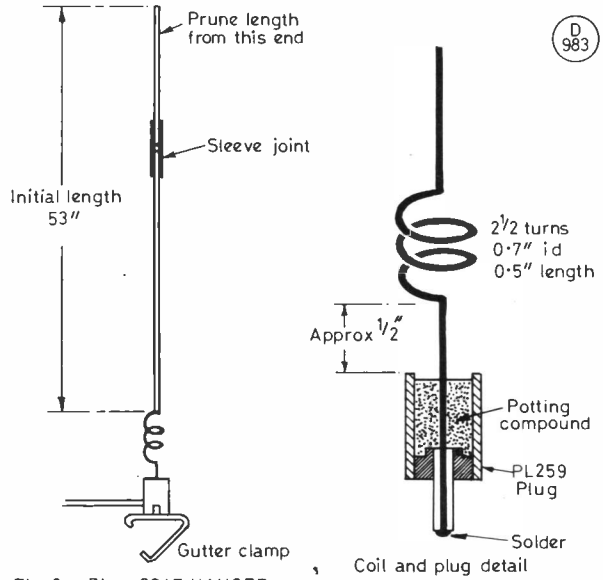


Fig. 2 7/8λ COAT HANGER

through the band in order to check that one is progressing in the right direction as the antenna length is shortened. Thus one starts by cutting to obtain resonance at 144 MHz and then proceeds slowly towards 145.5 MHz. Haste will invariably result in a collection of potential 420 MHz antennae! An SWR of better than 1.1:1 was obtained over the range 145.2 to 145.8 MHz with a little patience. This antenna provided some enjoyable mobile contacts, mainly on simplex — with some over 30 miles — using only 5 watts output from a Zycomm 58000 hand-held transceiver.

A very crude attempt to estimate the radiation pattern by walking round the car at a constant radius with a field-strength meter, indicated an omni-directional pattern with the vertical lobe concentrated roughly between 0 and 60 degrees to the horizontal plane.

The majority of people contacted seemed to favour either a ⅝ or ⅞-wavelength vertical, gutter or bumper mounted. The excellent article by Jessop (*Practical Wireless,* July 1978) confirmed that one should achieve lower angle radiation with this type of antenna. When the annual holiday in Wales came along it seemed an ideal opportunity to try one. It was decided to gutter-mount the antenna rather than use the mag-mount since this would enable the quarter-wave to be retained for comparison. The gutter-mount used is a standard CB type, comprising a PL259

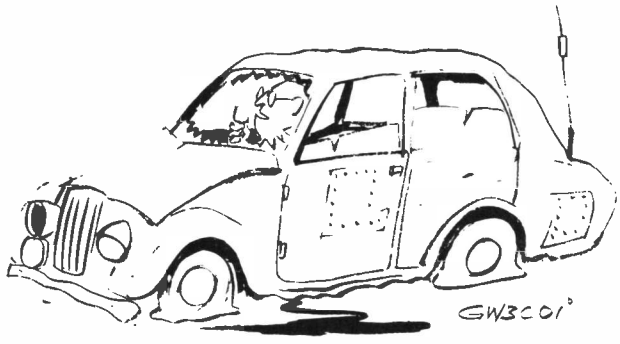
February issue due to appear on Friday, January 28th

A view of the gutter-mounted 7/8-wave and mag-mounted 1/4-wave aerials.

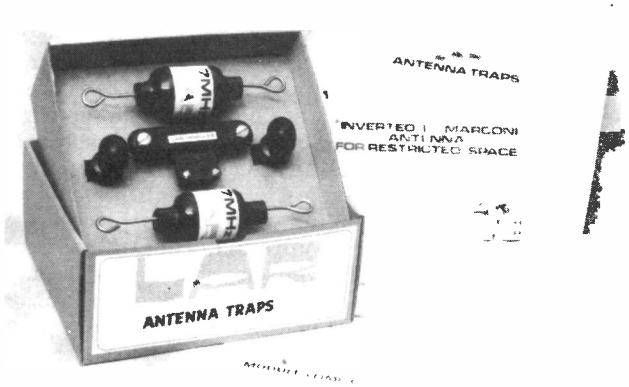
female connector mounted on a gutter clamp complete with some 4m. of coax cable. The antenna itself leaves much to be desired mechanically — it was constructed in approximately 1 hour (including commissioning) just before driving off into the sunset! The basic material was a stout wire coat-hanger, carefully straightened out. The lower end was coiled to form the loading inductor (*see* Fig. 2 for details) leaving a short tail of sufficient length to solder direct to the centre pin of a PL259 male connector. Before soldering to the connector this tail should be sleeved with a short length of PVC. When first conceived it was intended to fill the space between the inner and the shell of the connector with a potting compound to make a water-tight seal. However time did not permit 'temporary' measure the space was filled instead with *Blutak!* This has proved to be a very successful sealant, being water-tight and sufficiently elastic, and has survived a 1,000 miles of variable English/Welsh weather.

The antenna length was made up to a total of 53 inches by the addition of a length of brass rod and a short length of copper sleeve which was crimped to make a good electrical connection and, then wrapped with PVC tape to protect from the weather. The length was then pruned in the same way as for the quarter-wave described above but was found to be rather more critical — so be warned.

Results have been very encouraging. In general signal strengths appeared to be one or two S-points higher than with the quarter-wave and the radiation angle was decidly lower. Mounted on the off-side rear gutter the radiation pattern did not appear to be seriously distorted by the presence of either a loaded roof-rack or the mag-mounted quarter-wave but this is only a subjective assessment. As an indication of the results obtained, it was used to work into the Dublin repeater from just outside Fishguard. It was also found possible to access the Carmarthen repeater from the M4 near Newport whilst this was not possible with the quarter-wave, but with the number of variables involved there may be other explanations of why this was so! In addition several very enjoyable simplex QSO's were made en-route between Sussex and West Wales. In Wales, operation was mainly of HF — but that's another story!



". . . standing-by for a short QC. . . ."



LAR Modules Ltd., **are now able to offer lightweight versions of their popular traps. Typically, a 7 MHz trap now weighs only 50gm — half the previous figure — while still retaining the electrical and weatherproof properties of its earlier counterpart. The traps, 3.5 or 7 MHz, complete with end insulators and a centre tee-piece, come boxed with instructions for £17.20 inc. VAT (p/p £2.00 extra). Orders should be sent to LAR Modules Ltd., 60 Green Road, Leeds LS6 4JP. (Tel: 0532-782224.)**

CLUBS ROUNDUP

By "Club Secretary"

Before we get stuck into the business of reporting on the activities of clubs may we take this opportunity of reminding you that we can't manage without your regular up-dating. If *your* club appears in this piece, dear reader, please check on the details, and if you have a new Hon. Sec. or Hq address, or meeting date or whatever, then get him/her to send us an update. If your club doesn't appear here — and some clubs for various reasons don't want publicity — then at least send us the essential details annotated "not for publication" so that if we come across a wandering SWL looking for a club in your area we can at least set him on the right track. And, you'd be surprised how many enquiries we get of that sort!

The Mail

We start with **Acton, Brentford & Chiswick** as so often before, at the Chiswick Town Hall, in High Road, Chiswick; the date is January 18, and the matter in hand is the Annual General Meeting, starting at 7.30 p.m.

Addiscombe is nowadays primarily a contest club, but they foregather each week from 9 p.m. in "The Woolpack", Gloucester Road, Croydon; Tuesday evenings it is.

Turning to **Aylesbury Vale**, they, like so many other groups, have an AGM in January; in this case on January 25, at Stone Village Hall, commencing at 8 p.m. with a natter, coffee, and raffle as usual to finish off with. Details on the club from the Hon. Sec.—*see* Panel.

Yet another AGM — **Biggin Hill** on January 18, at Biggin Hill Memorial Library, starting at 8 p.m.

The **Braintree** gang foregather on January 18, the venue at Braintree Community Centre, Victoria Street, next to the bus station.

If you have an interest in RTTY, then you should be a member of **B.A.R.T.G.** There is a very fine newsletter, and supplies of materials likely to be required in the RTTY station are obtainable at favourable rates; all the details from the Hon. Sec.—*see* Panel.

Similarly, all the details on the **Caradon Hill Repeater Group** can be obtained from the Hon. Sec.—*see* Panel for his details. As this club is based in the Holsworthy district of Devon, it could provide a club in an area otherwise somewhat short of them.

There seems to be a change of Hq in the wind for **Cheltenham**; that being so, we feel the best thing for anyone wishing to join would be for them to get in touch with the Hon. Sec.—*see* Panel—for the latest details.

The **Chesham** chaps recently had an AGM, and so the new committee is doubtless busy putting the programme together. This being the case, for all the latest dates and details we must refer you to the Hon. Sec.

January 4 and 20 are the dates for the **Chichester** club meetings, at Fernleigh Centre, 40 North Street, Chichester, starting at 7.30 p.m.

The **Clifton** lads are to be found every Friday evening informally supping a pint at the New Cross Inn, Clifton Rise, London SE14.

An interesting talk is down for January 13 at **Colchester**, when G4JVM will be charting the shoals of obtaining planning permission for aerials. Turning to January 27, they have a talk about the new Sudbury repeater by G4IZA. The venue is Colchester Institute, Sheepen Road, starting at 7.30, and they make a point of expressing a welcome to visitors and new members.

The **Cornish** Hq is the SWEB Clubroom, Pool, Camborne, and it is here that on January 6, Stella, G6EGS, will be talking about "Polymers — where would we be without them?" This club may be well away from other groups, but they certainly know how to fill their Hq at every meeting — they've been overflowing it every month for years! Moral — get there on time at 7.30 p.m.

The **Crawley** meeting on January 12 is an informal; as these are held at members' homes, we would suggest a contact with the Hon. Sec.—*see* Panel for his details — to find out where and when to go.

The **Crystal Palace** Hq these days is All Saints Church Parish Room, Upper Norwood, which is almost opposite the ITA mast, at the junction of Beulah Hill and Church Road, and as every time, it is the third Saturday evening of the month.

For all the details on the **Dartford Heath D/F** club, we must refer you to the Hon. Sec.—*see* panel for his address. Apart from D/F Hunts, they have a regular meeting at the "Malt Shovel" in Eynsford, every month.

Up to **Derby** and this means 119 Green Lane, Derby, each Wednesday. January 5 is a junk sale; and on 12th G2CVV will be talking about the history of this, the oldest club in the country. On 19th they go all modern again with a computer demonstration by ICL, and then on 26th, G6CHE, will be asking "Contests — what are they?"

Further northward yet, this time to **Derwentside**; they are to be found every Monday evening at the R.A.F. Association, Consett, where we hear they are collecting in new members almost every week. Sounds good!

If you are within the catchment area of the **Doncaster** group, based on Gertrude Bell Hall, Church Street, Armthorpe, Doncaster, then every Monday evening should see you heading there for the meeting. All the details from the Hon. Sec. — *see* Panel for his address.

The **Echelford** crowd have the second Monday and the last Thursday of each month booked at The Hall, St. Martin's Court, Kingston Crescent, Ashford, Middlesex.

On January 13, **Edgware** group have their AGM, and on 27th they have an informal evening on the club project, the venue is 145 Orange Hill Road, Burnt Oak, Edgware. We are interested to note that they have set up another of their straight key evenings on Eighty CW on the evening of March 31.

We don't have the January data for **Farnborough**, but we can say that they foregather on the second and fourth Wednesday evenings in each month at the Railway Enthusiast Club, Access Road, off Hawley Lane, near the M3 bridge, Farnborough.

Up to Scotland now, to **Glenrothes**, which means Provosts Land, Leslie, Fife on January 16, when GM4GVJ will talk about amateur radio in New Zealand.

Leo Delaney, KC5EV, Hon. Sec. of the Houston QRP Club, recently visited England, and pictured here in the G3RJV shack are, left, Ian Deverell G6BAI, Fred Garratt G3HOM (rear), KC5EV (centre), and Rev. George Dobbs, G3RJV, Hon. Sec. of the G-QRP Club. QRP-talk must have lasted well into the small hours that night!

photo by G4LQF

January 28 is the date set up for Annual General Meeting at **Grafton**; they have this in the small hall at the rear of the "Five Bells" public house, East End Road; this is a half-mile from Manor Cottage on the North Circular Road, London, and the general routine is to meet on the second and fourth Friday of each month.

Turning to **Greater Peterborough** we find they also have an AGM, on January 27; but for details of the venue and the club itself, we are asked to pass you on to the Hon. Sec. — his details are in the appropriate spot in the Panel.

We come now to what must be one of the biggest groups in the country, namely the **G-QRP Club**; everyone with an interest in home-construction of gear, or of QRP operating should be a member! Details from the Hon. Sec. — *see* Panel.

It is party night at **Guildford** on January 14; the place is, as always, the Model Engineering Club Hq in Stoke Park, Guildford.

Tuesday evenings see a pile of cars outside **Harlow** club Hq, Mark Hall Farm, in First Avenue, owned by members attending. They seem to have something set up in the way of a talk or activity most weeks — why not go and have a look?

The **Harrow** gatherings are at the Harrow Arts Centre, High Road, Harrow Weald, on January 7 in the Belmont Room, and on January 14 in the Roxeth Room, the latter being the Informal and Practical evening.

We turn now to **Hastings** where the new Hq at Ashdown Farm Community Centre, which is in Darley Close and "up in the trees" according to the newsletter. Does that mean you bring your own ladder, we wonder? The main meeting there is on the third Wednesday evening in each month, and in addition they have an informal every Friday evening at the same place.

Deadlines for "Clubs" for the next three months—

February issue—December 31st
March issue—January 28th
April issue—February 25th
May issue—March 25th

Please make sure to note these dates!

Turning to **Havering**, we find them at Fairkytes Arts Centre, on January 5 for the AGM, on 12th for an informal, on 19th for a demonstration of the Microdot Terminal, and on 26th for another informal.

Off to **Hereford**, where cider apples grow and kings steam, not to mention the local club meetings. They are based on County Control, Civil Defence Hq, Gaol Street, on the first and third Friday of each month, and they have something set up for almost every meeting.

If there is anything doing in the amateur radio field in Eire, and you want to know about it, your first contact should be with **IRTS**; after all, they are the national society, as well as having local clubs. All the data from the Hon. Sec. — *see* Panel for his details.

Next stop is in **Jersey** where we are advised of the change of Hon. Sec. — but it gives us a suspicion that there is more than one amateur radio club in Jersey. To resolve the doubts, contact the Hon. Sec. — *see* Panel for his details.

KSC Amateur Radio Group is open to SWLs and licensed radio amateurs who are of the Catholic faith; details from the Hon. Sec.

The second and fourth Wednesdays are booked by **Lincoln** club at the City Engineers Club, Central Depot, Waterside South, Lincoln. On the intervening Wednesdays they have RAE and Morse classes at the same spot.

Scotland again now, and **Lothians**, who now have their base in Drummond High School, Edinburgh on the second and fourth Thursday of each month. On January 13 various members will be giving mini-lectures, and on 27th, GM3YOR will be talking about the role of the RSGB.

A hark back to summer, the occasion being Havering & District A.R.C. VHF Field Day. Standing, left to right, are G4MYO, XYL of G8ZKZ, BRS48819, G8DQJ, G8FBV, BRS51183, G3TPJ, G4GDG, G5AQQ, G6BEL, G6FQN, and YL of G6BEL; middle row, left to right, are G8KAX, G6JFQ, G8VVG and Paul; up front, left to right, are G6CNQ (VHF manager), G8URI and G8ZKZ.

photo by John Gibbs, BRS50947

Macclesfield Hon. Sec. G6HLQ says that they foregather on the second and fourth Tuesday of each month at St. Andrews Old School Hall, St. Andrews Road, Brough Street, West, Macclesfield, at 7.30 for 8 p.m. They alternate between informals and lectures, or whatever.

For details of the **Maidenhead** we must refer you to the Hon. Sec. — *see* panel. However, we can say that their Hq is at the Red Cross Hall, The Crescent, Maidenhead, and that to find it you turn westward off the A4 onto the A308, and look for the Crescent off the left-hand side; if you are just too late spotting the first entry to the Crescent, the next one is t'other end of it!

Maltby is a new club, meeting on Fridays at the Methodist Church Hall, Blyth Road, Maltby. Details from the Hon. Sec. — *see* Panel.

January 21 is the date for **Melton Mowbray**, and the topic "Front-end Measurements" given by G4AMK and G6KQP. As ever, the place is the St. John Ambulance Hq, Asfordby Hill, Melton Mowbray.

Midland get together at their own place at 194A Broad Street, Birmingham; on January 18 they have a talk on "Transforming a Transformer" to be given by G8KWE.

Mid-Warwick use the first and third Tuesday evenings at 61 Emscote Road, Warwick; they seem to alternate between open evenings and sessions at which they have a talk or demonstration laid on.

One of the groups with a forward programme for many months ahead is at **Norfolk**, based on Crome Community Centre, Telegraph Lane East, Norwich. January 5 and 19 are what they call 'short meetings' and on 12th they have a talk by G3PLF, the RSGB RR. January 26 is down for a lecture on Aurora by member G3IOR.

Northern Heights newsletter doesn't look far enough ahead to give January's dates at the Bradshaw Tavern, Bradshaw, Halifax, for which we have to refer you to the Hon. Sec. — *see* Panel for his details.

Carr Gate Working Men's Club, Thursdays, is the form for **North Wakefield**; on January 6 they have G4DXA on Interference, on 13th a visit to Wakefield power station, and on 20th they visit the Pontefract club junk sale.

Names and Addresses of Club Secretaries reporting in this issue:

ACTON, BRENTFORD & CHISWICK: W. G. Dyer, G3GEH, 188 Gunnersbury Avenue, Acton, London W3 8LB. *(01-992 3778)*
ADDISCOMBE: P. J. Hart, G3SJX, 42 Gravel Hill, Groydon, Surrey CR0 5BD. *(01-656 9054)*
AYLESBURY VALE: M. Marsden, G8BQH, Hunters Moon, Buckingham Road, Hardwick, Aylesbury, Bucks. *(0296-641783)*
BIGGIN HILL: I. Mitchell, G4NSD, 37B The Grove, Biggin Hill, Westerham, Kent. *(09594-75785)*
BRAINTREE: M. Jones, G6DFZ, 26 Anson Way, Braintree, Essex. *(Braintree 44168)*
B.A.R.T.G.: E. Batts, G8LWY, 27 Cranmer Court, Richmond Road, Kingston-on-Thames.
CARADON HILL REPEATER: C. P. Bartram, G4DGU, 23 Tuckers Park, Bradworthy, Holsworthy, Devon. *(0409-24543)*
CHELTENHAM: J. Holt, G3GWW, The Old Rectory, Brimpsfield, Glos. *(Witcombe 3435)*
CHESHAM: J. Alldridge, G6LKS, 15 Wichcote Gardens, Chesham, Bucks. *(Chesham 786935)*
CHICHESTER: T. M. Allen, G4ETU, 2 Hillside, West Stoke, Chichester, Sussex PO18 9BL. *(West Ashling 463)*
CLIFTON: R. A. Hinton, 42 Sutcliffe Road, Welling, Kent. *(01-301 1864)*
COLCHESTER: F. R. Howe, G3FIJ, 29 Kingswood Road, Colchester. *(0206-70189)*
CORNISH: J. Vinton, G6GKZ, "Cheriton", Alexandra Road, St. Ives, Cornwall. *(Penzance 795860)*
CRAWLEY: D. L. Hill, G4IQM, 14 The Garrones, Worth, Crawley, West Sussex RH10 4YT. *(Crawley 882641)*
CRYSTAL PALACE: G. M. C. Stone, G3FZL, 11 Liphook Crescent, London SE23 3BN. *(01-699 6940)*
DARTFORD HEATH D/F: A. R. Burchmore, G4BWV, 49 School Lane, Horton Kirby, Dartford, Kent DA4 9DQ.
DERBY: Mrs. J. Shardlow, G4EYM, 19 Portreath Drive, Darley Abbey, Derby DE3 2BJ. *(0332-556875)*
DERWENTSIDE: P. Howes, G8WEJ, 26 Hadrians Way, Ebchester, Co. Durham DH8 0PE.
DONCASTER: B. Coupe, G8GTG, 9 School Lane, Auckley, Doncaster DN9 3JR. *(Doncaster 770663)*
ECHELFORD: A. Matthews, G3VFB, 13A King Street, Twickenham. *(01-892 2229)*
EDGWARE: H. Drury. G4HMD, 11 Batchworth Lane, Northwood, Middx. *(Northwood 22776)*
FARNBOROUGH: I. Ireland, G4BJQ, 118 Mychett Road, Mychett, Camberley, Surrey. *(Farnborough 543036)*
GLENROTHES: A. Givens, GM3YOR, 41 Veronica Crescent, Kirkcaldy, Fife. *(Kirkcaldy 200335)*
GRAFTON: J. W. Chambers, 12 Sylvan Avenue, Finchley, London N3 2LE. *(01-346 5841)*
GREATER PETERBOROUGH: F. Brisley, G4NRJ, 27 Lady Lodge Drive, Orton Longueville, Peterborough, Cambs. *(0733-231848)*
G-QRP: Rev. G. C. Dobbs, G3RJV, 17 Aspen Drive, Chelmsley Wood, Birmingham B37. *(021-770 5918)*
GUILDFORD: Mrs. H. Mullenger, G4OJO. *(Aldershot 20384)*
HARLOW: Miss P. Mann, G4KVR, 23 School Green Lane, North Weald, Essex.
HARROW: C. D. Friel, G4AUF, 17 Clitheroe Avenue, Harrow, Middx. HA2 9UU. *(01-868 5002)*
HASTINGS: G. North, G2LL, 7 Fontwell Avenue, Little Common, Bexhill-on-Sea. *(Cooden 4645)*
HAVERING: A. Negus, G8DQJ, 17 Courtenay Gardens, Upminster, Essex RM14 1DH. *(Upminster 24059)*
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MAIDENHEAD: R. Hemmings, G3VCT, 107 Chalklands, Bourne End, Bucks. SL8 5TL. *(Bourne End 21036)*
MALTBY: I. Abel, 52 Hollytree Avenue, Maltby, Rotherham, Yorks.
MELTON MOWBRAY: R. Winters, G3NVK, 32 Redwood Avenue, Melton Mowbray, Leics. *(Melton Mowbray 63369)*
MIDLAND: N. Gutteridge, G8BHE, 68 Max Road, Quinton, Birmingham B32 1LB. *(021-422 9787)*
MID-WARWICKS: Mrs. M. Palmer, G8RZR, 12 Edmondes Road, Woodloes Park, Warwick CV34 5TX. *(Warwick 499730)*
NORFOLK: P. Gunther, G8XBT, 6 Malvern Road, Norwich NR1 4BA. *(Norwich 610247)*
NORTHERN HEIGHTS: B. Aspinall, G6CJL, 539 Moor End Road, Mount Tabor, Halifax HX2 0UH.
NORTH WAKEFIELD: S. Thompson, G6ELC, 3 Harlington Court, Morley, LS27 0RT. *(0532-536603)*
NOTTINGHAM: P. G. Chapman, G4IJL, c/o ARCON. Woodthorpe House, Mansfield Road, Sherwood, Nottingham. *(0602-623828)*
PONTEFRACT: N. Whittingham, G4ISU, 7 Ridgedale Mount, Pontefract, W. Yorks. WF8 1SB.
R.A.I.B.C.: Mrs. F. Woolley, G3LWY, 8 Rannoch Court, Adelaide Road, Surbiton KT6 4TE.
R.A.T.E.C.: R. Marsh, G8TYH, 43 Jenny Lane, Woodford, Cheshire SK7 1PE.
REIGATE: C. S. Barnes, G8FEE, 25 Hartswood Avenue, Woodhatch, Reigate, Surrey RH2 8ET.
RHYL: B. Jones, GW8OYT, 6 Rhodfa Maes Hir, Rhyl. *(Rhyl 37284)*
SHARP COMPUTER: M. Fitzgibbons G8VHB, 27 Roughwood Road, Kimberworth Park, Rotherham, S. Yorks S61 3RE.
SOUTH DORSET: A. Prior, G6HEL, 3 Greenways, Dewlish, Dorchester, Dorset DT2 7LP.
SOUTHDOWN: J. Pitt, G6BGT, 18 Kingsmere Court, Hurst Lane, Eastbourne. *(Eastbourne 643463)*
SOUTH POWYS: J. Thomas, 41 Uplands, Brecon Powys LD3 9HT. *(Brecon 3815)*
STEVENAGE: T. Bailey, G6CRF, 187 Archer Road, Stevenage, Herts.
STOURBRIDGE: M. Davies, G8JTL, 25 Walker Avenue, Quarry Bank, Brierley Hill. *(Lye 4019)*
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THANET: I. Gane, G4NEF, 17 Penshurst Road, Ramsgate, Kent. *(Thanet 54154)*.
THORNBURY: A. Jones, G8AZT, 9 Queens Walk, Thornbury, Nr. Bristol.
TORBAY: Mrs. M. Rider, 7 Kingston Close, Kingskerswell, TQ12 5EW. *(08047-5130)*
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W.A.C.R.A.L.: L. Colley, G3AGX, Micasa, 13 Ferry Road, Wawne, Nr. Hull, Yorks HU7 5XU.
WAKEFIELD: R. C. Sterry, G4BLT, 1 Wavell Garth, Sandal Magna, Wakefield. *(Wakefield 255515)*
WEST KENT: P. Reeve, G4GTN, 2 Court Road, Tunbridge Wells, Kent. *(Tunbridge Wells 24689)*
WORCESTER: A. C. Lindsay, G4NRD, 11 Durcroft Road, Evesham, Worcs. WR11 6EQ. *(Evesham 41508)*
YARMOUTH: A. D. Besford, G4NHU, 49 Blake Road, Gt. Yarmouth, Norfolk, NR30 4LT.
YEOVIL: D. McLean, G3NOF, 9 Cedar Grove, Yeovil, Somerset, (Yeovil 24956)
YORK: K. R. Cass, G3WVO, 4 Heworth Village, York.

Every Thursday evening the **Nottingham** crowd head for Sherwood Community Association, Woodthorpe House, Mansfield Road, Sherwood, Nottingham; they have a forum on January 6 and a talk on 13th. They have an activity night-on-the-air on 20th, and another talk set down for 27th.

Weekly on Thursdays is also the **Pontefract** routine. January 6 is the AGM, and there are informals on 13th and 27th January, plus the junk sale on January 20.

If you know of a blind or invalid amateur or SWL — or someone who would be interested in our hobby in these categories — then you should point them in the direction of **R.A.I.B.C.** The Hon. Sec. has all the details and her details are in the Panel.

RATEC is a club for the experimentally-minded ham; meetings are on Monday evenings at the British Legion, Moor Lane, Woodford, Cheshire. Details from the Hon. Sec. — *see* Panel.

An amusing consequence of the Amateur TV demonstration recently given at **Reigate** was that when passing motorists spotted the camera at the roadside near Hq, they jumped to the conclusion they were in a speed-trap! On January 18, G3JKF will talk about the antenna vector processor at the Constitutional and Conservative Club, Warwick Road, Redhill, Surrey.

If you have a **Sharp Computer** and are a radio amateur as well, this club should be of some interest; it hopes to act as a focal point for anything to do with the beast that can be said at any reasonable stretch to be connected with amateur radio.

South Dorset are to be found on January 4, at the Civilian Canteen, Army Bridging Camp, Wyke Regis, Weymouth, where they will be entertained by an RSGB film show; if you have trouble getting there, a shout on S20 will usually produce guidance from a member also on the way.

At the November meeting of Spalding & District A.R.S. (G4DSP), club chairman Dennis Hoult, G4OO (right), presented Cliff Collins, G3THX, with the G2BQC Memorial Trophy. Cliff's winning entry in the club's construction contest was a 160-metre AM/DSB/CW transmitter.

Southdown meetings are at the Chaseley Home for Disabled Ex-Servicemen, Southcliff, Eastbourne, on the first Monday in each month, or the second should the first one be a Bank Holiday. We don't have any data on the January meeting, but they usually have something organised.

Off to Wales now, and **South Powys**; this name covers a club based on Concorde House, The Street, Brecon, where they foregather on the first and third Tuesday of each month, and they would like to see anyone who is in the vicinity on Club nights.

Now to **Stevenage** where they have January 4 and 18, at their new Hq at **TS Andromeda**, Shephall View, Stevenage, starting at 8 p.m. At the time of their newsletter they had not finalised the details of the programme for these two dates, but by now it will doubtless be all settled.

Off to **Stourbridge**, where the group have a base at the Cross Inn, Hagley Road, Oldswinford; January 3 is a natter-night, and on 17th they have the Annual Grand Constructors' Contest.

For **Stratford-on-Avon**, the venue is now the Control Tower, Bearley Radio Station, on second and fourth Mondays; January 10 is a construction evening, and on 24th they have a visit to BBC Pebble Mill.

You've heard of the song about the "pub with no beer?" Well in **Sunderland** the group meet in a Brewery with — no beer! This phenomenon is in Westbourne Road, Sunderland, where they attend on Thursday evenings and Sunday mornings. In addition, on January 23 — a Sunday — they have a get-together and bring-and-buy sale at the Alexandra Hotel, Grange Town, Sunderland, where "there is lots of space and the beer is good!"

The New Year Party for **Surrey** on January 10 will be at the Community Centre, The Court, Blanchmans Road, Warlingham. The informal on January 24 is, of course, back at 34 The Waldrons, South Croydon.

January 10 at **Sutton Coldfield** is down for the video tape "The Secret Listeners" at Sutton Coldfield Public Library, Sainsbury Centre.

For the details of the **Thames Valley** meeting in January, we must refer you to the Hon. Sec. — *see* Panel.

Heading now for **Thanet** we find they are based on Birchington Village Centre, where on January 7 they have a video tape talk; on January 21st they have a talk by *Racal Thanet*, and on 28th they go to Richborough power station.

On the first Wednesday of each month the **Thornbury** crowd meet at the "White Horse", Grovesend, Thornbury. The January meeting is devoted to the making of PCBs.

We now head for **Torbay**, where the Hq is at Bath Lane, rear of 94 Belgrave Road, Torquay; they are there on every Friday evening, plus a formal on the last Saturday of the month, which for January features a video talk on satellite communications.

In the **Vale of White Horse** the club meets at the "White Hart" in Harwell village; on the first Tuesday of January G3CCC will be talking about repeaters, and on the other Tuesday evenings they have an informal at the same venue.

The **Verulam** meetings for January aren't mentioned in the current newsletter, so we must refer you to the Hon. Sec. — *see* Panel for the needful.

WACRAL, the group of Christian radio amateurs, continues to grow, says the Hon. Sec., and they keep in touch world-wide through the medium of their net oprations on various bands. Details from the Hon. Sec. — *see* Panel.

Alternate Tuesdays at Holmfield House, Denby Dale Road, Wakefield, sees members of the **Wakefield** group filling their club room. On January 11 they will have something organised, still to be settled at the time of their letter, but on 25th they will be on the air and nattering as is the usual routine for one meeting each month.

January 7 at **West Kent** is down for John Thwaites to talk of "Keyers and Kindred Subjects", while on 21st they will be hearing all about computing in amateur radio. Meetings at the Adult Education Centre, Monson Road, Tunbridge Wells, as above, and informals at the Drill Hall in Victoria Road on the alternate Tuesdays.

One week later than normal the **Worcester** lads will be in session at the Oddfellows Club, New Street, Worcester, on January 10 for a discussion night. The informal at the "Old Pheasant" in New Street, is on the 17th as normal.

A new Hq is notified by the **Great Yarmouth** club, who are now to be found at the STC Sports & Social Club, Beevor Road, South Denes, Yarmouth; dates and details from the Hon. Sec. — *see* Panel.

At **Yeovil** the Hq is still at Building 101 Houndstone Camp on Thursdays. January 6 is down for G3MYM to talk of aerial vertical radiation patterns, while on 13th G6HTI will give a potted history of radio astronomy. G3DSS takes over on 20th for his talk on frequency synthesis, and on 27th they have a natter night.

If you are in **York** the lads would like to meet you; find them at the United Services Club, 61 Micklegate, York any Friday evening.

QRT

That's all for this time, so it but remains for the writer to wish all you club members a very Happy and Prosperous New Year, individually and to your club. Deadline for next time is in the 'box', and is to *arrive* addressed to your conductor, SHORT WAVE MAGAZINE, 34 High Street, Welwyn, Herts. AL6 9EQ.

Extension Course for Radio Amateurs

Bedford College of Higher Education, Cauldwell Street, Bedford MK42 9AH, are offering a course suitable for those radio amateurs who have passed the R.A.E. and wish to extend their knowledge. Subject areas are: VHF/UHF propagation, aerials, SWR, modulation and digital integrated circuits. The course commences on Monday, 17th January 1983 and will run for eight weekly evening sessions; the lecturer is C. P. Meadows, G4KWH. For more details ring the College, Bedford 45151 ext. 240.

"A Word in Edgeways"

Letters to the Editor

The views expressed here are not necessarily those of the Editor, nor should they be taken to represent any particular SHORT WAVE MAGAZINE policy.

Dear Sir — Having a weekend off recently, I sat down in the shack and switched on my transceiver. What did I find? Another contest.

I would like someone to explain to me what these contest operators are trying to prove. What chance has the man with 10 watts into a dipole got against the man — or woman — with 1 kW into a four-element Quad? I can't see the 10-watt man winning. In other words, contest day is big-boy day — which is fairly often. This letter is not sour grapes on my part: I am the proud owner of one of the best transceivers and linears on the market, working into a Quad.

Contest operators must have a nice easy life with nothing else to do but shout meaningless signal reports into a microphone; and they must all use fantastic equipment because all reports are 5-9. I am sure that there are thousands of other operators like myself who are sick to the teeth of contests. If they must rave on like this, could they not be restricted to particular portions of the bands? It must be very embarrassing for a serious operator who is giving a demonstration to a budding SWL to receive nothing all weekend but "5-9, 001", "5-9, 002", etc.

If the RSGB, or some other recognised body, was to run an opinion poll on this subject, the result could be very interesting. On three previous occasions I have written a letter similar to this to the RSGB: one was acknowledged — but that was the last I heard.

I am thinking very seriously of taking up CB.

Mark McIntyre, GI3YDH

Dear Sir — My personal battle against CW started after passing the R.A.E. in December, 1981.

Having convinced myself that two-metres was really only a personal telephone system for local friendly chats, I prepared myself for the mental torture of 'dits and dahs' and wondered if the world was really ready for another G4 from central England.

After six weeks of total commitment to my Datong Morse Tutor, evening institute and nightly slow Morse practice sessions that strange sounding language of the airways is slowly starting to have meaning. Every increase in speed seems to create its own barrier but, with time and patience, I move on to the next hurdle and the ultimate goal, that Class-A licence.

And at the end of it all, you never know, I may even enjoy the art of the key.

Byron Fletcher, G6HCV

Dear Sir — Until I read G4MBD's letter (*S.W.M.*, September), I thought my collection of funny "not QSLs" were due to phonetic confusion with similar-sounding calls to my own. Now I'm not so sure — I've got a batch for the peripatetic Trevor too, some going back eight years. Anyone else?

Peter Jackson, G3ADV

Dear Sir — While postage costs have no doubt increased world-wide, there is also no doubt that we are getting a poor return for the QSL cards we send out, both direct and through the bureaus. When one considers that most DX stations are now asking for three IRC's it means that, by direct QSL-ing, each DX QSL is costing us £1 each.

If the small print is examined on an IRC you will see that it states that the coupon is valid for return postage by surface mail from anywhere in the Postal Union. Now I don't mind how long a QSL card takes to get to me, but I deplore spending a pound per QSL and *not* getting a QSL back.

One other aspect of this QSL game should be evident: that is, nobody is *bound* to QSL to anyone — even if three IRC's are sent, and if you consider that IRC's can be sold quite a reasonable income can be gained by unscrupulous people. Even selling them at 20p each or equivalent in foreign currency, means a sum running into hundreds, or even thousands, of pounds.

This letter was prompted by a certain DX station heard recently who said, "if you want a QSL from me, send me one U.S. dollar bill". Okay, so emigrate to the Channel Islands, charge all DX stations £1 per QSL, and you need never work again!

Tom Burton, G2BON

Dear Sir — I enjoy reading *Short Wave Magazine* and find the articles interesting. Recently, you asked for opinions on amateur radio today. I feel very strongly on this subject, and as I am confined to bed at the moment and feel very cut off, it is a good chance to put pen to paper.

In some respects amateur radio has made rapid progress, especially in recent years, and yet for a communication system in many ways it is out of touch with the reality of today, inclined to remain an exclusive club for the minority. As the amateur bands are being invaded by pirates, hands go up in horror. "How dare they use our frequencies!" is the cry. But does anyone stop to ask why?

Some of these 'pirates' are very good radio operators, serious and basically responsible citizens who cannot, or do not for various reasons, sit the R.A.E. — an examination out-moded in its present form, requiring careful re-organisation and re-structuring. Many licence holders I know study parrot-fashion, pass the exam., purchase a commercial transceiver, go on the air and promptly forget most of what they studied (studied rather than learned). Few are going to pay today's prices for a transceiver and even attempt to repair it. Most seem to cram, remember, pass and forget: not really evidence that they are either suitable licence holders or potentially good operators. Thus you get pirates who see the 'B' licence for what it is, a meaningless paper qualification, time consuming in requirement but of no real practical value.

So what would I like to see changed in amateur radio? First, a new structure of licence; second, a *novice licence* which would require knowledge of schedules, regulations and a practical transmission test, restriction to one or two frequencies, restriction on type of equipment purchased and used; third, a 'B' licence similar to the present one, but use of more bands; fourth, an 'A' licence for more advanced and experimental radio use only; fifth, a separate Morse test available to any licence holder at a minimum of one year after obtaining a novice or 'B' licence. Also it should not be possible to buy amateur transmitters without either a novice, 'B' or 'A' licence.

In my own particular case, I could pass a novice exam and Morse test tomorrow, but have no interest in the 'A' licence as I have no intention of getting involved in technical radio and electronics (that in my opinion is for the expert with years of training). All I would like to be able to do is *communicate;* any breakdowns, TVI, etc., and I would call in a qualified radio engineer.

Susanne Tilley,
Southampton

Address your letters for this column to "A Word in Edgeways", SHORT WAVE MAGAZINE, 34 High Street, Welwyn, Herts. AL6 9EQ.

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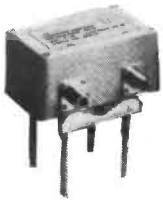

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