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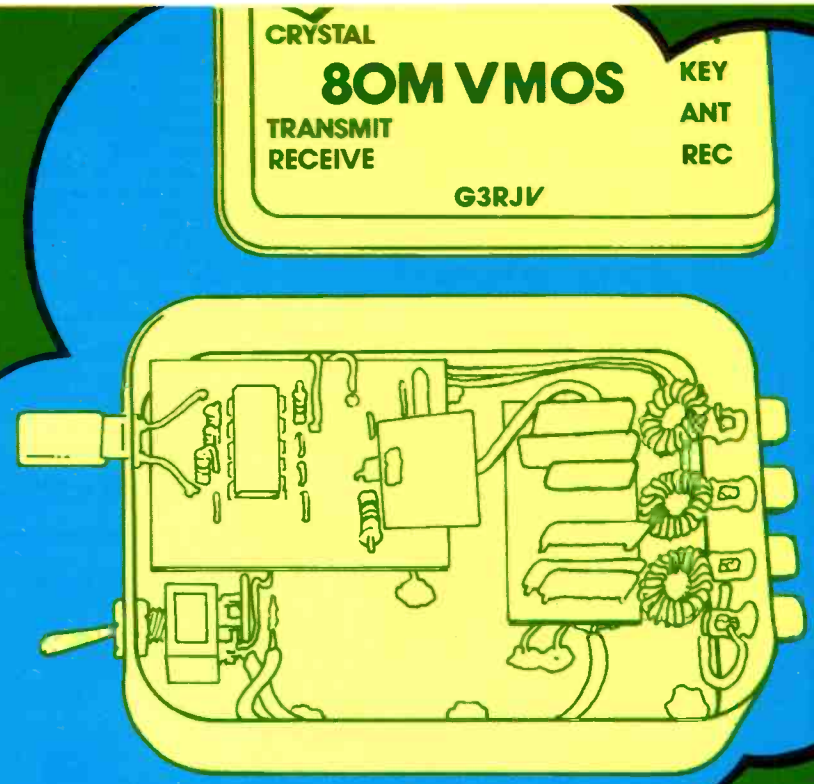
The SHORT WAVE Magazine

January 1985

Volume 42 Number 11

G3RJV builds an 80-Metre Transmitter in a tobacco tin

G4BUE completes his Sloper Antenna series



transmitter

FOR THE RADIO AMATEUR & AMATEUR RADIO

SHORT WAVE MAGAZINE

(GB3SWM)

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VOL. 42 JANUARY, 1985 No. 495

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Editor: **PAUL ESSERY, G3KFE/G3SWM**
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AUTHOR'S MSS

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

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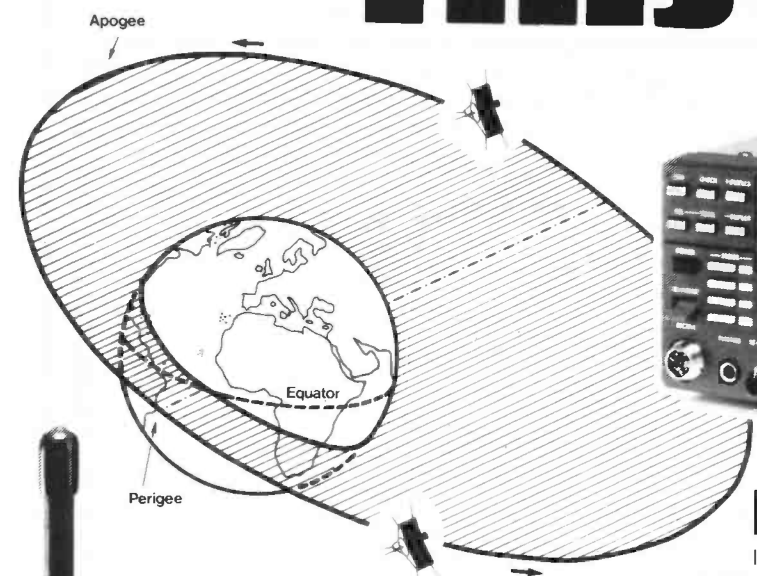

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MODES OF OPERATION	:	SSB, FM, CW, FSK, AM
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FOR THE RADIO AMATEUR AND AMATEUR RADIO

The SHORT WAVE Magazine

EDITORIAL

CW and Class-B Licensees

The announcement by Mr. John Butcher, Parliamentary Under Secretary of State for Trade and Industry that holders of the 'B' licence who wish to use Morse may do so for an experimental period of one year seems to us somewhat misguided. According to the press release we received it seems that upon application to RSGB Hq,

> **"... holders of a 'B' licence who wish to use Morse code in their contacts may do so for an experimental period of one year. The experiment will start on April 1, 1985. Applicants should enclose two first-class stamps to cover the costs and postage for which they will receive a letter varying their licence and a leaflet on 'Guidelines for Class-B Licensees using Morse'."**

Now this is a *most* interesting idea. As a parallel, albeit loose, presumably the next step will be for learner-drivers who have done a car-maintenance course at the local college to receive, on application to the AA or RAC, for an experimental period, a driving licence and a booklet entitled 'Guidelines on the use of the Brake Pedal and Steering Wheel' . . . the mind boggles! Liddery isn't confined to operation on the bands, that's for sure.

However the damage has been done, and with RSGB assistance. We must now make the best of it: that means trying to help the members of this new, hybrid group to become *good* Morse operators — for example explaining that if a letter is missed in QSO, it isn't any worse than a syllable lost on Phone.

On a positive note, at least we may see some more operators appearing on NFD, and *enjoying* themselves on the key — after all that is the idea, to show the Phone-only operator the pleasure he is missing, however dotty the method may have been!

G3KFE.

WORLD-WIDE COMMUNICATION

COMMUNICATION and DX NEWS

E. P. Essery, G3KFE

THE prolonged period of below-par conditions of the past few months seems to have continued for most of the month under review, although there has been a hint in the last few days that things might pick up a trifle, with some more sunspots appearing to interested observers and a consequential rise in hopes.

Coming Shortly

For a change, let's begin with a look in the crystal ball. Firstly, the call of the 'Project Blizzard' expedition to the Antarctic and, particularly, Macquarie Is, will, says *DX News Sheet*, be AX0PB.

RRS Discovery has just at the moment of writing left Gibraltar for the Antarctic; Scotia and Weddell Seas are objectives of the scientific expedition, and three amateur radio operators will board around February 1 at Punta Arenas in Chile. From then on, they will sign GB4DIS/MM from the ship, the operators being GW4SBB, GW4JAD and GW3NRP. It is hoped that they will get some operating time in over the period March 7-9 from Grytviken, South Georgia, and this is the best we can hope for at the moment. Indications for South Sandwich are about non-existent.

December 13 saw the start of activity by the Brazilian expedition to the South Pole, and they will sign ZX0EGF — we don't know for how long this one will be around.

Yet another one in the Antarctic is the Japanese station signing 8J1RL, the operator being JR1FVH.

If you still hanker for a Clipperton contact, note that the next expedition is scheduled to leave San Diego on March 27, and return on April 18; and a bonus of a possible 24 hours at XF4, Revilla Gigedo, on the outward and return journeys is hinted at.

The hasty retreat beaten by the Mellish Reef DX-pedition was for a rather simple reason — they neglected to take note of the tides in the planning, and discovered the hard way that spring tides go further *down* as well as up! They were left with the choice of grounding the boat or getting out and leaving it in an unsheltered spot, or leaving Mellish altogether. The latter was the only reasonably option.

A new country for DXCC will be signing 3Y0AA from Peter 1 Is., the licence having been granted to a JA group by the Norwegian authorities for the periods Jan-March 1985 *and* 1986 . . . we doubt this one being pulled together in time for a try in the 1985 time-frame.

Old Timers

We have a letter to hand from G6CJ who is a vice-president of the RAOTA. Since the death of G2UV in 1981 the organisation has slipped a bit and G6CJ wants to try and get some life back into things and, in particular, to get a meeting going in the Midlands in the spring. RAOTA operates on a 'lifetime' subscription, and this doesn't exactly help under such economic conditions as we have at the moment. All the members — and we know many of them read this piece — can help by making a voluntary contribution. A small amount from each of several hundred members will be enough to get things upright once again, and should be sent to Miss M. Gadsden, 19 Drummond House, 50 Fonthills, Long Lane, London N2 8LF. Offers of support or help in other directions should be sent directly to G6CJ at the address in the 1984 RSGB *Call Book*.

Top Band

Your scribe looked at the band just once — the road to Hell is paved with good intentions! — and that at mid-evening after a shack tidy-up. Lo and behold, there was G3BDQ, G3ROO, G6CJ all working some relatively DX'y stuff which I couldn't hear, and all reluctant to talk to G3KFE; so, demoralised, I took the dog for a walk!

G2HLU (Reading) re-surfaces after a longish silence, and says he has laid aside his QRP Top Band rig, as the main box has been changed from a TS-520 to a TS-830S, this giving Top Band on the main rig, and all the new bands to be looked at too, using the inverted-vee trap dipole with its feeders strapped and an assortment of ATU's.

G3BDQ (Hastings) thought it a funny old month on Top Band, with conditions certainly down on last year. John wonders whether the oft-stated idea that Top Band is best at times of low sunspot activity is merely a reflection of the increase in activity due to people having been driven down in frequency by dead HF Bands at times when they can operate. The CQ WW Contest brought out some new stuff, but the best was after the contest period. In the Contest: IS0FPH, CT2FN for a band new one, EA9CE, EA6ET, VK6HD, 4X4NJ, UA9CDT, UG6GAW for another new one, EX6F under a big pile-up; and three Americans namely KM1C, N2AA and N4IN. Other than the contest there was K1ZM, N1BUG, W1FC, K1MA, K2RIH, W1AXE, K1MEM, KA1PE, AA1K, W1WAI, W2RIH, WA3EUL, KT3M, W4DHZ, AA4V, K4LTA, W4ZR, K4PI, K5UR in Texas, K8CCV, W8AH, K0GVB (Iowa), VE3CPU, G6ZY/EA6, EA6CJ, EA8AAU, EA9KQ, C30BBE, TK5VN, UA9FKN, UZ9AYA, ZB2EO, OY7ML, UO5GQ, T77C — and a shaky one with FY0GA, thanks to someone putting a carrier on him.

G3ROO (Dover) has his converted FT-707 on to Top Band, and working well, so a half-wave dipole was put up, running N-S, and with the whole span up at sixty feet. During the first couple of days Russians were worked easily, and then on November 9 he thought he heard a 4X6 — imagine Ian's face when "QRZ?" resulted in the caller being VK6HD. VK6HD was worked again the next evening, and then the hunt was up for the States. This had to be the morning 'tilt' as G3ROO is not a late owl . . . the first try was successful with K1MEM who peaked up to 579, and the 57 on SSB before dropping back into the noise five minutes later. Another one was '9S3DI' copied as such at least six times. However, from other reports we can be fairly sure it was 9H3DI, QSL by way of DL1RK.

Now to G4AKY (Newport, Essex) whose activities have been somewhat reduced by a change of job and much longer hours of travel. However, over the past couple of months Dave has worked TK5XN (QSL by way of YU1FW), KA1PE, HZ1AB, UG6GAW, T77C (San Marino), VE1ZZ, EA9EU on SSB, IS0HBG, IS0CSX, JW0EQ, W1FC, 9H3DI, EA9CE, N2AA, IS0FPH, CT1AOZ, CT1BCM, K5NA (Texas), HV2VO (QSL *via* I2BBJ), 1A0KM (Sovereign Military Order of Malta), QSL *via* I0MGM. The gotaway tally included ZL3GQ, 3A2ARM, YB5ASO, JY9CB, JY9CW, 3X4EX, OX3AX (Greenland), VO1AW, CE8ABF(SSB), D44BC, YV10B, FY0GA, J40AA (SV0AA using a special prefix), K5UR and W8JI. That includes three new

countries and now takes G4AKY to 98C, not to mention WAC from the last two homes on Top Band and almost there from the present one.

G2HKU (Sheppey) says he worked, on SSB, PA0PN, plus CW contacts with SM4DDE, ZB2EO, HB9AMO, I3JSS, SP1ADM, GJ0AAA, UQ2PQ, OK1KPU, 4U1VIC, EA9CE, PA3ADJ, UP1BZZ, EA5TX, 4X4NJ, GW3COI, OE5NE, HB0CWE and LA7JO.

We must now turn to the CQ WW 160 contests. This year as a result of the way things have been trending, the organisers are saying that any on-frequency contacts made between 1825 and 1830 kHz will not score; furthermore, stations, either Stateside or DX, who consistently ignore this contest rule will be cited and probably disqualified. January 25-27 for the CW effort, 2200z to 1600z on the Sunday, and the same times, Friday-Sunday on February 22-24 for the SSB contest. Mailing deadline for logs are February 28 and March 31 respectively, to Don McLenon, N4IN, 3075 Florida Avenue, Melbourne, FL 32901, U.S.A., or alternatively to *CQ Magazine's* office at Hicksville.

Eighty

Not a band on which many people report, although we know there is a lot of DX to be found and worked by the chaps who know how. G3ZPF (Kingswinford)

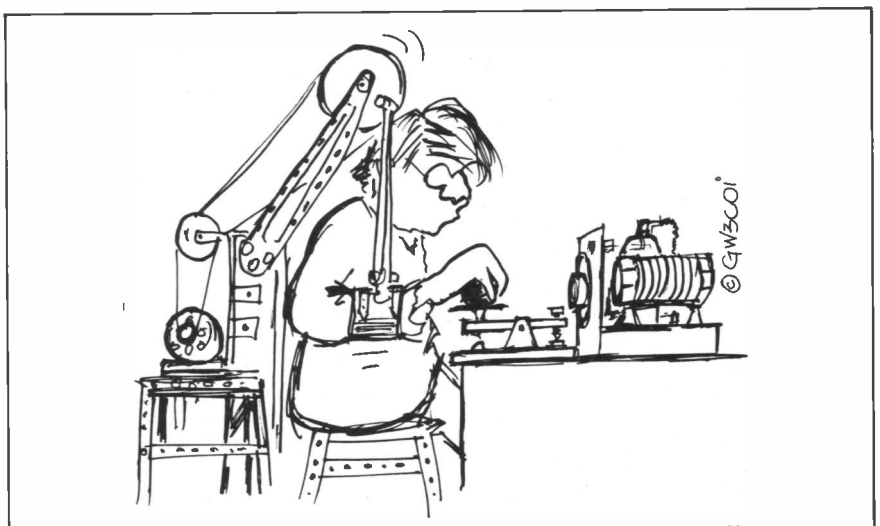
"CDXN deadlines for the next three months:

February issue—January 3rd
March issue—January 31st
April issue—March 7th
Be sure to note these dates

is one who knows how it's done; instead of the usual midnight to 0100 stint, a few mornings have been tried, and the only new one heard was TI2CF who slipped through David's sticky paws. On the other hand HZ1AB was knocked off during an evening session, while Sunday mornings demonstrated the value of an inverted-vee for inter-G working. Oddities included XN3MRN, who turned out to be a VE, and F9KP/21, who was jollying-up his callsign by including his Department number! Apart from that the main activity has been house maintenance, looking after the inner man, and of course caring for his micro-computer.

G2HKU keyed with 9H3DI, and used his QRP rig to work ON7BW on SSB and PA3CJG on CW.

G2NJ (Peterborough) reports that during the last week of November and the first one in December the Swedish and Russians were calling "CQ DX" on the band as early at 1400 zulu down at the bottom of the CW end of the band, and



"apologies fr bad fist but not yet used to semi-auto key hr..."

obviously after the JAs; the latter weren't audible to G2NJ but he did hear several of the Europeans making contact. One SM operator was even calling "CQ U.S.A." On a different tack, an interesting three-way contact was with GW8WJ and GI3OLJ home from Seattle after four years, and due to fly back there on November 17 after a long spell of home leave. We gather that GI3OLJ/W7 will be appearing on the bottom end of the band and looking for U.K. contacts.

Forty

We have just mentioned that GI3OLJ/W7 will soon be on the band. G2HLU, after spending most of the past summer either using or modifying his eighty-metre QRP transmitter found he hadn't had enough time to finish the forty-metre version! However, we are promised that as the next job.

G3BDQ spent a little time on 7 MHz, and worked VK3MR, VK3NC, VK3VJ, UH8BBP, UJ8JKK, UA9MDV, RI0BWJ, PY1JF, 9H3DH, EA9GS, VS6TA, and DK7PE/3B9 on Rodrigues.

Just one contact mentioned by G2HKU, with OD5NZ; of interest not just as an OD, though they seem rare enough, but also because the contact was with four watts of CW.

Snippets

G4VDV writes to comment that he notes someone reported working/hearing 'G4VDV/5' from Malta . . . a pity because Jon for various good reasons hasn't been able to get on the HF bands yet. However, a QRP rig will soon be finished and then G4VDV would be pleased to be heard or worked in Malta! Meantime, he would like to know more about his piratical *alter ego*. G4VDV is J. Rogers, 101 Brook Street, Stourbridge, West Midlands DY3 3UX.

G4RFV, Brians Adams, write to advise he is now QSL Manager for VP8VK (one of the few XYLs on West Falklands) and will soon be taking over the chore for VP8HZ and VP8NX, from GM3ITN. We recall VP8HZ, years ago, was active in the five-band Table we used to run with this column.

The idea of a 'New-Bands Newsletter' is put forward by G4UZN and he wonders whether anyone interested would drop him a line for details . . . A. M. Quest, G4UZN, 445 Street Lane, Leeds LS17 6HQ. This seems a very sound idea and this column would be very pleased to be on the circulation.

Now what about the long-delayed QSL stakes? G3ATH offers his claim for a winner, thus-wise. Back in 1947 he was XZ2HP at Mingaladon, Burma, and on May 15 of that year he had a QSO on Twenty with VU2CV (oddly enough this columnist was an SWL at the time and logged the QSO) which was followed by a QSL *via* the Bureau. Coming to September 21, 1984, a QSL arrived from G4PKW, *ex*-VU2CV, and on the back was written "Hullo, Harry, Hope you don't mind this QSL for our 1947 contact being 37 years late! The log was lost in India but recently came across some of my old cards." Interestingly enough it ended up as a personal QSO with G4PKW when he visited Skipton and sidetracked to G3ATH's Embsay home.

Totally different sort of claim now, from G6QQ (Hoveton) who was startled to receive a certificate for the 1983 ARRL Ten-Metre — first place Mixed-Mode England, for just four hours operating and some 14112 claimed points!

From Geoff Watts of *DXNS* and *Prefix List* fame we have a copy of the 1985 UBA SWL Competition rules in full. The object of the exercise is to hear countries as defined by the ARRL DXCC list, on 80/40/20/15/10 metre bands. You must use a specially repared 14-page log, obtainable from Marc Domen, ONL6945, Gebr. Blommestraat 14, B-2200 Antwerpen Borgerhout, Belgium,

from whom the full rules can also be obtained — include three IRCs with your request if within Europe or four IRCs outside Europe. The contest runs from January 1 1985 to December 31, one full year, but interim claims are called up three times during the year.

Now a result. SARTG sent us a copy of the 1984 SARTG World-Wide RTTY Contest; the only U.K. entries were from GW3EHN at No. 33 and G8CDW in the SWL section. The letter also included a copy of the rules for the 1985 contest, running over three periods, namely August 17, 0000z to 0800z and 1600-2400z, and 0800-1600z August 18, on 80/40/20/15/10m. Message to be RST and QSO number, QSO points are five with one's own country, ten with another country in same continent, and fifteen for another continent. In W, VE and VK, each call district will count as a country. For the multiplier, the sum of the countries and call areas as just defined, using the DXCC countries list as the criterion; final score is QSO points times multiplier. Logs, by October 10, to arrive with Jorgen Dudahl-Lasjon, OZ1CRL, Egebjergvej 90, 4500 Nykobing Sj, Danmark, who is also the custodian for the WSRY Award.

A note from Nigel, G3TXF, to say that the Three A's Contest Group made some 3165 QSOs while operating as GJ0AAA in the CQ WW CW contest, the operators being G3SXW, G3TXF, and G3WVG. All QSLs are to go *via* G3TXF, N. Cawthorne, Holt Cottage, Kingston-on-Thames, Surrey KT2 7JH.

A letter from G4HPU gives details of the WAB "Worked All Britain" Winter 1984/1985 Award. The award is available to any station which between December 1, 1984, and February 28, 1985, works stations in a minimum of 100 WAB areas in the counties of North, South and West Yorkshire — we read that to mean 100 WAB areas in each county, 300 in all. You can also claim a WAB area if you operate from that area as /M or /P. An area worked or activated can only be counted once. Claim forms from G4KSQ on receipt of an s.a.e.; send the claim sheet with cheque or P.O. made payable to "WAB Awards Account" and a stamp to G3UQT — QTHR. SWL stations to log 100 WAB areas from the specified areas, with a minimum of five in any county. G4KSQ is also the source of the WAB books, at a price of £4 plus £1 for postage. There is also a VHF Award covering the same period. We think there is a misprint on line 4 of the Award Rules sent to us, so if you are going after this one, check with G4HPU; he is at 4 Manor Cottages, Debden, Saffron Walden, Essex CB11 3JY.

New Bands

Only a couple of reporters this time. G2HLU took his first look at the band, using his TS-830S fed *via* an ATU into the strapped feeders of the trap dipole. Four EU countries were worked on 10 MHz, but nothing on 18 or 24 MHz.

Turning to G4UZN (Leeds) Tony found CT1BSN, EA7AG, SV1KU, T77C, ZL4QO, 4U1ITU, 4Z4DX, 5B4DN, and a gotaway in N7ET/DU7. On 18 MHz, the tally was CT1BSN, CT2FN, T77C, and 9K2BE. Tony notes that the Swedes were allowed use of the band from December 1, 1984, and he worked 48 of them on the first day!

Twenty

It hasn't been too hot at all, at least as far as the column's log is concerned, being dead most evenings by the time we can get at it.

G2HKU gave it a whirl, and on SSB worked ZL3FV and ZL3RS; on CW W7WHO, VK6RV and T77C, plus repeat QSOs with the two ZL stations, this time using four watts of CW.

G4RFV, besides his QSL Manager duties, finds time on occasion to get on the air, and mentions his contacts with JY5CI (QSL *via* G4WFZ), VP8JC, A71BK, PY0FF and 9K2JF.

It was a very thin time says G6QQ, except for the contest, partly due to sunspots and partly at least due to operating times. WS4J, W5SKD, N8FLE, W9GIL, W8NBK, and K8DR featured in the log on this band, all on the key.

G3NOF in his analysis of the month on Twenty says that while there have been openings to various places, they have been short-lived. The VK/ZL long path has been open most days between 0700-0800 and sometimes the short path around noon. Some Asians were heard around 1300z, and VQ9, S7, FH8 often were heard around 1600-1700. After that the band is unstable, often closing around 1800 but at other times staying open to 2000 to Africa and South America. Don made SSB contacts with A92EB, EA6MR, EA8AMX, EA8BW, F3LF/MM (a small yacht *en route* from Africa to the W. Indies), OX3MB, PY7SAR/PY0F, SU1ER, TR8DR, VU2MBS, East Coast Ws, W6FR, WA1NPO (Plymouth, Mass; a special Thanksgiving Day call), ZS1W, 5H3BH, 8J1RL (JA's Antarctica base), and 9Y4NG.

Since he last reported, Harold at G2HLU doesn't seem to have much luck at all on this band as he mentions only TR8DR.

Twenty SSB was used by G3BDQ to hook up with SV5TS.

21 MHz

Again not many reporters. G4RFV found A61AA, while G6QQ worked on CW KG4C plus, in the contest, KP4HZ, 9Y4VT and 9Y4W (a new country for David), UF, UL, UA9, and W1-2-3-4-8-9.

G3NOF says conditions were not good on 21 MHz. It opened around 0800 and closed pretty well instantly as darkness fell, say around 1700z. In the mornings there were a few short-path openings to VK6, with VK2 and VK3 between 1000 and 1200 at times. East Coast Ws were heard at odd times between 1300 and 1600z, Africans were about between 1000-1100 and again 1400-1600. South Americans were about in the early afternoons, but apart from a few weak VUs nothing was heard from Asia. SSB contacts were made with A22RS, CN8EL, CP8HD, D68WB, EA8ANS, EC9FS, EL9B, FH8CB, H5AE, T52JL (Somalia), TU2NH, VK6AJW, VP2VA, East Coast Ws, XT2AT, Z21AG, Z21BP, Z24JW, ZD7CW, ZS3TSB/P, ZS5US, ZS5YD, ZS5ZA, ZS6AIS, ZS6CCT, 3B8DB, 3D6AR, 5R8AL, 6W1AE, 7P8CL and 9J2LG.

G2HLU only mentions one contact on the band, namely ZS3BI on CW.

Ten Metres

Precious little here again, if we neglect the FM activity and its local QSOs, which are invaluable in the business of keeping the intruders out.

G3NOF neither worked nor heard anything on the band. However, he notes that several local stations took part in the RSGB CW Activity Periods, and only made inter-G QSOs plus one with DL.

The most assiduous user of the band must be G4HZW (Knutsford) with his two-element Quad and TS-820. Tony reckons it is the worst month he has had since he first began reporting some five years ago to this column. Most of his QSOs were on CW; EA2BFX, SM2NTU, LA1SEA, SM4MBC, EA8URL, plus G stations up to 120 miles away during the CW Activity Period. Very few beacons were audible at times when Tony was on, but he did hear 3B8MS on December 2 at RST 559, and so called CQ for 35 minutes with nary a reply!

However, it is possibly worth noting that there are some 56 beacons on this band, starting at 28.175 MHz for VE3TEN, and working up to 28.992 which is DL0NF. The majority, 54 of them, lie between 28.175 and 28.335 which is VK5AWI, so a good and thorough combing of this part of the band should disclose any signs of DX stirrings. We would be interested to hear from any contributors who have logged ten-metre beacons in the next few months.

Finis

That seems to be about the lot for this months. The deadline for next time is shown in the 'box', and is for the arrival of your letters, addressed to "CDXN", SHORT WAVE MAGAZINE, 34 High Street, Welwyn, Herts. AL6 9EQ.

The "Tonne" 400-Watt Valve Linear Amplifier, Part 2

BRINGS THE WARMTH BACK INTO AMATEUR RADIO!

IAN KEYSER, G3ROO

THE design of this part of the circuit is fairly complex and is dependent on the anode voltage. If a supply of about 1000 volts is used the component values that I have used are suitable, if a lower supply is used these should be re-calculated using the information in the RSGB *Radio Communication Handbook*.

500pF tuning capacitors of reasonable spacing are obtainable on the second-hand market at reasonable prices but it will be seen from Table 1 that this is insufficient for 80 metres. For this reason I have arranged a switch on the rear of the capacitor which connects a further 470pF on the 'unused' 180 degrees of the knob rotation. As the knob is rotated through 360 degrees the capacity will increase to 500pF by the 180-degree point, then switch to 970pF and decrease to 470pF when the 360-degree point is reached. This sounds a little confusing at first but in practice it is un-noticeable.

The low impedance side of the pi-network does not pose too great a problem. One of the large old-fashioned three-gang tuning capacitors has been used here and to increase the capacity on the 80m. band additional capacitors have been switched across to obtain a maximum of 2,910pF. With these values the whole spectrum can be covered with reasonable 'Q' over the span 3.5 to 30 MHz.

There is a complication in that the constructor is unlikely to be able to copy my coils exactly. A far better way is to wind (or find/scrounge) similar coils and then adjust the taps for each band by setting VC1 to the required capacity (as near as possible) with VC2 shorted out, then move the taps until they are in the correct position for resonance using a GDO. It is accurate enough for this to be done with the valves plugged in and the supply off.

RFC1 is constructed on a piece of ferrite salvaged from an old transistor radio. It consists of 30 turns of 20 s.w.g. enamelled wire 'araldited' in place. RFC2 is the main RF anode load and is constructed as described in the *Radio Communication Handbook*. The design is fairly complicated to duplicate as it is necessary to turn a bobbin on a lathe, not a piece of machinery common in the average shack! An alternative choke can be made by winding a choke on a 6-inch length of 1-inch diameter paxolin tube. Using 20 s.w.g. enamelled wire, close wind in sections and tap off at points onto PCB pins inserted through the tube; six sections each 3/4-inch long will be sufficient. If in use any of the

Table of Values
Fig. 2

R1, R2 = 1K2, 1W	R9, R10 = 1M, 1W
R3 = a.o.t. for half-scale deflection	C1 = 0.01 μF d/c, 1kV
R4 = 15M, 1W	D1 = 1N4004
R5, R6 = 5M, 1W	SW1 = 3-pole 12-way break-before-make switch
R7, R8 = 56K, 1W	M1 = 100 μA f.s.d., 1K25

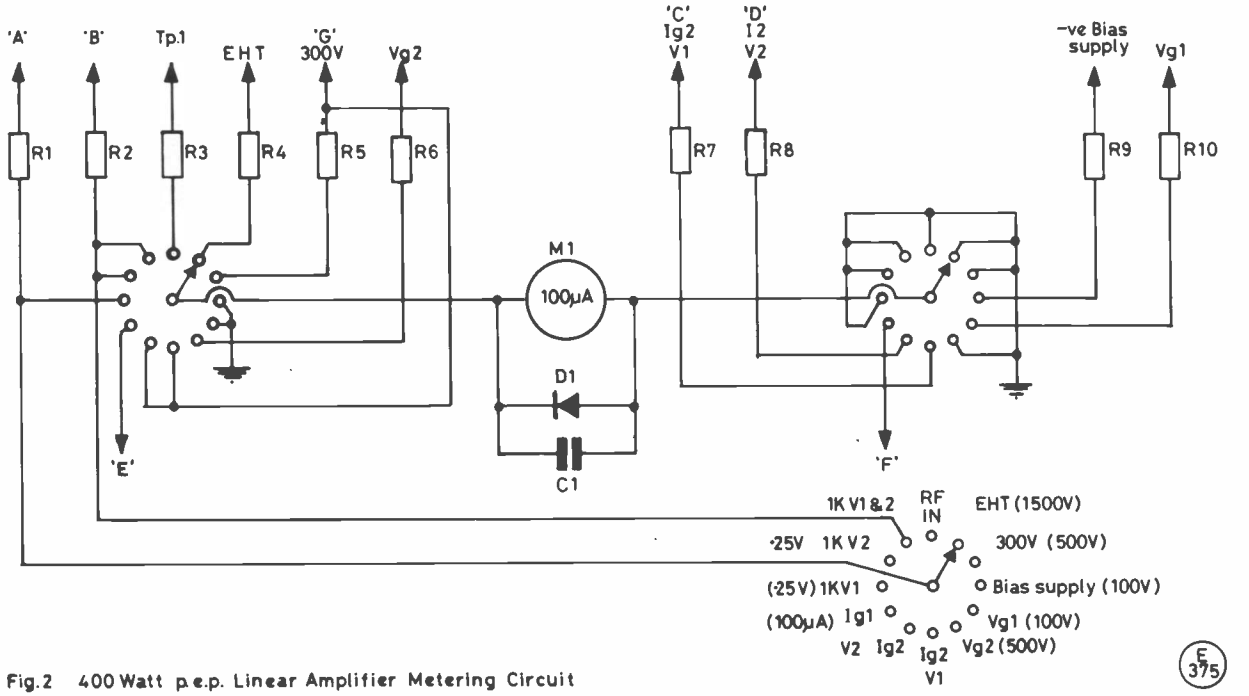
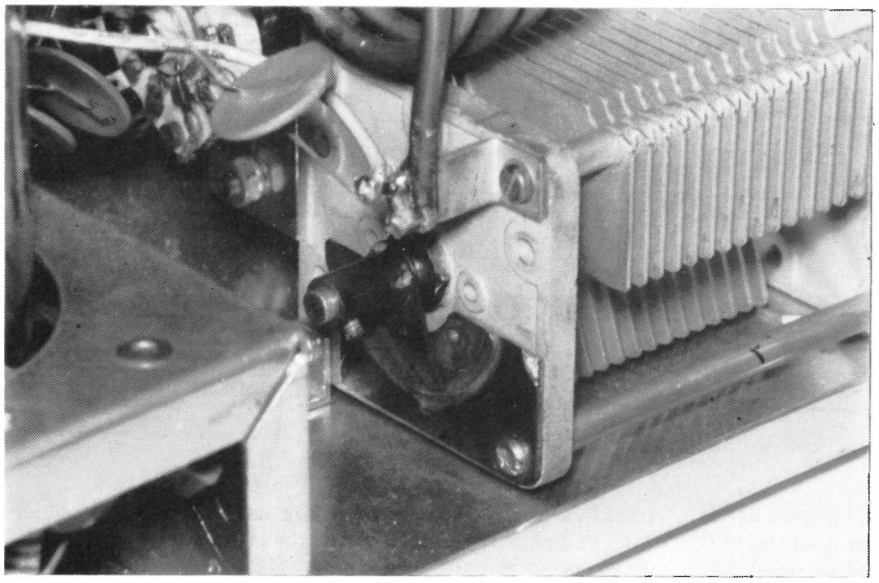


Fig.2 400 Watt p.e.p. Linear Amplifier Metering Circuit

E 375



The switch on the rear of VC1.

sections heat up, rewind that section with a few less turns and try again. The problem is that heating and very high losses occur if there is a resonance in the RFC on the band in use.

The RSGB design of choke has been altered slightly to enable it to fit in the available space, also this increases its inductance sufficiently to enable the amplifier to be modified to work on 160m. if ever we are allowed high power on this band. The top section of the choke has been reduced to half its original length and this winding made in two layers instead of one; this has caused no problems with resonances so far.

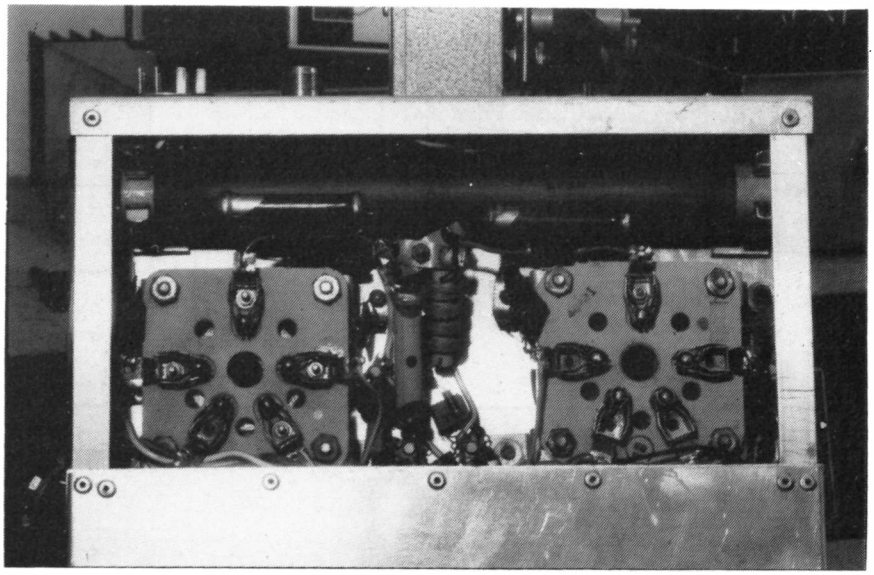
Cooling

These valves have been designed for convection cooling but in commercial amplifiers the boxes are considerably larger than those found in the amateur shack (the larger the box, the larger the price!). I have included a small blower, kindly given to me by G3JYJ, on the back drop of the amplifier blowing into the grid box. The air passes up around the valves giving adequate cooling. It will be noticed from the photos that I have included a switch to enable the fan be be turned off when the amplifier is unused with only the heaters running. This, and the blower, has not been included in the drawings as it is difficult to guess how different types of blower can be mounted.

Metering

Metering deserves a few words. It is in fact only really necessary to monitor the anode or cathode current for tuning purposes, but it is also highly advisable to also be able to monitor the grid current; the reason for this is that the valves must never be driven into grid current otherwise distortion becomes excessive. As a meter switch has been included in the design I have included the provision to monitor as much as possible.

The method of metering is a little unorthodox as I use the meter to measure the voltage developed across resistors inserted in the circuit. As we are not really interested in accuracy but require relative readings on a day-to-day basis this enables us to use standard values of resistors rather then making shunts. The meter I had to hand has a sensitivity of 100μA and the *Avo* shows it to have an internal resistance of 1250 ohms. This value must be subtracted from the series resistor to obtain the correct value. In practice this is not too important as it is insignificant in relation to the value of the series resistor, except in the case of the cathode



The grid compartment, showing R9 (100-watt resistor on input) alongside valve bases.

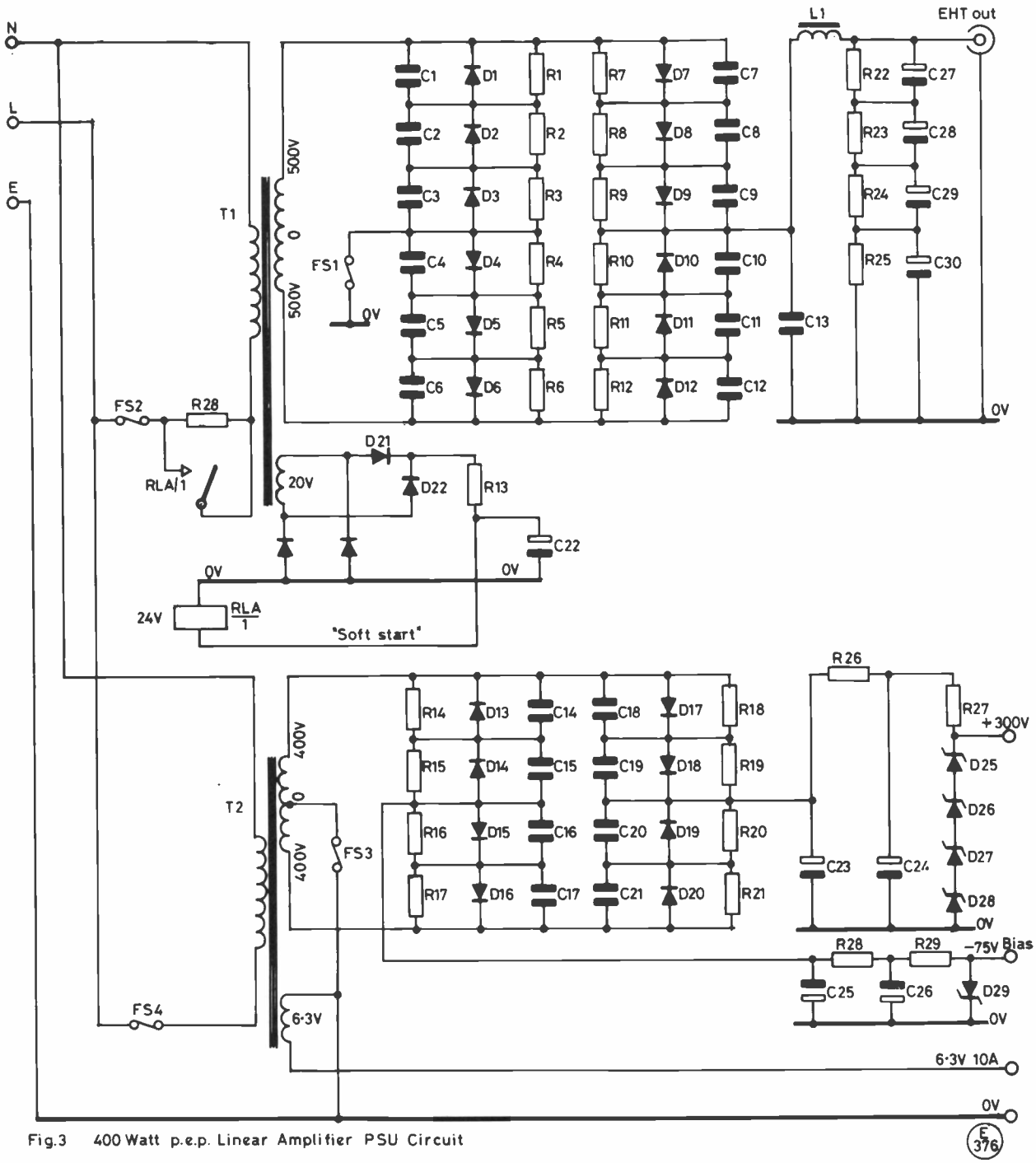


Fig.3 400 Watt p.e.p. Linear Amplifier PSU Circuit

Table of Values
Fig. 3

R1 to R12, R14 to R25 = 100K, 1W
R13 = 100R, 1W
R26 = 220R, 5W
R27 = 1K 25W, *or* 4 x 220R 5W in series
R28 = 100R, 5W
C1 to C21 = 0.01 μF d/c, 1kV
C22 = 1000 μF elec., 48V
C23 to C26 = 32 μF elec., 500V
C27 to C30 = 1100 μF elec., 350V
D1 to D24 = 3A, 1000 piv
D25 to D29 = BZY93/75
T1 = 500-0-500 at 500mA, 20V, primary 240V
T2 = 400-0-400 at 200mA, 6.3V 10A
Ch1 = 500mA swinging choke, 20-5 H
Fs1 = 10 amp
Fs2 = 5 amp
Fs3 = 2 amp
Fs4 = 1 amp
RLA = 24V coil relay, 1-pole 1-way

current where the series resistor required is only 2.5K ohms. The value in this instance will be reduced to 1.2K to compensate.

The second meter on my front panel is for aerial current and is a simple current transformer and rectifier circuit. It is not accurate but a useful indication of output.

The Power Supply

Rather than talk about the design of a specific unit it is better that we discuss what is required of such a unit. The most important thing to remember from the start is that we are not just dealing with dangerous voltages, but *LETHAL* ones. If it is necessary to operate the power supply or amplifier with the covers removed I always stand on a rubber mat and have my left hand either behind my back or in my pocket. This is not a foolish

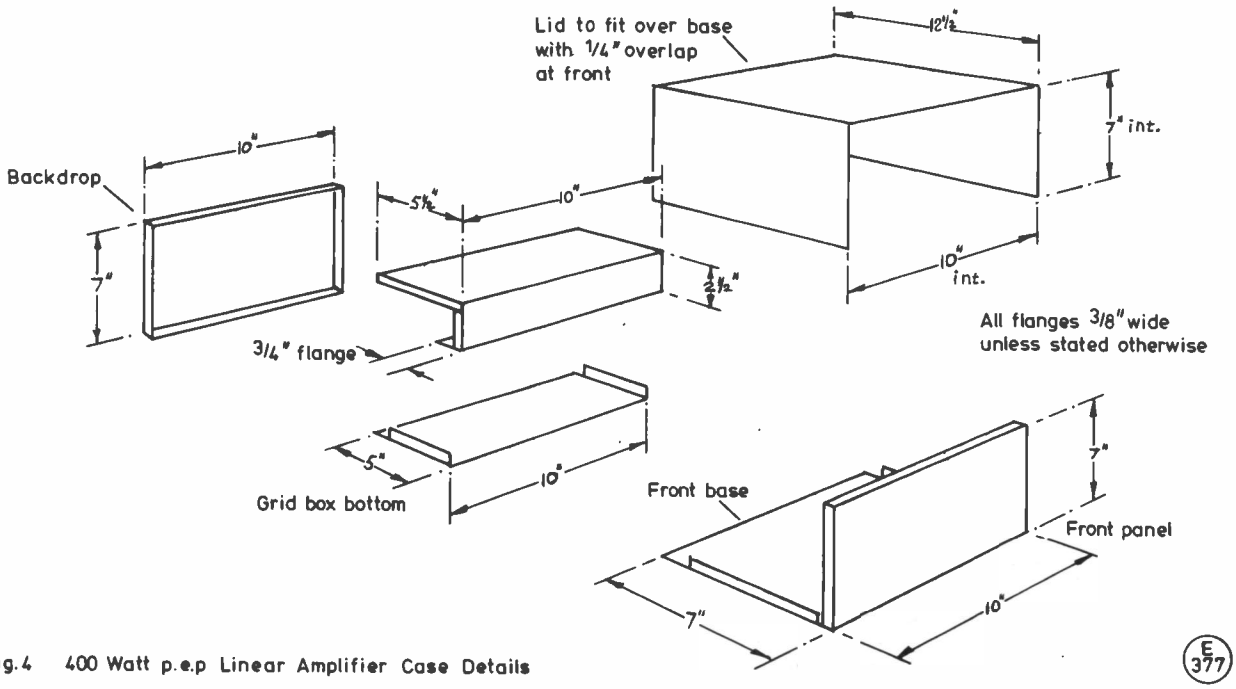


Fig. 4 400 Watt p.e.p Linear Amplifier Case Details

precaution but one that can *save your life,* as a shock across the arm is far less dangerous than one through your heart.

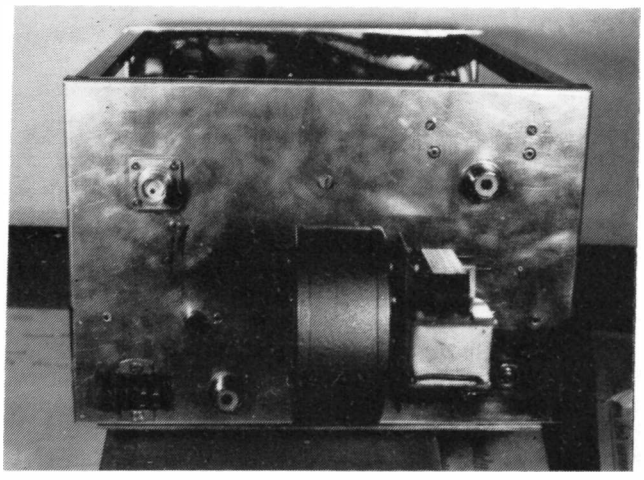
For this amplifier we need a heater supply of 6.3 volts at 8 amps and this voltage must be measured at the valve bases and the mains taps adjusted to compensate for the voltage drop in the cables. Two other 'non-critical' supplies are needed, 300 volts at 50 mA for the screens and a negative bias supply. I call these non-critical as initial regulation is not important and a simple capacitor is all that is needed for smoothing. The screen supply is finally regulated by a string of 75 volt zener diodes and a single 75 volt zener for the bias supply; these two voltages are obtained from the same winding on the second mains transformer.

The EHT Supply

This supply has to be fairly well regulated and be able to supply current peaks up to 1 amp. This adds up to a fairly hefty transformer and these are not easy to come by. The unit given to me by Tony, G3IOT, has several windings on it as well as 500-0-500 but no current ratings. To check the suitability of the unit I wired a load consisting of 250V 60W lightbulbs in a series/parallel arrangement across the secondary winding. The open-circuit voltage was 1050 volts dropping to 1010 volts at 500 mA. This load was left on the transformer for an hour and the unit got warm to the touch but not hot; I decided that this was therefore suitable for the job.

After rectification the supply has to be smoothed; there are several methods of smoothing but the most suitable in this application is the choke input filter. This filter has the advantage of good regulation, but does require that the DC resistance of the choke is in the order of a few tens of ohms. The capacitors are another problem as we need as much capacitance as possible. In the past there have been designs using 30μF but a more realistic figure is in fact 300μF; this can only really be obtained by using electrolytics in series. I was lucky enough to find four 1100μF 350 volt capacitors in the G4DCV junk box, providing 275μF at 1400 volts working. This in itself creates a problem, imagine at turn on suddenly 'dumping' 1100 volts across that much capacity: definitely a case for soft starting that transformer!

The circuit of my PSU is given in Fig. 3 to give an idea of what is required.



Rear view of the "Tonne", showing the blower.

Conclusion

Metalwork for the amplifier is shown in Fig. 4 and is available from *H. L. Smith,* 287-289 Edgware Road, London W2, for £7.95 inc. VAT and p/p. It is well worth remembering this firm as their prices are very competitive, as can be seen when comparing the price with the drawings for the metalwork. All other components were either scrounged from friends or purchased at rallies, with the exception of the zener diodes which I obtained from *Radiospares.*

The amplifier works well in practice adding two 'S' points to the signal strength. Reports of the signal quality have been "no change" with the amplifier switched on and off. This indicates that the distortion products are low, though they have not been measured as I do not have the facilities at home — and do not feel inclined to hump this mass to friends with the necessary equipment!

For those who follow my articles, I think I can safely say this is my last valve project as I hope that the "Tonne" will last me for many a year!

• • • SWL • • • SHORT WAVE LISTENER FEATURE

By Justin Cooper

LAST time round we were talking about aerials; this seems to have uncovered a grey area, namely *propagation.*

For any part of the world, there are preferred times of day or night, on each band up to 30 MHz. The lower bands tend to support propagation at night, and so need a path free of daylight, while the higher bands want an all-daylight path. If two places are connected by the desired path, and are also at twilight-time, either morning or evening, then there is usually a peak of propagation. Thus, to hear or work the Americans on, say Top Band, is possible through from around midnight on, but they will tend to peak about our dawn. On Twenty the band is dead at night, and during the day the W stations are not heard in the mornings, but surface around noon, as soon as a daylight path is available, carrying on then until the band closes in the evening. For the Australians and New Zealanders, the favourite times on Twenty are during the morning — at breakfast over the *long path* to the south-west, turning mid-morning to the short path to the north-east, on our 14 MHz band.

Thus, one can say if one listens only during say, early evening, one will find one's receiver fails to produce signals from the whole world.

Another reason for disappointment can of course be the sunspots, or rather the lack of them. If it is a peak time for, say, New Zealand, that won't help if the band isn't 'open' to that area. All we can say is that a path would exist if there were enough sunspots to make our chosen band open to that area. Thus, at a sunspot maximum such as we saw back in 1980, one would normally expect to hear the New Zealanders on 14 and 21 MHz, and a high probability exists that they will be heard on 28 MHz. At a sunspot minimum, such as we may expect about 1987, 28 MHz won't be open to DX, 21 MHz will only support signals for a few hours a day at around equinox time, and 14 MHz will only be open in daylight — and then only with relatively poor signals.

Related to this are the *seasonal changes*. The earth in its orbit around the sun 'wobbles' — rather like a spinning-top that is running down — there being one 'wobble' that produces the seasons and another, much smaller one, over the month. Clearly, if our signals prefer an all-daylight, or an all-darkness path, the most likely chance of this occurring is around the time of the year when day and night are equal all over the world rather than the time when one part of the world is in high summer and another in the depth of winter. This preferred season is the 'equinox' of March and September.

On the equipment side, any receiver from the simple TRF or direct-conversion kind up to the high-priced communication receiver, has enough sensitivity to receive signals from Australia; but of course if the aerial is so arranged, whether by accident or design, that it won't accept signals along the directions from which one normally receives VKs, then you will only hear a VK if he is coming in from some quite unusual direction or angle as a result of some form of *anomalous propagation* which is pretty well unpredictable.

Summing up then, we need to have a reasonable receiver, to listen on the right band, and at the right time, and have the chosen band supporting propagation to the chosen area thanks to the sunspots, and using an aerial which likes signals from the chosen area.

All of this leads to the question of which way the aerial should 'fire'. A study of the Great Circle map will indicate that a dipole for the chosen band which 'aims' east-west (*i.e.* has its wire north-south) will cover most of the heavily-populated world — Europe, Asia, Australia, half or more of New Zealand, North America, Central and the northerly parts of South America. It will not favour Africa or the southerly parts of South America. On the other hand if our dipole fires N-S (wire E-W), then it will look at Africa, South America, part of New Zealand, and not a lot else.

And, when all of this is said and done, there is yet another reason for no signals . . . most radio amateurs work in the daytime, relax in the evening, and sleep at night; so if their sleeping time happens to coincide with your operating time, you won't hear them even is there is a path!

The Mail

E. Sweeney (Chingford, E4) set off the train of thought we have just finished; he is a pensioner of 70, and was wondering why he hadn't heard anything of the Pacific or the isolated high-power BC station on his NRD-515 receiver, as a result of which he wondered if it were 'man enough' to receive from these places. As far as the hearing of stations in the Pacific goes, you have to add in another factor — the Pacific is mostly water! If you look at the map, the Pacific is well filled with tiny islands and atolls, but they are well spaced out and as a look at the *Call Book* will indicate none are heavily populated in radio amateur terms. Thus, while you might trip over one if your listen at the right time, you can't expect to find them as easily or as often as, for example, W6, JA, or UA0.

Next we have *D. Haigh (Halifax)* who is a complete newcomer to short wave listening. David uses an EA-12 receiver and some 33 feet of wire, which in due course will rise from its present 20 feet to 47 feet. As for the HPX Ladder, the rules were last published in the September 1984 issue. Essentially, HPX refers to 'Heard Prefixes', and the prefix is that part of a callsign of an amateur station which, usually, defines where that station is. Thus, in our own callsign G3SWM, the prefix is G3, and only one G3 can be counted; one G4 and one G5, and so on. GW3 is in Wales, so GW3, GW4, and GW5 and so on can be added to the list when heard, likewise GM3, GM4, GM5. The /M and /MM suffixes create a new series, so one can hear G3SWM as a prefix, G3SWM/M as a prefix, and G3SWM/MM as another. When looking at a station operating in other than his home country the rule gets bent a trifle, quite arbitrarily, so W1ZZZ/W4 counts as W4; but if the suffix of the host country doesn't have a number — *e.g.* VE1AED/P/SU — then it counts as the number of the prefix, namely SU1. The List, for comparison, is Geoff Watts' *Prefix/Country/Zone List,* available from Geoff as in his advertisement in every issue — *see* p. 535 this time. And, we don't count MARS, pirate, or undercover stations. On a different tack, David is after an ATU — if any reader is interested in a swap for a Vega 206, contact him at 27 Dodge Holm Gardens, Wheatley, Halifax.

Now we turn to another complete newcomer in *P. C. Clutton (Wrexham)* who at the time of his letter had been listening for just two weeks and had logged some 39 countries, plus four special-event stations, two from Yugoslavia and two from Russia. Best DX were the ZL2SM, HM6QI, and JS3JI in Japan. We would strongly recommend reader Clutton to get hold of a copy of Geoff Watts' *Prefix List* — it has to be *the* most useful accessory to an SWL shack, as well as the cheapest!

A man of few words is *S. Wilson (St. Andrews, Fife)* who makes a start at 212 — all heard on 14 MHz.

A. R. Sims (Spondon) wonders about the value of the Russian 'Globescanner' receiver advertised at £29.95 from a firm in Westcliff. A look at the advertisement indicates that the only amateur band to be covered is Forty — so it would be essentially useful for listening to the broadcasters. Were your J.C. in the position of reader Sims, we would make haste to join the local club (in this case Derby, any Wednesday evening, 119 Green Lane, Derby) where we would surely find ourselves able to get hold of a receiver to suit a shallow pocket — the club usually know what's on offer and may even have a spare receiver available on a loan basis while the search is on. However, if you have a couple of transistor portables both fitted with short wave and covering on one of them our 14.0-14.350 MHz band, you can use the second receiver as a BFO by way of the stray coupling, ajusting this by moving one receiver about relative to t'other, both in angle and distance, until the 'Donald Duck' is turned into speech. The routine is this: first tune the signal in to be as loud as possible, then switch on the second receiver and tune until you hear a whistle momentarily on the wanted signal. Now *carefully* bring that whistle back on to the signal, and slowly through it, until the whistle drops to zero and clear speech emerges. If the second receiver flattens the first one as you tune it through the signal, separate them; if the whistle is very weak, and tuning through gives a 'best' position which still sounds very rough, try bringing the two sets closer together. One recalls a regular reader of this piece a few years ago who got up to the 1000 mark in the HPX Ladder, when the top score was around 1400, using this method only.

It's nice to hear again from *N. Jennings (Rye)* who is back out of hospital — not a place to be at 75 — and back at the receiver and the micro. Norman now has his HPX List on the computer, and was horrified when the computer showed him some 20 duplicates! Norman does his programs with the help of "SWL" contributor A. P. Lincoln of Aldershot.

Next *B. F. Hughes (Kidderminster)*, who has some more to add to his list, despite the time lost in attending the Leicester Exhibition, where he failed to find your J.C. for the quite good reason that we didn't have a stand there! From Bernard's list we note a 35MO which Bernard says he has been told is O.K. — but we reserve judgement until someone produces a QSL card!

Now we come to *M. Newell (Kenilworth);* Mick's letter of September-end and second one at the end of October have both come to hand, and the earlier letter encloses one of the new G1HGD QSL cards, showing a rather nice drawing of Kenilworth Castle on one side, with the QSL details on the other. In the second letter we have the definitive Newell HPX list, sorted out after the mix-ups earlier, and this has been taken into the Ladder.

Now *Mrs. R. Smith (Nuneaton)* who says that although it is very hard to make much progress nowadays, partly due to a lack of time, it is still quite a cheering event when a new one or two fall into the net!

Similarly *Mrs. T. Parry (Blackpool)* who simply comments that most of her collection this time came from a bit of concentrated listening during the CQ WW DX Contest.

GW6VZW of *Cwmbran* acts as scribe for 7-year-old son *S. Baker;* GW6VZW claims the worst handwriting in the world and who are we to argue? Seriously, the vertical has been extended a little so Stephen has now lost some of the QRN; but it has also lost its capacity hat which won't have improved its passband! As for the OM, he has now got a TR-9130 multi-mode and an aerial, beaming S.E. from 15 feet in the air, awaiting completion of the PSU. Once he is active, SWL reports will be welcomed. Reverting to Stephen, we hear he has disposed of his JR-310, and will be using Dad's old KW-2000A, suitably doctored to prevent it transmitting.

Now we have three letters from *M. Ribton (Gillingham)*, who last reported in early 1980 from Oxted, since when he has moved, hit on a reduced-standard patch, and found himself at least temporarily house-bound. Nonetheless, the latter has we suspect sparked off a renewed interest in SWL, with a Realistic DX-400, an active aerial given by G3DME, and an end-fed wire. There is also a shielded loop for Top Band, which awaits the arrival of a 400 pF capacitor for completion. Nice to have you back aboard Mike!

Another reader in the wars is *C. Burrell (Stevenage)* who has just come out of the bandage-works after a 'full service'. This results in a 'Nil' return for this time, but a promise of more activity when he is allowed to do a bit more.

Lots of questions and answers in the letter from *J. Goodrick (Isle of Wight);* firstly RI0AWY is almost certainly O.K., although it has to be admitted that the new Russian prefix system is a bit confusing, at least in Asiatic Russia. John listens mainly to CW, and he comments on a couple of G4s nattering to each other right on top of some good DX at the bottom of the band. On Eighty there was a station copied as FR0FRO but which we think was surely FR0FLO and therefore O.K., unlike the '5A1LL' who eventually got the message after being repeatedly told he was a pirate. On a different tack John notices and wonders about the 'stretching' effect sometimes noticed on 21/28 MHz when the band is open, with weak signals, but from DX only. Most likely this is the result of the signals going right round the earth and re-appearing on the aerial a second time but delayed in time and affected in frequency by Doppler Effect. Finally, John says, he doesn't have VHF gear so what the blazes does 'scan' mean, and also 'squelch'. Now commercial operation at VHF is channelised on the assumption that the operators are too dim to stay on their allocated frequency. This fashion spread to amateur radio at VHF when the first repeater was put on the air, with its input and output, of necessity, on different frequencies. Now if you have channelised operation, some 40 channels, spaced 25 kHz apart, will take up a full 1 MHz of band at a level approaching maximum inefficiency(!) but with the opportunity of generating a transceive system which is ideal for *mobile* use — and, in fairness that was what the repeater was invented for, namely to make life easier for mobiles and increase their range. Now, if it is easier for the mobile to just turn a knob and read a display consisting of only a number, then there is some small point in our kind of operating, in going a tiny step further and making the receiver step from channel to channel at a specified rate, and only to stop when it finds a signal. Then if you don't want to listen to that one you can just press the button and it will continue to the end of the band and then go back and start again. Now, an FM receiver, in the absence of any signal, emits a loud 'sharsh' which is, to put it mildly a damn nuisance if you are mobile. Now there have been for many years — J.C. can recall them back as far as WW2 time — circuits that will silence a receiver's audio side completely as long as there is no signal present. As soon as the receiver hears some talk, the squelch 'opens' and the receiver acts normally. As far as your J.C. goes, a scanner is something he can live very happily without, but a squelch on a mobile rig is an essential, if only for the joy of silence in between contacts. The final point now. John wants to know just what the effective height of an aerial is if it is sitting on top of a

ANNUAL HPX LADDER

Starting date, January 1, 1984

SWL	*PREFIXES*		
C. Burrells (Stevenage)	370	P. Everitt (Bluntisham)	277
P. A. Cardwell (Sheffield)	333	Mrs. T. Carmichael (Lincoln)	250
M. Newell (Kenilworth)	330	S. Wilson (St. Andrews)	212
M. R. Warburton (Bury St. Edmunds)	309		

Minimum of 200 Prefixes to have been heard since January 1, 1984, for an entry to be made, in accordance with HPX Rules — *see* p. 319, September issue. At score 500, transfer to the All-Time Table is automatic.

HPX LADDER

(All-Time Post War)

SWL	PREFIXES
PHONE ONLY	
B. Hughes (Harvington)	2892
Mrs. R. Smith (Nuneaton)	2431
E. W. Robinson (Felixstowe)	2333
H. M. Graham (Chesham)	1742
E. M. Gauci (Sliema, Malta)	1696
Mrs. T. Parry (Blackpool)	1649
G. W. Raven (London)	1547
M. Rodgers (Harwood)	1470
N. E. Jennings (Rye)	1337
N. Askew (Coventry)	1325
S. Baker (Cwmbran)	1280
R. Fox (Northampton)	1273
N. Henbrey (Northiam)	1276
D. Shapiro (Prestwich)	1272
P. Oliver (Paisley)	1141
G. A. Carmichael (Lincoln)	961
J. Routledge (Hartlepool)	900
G. Shipton (Rye)	900
P. Lincoln (Aldershot)	883
J. Heath (St. Ives, Hunts)	749
B. Patchett (Sheffield)	726
R. Wooden (Staines)	716
M. Ribton (Gillingham)	690
P. A. Cardwell (Sheffield)	642
A. Chapman (Newark)	549
N. Fox (Wakefield)	517
CW ONLY	
E. B. Ward (Ruddington)	1848
J. Goodrick (Isle of Wight)	1705
A. F. Roberts (Kidderminster)	1344
R. Fox (Northampton)	433
RTTY ONLY	
N. E. Jennings (Rye)	592
P. Lincoln (Aldershot)	468
J. Routledge (Hartlepool)	311
N. Henbrey (Northiam)	288

Minimum score for an entry is 500 for Phone, 200 for CW or RTTY. Listings to be in accordance with HPX Rules — *see* p. 319, September issue.

high-rise tower block? A Good Question! Seriously, the building, provided the aerial is a few feet above the roof, will surely just act as a normal aerial tower. However, again as normal, the true position of 'earth' is very seldom exactly at ground level, but in general we disregard that question when talking about aerial heights.

Next we come to *N. Henbrey (Northiam)* who is well into the RTTY scene as well as SSB. A new addition to the gear this time was an AR-40 rotator to look after the eight-over-eight beam on VHF and the TA-31 used for 14/21/28 MHz.

M. R. Warburton was in the throes of moving at deadline time, to *Bury St. Edmunds* from Leicester. Martin has written off any hope of making the 500 this year, but on the other hand he feels the new place is a better spot for HF listening. A pity OT E. W. Robinson has moved to Felixstowe, but as that was so recent he will doubtless convey to J.C. the names of some local contacts for Martin to latch on to in Bury St. Edmunds.

G. Carmichael (Lincoln) honoured PJ2FR by logging him as Country No. 200, and then noted the absence of his list from this time in 1982, which he duly sent on — a mere couple of years late!

In reading Gordon's letter we suddenly realised that it also enclosed a first entry from *Mrs. T. Carmichael,* also of *Lincoln,* and a starting entry of 250. Welcome to the hobby!

E. M. Gauci (Sliema) has a typewriter that has gone into rebellion — it refused to type a letter 'N' anywhere, giving Eddie a major 'marking-up' job! However, it didn't prevent Eddie from going further up the HPX List with a new claimed score of 1696.

Now the bowls business is over, *G. Shipton (Rye)* has been able to apply himself to the matter of prefixes and their collection, with the usual result — George goes up to 900.

Up in Scotland, *P. Oliver (Paisley)* has been tied up with curling and work commitments, but has hopes now of a few months with time to listen, always assuming the propagation co-operates. Pete has a licensed amateur friend who has convinced him of the need to pass the RAE in 1985, so he will have to settle down with the books as well.

J. Chapman (Newark) has access to an ICL 'PerQ' computer used for CAD applications normally; this has a useful 'SORT' command, so he just types in the prefixes and the machine sorts them into order for him — handy!

H. M. Graham (Chesham) attended the Chesham club meeting at which G3KFE spoke on November 14; and it seems both took pleasure in the meeting. The Old Fella was talking to them about aerials, on which topic he is one of the few 'professionals' around, and pointing out how much of the alleged 'knowledge' is plain bunk. Whether or not he made his point or not is debatable — he said that there were a couple of youngsters in the back row who obviously thought otherwise. On the SWL front, Maurice managed to find a few openings on Ten into Europe, plenty of DX on 21 and 14 MHz, lots of noise on 7 MHz, A71AD working JAs on Eighty, would you believe, and the usual collection of locals on Top Band.

Now a dual letter from *P. and R. Everitt (Bluntisham).* Philip is 14 years old and is making his first starting entry, while Richard is well up the Table but has now passed the Morse test at the third time of trying and obtained G4ZFE. Congratulations on the new call and we hope to hear it on the air, particularly on CW — one learns Morse so much faster when one has an interest in the copying. It is worth remembering that while for the test the object of the exercise was not to miss anything, the situation on the bands mean that, like Phone, one can expect to lose odd bits of a QSO — so many people give up on CW for just this reason, forgetting that QRM or a bad fist at the other end is identical to QRM and a 'foreign' accent on Phone.

J. Routledge (Hartlepool) has been busy building a model railway layout for the past few weeks for an interesting change from radio activity; as a result the increase in score, both as regards SSB and RTTY hasn't been all that great. However, John is hoping soon to have the layout finished, so he will have more spare time for radio.

Propagation has been very poor this time, says *E. W. Robinson (Felixstowe).* A pole has been erected at the end of the garden and a long-wire put up to it, fed by way of an ATU to the EA-12 receiver. All that it wants now is for conditions to show willing a little more!

R. Wooden (Staines) found some 27 new ones since his last report, all on the 14 MHz band at various times of day or night, but as Roy remarks, at the time of his letter things had settled into the winter conditions with Twenty even closing shortly after dark. One query in the list is 1Z9A — we believe this is the Karen State and while it is quite a legitimate operation there is some doubt as to whether it is a 'counter' in terms of DXCC for the transmitting types.

N. Fox (Wakefield) had the ill-luck to lose his previous list during the business of shack alterations. The new shack has, on the other hand, vastly increased enthusiasm for listening as the new complete listing shows very clearly. On a different tack, SWL Fox wonders why he hears so little from Africa; basically because the aerials — these are discussed in his letter — all fire east-west. However, it has to be admitted that even with the aerial slewed round by 90 degrees there would still be something of a problem, caused by the fact that the African countries in so many cases do not allow amateur radio operation, or, if they do, the amateur radio population is very small. Thus *activity* is a part of the problem, except in South Africa.

D. C. Piccirillo (Plymouth) used to be ZD2DCP and then 5N2DCP in the early post-war years, but dropped out on return to the U.K. until starting to read this piece over the last couple of years. Donald noted our comments about WAB and G4HPU, as a result of which he wrote to Adrian for the details and picked up a new interest therefrom. On a different tack, Donald has some acid things to say about your conductor's comments about the lack of activity from G in the 1984 White Rose SWL Contest, and to prove his point included a copy of the results sheet. Point taken, and we have to admit that the U.K. representation is far higher in this one than in most contests. Usually for some reason the G stations will operate in the contest but not enter a log, or alternatively just stay off the air — an uncompetitive race we are!

P. A. Cardwell (Sheffield) notes that programs for the Sharp MZ700 will also run — save for the colour statements — on the MZ80K. Turning to the Prefixes, reader Cardwell is a bit puzzled by hearing a 5N station signing with a /2 on the end of his call-sign. The 5N area is cut up into call areas, rather like the U.S.A.;

and the /2 suffix applied to the call almost certainly indicates that the station in question was out /P or /A in terms of the U.K. licence terminology. Many countries do this — for example, W1BB used to sign W1BB/1 from his water-tower Top Band spot.

Finally, a plea from reader Cardwell about his FRG-7700 — he has the FRT-7700 ATU and FRA-7700 active aerial but *without* the instructions. Any information would be appreciated, addressed to: P. A. Cardwell, 223 Chesterfield Road, Meersbrook, Sheffield S8 0PR. Meanwhile, without the instructions, J.C. offers the following. Looking firstly at the ATU, it will have both terminals for aerial and earth, and coaxial sockets for an aerial and for feeding the receiver, probably marked ANT and Rx; coaxial feed from the receiver to the ATU, and from the ATU to the active aerial device can be connected now. This will leave only a requirement for DC supplies to the active aerial, or maybe a mains lead to an inbuilt PSU. Either way, connect a DC supply of the required voltage, or AC from the mains; in either case be sure you don't exceed the specified voltage. With a mains lead, one would expect somewhere — probably inside — there is a tapping on the transformer to change from 117 volts to 240 volts. The DC supply, should that be what is required, can probably be 'stolen' from the 'accessory socket' on the back of the receiver, but check with the handbook of the receiver to be sure you know how much current can be drawn out of it, and see that this is all the active aerial wants.

Finis

Another "SWL" column done; unusually interesting mail this month, so we hope you keep up the good work. Thanks to all those of you who included Christmas and New Year Greetings, which are heartily reciprocated.

The deadline for the arrival of your letters for next time is Thursday, **January 17th, 1985,** addressed as always to your scribe, "SWL", SHORT WAVE MAGAZINE, 34 High Street, Welwyn, Herts. AL6 9EQ. See you next time.

• • • *"Practically Yours"* • • •

with GLEN ROSS, G8MWR

WE start this month with a correction. The article in the November issue in which the "Do it all" was described contains an error in the drawing of the circuit diagram. The left hand position of switch S4 is shown as going straight to earth which would, of course, stop the oscillator from running. C3 should be inserted in this line and the capacitor which is marked as C3 is actually C4. A small refinement to the original would be to mount the sensitivity control RV1 on the panel, this is particularly useful when the unit is used as a field strength meter.

Capacity Meter

This piece of test gear was suggested by G6KXA. It is often helpful to be able to measure the value of small capacitors, say up to 500pF with a fair degree of accuracy. The circuit shown here, when used with a frequency indicator, will make this possible. The obvious thing to use is a frequency counter but this is not essential and acceptable results can be obtained using a suitably calibrated absorption wavemeter; this could be built into the box, so forming a very compact unit. The use of a frequency counter will make it much easier to see small differences in the values of the capacitors and is the preferred method.

How it Works

Referring to the circuit diagram, Fig. 1, it will be seen that it consists of nothing more complex than a small oscillator. This can be run at any convenient frequency, in this case 9 MHz, and the frequency is measured on the counter. If additional capacity is connected across the test points the frequency will be reduced by an amount depending on the value of the capacitor. This lower frequency is then read on the counter and by using a graph the actual value of the additional capacitor is determined.

Accuracy

The overall accuracy depends on the stability of the oscillator and the circuit given has proved adequate without needing any resetting capability. If you really want to "gild the lily" you could connect a small trimmer across the tuned circuit as a front panel control to enable you to set the standard frequency to 9 MHz. This would only require a swing of around 10pF and whilst this would change the calibration slightly, the effect would be negligible when compared to the 100pF of fixed capacity that is permanently connected as part of the tuned circuit.

Table of Values

R1 = 33K, ¼W
R2 = 470R, ¼W
C1 = 15pF ceramic
C2 = 100pF ceramic
C3 = 33pF ceramic
C4 = 10nF
TR1 = MPF102
ZD1 = 6.8 volt Zener
S1 = SPST toggle
L1 = 30 turns 28 swg close-wound, tapped 4t from earth on 5mm former with tuning core
VC1 = optional, small variable around 15pF
SK1 = socket (BNC, Belling, SO-239, etc.)

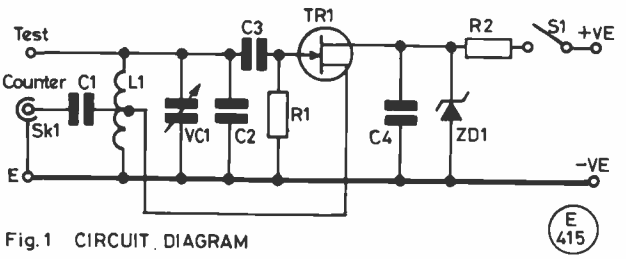


Fig. 1 CIRCUIT DIAGRAM

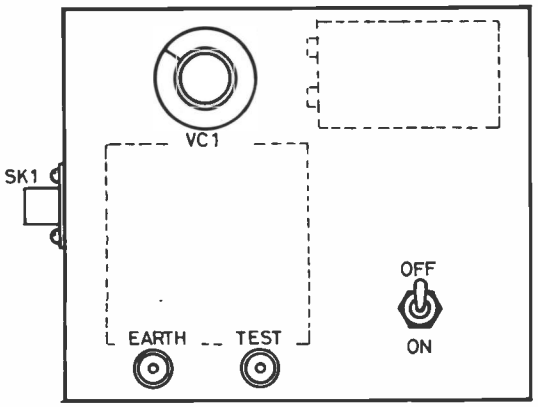


Fig. 2(a) SUGGESTED PANEL LAYOUT

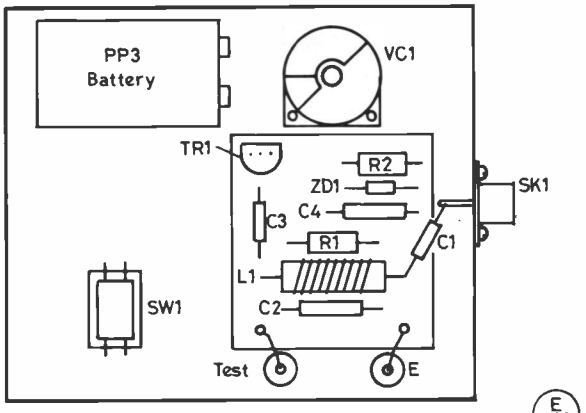


Fig. 2(b) SUGGESTED COMPONENT LAYOUT

E 416

Power

The unit may be run from a PP3 battery mounted in the case or from an external supply of up to 15 volts or so. The long term stability is protected against voltage changes by the Zener diode. If you want to make it an "all singing" unit the supply voltage could be monitored using the comparator circuit which was described in the July 1984 "Practically Yours". This would be connected across the Zener diode and set to indicate when the voltage fell below the stabilised value.

Building It

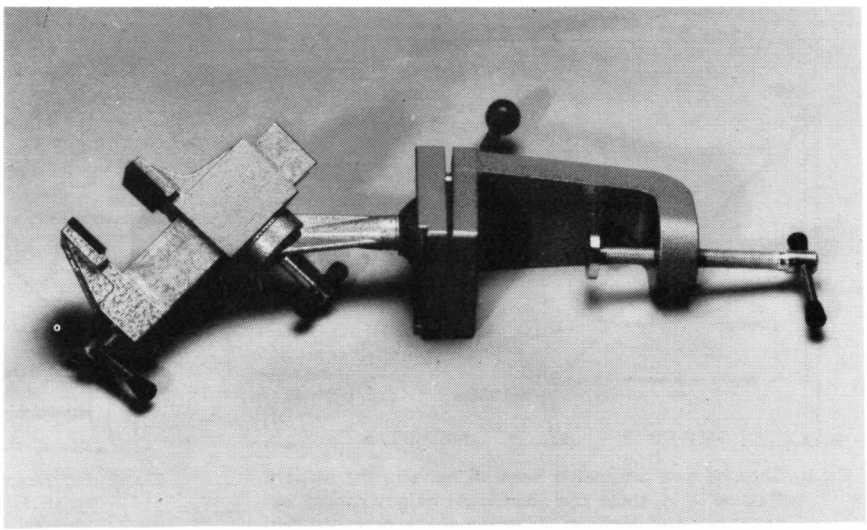
Except for taking some precautions to avoid frequency changes due to vibration or hand capacity effects there is nothing at all critical in the construction of the unit. It may be constructed in a small metal case and the oscillator could be built on a small piece of Veroboard which should be mounted directly on to the test terminals; *see* Fig. 2. To avoid vibration effects the coil should be wound tightly on the former and then painted with nail varnish (colour to choice!).

Calibration

It is possible to calculate the frequencies which will be obtained using various values of capacity but in practice it is easier to calibrate using known values of capacity.

The unit should be connected to the power source and the counter. Set the "calibrate" trimmer, if fitted, to half capacity and then adjust the core of the coil to produce 9 MHz (or whatever frequency has been decided upon) and lock the core. Now connect known values of capacitance to the test terminals and note the frequencies produced. It will be found that the unit will operate satisfactorily up to a maximum of around 500pF, at which point the frequency will have dropped to around 4 MHz. Having taken a few readings a graph can be drawn from which other values may be read.

Pictured here is the Oryx 1B, a novel and versatile vice for the electronics workshop, which *Greenwood Electronics Ltd.* has recently added to its tempting range of products for the electronics constructor. The Oryx 1B has a base which can be clamped to the side of a bench and a lockable ball-joint which allows the vice head to be easily adjusted through a complete hemisphere of positions relative to the base; its rubber-faced jaws are designed to hold a PCB securely but gently, making it ideal for drilling and soldering. For more information, contact the firm at Portman Road, Reading, Berks. RG3 1NE. Tel: 0734-595844.



The Sloper Antenna System, Part 3

A CHEAP AND EFFECTIVE DIRECTIVE ARRAY

CHRISTOPHER PAGE, G4BUE

I RETURNED to using slopers at my present QTH, although I do not have as much space as I did at my Haywards Heath QTH. I decided to try a system for 7 MHz, but due to the size of my garden, I had to bend the ends of the slopers back towards the tower, as in Method 'B' in Fig. 8, in respect of two of the slopers. This did not seem to effect the gain or the front-to-back ratio of the system.

By this time I had become very interested in QRP, and had a Ten-Tec 509 Argonaut for QRP work. I found that using QRP was an excellent method of testing the efficiency of antennas, especially if the output power of the Argonaut was reduced to milliwatt levels. Obviously if DX can be worked on an antenna when you are only using milliwatts, it must be working properly. Soon after erecting the system, I worked AL7H in Alaska with five watts input with the Argonaut, receiving a 539 report. We exchanged several overs and the Alaskan station was very surprised and interested that I was only using QRP, much to the annoyance of a large number of European stations who were waiting on the frequency to work him. At that time the tops of the slopers were about 45 feet high, and their centres about 20 feet. Further confirmation that the system was working was provided in the 1979 CQ WW CW Contest when I worked 39 U.S.A. stations whilst using 5 watts from the Argonaut and during the 1980 ARRL CW Contest I worked 63 U.S.A. stations in 16 States, VE, UA9 and UL7, also with the Argonaut.

After this I decided to try and erect a sloper system for 3.5 MHz, but really needed more height. I eventually decided to obtain the extra height by replacing the short length of mast at the top of the tower holding the HF beam with a 20 foot length, and attach the slopers to the top of this, hanging them so they cleared the beam when it was rotated. A method had to be found of fixing the slopers to the top of the mast, whilst allowing it to be rotated with the beam. I accomplished this by using a guy plate a size too big for the mast, and two Jubilee clips, one below and one above the plate, allowing it some movement, *see* Fig. 9. After smothering it with grease, it was possible for the slopers to be held steady, whilst the beam and mast rotated.

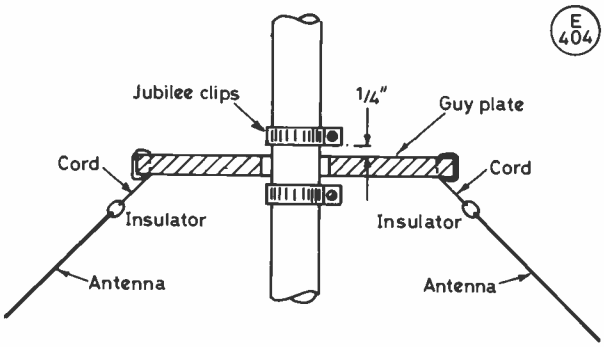


Fig. 9 Diagram to illustrate a method of allowing a Sloper System to be attached to the top of a rotateable mast. The guy plate is one size too big for the mast.

With the tower cranked half way up, the beam is about 40 feet high and the top of the mast about 55 feet. When the 3.5 MHz slopers were hung out, the ends of two of them had to be bent back towards the tower as in Method 'B' of Fig. 8 due to the size of my garden, and the other two had to be hung as in Method 'A' of Fig. 8 due to the height of the mast.

This time I decided to conduct some experiments between the sloper system and an inverted-vee in an effort to ascertain whether the slopers were really as good as they appeared to be. I erected an inverted-vee for 3.5 MHz so that the centre of it was just below the beam at 40 feet, which was in fact quite a way above the feed point of the slopers. KD5M gave me 579 whilst I was using the north-west sloper and 439 on the inverted-vee; K2OPJ and W2BA both

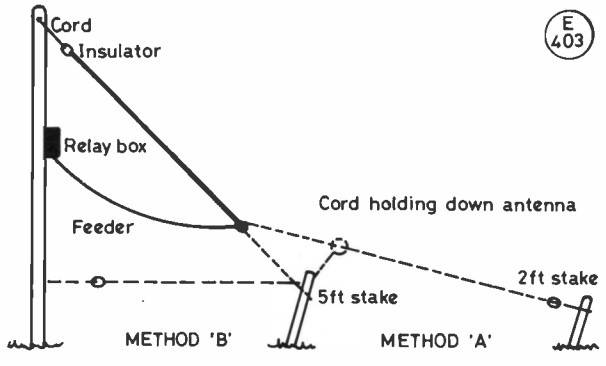


Fig. 8 Showing two alternative ways of hanging the slopers. Method 'A' is where the ideal mast height cannot be achieved and Method 'B' where space prevents the slopers being stretched right out.

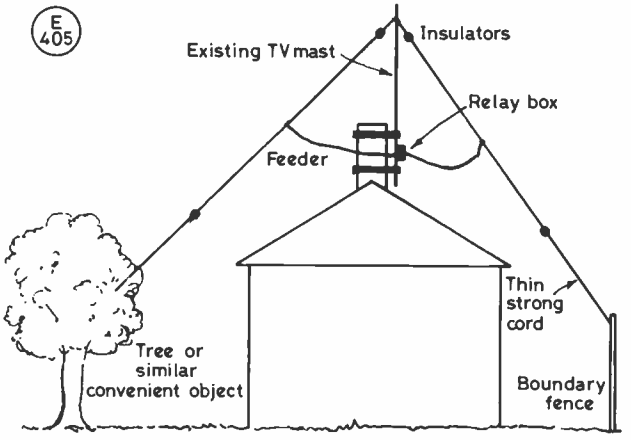


Fig. 10 Full Sloper System for either 14, 21 or 28MHz installed on an existing TV mast with the slopers hanging towards each corner of the house Two slopers only have been shown in the diagram.

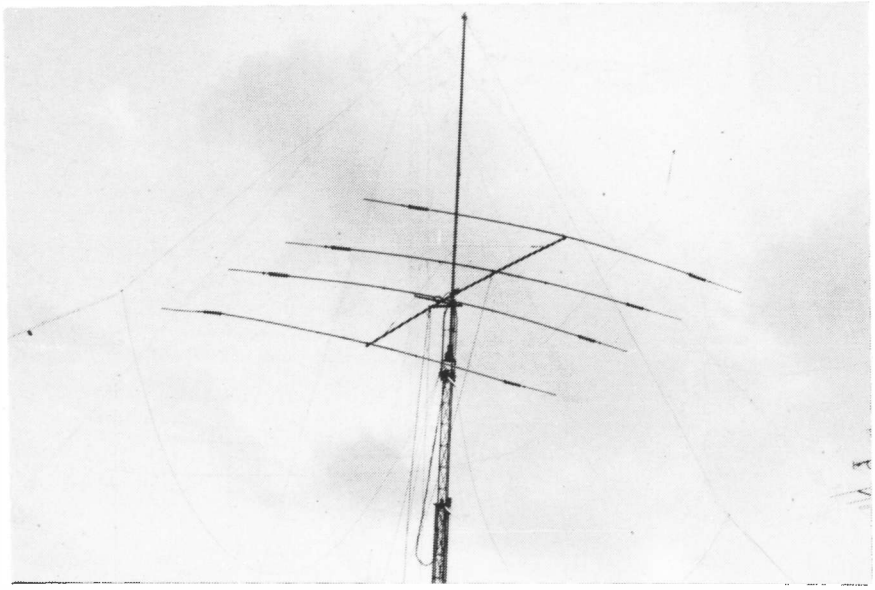


Photo F: The system of using a long mast above an HF beam to give added height to a Full Sloper System. The guy plate used on top of the mast is a size too big, enabling the mast to rotate with the beam, leaving the slopers in place (see Fig. 9).

said that the sloper was 10dB up on the inverted-vee (almost two 'S' points); K1MEM found that the inverted-vee was at least two 'S' points down on the north-west sloper. Other reports from North American stations were similar, as were the north-east sloper reports from Japanese stations and VK on the short path. In addition I could hardly copy the Japanese stations when listening to them on the inverted-vee, whereas on the sloper they were perfectly Q5. The photograph (F) shows the system erected above the HF beam.

The conclusions that I came to after using the sloper system on two different occasions at two different QTHs on two different bands, is that it is a very cheap method of obtaining a directive array. As the system can be scaled up from 7 MHz to 3.5 MHz, I can see no reason why it cannot be scaled down to 14, 21 or even 28 MHz. For amateurs with restricted space, or without the capabilities of being able to erect a rotateable beam for the HF bands, the sloper system enables them to have a very effective directive array. In addition the system should appeal to those amateurs residing in areas where it has not been possible to obtain the necessary planning permission for towers and rotateable beams. Fig. 10 shows a possible installation of the sloper system for any of the HF bands erected on a typical house. The mast consists of a ten-foot length of mast fixed to the chimney stack which can also be used to support the domestic TV and/or FM radio antennas. The four slopers can then be hung from the top of the mast down towards the corners of the house. Depending on the position of boundary fences, it may be necessary to hang the slopers over the gutter, or secure it to the corner of the house, but

Band	*CW*		*SSB*	
	Frequency	*Length*	*Frequency*	*Length*
10	28.050	8.34	28.600	8.18
15	21.050	11.12	21.275	23.12
20	14.050	16.65	14.225	16.45
40	7.020	33.33	7.070	33.09
80	3.550	65.91	3.700	63.24
160	1.830	127.87	1.875	124.8

Table 3. Showing the length (in feet) of a quarter-wave sloper to be used with a Half-Sloper System.

Band	*SSB/CW*	*Antenna Length*	*Feeder Length*	*Ideal mast height*	*Minimum mast height***
80	3.550	138.59	72	120	45
	3.700	132.97			
40	7.020	70.80	36	60	30
	7.070	69.59			
20	14.050	35.02	18	35*	25
	14.225	34.59			
15	21.050	23.37	13½	25*	20
	21.275	23.12			
10	28.050	17.54	9	20*	15
	28.600	17.2			

* Although this figure is not a direct scaling down from the 7 MHz figure of 60 feet, in each case it allows the bottom end of the antenna to clear the ground by 5 feet.

** This is the minimum mast height compatible with the system retaining some gain and front-to-back ratio, and with the slopers hung as described in Method 'A' of Fig. 8.

Table 2. Showing the antenna lengths, feeders, ideal and minimum masts heights (in feet) for a Full Wave Sloper System.

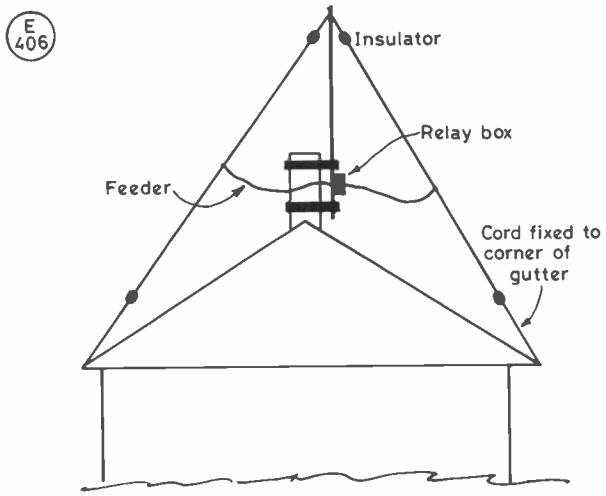


Fig.11 Full Sloper System for 14, 21 and 28MHz where there is insufficient space at the side of the house to hang the Sloper away from the roof.

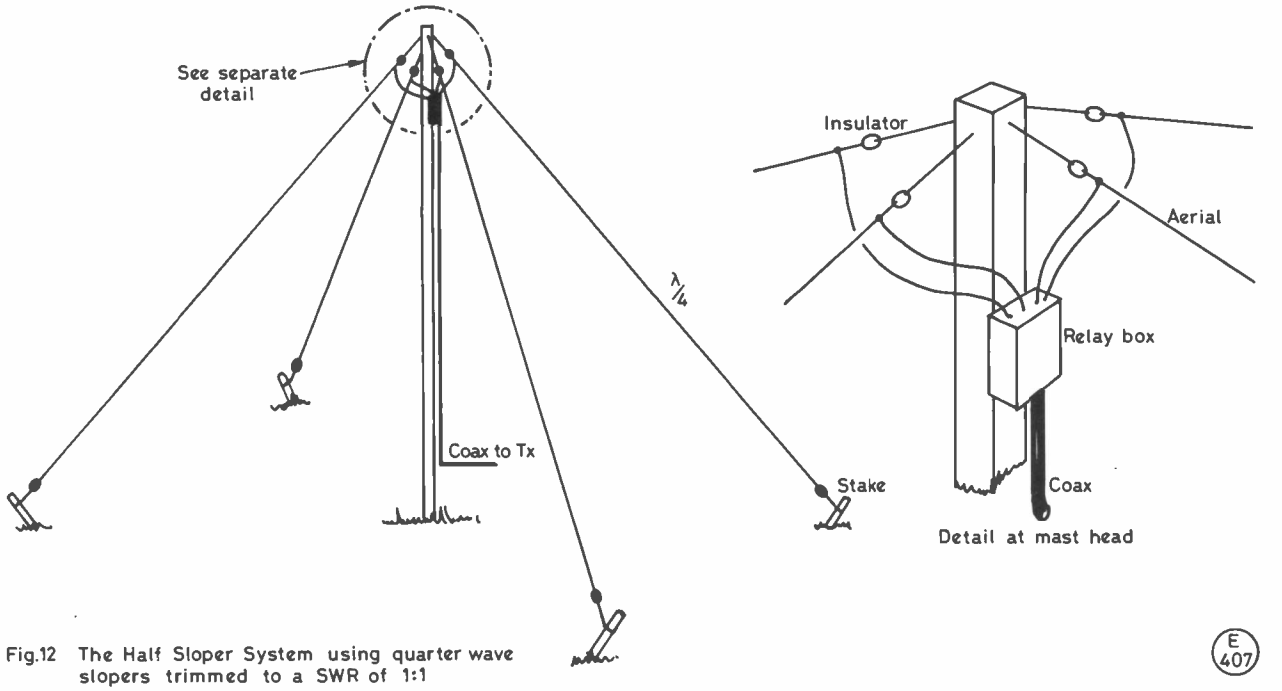


Fig.12 The Half Sloper System using quarter wave slopers trimmed to a SWR of 1:1

at least it would be able to be fitted into the garden, *see* Fig. 11. The coaxial cable feeders are then allowed to lie on the roof of the house, connected to the relay box which can be positioned at the foot of the mast. It is then an easy matter for the coaxial cable and 24 volt control cable to be led into the shack.

I am not aware of the sloper system having been tried on the HF bands, but there is no apparent reason why it should not be as effective as it is on the LF bands. Table 2 sets out the lengths of the antenna and feeder for the CW and SSB portions of all the amateur bands.

Another intersting development would be to extend the sloper system into a multi-band system by the use of traps. Trap dipoles for 40 and 80 metres are quite common, and I can think of no reason why the gain and front-to-back ratio of the system should not apply when traps are used. Alternatively two traps would enable a system to be used on 14, 21 and 28 MHz at the same time. The suitable length of the feeder may have to be found by experimentation, but a suggested starting point would be the length for the lowest frequency on which it is intended to use the system. To enable it to add inductance to the centre of the sloper and electrically lengthen it, causing it to act as a reflector, it would have to be at least three-eighths of a wavelength long. What is not known is the effect on the system if a feeder much longer than three-eighths of a wavelength long is used.

The use of half-wave dipoles as slopers is often referred to as a Full Sloper System, whereas a similar system using quarter-wave dipoles is referred to as a Half-Sloper System. The half-sloper system is a reasonable alternative for amateurs who do not have sufficient room for a full system, or even the alternative methods of hanging the slopers for a full system, as shown in Fig. 7 and Fig. 8.

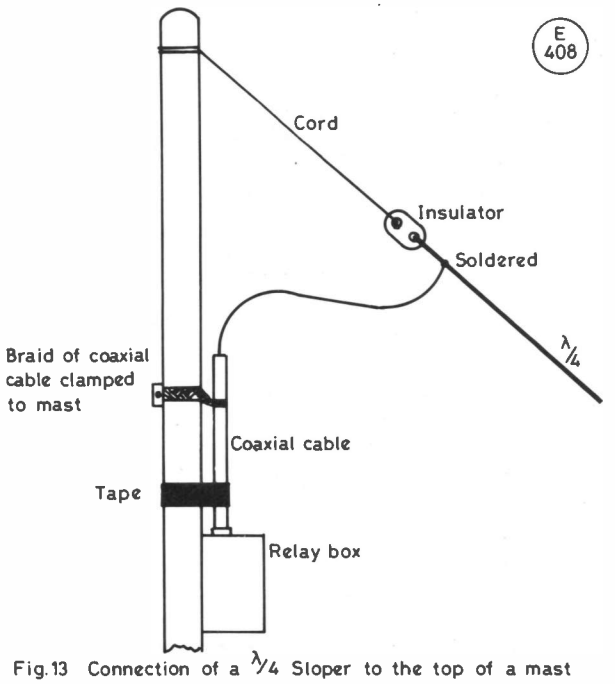


Fig.13 Connection of a λ/4 Sloper to the top of a mast

A system of quarter-wave dipoles used in a half-sloper system is shown in Fig. 12. Basically the difference between this system and the full system, is that the quarter-wave dipoles are trimmed for a low SWR, as close to 1:1 as possible. In addition, as there is no feeder length, the unused dipoles do no act as reflectors and so the front-to-back ratio of the full sloper system is absent. The gain however, is still there, and it is this which makes the quarter-wave sloper an appealing alternative. In cicumstances where amateurs cannot erect four slopers, a smaller number, or even one on its own, can be erected to slope in favoured directions. As the quarter-wave sloper is trimmed for a low SWR, the formula of $l = 468/f$ is used in calculating the length. Table 2 sets out the lengths for the CW and SSB portions of each of the amateur bands. Fig. 13 show the connection of the quarter-wave sloper to the top of the mast.

In a similar manner to the full sloper system, there is no reason why trap(s) cannot be used to enable a quarter-wave sloper to be used on more than one band.

As mentioned previously the full sloper system is a very efficient directive array and, to the amateur with the space available and time on his hands, can form the basis of interesting antenna experiments. I am certain that this system can be developed even further and made even more efficient, and I await these developments with interest and anticipation.

"Kitchen Table Technology"

A SERIES OF OCCASIONAL ARTICLES TO PUT THE 'AMATEUR' BACK INTO AMATEUR RADIO

REV. G. C. DOBBS, G3RJV

No. 7: "Tinned VMOS" — A Simple Transmitter for 80 Metres

IN the "golden days" of amateur radio, the average amateur could look into his junk box, or Charlie McGee's Closet as our Australian friends would have it, and find all the bits and pieces he required to build his new transmitter. Sadly things are not quite the same these days. There are very few surplus items of equipment which can be used directly to cull parts for radio building. H.M. Government does not seem to shower the surplus market with almost-usable items of communication equipment. This is not to say that radio construction is now more expensive; on the contrary it is probably cheaper. If the avid constructor keeps his weather eye open for bargains in components, then by buying at the right time and hoarding, construction can be a very inexpensive hobby. Avoid the prestige mail order companies and be prepared to amend circuits to suit the available components and amateur radio construction is as cheap as it ever has been.

Keeping my constructor's nose to the ground, I noticed that *J. Birkett* of Lincoln was offering VN10KM VMOS transistors at 50p each. That seemed rather better than the market price of nearly £3, so I had a couple. As with most of my buys they were consigned to "the stock". I store transistors in small buff envelopes which I buy from Woolworths; a convenient way to keep them. (Label the tops of the envelopes and store them in alphabetical order in a shoe box.) And there they resided for a while. One day when musing on the state of the world and why no one comes to Evensong any more, a little lateral thinking came my way. I had recently looked at a VMOS transmitter circuit driven by a CMOS integrated circuit driver arrangement and recalled that lurking in my "built it but never really got around to using it box", my Tuit Box as our American friends would call it, was a little TTL oscillator board. It was a crystal oscillator for 80 metres once suggested by G3VA from, of all things, a Norwegian scouting book, although I had seen the circuit some years before in a copy of *QST* from K6UH. I had intended to use it to drive a TTL IC power amplifier stage found in an Italian QRP magazine.

I take the reader on this trip down my circuit memory lane to illustrate that not only components, but circuits, should be hoarded. I photocopy circuits which I find, and might need later, and consign them to my incomprehensible filing system: a lot of old folders, most of which have no markings on them or are marked "Anthems For Advent" or "Sermons 1969 to 71". The little TTL oscillator and buffer circuit, I thought, could well be used to drive one of my VN10KM devices. A simple 'bolt together' circuit job. Add the TTL oscillator and driver to a standard VMOS power amplifier circuit and see what happens.

The Circuit

The circuit, such as it is, of the transmitter is shown in Fig. 1. The integrated circuit is the very inexpensive — they almost give them away — SN7400, quadruple 2-input positive NAND gate. I didn't pay anything for my stock of 7400's. A well known fruit machine manufacturer was overtaken by technology about ten years ago and had to scrap most of their rather complex and beautifully made TTL counting circuits for electronic gaming

Tinned VMOS: top view of the 80-metre transmitter.

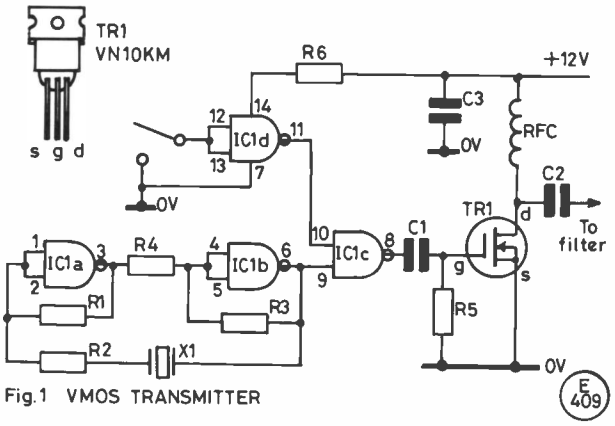


Fig.1 VMOS TRANSMITTER

Table of Values
Figs. 1 and 3

R1 = 560R
R2, R4 = 220R
R3 = 1K8
R5 = 1M
C1, C2 = 10nF miniature mica
C3 = 0.1 μ
RFC = 14 turns of 36 swg enamelled wire on ferrite bead
IC1 = SN7400
TR1 = VN10KM
SW1 = double-pole changeover miniature toggle switch
X1 = fundamental 3.5 MHz band crystal

Component sources: VN10KM VMOS transistors are available from **J. Birkett**, 13 The Strait, Lincoln LN2 1JF (Tel: 0522-20767); 3.560 MHz (International QRP Calling Frequency) crystals in HC25U mountings are available from **P. R. Golledge Electronics**, Merriott, Somerset TA16 5NS, at £4.00 each inc. postage and VAT (£3.50 to G-QRP Club members).

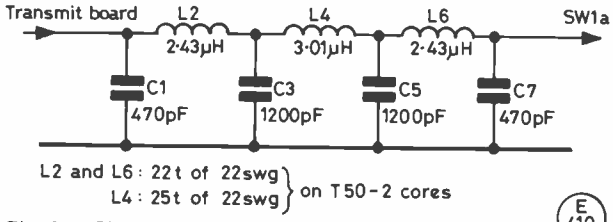


Fig. 2 LOW PASS FILTER

machines when dedicated integrated circuits appeared for their application. But you cannot get integrated circuits off soldered boards, you say? Well generally that is true but a group of us who got these boards just applied a blow torch to the solder side and banged the board against a table to knock out the ICs. I did not expect any of them to survive but I have yet to find one from that operation that does not function.

The circuit amounts to a flip flop oscillator using two gates, IC1(*a*) and IC1(*b*) coupled by the crystal (X1) to determine frequency. The resistors help to ensure that the gates operate in an almost linear fashion for starting and help with temperature

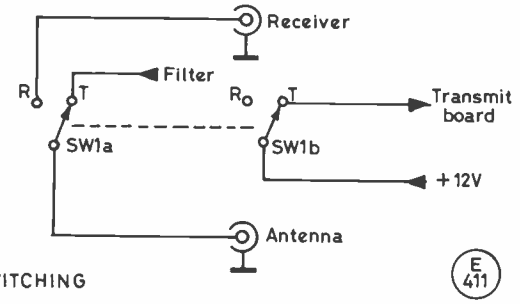


Fig.3 SWITCHING

stablization. R6 ensures that the IC has something near its correct operating voltage, usually 5 volts for TTL devices. IC1(*c*) acts as a buffer/driver stage but since it requires both gates to have input to function, it is also the stage which is keyed. The keying is done using the fourth gate, IC1(*d*), which functions as a simple on/off switch from the Morse key. The more sophisticated constructor could add some keying shaping to this part of the circuit.

The driver feeds into the single VN10KM VMOS PA stage. Delightful stuff this VMOS, so they tell me. Not only is it a high input impedance but on paper they seem almost indestructible. There is no thermal runaway as with bipolar transistors, they have excellent immunity to damage from high SWR in both open circuit and short circuit conditions, they are self-ballasting when used in parallel so two, or more, of them can be stacked piggyback fashion and they find their own current levels. The PA circuit in Fig. 1 is simplicity itself and delivered up to 1 watt of RF output, enough for useful QSOs on the band.

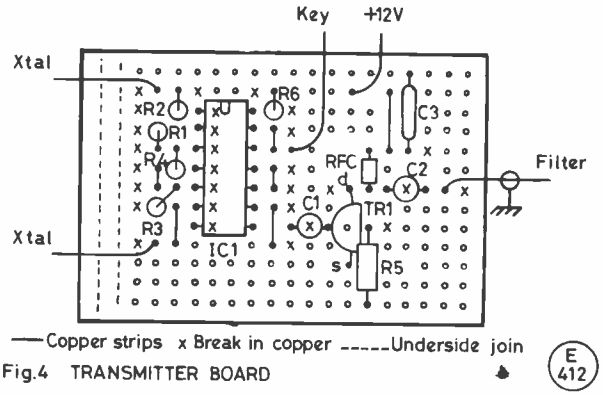
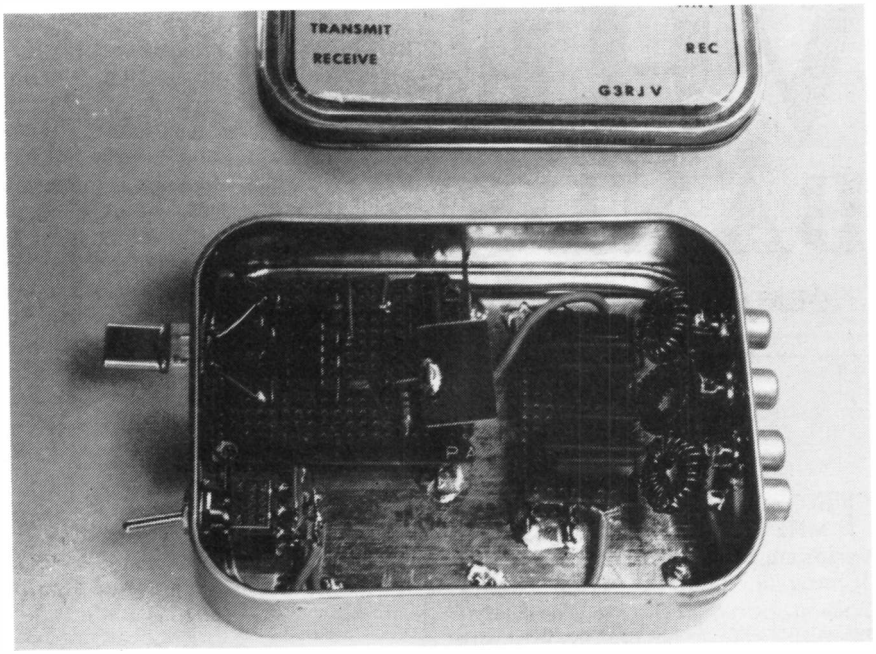


Fig.4 TRANSMITTER BOARD

The output from the PA stage requires a good low pass filter. Bearing in mind that the TTL circuitry will produce a square wave signal which is rich in harmonics a single pi-network section is not adequate, even at these low power levels. The low pass filter employed is shown in Fig. 2. Avid *Short Wave Magazine* readers will recall the learned series of articles by Ed Wetherhold, W3NQN, on Low Pass Filters for RF Attenuation. Part II of this series (*Short Wave Magbazine,* Jan. 1984) gave practical information for the design of a series of low pass filters for amateur band use. The filters are 7-element Chebyshev filters using only standard value capacitors. An achievement in itself since all too many low pass filter designs come up with very odd values of capacitance which have to be contrived from standard values connected in series or parallel.

One or two constructors I have spoken to were put off by the mathematics of W3NQN's articles. Never fear, that particular article gives a simple series of charts and a formula from which the constructor can choose the required low pass filter from a series of computerised designs. The capacitors are standard types and the inductors can be wound onto *Micrometals* (Amidon) cores, the number of turns required and even the gauge required to suit the chosen core can be selected from the tables. The only calculation, from a formula, can be done in five seconds on any pocket calculator with a square-root facility. Ed Wetherhold was kind enough to send me this article before it was published and I have used his standardised values for low pass filters ever since, with very good results. The values I used, worked out from the W3NQN data, are given in Table 1.

The transmitter was to be a simple construction exercise so manual transmit/receive change over is used. This is illustrated in Fig. 3. A single miniature 2-pole changeover toggle switch is employed to change over the antenna from transmit to receive and also cut off the oscillator during the receive periods. It would, of course, be possible to build a semi-automatic changeover using



An inside view of the transmitter; note the small piece of printed circuit board material soldered onto the VMOS PA transistor tab as a heatsink.

the keying action to pull in a changeover relay. A slide switch could be substituted for the toggle switch, which would cheaper, but I find them very prone to poor contacts.

Construction

The transmitter is built onto two small offcuts of Veroboard. I don't usually like Veroboard construction but the TTL section of the circuit seems to lend itself to this method of construction. One board holds the transmitter electronics and the other, smaller, board the low pass filter; these are shown in Fig. 4 and Fig. 5 respectively. The diagrams use the usual convention of showing where a break in the copper strip occurs by a cross and underside joins in the copper strips by means of a dotted line. The wary might like to use an IC holder for IC1 but I merely soldered mine directly onto the board. When building with Veroboard, do check the soldering carefully for accidental bridges between tracks of the copper strips. The Low Pass Filter board is smaller and the leads to and from this board ought to be screened; I used thin microphone cable which works well for the very short runs required, although no doubt the purist will use 50 ohm cable.

The whole transmitter is mounted into a single two-ounce (they usually have some funny markings to do with grams on them these days) tobacco tin. There is plenty of room in the tin when both boards, the sockets and the crystal holder and switch have been mounted. I reckon I could still get at least an ounce of tobacco in mine! I use the small inexpensive phone plugs for all terminations at my station. At the power levels I use they are good up to VHF and very cheap and easy to obtain. The single hole mounting type which I favour do have an annoying habit of loosening off in use and I usually add a corrugated lock washer under the nut for extra security.

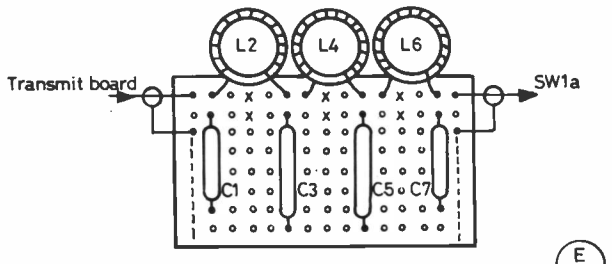


Fig.5 FILTER BOARD

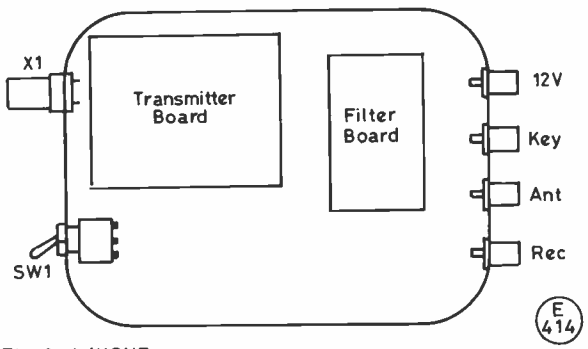


Fig. 6 LAYOUT

The tin is embellished with an insert, on the lid, of thin card which bears the markings and legends shown on the photographs. Just cut a thin piece of card to fit, mark it with Letraset or other suitable lettering medium, stick it onto the tin lid and cover it with a layer of the clear sticky-backed plastic film obtainable from stationers. The photograph of the inside of my prototype will reveal another couple of oddities. First of all the number of capacitors in the low pass filter. In spite of Mr. Wetherhold's attempts to ease the problems of finding suitable capacitors for the filter, I could not find single capacitors to use for C3 and C5 in the circuit; hence two are used in parallel. The solder blobs reveal another attempt at cheapness: I did not mount my board away from the bottom of the tin with expensive standoff pillars but merely used pieces of bent stiff wire soldered onto the earthy points on the boards, then directly onto the bottom of the tin.

Results

Well there it is, no threat to hi-tech but a simple, very cheap, little transmitter. The power, about 1 watt of RF output, is enough for some useful contacts on 80 metres. The crystals I used were from the source named in the Table of Values, and the rather posh HC25U type mountings, but any surplus 80-metre CW band crystals should function very well in this circuit. Within five minutes of building the little transmitter, in fact before it was in the box, I had my first QSO. I received 579 from a station in Surrey, from my QTH in Lancashire. The little box was feeding my G5RV antenna *via* a homemade Z-match ATU.

VHF BANDS

NORMAN FITCH, G3FPK

Awards News

TWO more readers have joined the 144 MHz VHF Century Club this month. Certificate No. 370 was issued to Peter Johnstone, G6RAU, from Stoney Stanton, Leics., on Nov. 16. For most of his working life, he has been involved with radio and electronics, but is was not till 1982 that he decided to become a radio amateur. Peter and his eldest son, now G6SGJ, sat the May, 1982 *R.A.E.* together and both passed. Peter's station consists of the *FDK 750A* transceiver running 10w to a 9-ele. *Tonna Yagi* at 25ft. *a.g.l.* the site being 350ft. *a.s.l.* and a good one for VHF.

Ray Baker, G4SFY, from North Walsham in Norfolk, is member no. 371, his certificate being issued on Nov. 21. He began listening in 1978 and took part in our HPX Ladder. He passed the May, 1981 *R.A.E.* and received his G6FDW call on Sept. 19. The present call was received on Feb. 21, 1983. Ray's station is a *Trio* TR-9000 with *Microwave Modules* MML 144/100S amplifier, the antenna a 9-ele. *Tonna Yagi* at 40ft. The *a.s.l.* is 100ft. He also operates on the HF bands but VHF is the main interest with 70cms. in mind.

Mick Cuckoo, G6ECM, was issued his "150" sticker for his QTH Squares Century Club Certificate no. 27 on Nov. 20. The new confirmations were for 16 tropo. and 9 *Es.* QSOs. Rare squares included SV3QD (LY), YU1OO (KG), CT1AYC (VY) and CT1AWO (VZ) all via *Es.* Gerald Nenner, DL8FBD (EK75f) is now up to 153 squares confirmed and his "150" sticker was dated 23 Nov. for Certificate no. 39. His latest additions included GM4DHF/P (XS) on CW MS and IM0/DF1ZE (EY) by the same mode. At long last your scribe has managed his "175" sticker for Certificate no. 1, dated Nov. 22. For details of the VHFCC and QTHCC send an *s.a.e.* to the Welwyn address at the end of this feature.

Beacon Notes

After many years of good service, the GB3SUT beacon (ZM31b) on 432.890 MHz is off the air. Water seeped into the oscillator and the antenna was rather grotty. An alternative site is being sought for a future replacement now that a new mast at the *BBC's* transmitter site is due.

Gunner Erickson, SM4GL, beacon keeper of SK4MPI, (HU46d/JP70NJ) on 144.960 MHz confirmed that this useful Tx is still operating but only at 5w to its four *Yagis* which beam north. In the new year it will be taken back to the Club where the new PA mentioned last month will be fitted. It is proposed to operate it from the club for about three months at 250w with a single *Yagi* and, after running it in, to return it to site sometime in the Spring.

From various sources there is news of an 6m. beacon in Greenland. Its callsign is OX3VHF, located at IQ06PS, possibly at the Denmarkshavn weather station. Its QRG is 50.045 MHz and the power about 20w to a ground plane. At the same location there is a 2m. beacon OX3VHF, on 144.902 MHz which runs 10w to a 6-ele. beam bearing 160° both looked after by OX3BX.

The Satellites

The UOSAT Bulletin no. 102 reports odd behaviour of *UOSAT-2's* attitude which occurred during the ten days the spacecraft was "unattended" due to the Command Station staff being away from Guildford. Previously gravity-gradient stabilised, it was no longer so when they returned, the spacecraft having apparently "toppled over." The current motion of *UOSAT-2* is complex, but on-board systems are unaffected. It will take some time to get things back to where they were and this unexpected problem is leading to some intricate studying of the spacecraft's dynamics.

The *OSCAR-10* schedule sems to change frequently. Until March 21, *AMSAT* states it will be; MA 15-51, Mode B; 52-68, Mode L; 69-200, Mode B; 201-14, off. Adrian Chamberlain, G4ROA, (Coventry) has recommended *0-10* operations since returning from a vacation in the U.S.A. On Nov. 14, he was called by W4BE from Port Richy, FL, whom he had met at the Tampa Hamfest. New countries worked were YV4WT, LU1HC and PZ1AC.

Roy Fox, G6UTI, is a new contributor to this section from Northampton. He uses *0-10,* the station comprising 10w from an *Icom* IC-451E on 70cm and an *IC-251E* with *muTek* board on 2m. The antennas for the uplink are a *Jaybeam* MBM88 and an eleven turn helix, with a *Jaybeam* 8-ele. *Quad* for the downlink. The feeder is 18m. of *Pope* H-100. His November DX includes; A92P, JA2AQ, JH4JPQ, JI3TIX, LU1DIU, UA9CKW, UA0SV, VE3MAP, VS6XMT, ZS3AK, ZS5NO plus some Europeans. He hopes to get on the *RS* satellites soon, too.

Concerning *AMSAT* matters, *Orbit Magazine* has ceased publication after having drained *AMSAT-USA* funds. The *ASR* News sheets continue. *AMSAT-UK* donations for 1985 are now overdue. A minimum donation of £7.50 would just cover costs. Full details of *AMSAT-UK's* services can be obtained for an *s.a.e.* from AMSAT-UK, London E12 5EQ.

Contest News

This must be something of a record in that your scribe is not aware of any contests in January. Last year the *Swale ARC* promoted two but no similar notification has been received for this year.

Occasional monitoring during the Dec. 2 144 MHz Contest from G3FPK suggested that conditions were rather mediocre. Local operator Steve Marsh, G4BWG, who took it seriously and operated with a small team, made 415 QSOs but with no real DX. Some of the usual dedicated contest types were not exchanging very big serial numbers at the end and your scribe noted that some stations were calling "CQ Contest" for some time with any takers.

Funny Noises

It seems that the 2m. band is increasingly suffering from extraneous noises, many of which appear to originate from digital equipment. A typical London case was reported in the *RSGB's* November 1984 *Council Letter.* The offending object was traced to a *British Telecom* Handset Type 8520, Gen. 84/1, embodying modifications 1 and 2. The QRM was a high pitched whine with superimposed fast pulses.

Similar noises in the 2m. band are always in evidence at G3FPK when beaming north towards Croydon and the City of London. When received in SSB/CW mode, the noise is a bubbling sound occupying several kHz and when in AM mode, there is this whining noise, rather like that from a turbine in a power station generating hall. Some careful checks were carried out with John Nelson, G4FRX, in Hampstead and who is 25.4 kms. from G3FPK. We were both hearing the same signals when John beamed south, though they were much weaker with him.

Rod Burman, G4RSN, reports similar noises from Sunningdale, Berks. They infest the SSB end of 2m. and have three distinct peaks, occupying about 100 kHz. They drift during the day, as do the ones at G3FPK. He has traced the source to the Sunninghill Post Office so it would seem that *BT* have a problem. There are fascinating legal implications since the offending devices are, in fact, behaving as illegal transmitters. It is rumoured that a major communications company may bring a test case to Court as it has been put to considerable expense to avoid illegal interference to its services. If any readers detect this type of interference it is suggested they try to track down the source, otherwise the 2m. band — and

others possibly — might become unusable in some areas.

Another ever-increasing source of whistles and unwanted burblings is the ubiquitous home computer. Almost all radiate "crud" throughout the HF and VHF spectrum and the interference is not confined to discrete frequencies. Particularly in graphics mode, the burblings hop about all over the spectrum, whereas the telephone ones basically stay put although they do seem to wander slowly up or down in frequency. This QRM makes it difficult to choose a QRG for an MS sked since what was clear when it was arranged might well be subject to QRM when the sked time begins. This point was mentioned by Terry Hackwill, G4MUT, who suffers in the Reading area.

There is no reason why digital equipment should radiate hash. After all, many modern amateur radio transceivers now incorporate microprocessors and they do not interfere with themselves. Perhaps we radio amateurs ought to adopt a more aggressive attitude and bombard our MPs with demands that legislation be enacted to make computer manufacturers eliminate this problem, and also write to these manufacturers individually, and from clubs, to try to shame them into doing something. Of course, the Amateur Service is not a protected one, however the Government does collect a licence fee from all of us, whereas computer users pay no such fee.

ANNUAL VHF/UHF TABLE

January to December 1984

Station	FOUR METRES		TWO METRES		70 CENTIMETRES		23 CENTIMETRES		TOTAL
	Counties	Countries	Counties	Countries	Counties	Countries	Counties	Countries	Points
GW4TTU	—	—	92	37	49	10	19	4	211
G6DER	—	—	75	25	61	14	25	8	208
G1EZF	—	—	83	26	52	11	17	2	191
G4TIF	31	3	69	19	53	13	—	—	188
G8PNN	—	—	62	14	50	10	38	13	187
G3BW	46	6	63	23	35	9	*16*	*5*	182
G4ROA	—	—	61	12	54	10	32	5	174
GD2HDZ	43	5	58	8	37	7	*8*	*3*	158
G6XLL	—	—	75	18	52	9	—	—	154
G4SEU	38	6	56	15	25	7	—	—	147
G4MUT	37	4	51	16	28	7	—	—	143
G4ZTR	*17*	*1*	54	16	38	10	17	5	140
G4ARI	42	4	72	19	—	—	—	—	137
G8ULU	—	—	58	18	32	13	8	7	136
G6MGL	—	—	58	18	43	13	2	1	135
G8FMK	—	—	36	5	48	8	30	5	132
G4VXE	—	—	66	14	43	8	—	—	131
G8TFI	—	—	—	—	63	18	32	12	125
GW8UCQ	—	—	59	16	38	8	—	—	121
G4XKR	—	—	61	9	38	7	—	—	115
G6XVV	—	—	61	13	31	8	—	—	113
GW3CBY	*6*	*3*	56	16	21	5	8	4	110
G6ZPN	—	—	72	14	20	4	—	—	110
G6ECM	—	—	78	28	—	—	—	—	106
G6YIN	—	—	71	17	13	3	—	—	104
G4HGT	14	2	50	6	24	7	—	—	103
G4NRG	22	4	23	20	20	9	*1*	*1*	98
G3FPK	—	—	75	23	—	—	—	—	98
G4SFY	—	—	71	23	—	—	—	—	94
G6HFF	—	—	57	8	20	5	—	—	90
G6AJE	—	—	64	16	—	—	—	—	80
G8RWG	—	—	59	20	—	—	—	—	79
G4LZD	—	—	60	15	—	—	—	—	75
GM8YPI	—	—	32	14	20	8	—	—	74
G8XTJ	—	—	59	14	—	—	—	—	73
G8HHI	—	—	5	9	33	3	18	4	72
G6NVQ	—	—	60	7	—	—	—	—	67
G8VFV	—	—	50	14	—	—	—	—	64
G4YIR	—	—	50	12	—	—	—	—	62
GW4HBK	29	4	6	3	7	2	—	—	51
G2DHV	7	1	33	4	3	1	—	—	49
G6XSU	—	—	—	—	41	8	—	—	49
GU4HUY	—	—	42	6	—	—	—	—	48
G4CMZ	36	4	1	1	—	—	—	—	42
G4EZA	—	—	31	9	—	—	—	—	40
GM4CXP	—	—	20	7	6	2	—	—	35
G3PBV	—	—	—	—	—	—	30	5	35
G6CSY	—	—	8	5	7	1	4	2	27
GW3MHW	16	2	—	—	—	—	—	—	18

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

Six Metres

Following the issue of the 60 new permits, 6m. has seen a welcome increase in activity. A number of our contributors have got permits and Dave Sellars's G3PBV, (Devon) arrived on Nov. 12. He hastily made a 3-ele. *N.S.B.* type *Yagi* and put it up at 15ft. Using a *Trio* TS-660 with 10w, he had worked 14 stations up to Dec. 5. His beam is now at 25ft. Dave reports the Potters Bar beacon GB3NHQ audible much of the time but subject to slow fading, seemingly a tropo. characteristic of the band. He notices MS pings on local stations when they are beaming away from him.

Derrick Dance, GM4CXP (Borders) says his is "open to offers" for 6m. skeds on CW or SSB, also crossband 6m/2m. and hopefully 6m/10m. later this year. From 2330 to 0030 would be suitable and he welcomes SWL reports. He is *QTHR*, the telephone no. St. Boswells (0835) 22795. His station comprises a *Yaesu* FT-101B and transverter, running 10w to a 5-ele. *Tonna Yagi* at 25ft.

Alan Wright, GW3LDH, (Clwyd) has provided some interesting observations on the *Ar* on Nov. 15. GB3SIX beacon in Anglesey was S8A at 1830, QTE 285°, S9A at 2230/350°, S1A at 2250/315° and S5A at 2301/280°. A distinct change of "note" in the *Ar* was noted at 2310. Stations worked were GM3WOJ at 2237/350°, GM3DOD at 2243/350° with 'DOD beaming at 015°. GI3ZSC and GW3MHW are reported at 2355 and 0006 at 315° azimuth. On Nov. 20, Alan mentioned that G4IFX (Cheshire) received Icelandic TV on Ch. E3 and E4 at 1900 and again 1950-2045. GW3LDH received the Greenland beacon OX3VHF at RST 539 from 1949 to 2000 that day, peaking to S7. The mode was almost certainly *Auroral Es*.

Alec Allan, GM3ZBE, near Inverurie, copied OX3VHF beacon at S9 plus 20 dB between 1927 and 1935 on Nov. 15 on the true great circle azimuth. The QRB is 2,260 kms. for this *Auroral Es* reception which occurred after the *Aurora*. From north London, Jim Rabbitts, G8LFB, saw his first ever Icelandic TV pictures on Ch. E4 on Nov. 15. They built up in strength from 2245, were very strong at 2250, lasting till 2300. These were just like normal *Es* TV signals in the summer from southern Europe. Identification was easy due to the test card with "RUV" legend. This was *Ar Es*, of course.

Four Metres

Welcome to Jerry Russell, G4SEU, from Nuneaton, Warks., who enters the Annual Table at the eleventh hour. He got going on the band on June 15 and has now contacted 74 different stations. He monitors most nights from 1900-2230 and often works G3CUN and G4WND. They would welcome other callers. The *Atherstone RC* put on a special event station on the *JOTA* weekend and GB4FHC made 28 QSOs. A contact with GB4SGB is thought to be the first 4m. QSO between two special event stations. Jerry's station consists of a *Yaesu* FT-902DM and *FTV-901R* transverter with 70cm., 2m. and 4m. fitted. The power is 85w to a 7-ele. *ZL-Special* antenna.

Two Metres

Mick Allmark, G1EZF, (Leeds) got one new square during the *Ar's* on Nov. 1 and 1, GM6LXN (YS). On CW he heard many SM and LA stations so is determined to get his Class A licence this year. He has "coaxed' 260w out of his PA which is now

all boxed up in a 19inch rack. From Devon, G3PBV received strong signals from SM5CBN and SM5CNQ on the 15th, the *Ar* still going on when it was time to start up on 6m.

Tim Raven, G4ARI, (Leics.) has been wielding a paint brush a lot lately, so has not had much time for *AR*. However, in October he added 41 new stations for the CW Ladder. Vaughan Reynolds, G4MVR, (Kent) is looking for another 7-ele. *H.A.G. Yagi* to upgrade his antenna system. These excellent beams are no longer stocked in the U.K. unfortunately. Any reader with a spare one, please contact him. *QTHR*.

Ken Osborne, G4IGO, (Somerset) mentions GM and SM stations in the Nov. 15 *Ar* between 1820 and 1843, with more at 2300-0045, when he switched off, at QTE 25-30°. At G3FPK, the first phase on the 15th was from 1819-1842 with LA8SJ and GM4ILS both only S1A. Another phase was in full spate at 2345 when GM3WTA (YR68b) was worked on CW at QTE 0°. LA7KK (FU62j) at 0028/15° was a new square and SM0HAX (JT51b) at 0039/10° was contacted before close down. At 0005, LA7KK was copiable at 330° only. At 0025, G4HDF was heard working LA6VBA (ES26g) David beaming at 70°.

Although he works CW fairly consistently, Les Bober, G4NOZ, (Essex) finds it hard to work new stations so only added five more in November. Ron Wilson, G4NZU, (Notts.) noticed the CW Ladder so counted up his tally this year which came to 163, so he enters the table. Steve Black, G4PSS, (Sunderland) added a few more on the key and asks if anyone is QRV on SS/TV. He has acquired G3WW's *Robot 400,* so is keen to have a go. He has a good location at 520ft. *a.s.l.* and is also an RTTY enthusiast.

Adrian Chamberlain, G4ROA, only added G1HGJ on Nov. 29 in Tyne & Wear to his table total and has confirmed that GI6ATZ is in Co. Down; he worked him in the Sept. 23 *Ar*. G4SEU operates on the band and has 56/15 for the Annual Table so far. Jerry runs 160w to a 16-ele. *Tonna Yagi,* so should do well. Martyn Jones, G4TIF, (Warks.) wrote to say he had worked nothing new due to the poor activity and conditions. However, he found that CT1BZT worked on June 30 is in VY, a new square.

Due to a postal strike, Ray Baker, G4SFY, telephoned his report from Norfolk. His best DX in the Nov. 3/4 contest were:- DL8GP and F6KMO in DJ, DL1GCR/P (DH), LX1YX (CJ), F3MS (CI) and HB9BLF/P (DH), plus Ds in EJ, FM and FO. In the *Ar* on Nov. 15/16, on CW, he worked:- LA8SJ (FT), SM4MI and '4CLU in GT, RQ2GAG and UQ2AO in MQ, Sk5EW and SM0HAX in JT, SM5CBN (HS), LA8WF (FT), OZ1FGP (EQ), LA8AK (DS), SM4ESA (HU),

QTH LOCATOR SQUARES TABLE

Station	23cm.	70cm.	2m.	Total
G3POI	—	—	429	429
G3IMV	—	100	366	466
G4IJE	—	—	325	325
EA3LL	3	32	300	335
G4ERG	—	16	261	277
G3BW	9	38	250	297
G8VR	2	24	246	272
G4DHF	—	—	245	245
G4DEZ	—	—	242	242
GJ4ICD	41	116	238	395
G4KUX	—	36	231	267
GW3NYY	—	48	219	267
GW4EAI	—	—	218	218
G4DCV	—	50	212	262
G4NQC	61	90	211	362
GW4LXO	24	63	207	294
GW4TTU	15	65	207	287
G3FPK	—	—	205	205
G3UVR	25	86	202	313
GJ8KNV	18	79	201	298
GM4IPK	—	—	201	201
G4MCU	18	81	198	297
G4OAE	—	46	190	236
G3PBV	41	106	189	336
G8KBQ	22	96	188	306
G6ECM	—	—	185	185
GJ8SBT	26	47	182	255
G3BDQ	—	—	177	177
G8LFB	—	—	177	177
G8TGM	—	—	174	174
GM4CXP	—	27	172	199
G3JXN	71	110	171	352
G3COJ	42	97	170	309
G6HKS	—	—	169	169
G4TIF	—	89	166	255
G3XDY	58	109	155	322
G4RGK	5	52	154	211
G4BWG	—	64	152	216
G4HMF	2	35	152	189
G4MEJ	—	—	150	150
G4IGO	—	—	146	146
G4SFY	—	—	143	143
G6DER	27	72	142	241
G4MJC	—	12	140	152
G8HHI	22	77	135	234
G6DDK	3	15	131	149
G4DOL	—	—	131	131
G8ATK	23	82	129	234
G6MGL	2	51	127	180
G8TFI	51	109	126	286
G8PNN	50	83	126	259
G8ULU	35	90	125	250
G1EZF	9	44	119	172
G4YUZ	—	—	117	117
G6JNS	1	32	116	149
G4HFO	—	69	115	184
GW8UCQ	1	68	115	184
G4NRG	1	36	115	152
G4STO	29	48	113	190
G4GHA	—	6	112	118
G4MUT	—	72	109	181
G6DZH	—	57	107	164
G8VFV	—	—	107	107
GW3CBY	10	35	105	150
GM8YPI	—	37	105	142
G8ZDS	—	31	104	135
G8WPL	9	63	103	175
G8RWG	—	—	103	103
G6HCV	—	—	102	102
G4NBS	14	77	94	185
G4TJX	—	59	94	153
G4FRX	—	66	92	158
GD2HDZ	13	50	91	154
G8FUO	39	105	88	232
G4RSN	2	23	88	113
G8ROU	1	43	86	130
G6XLL	—	27	86	113
G6NWF	—	—	86	86
G4ZTR	35	57	82	174
GW8VHI	—	41	82	123
G8XTJ	—	—	82	82
G6AJE	—	—	82	82
G4UYL	—	—	81	81
G8FMK	36	70	80	186
G6YIN	—	11	71	82
G4LZD	—	—	71	71
G4FRE	41	106	68	215
G4CQM	—	49	67	116
G4ROA	25	60	65	150
G6YLO	10	13	55	78
G4MAW	43	105	52	200
G6XVV	—	20	50	70
GM8BDX	13	28	40	81
G6CSY	15	25	30	70
G2DHV	—	2	24	26
G6XSU	—	45	—	45

Starting date January 1, 1975. No satellite or repeater QSOs. "Band of the Month," 2m.

SM0DXV and '0FMT in IT, the event ending at 0210.

Sue Frost, G4WGY, (London) added 12 more to her CW total including John Short, G3BEX, (Bucks.) who returned to 2m. CW after 26 years. He was pleasantly surprised at the standard of operating on the key. Sue also worked her first G0, G0ABN, on Nov. 18. June Charles, G4YIR, (Essex) also worked a G0 in her 15 new ones for the Ladder and reckons it has been an incentive for her to use CW. On Oct. 31, GJ1JWB was a new county and country for the Annual Table.

Dave Carter, G4WHZ, (Essex) operated in the Nov. 15 *Ar* working SM5CBN, SK5EW and GM4ILS, and now has 318 for the year. G8LFB's only new one was EI8EF (Donegal) in VO square, in the Nov. 15 *Ar*.

John Eden, GM6LXN, (Caithness) sent a very detailed account of the Nov. 15 and 16 *Ar* events. In the period 1730-1815 on the 15th, he worked Gs in YN, ZN, ZO and ZP, plus GM6LNM, GM4ZUK, LA8AJ (FT71e) and EI8EF. The LA was not the "normal" Ar quality though. John is well sited on 120ft. cliffs with the beam pointing over the sea. Very often, an *Auroral* hiss is heard at a number of bearings. GB3LER beacon is heard 99.9% of the time 1.4 kHz low from its published QRG. It is rarely detectable on 144.965 kHz. At 0010 on the 16th, DL0PR (EO) was *Auroral* at QTEs 300°, through north, to 80° continuously. GB3LER was S4A at 25-45° which is normal.

Another *Ar* was going on when John switched on at 1200 on the 16th. G1AWP in Newcastle-on-Tyne, and G1FFF in Berwick-on-Tweed were worked. The *Ar* went on all afternoon but there seemed nobody to work. From 1630 to 1710, Gs in YN, ZM and ZO were worked, plus GI6ATZ. Signal strengths were up and down all the time. A PA3 was called at 1800 but was lost.

Some very interesting notes have been received, via G4DHF, from Henry Snip, PA3BWY, concerning *Auroral* reception in the North Atlantic. Henry is a weather observer employed by the Dutch Meteorological Office, known as KNMI. He makes two or three voyages a year in the weather ship *Cumulus.* These last about a month at *Station Lima,* 57°N and 20°W. In his last voyage from Holland to *Station Lima,* some readers contacted him as PA3BWY/MM on 2m. His station on board comprises a *Yaesu* FT-480R feeding a ground plane through 12m of RG-213/U cable.

On Nov. 15 at 2350 in the *Ar,* he copied GM4TXX calling "CQ" on CW. Between 0035 and 0215 on the 16th, he logged the following;- GM3WTA, G4ERG, G4XEN, G4KUX, G4SHC, G4YHF, G4SDC, GM4OGM and G4DHF. He gives signal reports mostly as RST 529, indicating they were only just about audible, but for 9 read A, surely? All stations identified were called from QR square but only G4SDC came back with a QRZ?

The visual *Aurora* was very impressive. It crept over the northern horizon at 2100 and at 2300 reached its zenith. Shortly

ANNUAL CW LADDER

Station	4m.	2m.	70cm	μWave	Points
G4SFY	—	458	—	—	458
GW4TTU	—	318	72	19	409
G4ARI	73	255	—	—	328
G4WHZ	—	318	6	—	324
G4TVH	—	213	—	—	213
G4NOZ	—	206	—	—	206
G4NZU	—	163	1	—	164
G4WGY	—	135	—	—	135
G4TON	—	130	2	—	132
G4UNL	—	119	—	—	119
G4EZA	—	117	—	—	117
G4VXE	—	83	16	—	99
G2DHV	23	74	1	—	98
G4LZD	—	70	—	—	70
G4YIR	—	59	—	—	59
G4OUT	—	55	—	—	55
G4SGO	—	43	1	—	44
G4PSS	—	32	—	—	32
G3URA	—	30	—	—	30
GW4HBK	27	—	—	—	27
GU4HUY	—	27	—	—	27
GM4CXP	—	21	—	—	21

No. of different stations worked since Jan. 1.

after, the Corona appeared in red, green and white/yellow, quite an awe-inspiring sight. It is doubtful that much will be worked with just 10w and a ground plane and Henry points out that there are many obstacles near his antenna which cannot help. He mentions how loud was G4KUX's signal but that is to be expected since Nick runs full power to four 19-ele. *Yagis* and is ideally situated for *Ar* operating.

Kathy Niebuhr, G4LMO, (Oxon.) talks to Henry on 80m. and he sent her some letters for various G stations. Most have been sent but she had no QTHs for G4SHC, G4XEN and G4YHF. So if any of those have not yet received their letters, please contact her at *QTHR 1984 Call Book only.*

Seventy Centimetres

G1EZF found the Cumulatives conditions poor, generally, but did add a few to his Annual Table total, Mick is planning to build a 4CX250-type amplifier provided he can get a suitable base without paying a small fortune for it. Bill Hodgson, G3BW, (Cumbria) has had to remove his antenna from the tower due to the terrific gales, so will not be very active on the band till the Spring. G4ROA added GW8JLY (S. Glam.), GW3NYY (W. Glam.), G8JHL (Lancs.?) and G6WZO/A (W. Yorks.) for new ones in November.

G4RSN is on the band again with an antenna in the loft. He had to prune his *Multibeam* to 44 elements in order to be able to rotate it. G4SEU is on the band with 10w to an *Ant Products* Silver 70 antenna. Roy Bibbons, G6XSU, (Herts.) has had problems with a transistor amplifier so, with flat conditions lately, he has been constructing a 2C39A amplifier which should soon be operational.

Microwave Bands

G1EZF borrows G4TRQ's 23cm. transverter. Mick writes that Andy is now building an amplifier with two 2C39A valves which he hopes to borrow also, from time to time. If so, his own score should improve. Gordon Emmerson, G8PNN, (Northumberland) reports that November was a very quiet month. He sent in a list of all the counties and countries worked on 23cm. and his all-time figures are 44 and 15 respectively. On 13cm. his score is 9 plus 6 so far.

On 3cm. there is news of a QSO on Oct. 30 between G3LOR and DK2UO (DL) over a distance of 392 kms. Simon was running 100 milliwatts to an 18 inch dish.

DX-Pedition

The *Derbyshire Hills Contest Group* is planning another DX-Pedition for this year following their trip to the Irish Republic in 1984. First thoughts were to go there again but the latest idea is to go to Scotland, YS and YT squares being considered. The main requirement is a team of really good and dedicated operators. When enough have made a firm commitment, the Group can plan how many bands to use, perhaps operating from different sites at the same time. Anyone interested should contact David Hardey, G8ROU, whose address is;- Thorntree House, Wensley, Matlock, Derbys., DE4 2LL, the telephone no. being Matlock (0629) 732620. No dates were mentioned.

The 1985 Tables

Next month the final listings for the 1984 Annual Table will be published with the band-by-band listings. The Final List for the 23cm. All-Time Table will also appear, this being replaced by a new 13cm. All-Time Table to encourage a little friendly competition on 2.3 GHz. Please be sure to get your scores in, ideally to arrive at Welwyn by January 2. However, late figures are acceptable if they get to G3FPK's QTH by Jan. 5 at the very latest.

The QTH squares list will continue, its starting date being Jan. 1, 1975 as before, and a new Four Band Annual Table will begin in the March issue. As the Annual CW Ladder has proved so popular, a new one will commence on Jan. 1. Reverting to the 13cm. All-Time Table, it has been suggested that QTH squares be included, so please state the number of *administrative* counties, countries and squares — e.g. ZL = I091 — to be added together for the total.

Late News

As this piece was being compiled, a large high pressure system centred to the southwest and drifting eastwards from Dec. 8, produced some excellent tropo. conditions into central France, Luxembourg and Germany. In the evening of the 10th, G4FDX/LX worked scores of U.K. stations and G8LFB was calling "CQ DX Italy" after hearing that G6ECM had contacted an Italian on 2m. At G3FPK, signals from the north of England and Scotland were very strong off the back side of the beam. Reports on this event will no doubt feature largely in next month's feature.

VHF Convention

A reminder that this year's *RSGB National VHF Convention* will be held at the Sandown Park Racecourse, Esher, Surrey, on Saturday, March 23. It will follow the usual format of an all-day trade show with three-stream afternoon lectures.

More details later.

Deadlines

Hope you all enjoyed the Christmas holiday and that you will find some time to write for the next issue, the copy deadline for which is *very early,* **Jan. 2.** The deadline for the March issue is *exceptionally early* — **Jan. 30** — so please note both dates in your new diaries. As usual, all your news, claims and comments to;- "VHF Bands," SHORT WAVE MAGAZINE, 34 High Street, WELWYN, Herts. AL6 9EQ. *73 and a Happy New Year, de G3FPK.*

Looking at the High-Frequency Bands

N. S. CAWTHORNE, G3TXF

THE exact definition of "HF" (high frequency) varies slightly depending on the user of the term. Professional communications people talk of HF as being from 3 to 30 MHz, with the frequencies on the low side of 3 MHz being referred to as "MF", medium frequency. For radio amateurs the term HF covers the bands between 1.8 MHz and 30 MHz. There are nine HF bands available to U.K. operators and they are listed in Table 1.

No two HF bands are the same. Each has its own characteristics and identity. The total bandwidth available to amateur HF operators in the U.K. is 3.340 MHz, which represents nearly 12% of the spectrum between 1.8 and 30 MHz.

Frequency or Wavelength?

In referring to different HF bands, amateurs slide from 'frequency' to 'wavelength' with ease, and often in the same sentence too! Fortunately because the numbers in "Megahertz" and "Metres" describing the bands do not clash, confusion does not usually arise. The only exception to this is the new band at 10 MHz. Care is needed in conversation to avoid confusion between "10 MHz" and "10 Metres"!

To avoid further to the confusion of names for the different HF bands, the new WARC bands are usually referred to in MHz terms 10, 18 and 24, whereas in conversation the original six HF bands are more often referred to using their 'Metres' name.

This article will make no attempt at sorting out the confusion of terminology. It will use the term that seems most appropriate at the time, as most HF operators do in practice anyway!

WARC 1979

Three new HF bands have been released to U.K. amateurs in recent years following the excellent work done by the International Amateur Radio Union (IARU) delegation at the World Administrative Radio Conference held in Geneva in 1979. These new bands at 10 MHz, 18 MHz and 24 MHz, although still available only on a relatively restricted basis, represent an increase in available bandwidth for the HF amateur of 250 kHz. The net result of the 1979 WARC conference for the HF amateur radio operator was a significant net gain in frequencies, in the face of opposition from other interested HF users such as broadcasters and fixed and land mobile service operators. A significant achievement.

Each of the HF bands is seen differently through the eyes of individual operators, reflecting their own operating preferences as well as perhaps the type of equipment they are using. The following is just one HF operator's view of each of the HF bands.

160 Metres: 1.810 – 2.000 MHz

Known to many as Topband, this 190 kHz of spectrum at the lowest frequency end of the HF bands is sometimes more cheekily described as Bottom Band or Grandad's band! The Topband designation came about in the days when 'wavelengths' were used to describe bands rather than 'frequency'; at 160 metres, it is our longest wavelength band.

Topband has changed dramatically over the past ten years or so for two different reasons. The number of countries allowed to use the band has increased enormously over this period. At one time, to work 100 countries (DXCC) on Topband was only possible for a very few long serving devotees of Topband, whereas today working 100 countries on 160m. is a practicable target, even though it is still by no means an easy one! Most European countries are now allowed on 160m. Many countries only have limited access to the band through a limited range of frequencies. The U.K. still has full access from 1.810 to 2.000 MHz.

The other major change to Topband over the years has been a reflection of the operating style of amateur radio in general. Before the days of the now ubiquitous black-box HF rig, transmitters had to be built, and the easiest band to build a transmitter for was 160m. With ten watts of AM and a 132-ft. length of wire folded around the garden, all the locals could be worked with a home-brew transmitter. Local natters in those days were mostly on Topband. A Topband QSO was the first QSO for many a newly licenced radio amateur. The transmitter may have been made from one of the hundreds of published designs for 10

Planning permission for major HF band antenna installations in the U.K. can sometimes be a problem. Not so in France! Thanks to a French law "droit à l'antenne", everyone in France has the right to put up antennas. This impressive HF and VHF roof-top installation at Blagny in Normandy belongs to F6DLN.

watt Topband transmitters centred around a 6BW6, 807 or similar valves.

It was from a start on Topband that newcomers would progress to other bands. Incredibly as it may now seem, with today's 2m. FM boxes being no larger than paperback books, Topband mobile operating was a popular activity. Large whip antennas with huge loading coils were needed to get anywhere as a Topband mobile.

Topband has changed a lot over the past decade. It is no longer a major natter band, and it is also no longer most newly licenced amateur's first contact with the radiowaves; 2m. has taken over both of these roles. Today's Topband is more of a specialist's band; it has plenty to offer. There are still some local club nets on SSB and AM.

Topband is still a good band for a round-U.K. chat in the evenings. The Worked All Britain area chasers hold regular nets on SSB on 160m. DX traffic on 160m. is still concentrated around the low end. Many countries that have only limited access to the band have their small band of frequencies at the lower end of the band around 1,830 to 1,840, although the JA's are limited to a few kHz up around 1910 kHz.

Topband is the home of many devoted night-owl DX-ers. Topband DX-ing requires good antennas and patience. There is a solid core of 160m. DX-ers who can usually be found lurking around the lower parts of the band at night during the winter months. The U.S.A., Australia and New Zealand are all within reach of the keen Topband DX-er. The key factor, apart from having a good station, is knowing about propagation on Topband. Much of the better DX is worked along the Grey-Line. As the sun is setting in the U.K., it will be rising elsewhere in the world. When the station that you are searching for lies exactly on this dawn-dusk line and providing that conditions are reasonable, there might be a short opening of a few minutes. It is during these types of openings that much of the more exotic DX is worked on Topband.

Topband bursts to life with a flood of activity during any of the four Topband contests annually organised by the RSGB. Three are on CW and one on SSB. These are short sharp contests designed to generate a high level of activity. There is inter-G working as well as DX working. For anyone new to Topband one of these contests is an excellent opportunity to get to know the band at the same time as making a number of interesting contacts.

The CQ Worldwide 160-Metre contests held in January (CW) and February (SSB) generate a lot of international DX activity on the band. Many countries that at other times are rarely heard on Topband make an appearance during the CQ WW 160 contests.

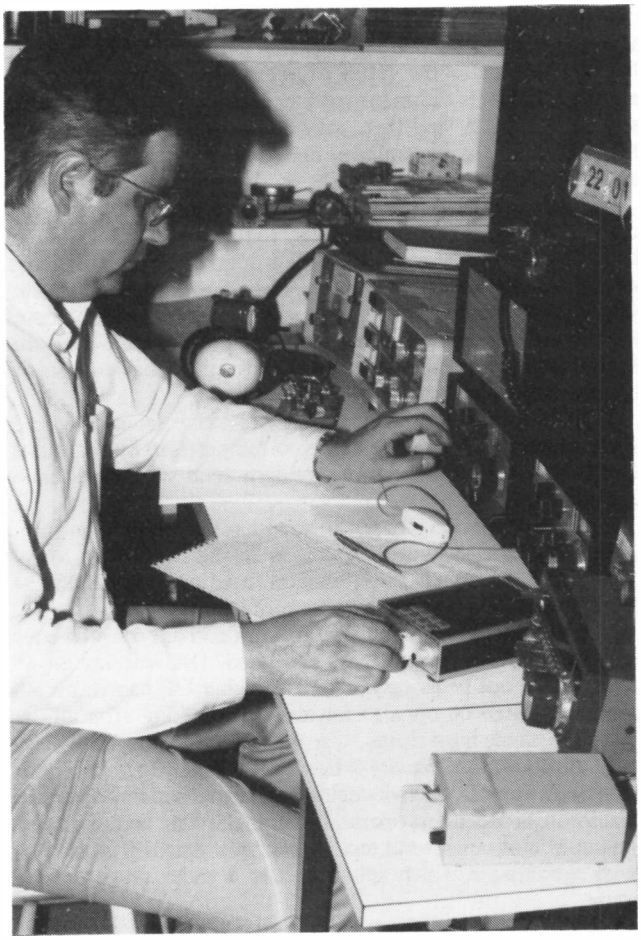
Many other multi-band international contests include 160m. among the bands to be worked, whereas the contests mentioned here are Topband only and are the ones that generate the most activity on "Grandad's Band"!

80 Metres: 3.5 – 3.8 MHz

Eighty metres is truly all things to all men! It can be used for local nets, for inter-G working, for chatting around Europe as well as for chasing DX. During the daylight hours 80m. can only be used for inter-G working, but as the evening approaches the range available increases. European signals start to grow in strength just before darkness falls. After dark the band is usually full of loud European signals, as well as U.K. signals.

For the DX-er, 80m. presents a challenge. Openings can be very short on this band, too, and as with Topband, real DX openings to far away places often being dependent on one side or other of the QSO being on the Grey Line. Where both ends of the QSO are on the Grey Line, such as, say, Hawaii (KH6) and the U.K. are for a few days in August, some amazing DX becomes possible on 80m.

Because the propagation on 80m. is such that very often there are loud signals from the U.K. and Europe at just the time when the very much weaker DX signals are coming in, there is a further challenge to the DX-er: enormous QRM! To avoid some of the potential conflict and QRM between those wanting to use the band for a natter and those wanting to work DX, the very top end of the band is used as a DX band for SSB (3775-3800 kHz) and similarly the first 10 kHz of the band at the bottom end are used as a CW DX band.



Well-known HF CW operator Dale, K5MM seen here during a recent visit to the U.K. Operating at EP2SV from Tehran and then later as GU5CIA from Guernsey, Dale has made several hundred thousand HF CW QSO's, many of which have been in contests.

40 Metres: 7.0 – 7.1 MHz

This is a love-hate band! A few people love it, a lot of people hate it! 40 metres is again a mixture of local and DX working, although it is a much more regular DX band than 80m. Inter-G working on a regular basis is only possible during sun-spot maxima. At other times band conditions may be more suited to working European stations during the day-time and DX during the evening.

The amateur 40-metre (7.0 – 7.1 MHz) band is heavily over-shadowed by its broadcasting neighbours operating between 7.1 and 7.3 MHz. The proximity of the shortwave broadcast band causes two problems. Firstly there are the broadcast stations that have strayed out of their own band for what for them are the somewhat quieter waters of the amateur 40-metre band. For a number of years there have been the infamous cases of Peking and Tirana operating with their several hundreds of kilowatts into high-gain antennas inside what is officially designated as the exclusive 40-metre amateur band.

The second problem encountered is receiver performance. The phalanx of high power broadcasters with their combined power of several tens of megawatts that lie just a few tens of kHz away from the 40-metre amateur band, has a devastating effect on the front-end of most amateur band receivers. Receivers become overloaded and deafened by this wall of RF. The result is that

many amateur receivers when operating in the evening on the 40-metre amateur band are not hearing the 40m. band at all! All they are hearing is the result of cross-modulation and inter-modulation effects within the receiver itself. The 40m. band itself may be quite quiet and there may be a number of DX stations there which are totally inaudible due to the overloading effect of the high-power BC stations on the receiver.

To make any head-way on 40 metres this problem has to be solved. The easiest solution is usually to turn back the RF gain of the receiver to a point where the background noise drops, leaving only amateur signals in the receiver. Care needs to be taken here, because with many receivers that suffer from these problems, there is a fine balance between turning the RF gain back far enough so as to lose the interference and turning it back too far so that the amateur signals disappear as well!

Older receivers, especially those with valve front-ends and plenty of tuned circuits and filters, often perform better in this respect than some of the more modern solid-state broadband receivers.

The second solution is to put an attenuator in the antenna path, so that less signal gets to the receiver in the first place. Many modern transceivers have an attenuator fitted as standard because the manufacturers are aware of the problem.

Once you have got your receiver to work correctly on 40 metres you will discover a magnificent DX band. DX working on 40 metres might not be as easy as on the higher HF bands, but 40 metres can often be open to far away places long after all the higher HF bands have closed. CW operation is below 7040 kHz. The majority of CW activity is between 7000 and 7025 kHz with much of the rarer DX activity being concentrated in the lower few kHz. Pirate broadcasters operating within the 40m. amateur band sometimes blot out several tens of kHz at a time, by using very rough modulation which splatters over a wider range than it should.

30 Metres: 10.1 – 10.15 MHz

One of the three new bands won at WARC 79, 30 metres was released to U.K. amateurs on 1st January 1981. Even though it is only 50 kHz wide it is potentially a very major DX band, lying as it does midway between 40m. and 20m.

The growth in activity on this band has been restricted by two factors. Many rigs currently in shacks do not cover this new band, and modifications are necessary to get older rigs to work on the 10 MHz band. Secondly the release of this band to amateurs in other countries is on a country-by-country basis, depending upon a decision within each country's own administration. Nevertheless activity on 10 MHz is still slowly increasing. Many countries now have access to 10 MHz and several DX-peditions are making a point of operating on this band too.

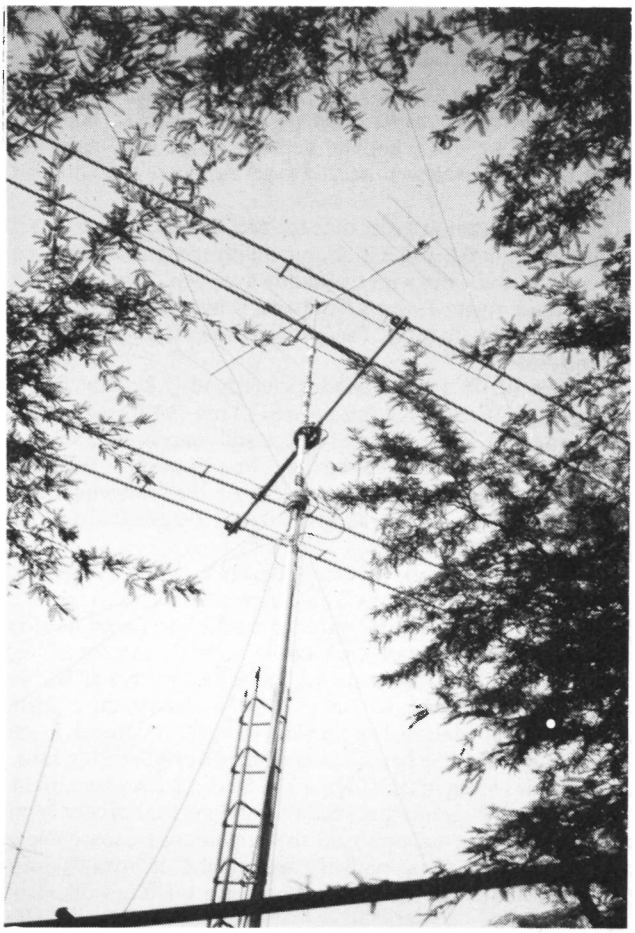
From a DXCC and contest viewpoint this band is still not active. For the moment there are no contests on 10 MHz, nor do QSOs count towards DXCC or other awards.

From the propagation viewpoint, this is a very exciting band since it could potentially provide DX openings to different parts of the world for most of the day. As it is still a shared band, there are a large number of commercial stations present in the band, which result in not all of the 50 kHz being really usable. By international agreement, operation is limited to CW only.

There have been several designs for simple 10 MHz CW QRP transmitters published in different magazines; this new band promises to be of great interest to the QRP operator.

Band (m)	*Frequency Range (MHz)*	*Bandwidth (kHz)*
160	1.810 – 2.000	190
80	3.500 – 3.800	300
40	7.000 – 7.100	100
30	10.100 – 10.150	50
20	14.000 – 14.350	350
17	18.068 – 18.168	100
15	21.000 – 21.450	450
12	24.890 – 24.990	100
10	28.000 – 29.700	1,700
	Total Bandwidth:	3,340 kHz

Table 1. The nine amateur HF bands total about 12% of the HF spectrum.



HF antennas look very similar the world over! This 2-ele 15m. and 20m. array is the antenna behind the very active CW DX-er Jacques, 5T5CJ in Nouakchott, Mauritania, West Africa.

20 Metres: 14.0 – 14.35 MHz

To many amateurs, 20 metres is "the DX-band"! When everything else fails, it is usually 20 metres that saves the day. When 10m. and 15m. are as quiet as the grave because the MUF is too low and when the LF bands are rendered useless by high static levels, it is 20 metres that usually keeps plodding on as the main DX traffic band.

It is no coincidence that many DX-ers have their highest band country scores on 20 metres.

For many U.K. SWLs, the first DX stations that they ever hear are on 20 metres. Season in, season out, year in, year out, signals from Australia can be heard nearly every day around breakfast time in the U.K. on 20 metres.

Unlike 40 metres, 20 metres has ample bandwidth (350 kHz) does not have too many intruders, and is not situated next door to a "megawatt alley" like the 41m. BC band! As the present sun-spot cycle continues to descend over the next few years, 20 metres will play an ever greater role as the major DX carrier. If you are limited for space and can get up an antenna for one band only, and you are interested in working DX on a regular basis over the next few years, 20 metres has to be your band!

17 Metres: 18.068 – 18.168 MHz

The second of the three new bands, the 100 kHz allocation has been released to U.K. amateurs on a restricted basis. Low power and limited antennas are the order of the day on 18 MHz. DX has been reported on this band. Lying as it does between 20 metres and 15 metres, the two major DX bands, this new allocation will no doubt be a useful DX band in due course. The number of countries able to operate on this band is still restricted.

Activity periods and Set Listening Periods have been organised to bring together operators and SWLs interested in using this new band. 18 MHz activity will increase as more countries are permitted to use the band and as equipment that operates on the band becomes more widespread in use.

15 Metres: 21.0 – 21.45 MHz

Like 20 metres, 15 metres is a major DX band. During the better years of the sun-spot cycle 15 metres produces excellent DX openings to all parts of the world. As now, with the decline in the sun-spot count, 15 metres becomes more patchy. It cannot be relied upon for regular openings. This is not to say that there will not be any openings to far away places, but only that such openings will not be so regular nor will they last very long. In a period of declining sun-spots numbers, 15 metres may have good openings for a few days and then go quiet again for several more days, whereas during periods of higher sunspot activity this band will produce regular DX openings for weeks on end.

Frequency	*Callsign*	*Location*
28205	DL0IGI	Germany
28210	3B8MS	Mauritius
28215	GB3SX	Crowborough
28217.5	VE2TEN	Quebec
28220	5B4CY	Cyprus
28222.2	HG2BHA	Hungary
28227.5	EA6AU	Palma
28235	VP9BA	Bermuda
28237.5	LA5TEN	Norway
28240	OA4CK	Peru
28242.5	ZS1CTB	South Africa
28245	A92C	Bahrain
28250	Z21ANB	Zimbabwe
28275.5	DK0TE	Germany
28260	VK5WI	South Australia
28262.5	VK2RSY	Sydney
28265	VK6RTW	West Australia
28270	ZS6PW	South Africa
28277.5	DF0AAB	Germany
28280	YV5AYV	Venezuela
28282.5	VP8ADE	Antartica
28290	VS6TEN	Hong Kong
28295	VU2BCN	India
28300	PY2AMI	Brazil
28302.5	ZS1STB	South Africa

Table 2. List of some of the current 10-metre beacons. Checking for beacons gives a quick guide to the areas of the world to which the band is open. Beacons will often show the band to be open even though there are no stations other than the beacon to be heard!

During the summer months there will be strong signals from the nearer European countries. Best DX conditions on this band can be expected around the equinoxes in March and October.

12 Metres: 24.890 – 24.990 MHz

The third of the new allocations, the 24 MHz band has been released in the U.K. at a time of declining sunspot numbers and consequently at a time when the numbers of days on which there are likely to be DX openings on these higher frequencies are relatively few. By the time the next sun-spot maximum comes round, many more countries will be authorised to operate on this band, and equipment for use on the band will be in more common use. It should prove to be a useful DX band for days when the MUF on some paths does not quite reach 28 MHz.

10 Metres: 28.0 – 29.7 MHz

A favourite band with many. This is both the highest and the widest HF allocation that radio amateurs have. 10 metres is 1700 kHz wide, and houses a wide range of amateur radio activities.

For the DX-er 10 metres is usually in one of two states. It is open or it is closed! Being the highest frequency HF band, it is the most sensitive to sun-spot numbers. During the years of the sun-spot maxima, 10 metres can be open from morning to night with DX coming in from all over the world; DX can be worked with low power and low antennas during sunspot maxima on this band. Unfortunately at other times 10 metres can be dead for weeks on end with nothing being audible except a few local stations on groundwave.

With propagation being much more sporadic on this band, it is a great help having the well organised set of beacon stations to listen out for and to help with judging conditions. There are now literally dozens of 28 MHz beacon stations all around the world. Most of them transmit continuously 24 hours a day, sending out their callsign and perhaps some other data on a cyclical transmission basis. Table 2 lists some of the beacons that the writer has heard over the past year. Identifying the beacons can be a form of simple CW practice too!

Sporadic-E propagation on 10m. on summer afternoons and evenings brings in very loud European signals. Signals can rise out of the noise in a matter of seconds, stay at S9 + 40dB for long enough to make a good QSO and then return down into the noise again.

High up in the ten-metre band, way beyond the CW section, the beacon band and the SSB, there is also NBFM activity both on a national and international level. Some amateur satellites have a down-link into the top end of the 28 MHz band. Ten metres is both the top end of the amateur's HF spectrum but also the lower end of the VHF spectrum.

Conclusion

The HF amateur bands which range across the whole HF spectrum allow us to make best use of the propagation conditions whatever they are. At sunspot maxima we can work DX on the proverbial piece of "wet string" on 28 MHz and during sunspot minima the LF bands offer exotic DX to those who know how to find it.

Making the effort to get onto HF is very much worthwhile, because it opens a new door in amateur radio, a door that opens onto the whole world!

Next month Nigel Cawthorne, G3TXF, begins "Oblast Corner", a new alternate-month feature on working U.S.S.R. stations and oblasts

CLUBS ROUNDUP

By "Club Secretary"

The Month's Mail

ABERGAVENNY & Nevill Hall have their meetings in the Club Room, above Male Ward 2, Pen-y-Fal Hospital, Abergavenny, every Thursday evening, to which all are welcome. They are also a 'centre' for RAE candidates wishing to take the exam. The last entry date for the March exam is January 15, with February 15 the closing date for the May sitting. All the details from the Hon. Sec. — *see* Panel.

January 15 is AGM-day for **Acton, Brentford & Chiswick** at their Hq. at Chiswick Town Hall, and we gather there are some important items on the agenda. Start this one at 7.30 p.m. and the venue is in High Road, Chiswick.

Now to **Antrim and District**, which is having a membership drive at the moment, ready for the AGM in March. We suggest you get all the details from the Hon. Sec. — *see* Panel — or write to them at P.O. Box 3, Antrim, Northern Ireland.

Still in Northern Ireland we have **Bangor**, where the lads keep in touch by way of a nice little newsletter called "Contact". The next meeting is on January 11, a week later than usual, and we believe the venue to be the Sands Hotel on the sea-front.

The **Bath** crowd has a place at "Englishcombe Inn" in the lane of the same name at Bath, on alternate Wednesdays at 8 p.m. More details from the Hon. Sec. — *see* Panel.

Biggin Hill is another one to have an AGM, on January 22 at the new venue, St. Mark's Church Hall, Biggin Hill.

The **Bishops Stortford** gang have their comfortable Hq. in the British Legion Club in Windhill on the third Monday, with the January session being the AGM. In addition there is an informal on the first Thursday of the month, in the "Nag's Head" on the Dunmow Road, in the saloon bar.

Heading up north now we go to **Bolton** where the January 9 exhortation is "Finish that Project" — which is not surprising since on February 6, they have G3RJV to talk about QRP and construction. The Hq. is at Horwich Leisure Centre.

Next it's Bristol's **Shirehampton** crowd, based on Twyford House, between 7.30 and 9.30 every Friday evening. The routine is to have something 'planned' on every other meeting, the rest to be informals.

A note from **British Rail** indicates their members are drawn from railway and associated companies, such as BREL, Freightliners, London Transport and so on; and the cry goes out for more members from these organisations. Get all the details from the Hon. Sec. — *see* Panel for his details.

We know there are two clubs in Bromsgrove; the one reporting this time is called **Bromsgrove Amateur Radio Society**; they can be found on the second and fourth Tuesdays at the British Legion Club, Birmingham Road, Bromsgrove. Their letter is strong on how democratic it all is, but short on detail of the events on the programme for the next few months, but a telephone call to the Hon. Sec. — *see* Panel — should put you in the picture instantly.

Now we go to **Bury** for instruction on "how to blow your rig up", by G3LLL on January 8; and on Sunday, February 10 they have a Hamfest and Mobile Rally. Both are at the Mosses Community Centre, Cecil Street, just a couple of minutes from Junction 2 on the M66. However, they are 'at home' to visitors every Tuesday evening.

The **Cambridge Repeater Group** has the maintenance of four repeaters as its prime activity; however they do have the odd get-together — try the "Green Dragon" in Water Lane, Cambridge, at Friday lunchtimes 12.15-2.00.

The **Cheltenham** crowd foregathers at the Stanton Room, Charlton Kings Library; as the AGM is in December we don't have any details on the January meetings for which we refer you to the Hon. Sec. — *see* Panel for the details.

At **Cheshunt** they are still at Church Room, Church Lane, Wormley, every Wednesday evening, alternating informals and lectures. G4FAI talks about the Morse Telegraph on January 9, and on 23rd, they have "Smudge" Lundegard, G3GJW, to talk about matters RSGB.

Civil Service members get together on the first and third Mondays of each month at the Civil Service Recreation Centre, Monck Street, Westminster, at 12.30 p.m.; they also keep in touch by way of nets on VHF and Eighty — details from the Hon. Sec. — *see* Panel.

No question about the **Colchester** way of doing things — they have sent their programme up till next October! January 10 is down for a talk on fire prevention by Essex Fire Service; and on January 24, the home-construction of PCBs comes up for consideration by G4JIE and G8CKW. The place for all this is Colchester Institute, Sheepen Road, starting at 7.30 p.m.

Now we head for Cornwall, where **Cornish** get together on January 3 for Part 2 of the talk on "Early Radio and TV", at Treleigh Church Hall, Redruth. The following month, on February 7, G3VGO gets into AMTOR.

Coventry seems to have settled at Baden-Powell House, 121 St. Nicholas' Street, Radford, every Friday evening, with nights-on-the-air down for January 4 and 25; bring-a-computer on January 11, and on 18th you are at the Annual Dinner at the Beechwood Hotel. Looking forward to February 1, they have a visiting speaker, not finalised at the time of their letter.

Deadlines for "Clubs" for the next three months—

February issue—December 28th

March issue—January 25th

April issue—February 2nd

May issue—March 29th

Please be sure to note these dates!

At **Crawley** they have a new cover to their newsletter, but it also says "no more programme till we've had the AGM". They get together at the Trinity United Reformed Church Hall, Ifield, once a month and have informals also at each other's houses. For more details on this very fine club, contact the Hon. Sec. — *see* Panel for his vital statistics.

Like many another club, **Cray Valley** used to send us a newsletter — now, also like many others, they send us a computer printout! January 3 is down to G3GJW, with his "Assorted Panics!", and on January 17 they have a natter. Both are at the club Hq. at Christchurch Centre, Eltham High Street, London.

On January 19 at **Crystal Palace**, Frank Emery, G3ZHF, will be talking about 'converting surplus' at the club Hq., All Saints Parish Room, Upper Norwood, SE19; this venue is at the junction of Beulah Hill and Upper Norwood Road, opposite the IBA mast.

The **Dartford Heath D/F** club is possibly the only one to specialise in D/F hunts, so that there is probably a higher proportion of YL members and more group activities too . . . For details on the meetings and the hunts and indeed everything to do with the club, contact the Hon. Sec. — *see* Panel for the details.

At **Derby** we can find the locals on Wednesday evenings at 119 Green Lane, Derby, where they have the top floor to contain their lecture room, shack and everything. January 2 is a bring-and-buy-sale, and on January 9 they have their popular 'year in retrospect' programme.

On second and fourth Mondays, you can find the **Droitwich** group at the Scout Headquarters in Union Lane, where the Chairman is Jenny Veasey, G4THU; and we have it there are a *few* places left for new members.

Dudley has dates booked on January 7, 14, and 28; the first one is the monthly committee and natter night, and the other two were still being sorted out at the time of their letter.

Now to **Edgware**, which means 145 Orange Hill Road, Burnt Oak, Edgware, on the second and fourth Thursday of each month. January 10 is the AGM, and on 24th they have an informal — and there is always the FB newsletter!

Always a short letter from the **Exeter** scribe — he just says they'll be at St. Davids Hill Community Centre on January 14, for a video on troposcatter.

Turning now to **Farnborough**, we have a copy of their very nice annual magazine, and from it we can see that they are still based on the Railway Enthusiasts' Clubroom, 103 Hawley Lane, Farnborough, where they are to be found on the second and fourth Wednesday of each month; on January 7 they have G3AQC's Aerial Circus.

Another club with aeronautical connections is at **Fylde** where the venue is the Kite Club at Blackpool Airport, on first and third Tuesdays. January 1 this would give — so they have cancelled it, but on January 15 they have the AGM. This club seem to have come on wonderfully since they moved to the Kite Club and combined the membership of both.

We now go to **Glenrothes**, where on January 20 GM3YOR will be talking about the DX-peditions he has done to OY, TF, 9L, ZB, and VP2M; these Sunday meetings are at the Provosts Land, Leslie, Fife, which is also the spot for the informals on Wednesday evenings at 7.30. There is also an RAE and Morse class at Balwearie High School, Kirkcaldy.

The arrangements at **Glossop** seem to be that they book the last Thursday in the month at the "Nags Head" in Glossop. More details from the Hon. Sec. — *see* Panel.

The **G-QRP Club** hardly needs a mention — it has more members than any other club, bar possibly RSGB. . . . It's for all lovers of low power operating or home-construction, not to mention the odd gathering at which the old-time virtues of amateur radio always seem to reappear. Drop a line to the Hon. Sec., G3RJV, to join, at the address in the Panel.

January 24 is AGM-time at **Greater Peterborough** — but with only our card-index to tell that it is at Southfields Junior School, Stanground — if it's wrong, let me know!

Turning now to **Grimsby**, they are still at the Cromwell Social Club in Cromwell Road, on every other Thursday, plus a special 'computers' session on the first Monday in every month.

Hambleton has now been formed, based on Room C11, Allertonshire School, Northallerton, the arrangements being fortnightly from October 1, which gives January 7 and 21. Full details from the Hon. Sec. — *see* Panel.

At **Harrow** on January 4 they have a used equipment extravaganza, together with their other formal and informal sessions every Friday evening at Harrow Arts Centre, High Road, Harrow Weald, opposite the "Alma" pub.

Now to **Hastings** where they have a main meeting at West Hill Community Centre on the third Wednesday, and informals on Friday evenings at Ashdown Farm Community Centre; the main meeting on January 16 is a compact disc demonstration..

Havering don't believe in havering about — from them we just get a programme: January 2 the AGM, January 9 and 23 informals, January 16 a talk on AMTOR by G3NPW, and January 30 a topic on which the details are not yet finalised. All are at Fairkytes Arts Centre in Havering.

The **Hereford** lot is still to be found in the County Control, Civil Defence Hq., Gaol Street, Hereford, on the first and third Friday of the month. January 4 sees G4CNY give his talk on his Bermuda trip, and on 18th it is an informal, doubtless in preparation for the AGM on February 1.

Ipswich foregather in the "Rose and Crown", 77 Norwich Road, at the junction with Bramford Road; while they have formal meetings on the second and last Wednesday of each month, we understand that someone is usually about on the other Wednesday evenings, too. More details from the Hon. Sec. — *see* Panel.

Some of the visitors and members at the Yeovil Amateur Radio Club's QRP Convention held at the Preston School, Yeovil, last October. Below, Eric Godfrey, G3GC, holding the 'feeder' after his lecture at the Convention on aerial design for low power operation. Left to right, Frank BRS10663 (founder member), Rob G3MYM (club lecturer), Tim G4WMV (chairman), Frank G3CFV (founder member), Eric G3GC (secretary), Nobby G3BEC (president and founder member), Don G3NOF (founder member).

photos: G4PDG

I.R.T.S.: this is the one to think of if you want to know about amateur radio in Eire, and clubs, local and national. Details from the Hon. Sec. — *see* Panel.

Half-way back from EI and we trip over the **Isle of Man**; here the locals are based on the Keppel Hotel, Creg-ny-Baa on Mondays. We suggest you check with the Hon. Sec. as our information is a little aged!

The **Kidderminster** programme seems to indicate the first and third Tuesday of each month, at the Aggborough Community Centre, Hoo Road, Kidderminster. More details from the Hon. Sec. — *see* Panel.

The Hq. address of the **Loughborough** club is now the Top Floor, *Brush* Sports and Social Club, 18 Fennel Street, Loughborough, handy for the town centre and the bus station and car parking. Although they have the use every night the normal routine is to have meetings on Friday evenings for the 'organised' programme — talks, films and that sort of thing — with Tuesdays set apart for the constructors' group to build and test things, and for putting the rig on the air as G3RAL. They also have a library and a twice yearly newsletter. On a different tack they have had to suspend their RAE classes due to a lack of custom — all the locals have passed!

Back to GI again, this time to **Lough Erne**, where the object is to call up a mention of their Mobile Rally on April 21, at

Names and Addresses of Club Secretaries reporting in this issue:

ABERGAVENNY: D. F. Jones, GW3SSY, 80 Craesonen Parc, Abergavenny, Gwent NP7 6PE. *(0873 78674)*
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EDGWARE: J. Cobley, G4RMD, 4 Briars Close, Hatfield, Herts. *(Hatfield 64342)*
EXETER: R. Tipper, G4KXR, 11 Chancel Court, Chancel Lane, Pinhoe, Exeter. *(Exeter 68065)*
FARNBOROUGH: P. Taylor, G4MBZ, 12 Dunbar Road, Paddock Hill, Frimley, Camberley, Surrey GU16 5UZ.
FYLDE: H. Fenlow, G8GG, 5 Cromer Road, St. Annes, Lytham St. Annes, Lancs. FY8 3HD.
GLENROTHES: A. Givens, GM3YOR, 41 Veronica Crescent, Kirkcaldy, Fife KY1 2LH. *(Kirkcaldy 200335)*
GLOSSOP: E. Calvert, G4EIC, 6 Barber Street, Podfield, Hadfield, via Hyde, Cheshire SK14 7EG.
G-QRP CLUB: Rev. G. C. Dobbs, G3RJV, 498 Manchester Road, Rochdale, Lancs. OL11 3HE. *(0706 31812)*
GRIMSBY: G. J. Smith, G4EBK, 6 Fenby Close, Gt. Grimsby, South Humberside DN37 9QJ.
HAMBLETON: Dr. A. Wilson, G3MAE, 8 The Paddock, Appleton Wiske, Northallerton, N. Yorks. DL6 2BE. *(Great Smeaton 530)*
HARROW: D. Atkins, G8XBZ, 25 Maxwell Close, Rickmansworth, Herts. *(0923 779942)*
HASTINGS: D. Shirley, G4NVQ, 93 Alfred Road, Hastings, Sussex. *(Hastings 420608)*
HAVERING: J. R. Gibbs, G4UQR, 40 Bridge Avenue, Upminster, Essex RM14 2LX. *(Upminster 26904)*
HEREFORD: F. E. G. Cox, G3WRQ, 35 Thompson Place, Hereford. *(Hereford 54064)*
IPSWICH: J. Tootill, G4IFF, 76 Fircroft Road, Ipswich, Suffolk IP1 6PX. *(0473 44047)*
I.R.T.S.: C. Hunter, EI9V, Coolgariff Road, Beaumont, Dublin 9.
ISLE OF MAN: Mrs. A. Matthewman, GD4GWQ, 20 Terence Avenue, Douglas, I.o.M. *(0624 22295)*
KIDDERMINSTER: A. F. Hartland, G8WOX, 22 Granville Crescent, Offmore Farm, Kidderminster. *(Kidderminster 61584)*
LOUGHBOROUGH: J. S. Smith, G4DZL, c/o 91 Anson Road, Shepshed, Loughborough, Leics LE12 9PT.
LOUGH ERNE: C. Corderoy, GI4CZW, 9 Tarman Brae, Enniskillen, N. Ireland.
LOUGHOR: T. Griffin-Thomas, GW8TYS, 'Riverside Manor', 77 Castle Street, Loughor, Swansea, W. Glam.
MALTBY: I. Abel, G3ZHI, 52 Hollytree Avenue, Maltby, Rotherham, Yorks.
MEDWAY: A. Wallis, G4TQS, 13 Stoneacre Close, Parkwood, Rainham, Gillingham ME8 9PS. *(0634 363960)*
MIDLAND: N. Gutteridge, G8BHE, 68 Max Road, Quinton, Birmingham B32 1LB. *(021-422 9787)*
NORTH CORNWALL: J. West, G6ICN, 4 Trevella Road, Bude EX23 8NA. *(Bude 4976)*
NORTH WAKEFIELD: S. Thompson, G4RCH, 3 Harlington Court, Morley LS27 0RT. *(0532 536603)*
POOLE: P. Ciotti, G3XBZ, 214 Rossmore Road, Parkstone, Poole, Dorset BH12 2HN. *(0202 730012)*
R.A.O.T.A.: Miss M. Gadsden, 19 Drummond House, Font Hills, Long Lane East, Finchley, London N2.
REIGATE: T. I. P. Trew, G8JXV, Hoath Meadow, Church Hill, Merstham, Redhill, Surrey.
RUGBY: K. Marriott, G8TWH, 41 Foxons Barn Road, Brownsover, Rugby, Warks. CV21 1LA. *(0788 77986)*
ST. HELENS: A. Riley, G6MXT, 32 Old Lane, Ecclestone, Prescot, Merseyside L34 2RG.
SCARBOROUGH: N. Lill, G4YWR, 7 Harewood Avenue, Newby, Scarborough YO12 6DH. *(0723 360587)*
SOUTH BRISTOL: L. Baker, G4RZY, 62 Court Farm Road, Whitchurch, Bristol, Avon BS14 0EG.
SOUTH CHESHIRE: H. Pallen, 20 Burlea Drive, Shavington, Crewe CW2 5BZ. *(Crewe 67003)*
SOUTHDOWN: T. Rawlance, G4MVN, 18 Royal Sussex Crescent, Eastbourne.
SOUTH MANCHESTER: D. Holland, G3WFT, 32 Woodville Road, Sale, Greater Manchester. *(061-973 1837)*
SURREY: R. Howells, G4FFY, 7 Betchworth Close, Sutton, Surrey SM1 4NR. *(01-642 9871)*
SUTTON & CHEAM: A. Keech, G4BOX, 26 St. Albans Road, Cheam, Surrey.
SWALE: B. Hancock, G4NPM, Leahurst, Augustine Road, Minster, Sheerness, Kent ME12 2NB. *(Minster 873147)*
SWINDON: D. Ireson, G4ZAZ, 20 The Broadway, Swindon SN2 3BT.
THORNTON CLEVELEYS: Mrs. J. Ward, G8YOK, 143 Arundel Drive, Poulton-le-Fylde, Blackpool, Lancs. FY6 7TZ. *(Blackpool 890114)*
THREE COUNTIES: R. Hodgson, G3TBT, Brackendene, Hollywater Road, Passfield, Bordon, Hants. *(042877 368)*
TIVERTON: G. Draper, G4ZNV, 19 Sunnymead, Copplestone, Crediton, Devon EX17 5NQ.
TODMORDEN: J. Gamble, G6MDB, 283 Halifax Road, Todmorden, Lancs. OL14 5SQ.
TORBAY: B. Wall, G1EUA, 48 Pennyacre Road, Teignmouth, TQ14 8LB. *(Teignmouth 78554)*
TROWBRIDGE: G. Callaghan, G4SPE, 54 Bratton Road, Westbury, Wilts. BA13 3ES.
VERULAM: H. Claytonsmith, G4JKS, 115 Marshalswick Lane, St. Albans, Herts. *(St. Albans 59318)*
WACRAL: L. Colley, G3AGX, Micasa, 13 Ferry Road, Wawne, Hull, Yorks. HU7 5XU.
WEST KENT: Mrs. J. Green, G4UPI, 13 Culverden Down, Tunbridge Wells, Kent TN4 9SB *(Tunbridge Wells 28275)*.
WIRRAL: C. Cawthorne, G4KPY, 40 Westbourne Road, West Kirby, Wirral L48 4DH.
WOLVERHAMPTON: K. Jenkinson, 10 Avondale Road, Wolverhampton WV6 0A1. *(0902 24870)*
WORCESTER: D. W. Batchelor, G4RBD, 14 Oakleigh Heath, Hallow, Worcester. *(Worcester 641733)*
WORKSOP: D. L. Rush, G4CRE, 87 Rydal Drive, Worksop.
YEOVIL: E. H. Godfrey, G3GC, Dorset Reach, 60 Chilton Grove, Yeovil, Somerset BA21 4AW. *(0935 75533)*
YORK: K. R. Cass, G3WVO, 4 Heworth Village, York.
308: D. Davis, G6YQD, 13 Maple Road, Surbiton, Surrey KT6 4AA.

Killyhevlin Hotel, near Enniskillen. However, while getting the Rally information doubtless the Hon. Sec. *(see* Panel) would be pleased to give you membership details as well.

At **Loughor** membership is still rising, attracted by a good programme. Meet them at Loughor Scout Hall, off Heol Cae-ty-Newydd, with talk-in from GW4HVJ on either S20 or GB3WW, fortnightly on Tuesdays. Contact the Hon. Sec. as we are not sure *which* are the appropriate Tuesdays!

Medway haven't been heard from for some time, says the Hon. Sec. apologetically — and then goes on to forget to tell us where they have the Hq.! Our records say that last time we heard they were at No. 1 Hall, St. Luke's Church, King William Road, Gillingham — but if you have any doubt, contact the Hon. Sec. at the address in the Panel.

The **Midland** gang has its own place at 294A Broad Street, Birmingham, and we note that at long last the Hon. Scribe, G8GAZ, has been let off the hook, due to ill-health — we hope Tom hasn't been inhaling too much GAZ but will look out for him on S17 when around Brum. To revert to the club, which lies opposite the Repertory Theatre, Tuesday seems to be popular, but you could try almost any evening and have some hope of contact.

North Cornwall are based at the R.A.O.B. Club in Camelford on the first Wednesday on each month; on January 9 (a change from the nominal date, notice) they have a showing of the RSGB film "World at their Fingertips".

At **North Devon** All meetings will in future be at 'Micro Chips", Castle Street, Barnstaple, starting at 7.30 p.m. The next dates will be January 2 and February 6.

January 3 is the day for paying your annual subs to the **North Wakefield** club, at North Wakefield Working Men's club, Carr Gate. They have an 'on-the-Air-night' on January 10 and have a visit to Pontefract's junk sale on 17th. A lecture on test equipment by G8UYZ is down for January 24 and the monthly formal is on January 31.

January 30 is the date for **Poole** club to meet at Poole College of Further Eduation, North Road, Poole for an Open Evening at which it is hoped to demonstrate as many aspects of the hobby as possible. More details from the Hon. Sec. — *see* Panel.

Old Timers

The club for Old-Timers is **R.A.O.T.A.** and we have a letter from G6CJ. He says that since the death of G2UV matters have fallen a little by the wayside, and he is hoping to get things picking up again. Write to him, whether you are a member or would like to be and, if you can, add a donation to help offset the costs of a meeting which is proposed for the coming spring to get things running again. Alternatively, drop a line to your scribe, who will pass them on. G6CJ's address is: The Firs, East Stour, Gillingham, Dorset SP8 5JR. The address of the Hon. Treasurer is also noted in the Panel.

Heading now for **Reigate**, we find they have their monthly gatherings at the Constitutional and Conservative Centre, Warwick Road, Redhill on the third Tuesday of each month.

At **Rugby**, the Cricket Pavilion, BTI Radio Station, 'B' Building Entrance, on the A5 at Hillmorton, is the way in to the club Hq. Try this on any Wednesday evening; one or two each month are 'arranged' and the rest are informal to keep a balance. In the fairly near future there is a proposal to change the meeting night, so if in doubt — check with Hon. Sec.

Every Thursday evening the **St. Helens** club meets, at the Conservative Rooms, Boundary Road, St. Helens; and it sounds as though the new committee are on the attack, actively recruiting new members.

Up to **Scarborough** you will find a cricket ground, that of the Scarborough CC. This is home also to the Scarborough Radio Club, every Monday evening, in North Marine Road.

The **South Bristol** group, at Whitchurch Folk House, East Dundry Road, Whitchurch, recently presented a bottle of wine to their 100th new member. On January 2 G3OUK leads a discussion "What's Legal?" and on 9th they have a CW activity night. January 16 is 1984's films and slides, and on 23rd they are active on 70 MHz. January 30 ends the month, with a construction workshop.

On the second and fourth Monday of each month, the **South Cheshire** crowd foregather at the Victoria Club, Gatefield Street, Crewe. For more details contact the Hon. Sec. — *see* Panel.

The routine at **Southdown** seems to have become a little more complex, with the usual first Monday at the Chaseley Home for Disabled Ex-Servicemen, Southcliff, Eastbourne, now augmented by informal meetings each week on Tuesday and Friday evenings at the clubroom in Hailsham. Details from the Hon. Sec.

The **South Manchester** club have Fridays and Mondays booked at their Hq. in Sale Moor Community Centre, Norris Road, Sale. January 4 is a talk on oscilloscope design, and on January 11 the talk is on radio analysis by G6EAO. Microwaves comes up on January 18, under G3PFR, and on January 25 RTTY by G4NTY and G4MYB.

The **Surrey** group was disheartened at their last meetings to find both heating disconnected *and* no bar! This is an unheard-of disaster at *TS Terra Nova,* 34 The Waldrons, South Croydon; however, you can go and offer moral support (and a big overcoat with flask!) on the first and third Monday in January.

At **Sutton & Cheam** the third Friday in each month is taken at the Downs Tennis Club, Holland Avenue, Cheam, with G4BUE doing the honours on January 18, with his own slant on QRP. There also seems to be a natter date on the first Friday, also at the Downs club.

Down to **Swale** where they have every Monday evening at the Ivy Leaf Club in Dover Street, Sittingbourne; more details from the Hon. Sec. — *see* Panel for necessary information.

The **Swindon** crowd are another lot on the hunt for new members; find them on Thursdays at Oakfield School, Marlowe Avenue, Swindon. Or for more data get in touch with the Hon. Sec. — *see* Panel.

The **Thornton Cleveleys** gang seems to have moved; they are now at 1st Norbeck Scouts Hq., Carr Road, Bispham, Blackpool, every Monday. The first and third Mondays are down for guest speakers, and the second and fifth for a super Morse class; the fourth Monday is a construction or informal session.

Three Counties come together at the Railway Hotel, Liphook, Hants, where they are to be found on January 9 for G3CCB to ask "Did Morse get it right?", while on 23rd G3ZRM will be talking about steam railways.

The "Queens Head" in Tiverton harbours the **Tiverton (South West)** club; it started as a CB club but has both amateurs and CB-ers in membership; so they have a call, aerials atop the pub, and a club rig, not to mention their own Award. Find them any Monday evening, or drop a line to the Hon. Sec. — *see* Panel.

At **Todmorden** the word goes round "things are happening at the Queens Hotel on the first Monday of every month." However, to find out *what* we must refer you to the Hon. Sec.

As far as **Torbay** goes the big news is that they have to move out of their Hq. of the past 27 years — so if you want to make contact with them we suggest you get in touch with the Hon. Sec. — *see* Panel — to see what is the latest state of play.

New Club

This gives us a chance to mention **Trowbridge**, a new club who are just coming up for their first AGM; this will be held on January 17 at the village hall at Southwick, near Trowbridge. More details from the Hon. Sec. — *see* Panel.

The R.A.F Associaton, New Kent Road, St. Albans, plays host to the **Verulam** club on the second and fourth Tuesday of each month; January 22 sees a talk on Microwaves by G8MWR.

The **WACRAL** membership are all committed Christians, of various denominations and spread world-wide. More details from the Hon. Sec. — *see* Panel.

West Kent are now at the Adult Education Centre Annexe, Quarry Road, Tunbridge Wells, where they have informals on January 4 and 18. The formals are: on January 11 for a talk by G3VA on clandestine radio, and January 25 for a talk entitled 'Touchdown" by D. Thorpe and B. French.

There are two clubs on the **Wirral;** the one mentioned here meets at Heswall Church Hall, next to the bus station, on the first and third Wednesday of each month. Unfortunately we don't have an update, so we must refer you to the Hon. Sec. for the latest information.

Now to **Wolverhampton**, which has a place at the Wolverhampton Electricity Sports and Social Club, St. Mark's Road, Chapel Ash, Wolverhampton. No meeting on January 1, but on 8th there is a club night, and on 15th a talk on home security by the local crime prevention officer. January 22 sees a junk and surplus equipment sale, and on 29th there is a committee meeting to which all are welcome. Oh, and we forgot the 144 MHz D/F Hunt starting from the Children's Paddling Pool, Tettenhall Rock, on Sunday, January 20, time not mentioned. Doubtless the Hon. Sec. could answer that question.

The formals at **Worcester** are taken in the Oddfellows Club in New Street, while the informals are in the "Old Pheasant" in the same street. January 7 is a club night for the video of the JARL visit to China, while the informal is on 21st. February 4 is the next main meeting with slides of the 1984 club events.

Thursdays are the nights, at the "Old Ship" in the Market Place at **Worksop,** unless they are for any reason 'playing away'. Programme details from the Hon. Sec. — *see* Panel.

The **Yeovil** programme for January includes G3MYM on "Using your RAE Knowledge" on January 3, and the same speaker talking about making an absorption wavemeter on 10th. On 17th, G3MYM talks about the sunspot minimum, and on 24th they have a discussion. Finally, on January 31 there is a natter evening. All are at the club Hq. at the Recreation Centre, Chilton Grove, Yeovil.

The Annual Dinner was a wizz, says the Hon. Sec. of **York** — meet this friendly group on any Friday evening at the United Services Club, 61 Micklegate, York.

Finally, **308** at the Coach House, Church Hill Road, Surbiton, Surrey. However, they forgot to give any indication of their meeting plans so we can't give you any firm dates; at a guess, the last Tuesday, but for more details you'll have to contact the *ex*-Hon. Sec. — he resigned at the last AGM and wasn't replaced, but he is the only contact we can offer!

QRT

That's it for yet another month. Deadlines for the next few issues are in the 'box', the dates being for the *arrival* of your letters, addressed to your "Club Secretary", SHORT WAVE MAGAZINE, 34 High Street, Welwyn, Herts AL6 9EQ. Meantime, thanks for all the good wishes, which we of course reciprocate heartily.

R.A.E. and CW Courses in Huddersfield

A three-term R.A.E. course at Greenhead College, Huddersfield, on Mondays 7-9 p.m., commences on January 7th. The college is also running a three-term Morse course, on Wednesdays 7-9 p.m., commencing January 9th. For full details of both courses, ring Peter Mercer, G6CPM, on Huddersfield 33036.

One-Day Course

A one-day non-technical course, providing basic information for a potential newcomer to amateur radio, is to be held at Theobalds Park College, Waltham Cross, on Tuesday, February 5th. The course explains who radio amateurs are, what they do, and how to join them; a special-event callsign has been applied for, and course members may have the opportunity to send brief greetings over the air. Existing amateurs may like to draw this course to the attention of friends or relatives who have expressed an interest in the hobby. Enquiries/bookings should be addressed to The Principal, Theobalds Park College, Bulls Cross Ride, Waltham Cross, Herts. EN7 5HH (tel: Waltham Cross 37255). Course fee is £6 for the day including lunch and beverages, and the tutor is Tony Smith, G4FAI.

New RTTY Software

Newly released by *Pearsons Computing* is the G1FTU RTTY Program, which allows the 48K Spectrum computer to transmit and receive RTTY with no interface or terminal unit. The user simply connects the 'Ear' and 'Mic' sockets of the Spectrum to the 'external speaker' and 'audio input' (or 'Mic') connections of his/her transceiver.

The program features split-screen operation with full type-ahead during receive and transmit, baud rate variable between 45 and 110 bauds, variable transmit tones, on-screen tuning indicator, unshift-on-space, and the capability to receive reversed 'mark' and 'space' tones. In addition the program has a 'clarifier' facility for tuning accurately to FM RTTY tones, and a personalised CQ memory along with eight other memories of up to 255 characters each which may be saved on cassette.

Inclusive cost of the G1FTU RTTY Program is £10.00, and orders from licensed amateurs should be accompanied by their callsign for the CQ memory; non-amateurs will be allocated a dummy callsign. For more information contact John Pearson at the firm's address, 42 Chesterfield Road, Barlborough, Chesterfield, Derbys. S43 4TT (tel: 0246-810652).

Correction

In Part 1 of "The 'Dover' Frequency Meter", p. 276 of the August 1984 issue, R5 should be 270R and C17 should equal 68pF. Also, if difficulty is experienced in obtaining decimal points, R11, R14 and R17 should be reduced to 4K7.

"A Word in Edgeways"

Letters to the Editor

Dear Sir — As one of your regular writers, I feel that the points I am about to raise will be shared by other contributors to *Short Wave Magazine.*

It is inevitable that mistakes will creep into articles from time to time, some the fault of the author, others editorial or proof-reading errors. The onus for repyling to resulting queries falls, in the main, upon the author.

When writing for clarification, the enquirer can assist considerably — which is the point of this letter. Please make sure that your question or query is valid: many times I have been told that a component is in the wrong position when, in fact, it is in the *right* one! Also, if the points are itemised and plenty of room is left at the end of each point, the author can reply on the sender's letter. This has several advantages, in particular it avoids the situation when an enquirer receives a reply thinking that he asked a specific question when in fact he did not; this in turn will avoid the letter saying "why didn't you answer the question about . . ."! The other main advantage is one of time saving: when the letter is opened it is almost certain that the reply could be made in a couple of minutes, but if paper and envelopes have to be found . . . it is very tempting to leave it till later. If the enquirer's letter can be used I usually sit down there and then and write the reply — *especially* if a stamped-addressed-envelope has been enclosed, which is always very much appreciated!

Ian Keyser, G3ROO

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

("SITUATIONS" AND "TRADE")

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TRADE

Amateur radio equipment bought, sold, exchanged. Phone Dave, on 025587-663 or 04024-57722, or send s.a.e. for list to **G4TNY Electronics,** 132 Albany Road, Hornchurch, Essex RM12 4AQ. For the **best deal — guaranteed!**

Service sheets. Amateur radio, vintage wireless, etc. Large s.a.e. with enquiries please. — **Mauritron (SWM),** 8 Cherrytree Road, Chinnor, Oxfordshire OX9 4QY.

Resistors, capacitors. 1000 mixed ⅛W, ¼W, ½W, 2%, 5%, 10%, carbon film resistors, £2.95. 50 flat tubular ceramic capacitors, £1.00. Post/packing 50p. — D. J. Hooker, **Romney Marsh Electronics,** Pennywood, Clark Road, Greatstone, Romney Marsh, Kent TN28 8PB.

Morse reader programs. Off air onto screen. Programs for BBC 'B', Spectrum, ZX81 16K, Dragon, Amstrad 464, Commodore 64 and any Vic-20. Sinclair computers need no interface, others use simple one-transistor (BC107) interface. Programs self-tracking 8/30 w.p.m. All connections to existing sockets. Cassette with full instructions and circuit, £6.00 — **J. E. Price,** 4 Housman Walk, Offmore, Kidderminster.

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Continental DX-pedition/holiday plans? Start with "GB News 1985". For copy, send two 13p stamps. — **GB Car Club,** FREEPOST 2, Romsey, Hampshire SO5 8ZT.

February issue: due to appear on Friday, January 25th. Single copies at £1.10 post paid will be sent by first-class mail for orders received by Wednesday, January 23rd, as available.—Circulation Dept., Short Wave Magazine, 34 High Street, Welwyn, Herts. AL6 9EQ.

Tuition: self-test manual for R.A.E. students—"Questions & Answers", £2.75 inc. post/packing. For details please send s.a.e.—**Peter Bubb (Tuition), G3UWJ,** 58 Greenacres, Bath BA1 4NR.

D.I.Y. QSL/SWL cards (state which), 100 mixed designs/colours, £2.50 c.w.o. **Personalised QSLs,** 1000 for £15. Station logs, 10 for £18.—**Currie Cards,** Blackhill, Consett DH8 8LT.

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10p per word, minimum charge £1.50 payable with order. Add 25 per cent for Bold Face (Heavy Type). Please write clearly, using full punctuation and recognised abbreviations. No responsibility accepted for transcription errors. Box numbers 40p extra. Send copy, with remittance, to the Classified Dept., Short Wave Magazine Ltd., 34 High Street, Welwyn, Herts. AL6 9EQ.

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READERS

Wanted: *Short Wave Magazine* for March, 1981.—Knapp, G3NMJ, 14 All Saints Lane, Bexhill, Sussex. (Tel: Bexhill 215556).

For Sale: Sony ICF-7600D digital receiver, 150 kHz to 30 MHz and FM, virtually unused (cost £180), sell for £125.—Ring Mike, 041-334 2811 after 6 p.m.

Selling: Yaesu FRG-7700 receiver, 12-channel memory, with Yaesu FRA-7700 active antenna, both items in mint condition, original packing, with manuals, £340. *Or* part-exchange for Icom-R70 receiver.—Ring Farrell, 051-931 1001.

Wanted: KW-202 and KW-204. I will pay top price if both in mint condition physically and electrically with no mods. I will arrange shipping, etc.—Mahon, VE3NLM, 441 Hill Street, Holland Landing, Ontario, Canada Log 1HO.

Sale: Sony CRF-320 receiver, FM/MW/LW/SW, 32 bands, excellent condition (cost over £800), sell for £280.—Ring Sunderland 485613.

Sale: Eddystone 940 receiver, 480 kHz to 30 MHz, with manual, £135. Realistic DX-200 receiver, 150 kHz to 30 MHz, with manual, £55. Both excellent condition and 'or near offer'. —Ring Siddall, Sheffield (0742) 890192.

Selling: Heathkit HW-100 with matching 240VAC PSU, loudspeaker and manual, immaculate, £150.—Ring Davis, G3FSA, Bridgwater (0278) 662413.

Can you help: No. 451 Squadron, Air Training Corps, Stourbridge, establish an HF/VHF radio station by donating unwanted equipment, not necessarily in working order? Collection can be arranged.—Write to their civilian radio instructor, J. Chandler, Selbourne House, Newfield Road, Hagley, Stourbridge, West Midlands DY9 0JR.

Wanted: Radio receiver, AM/FM, coverage 19-176 MHz approximately.—Ring Brookes, Sedgley (09073) 71668 after 6 p.m.

Morse tuition kit: Datong D-70 Morse tutor/practice oscillator, with batteries, Himound straight key with lead and jack, headphones, practice C90 tape, £60 inc. postage. Gone HF phone!—Ring Martyn, 0642-784915.

For Sale: FRG-7 receiver, excellent condition, with phones and trap dipole aerial, £120.—Ring Irvine, Instow 860321 (Devon).

All offers considered: must sell **Yaesu FT-501** transceiver, **Yaesu FC-902** tuner, **Trio TS-820S** transceiver, **new TET HB-33SB** triband beam, **Gem Quad GQ-2E, wire** trapped dipole, **Heathkit 'scope**, 50-ft. **Versatower.**—Ring Joyner, G4DRH, 0253-730033.

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FT-101, Mk. 1-E mods., G3LLL. FT-101 Mk. 2-E. Double-balanced mixer, £14.50 post paid (FT-101 Mk. 1, £15 post paid). DX 'Brighter' mic., £6.50 post paid. New bands WARC kit, £15.75 post paid. RF Clipper, £41 post paid. S.a.e. for details. New Yaesu in stock, see below.

Black Star 600 MHz counters, £141 post paid. G3LLL recommended for pro quality. S.a.e. for leaflet. — **AEUK/Holdings Ltd.,** 45 Johnston Street, Blackburn BB2 1EF. Tel. 0254-59595. Access/Barclaycard. Closed Thursdays.

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Practical Aerial Handbook, 2nd Edition (King)	£10.60
Beam Antenna Handbook	£4.35
Cubical Quad Antennae. 2nd Edition	£3.90
Simple Low Cost Wire Antennas, by Orr	£6.20
Aerial Projects (Penfold)	£2.30
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The (ARRL) Antenna Anthology	£4.50
Two-metre Antenna Handbook, F. C. Judd G2BCX	£6.35
HF Antennas for All Locations (RSGB)	£6.65
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