

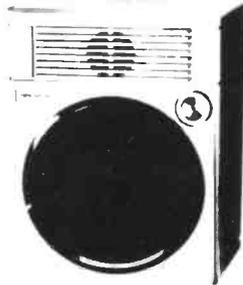
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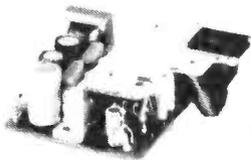
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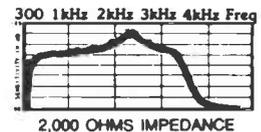
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SHORT WAVE MAGAZINE

(GB3SWM)

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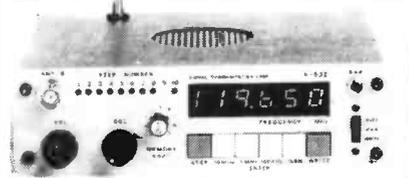
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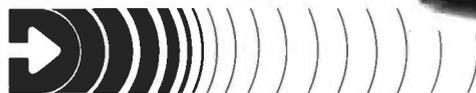
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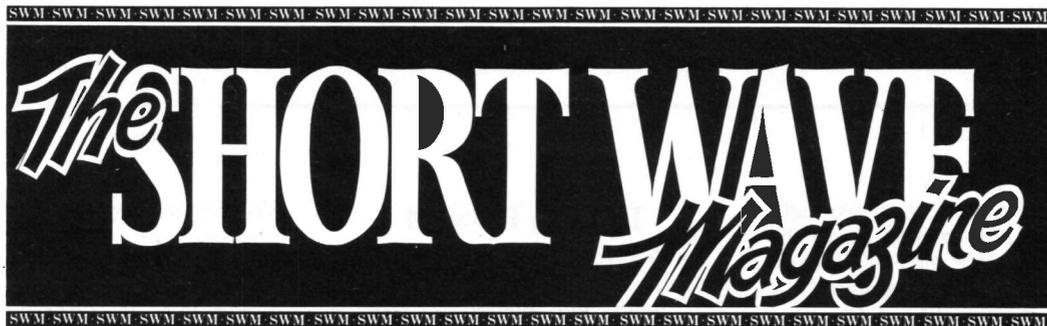
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FOR THE RADIO AMATEUR AND AMATEUR RADIO



GUEST EDITORIAL

A Threat to European UHF Activity?

In the "VHF Bands" column in the August, 1983 issue, a story was featured concerning the drastic restrictions on VHF/UHF activity which the Belgian government sought to impose on its radio amateurs. In the event, the required legislation was not passed and that episode became history, everyone breathing a sigh of relief.

However, according to a communication to the RSGB from Walter Empsten, ON4ZN, the VHF Manager of the Union Belge des Amateurs Emetteurs, this proposal has once again reared its ugly head with the government trying to push through legislation quickly in an attempt to outflank any considered opposition.

The proposals are to restrict the RF power on 144-146 MHz and 434-440 MHz to fifty watts; to take away completely 430-434 and 1,245-1,296 MHz; to impose a one watt power limit to 1,296-1,300 MHz; to reduce the 13cm. band to 2.40-2.45 GHz and to cancel the 6cm. and 9cm. bands. In practice, this would mean that our Belgian friends might as well forget about any serious amateur radio activity above 146 MHz since they would be deprived of the DX part of 70cm. and would be unable to use 23cm. for satellite uplink purposes such as for Oscar-10.

It is instructive to compare the way the Belgian authorities treat their radio amateurs with the way the D.T.I. deals with British radio amateurs. It seems that the Belgian government treats its radio amateurs' small national society with contempt and is not even prepared to explain why it wants such drastic curbs on activity.

By contrast, in Britain there is close liaison between the well-organised and strong R.S.G.B. and the D.T.I. through regular quarterly meetings, and by frequent personal and telephone conversations; co-operation, not confrontation, is the key factor and there is a high degree of trust and respect between the two bodies. Indeed, the D.T.I., as an organ of the government, has gone out on a limb by proposing to grant us an additional band at 50 MHz.

As far as we can ascertain, the Belgians want to allocate 430-434 MHz to the out-dated and very interfering *Syledis* network and the worry is that some neighbouring administrations might adopt the same tactics. No doubt the military want the other bands. But surely, if Britain, with its much bigger population and much greater demands on the RF spectrum can solve its problems and grant us an extra band, the much smaller Belgian requirements could be satisfied by better and more efficient spectrum management?

We wish our Belgian amateur radio colleagues the best of luck and hope that something can be salvaged from this mess.

Norman Fitch, G3FPK

WORLD-WIDE COMMUNICATION

COMMUNICATION and DX NEWS

E. P. Essery, G3KFE

FOR the writer there were two highlights in this last month. Firstly the 'second annual G-QRP and FOC rave-up' at the home of G4BUE on August 17; a few of us stayed overnight with Chris and on the Sunday morning we paid a visit to the Chalk Pits Museum at Amberley, both for the radio exhibits cared for so well by Ron and Joan Ham and for all the other interesting working exhibits and activities there.

Secondly, there was the sudden and late decision of the local club to put on a station at Stansted Wind Mill Fair—a fund-raising event to finance the completion of the restoration. The site of the Mill, at Stansted Mountfitchet is somewhat cramped, as the Mill's base is surrounded by more recent—though not necessarily modern—houses and cottages, but there can be no doubt whatever that it is a fine site for amateur radio. At short notice there was a full length vertical for Eighty and a halo up at 65 feet for VHF (for next time there are thoughts of an eighty-metre Quad which can be rotated and changed from horizontal to vertical polarisation by adjustment of the Mill and sails!). are going through our heads. It seemed right that *S.W.M.'s* contribution should be the use of G3SWM. What a pity that when we had a nice pile-up going on Eighty that we should have to QRT for a time while a memorial plaque was unveiled; alas, the speeches lasted too long and so we didn't manage to get back to the bands. Apologies to all who didn't get a contact.

The Bands

In this context, the *DX Bulletin* points out that the Solar Flux has been recorded at 67 during August as against a theoretical minimum of 65. That, of course, is not to say that we are right at the trough of the cycle yet—but there have been a few noises from 'over the water' on the theme of "Is this, maybe, going to be a short cycle?" We are at the moment in the 9th year so a short cycle cloud hit bottom in a year's time. One feels the first indication will come from the sunspot-watchers by visual means, when they see the first high-latitude spots on the sun; and we have no record of any such observations yet.

On the other hand, as our Stansted Mill activity showed only too clearly, a band that looks poor when listened to on a rotten aerial perks up no end when listened to on a better aerial and from a better site. The moral is fairly obvious!

Looking Forward

ZL9AA is on Auckland Island for about a month, and is limited, we understand, to Top Band and Eighty; ZL7AA on Chatham is reportedly allowed only 80 and 10 metres!

The forthcoming CQ WW Phone Contest will of course bring out the countries; Quito Radio Club, which was the group which activated HC8E recently has an operation firmed up for the Contest weekend, plus low-band—and in particular Top Band—operation before and after.

There seems to be something happening in Mozambique, with reports of SM7DZZ, AB4Y and C9MDB, the first two adding the /C9 suffix before their home calls. Is this the break in the barrier to licensing over there—we certainly hope so.

Heard Island possibilities seem to have come to a stop; one word that Jim and Kirsti have been refused permission to go, and the other that they are still waiting for word—we suggest you keep an ear to the speaker if you need Heard—the pile-up should be quite noticeable!

There are sundry noises on the bands signing as 7O; we would think that if even Eastern bloc nationals can't get a ticket, the an ON would find it impossible. Thus the advice must be to work them first, then worry about their legality later—unless and until the QSL card is received and shown to be acceptable!

S92LB's licence has been photo-copied and sent to ARRL for DXCC verification purposes.

The question of country status for the Pribilof Is. is still in the mill; however the present indications are that it will in due course become a new country in the DXCC list. On the other hand there has been a vote to amend the criteria for country status, (Para 5B.) This, in summary will make embassies, consulates, and extra-territorial legal entities, including but not limited to monuments, UN offices and so on, ineligible for country status, though it is not expected that the action will be taken retrospectively. This, then, would seem to knock on the head the prospects of 4U1VIC for country status, although it leaves SM0M untouched in Rome.

There are preliminary thoughts running around on the prospect of a VK9Y DX-pedition to Cocos-Keeling. Call not known as yet, and we would think that the

VK9YS noted by *DXNS* was probably a phoney.

Turning now to the contests, October 5/6 is down for the VK/ZL/Oceania SSB, and 12/13 for the CW Contests. Both run 1000z Saturday to 1000z Sunday and this year it celebrates 75 years of WIA and fifty years of the contest. Work VK/ZL/Oceania stations at two points a QSO; the same station can be worked on each of the old bands (no WARC) for QSO points and multiplier credit. The multiplier is each VK/ZL/Oceania prefix worked on each band and the contest exchange is the usual RS(T) plus serial number starting from 001. There is an SWL section in which only the VK/ZL/Oceania stations are to be reported. Prizes to the top scorer in each continent and medallions to the top scorers in countries showing ten or more entries. Logs to be received no later than January 31, 1986, by the WIA VK/ZL/Oceania Contest Manager, 1 Noorabil Court, Greensborough, Victoria 3088, Australia.

Also on the October 12/13 weekend, the ARCI QRP CW Contest, noon zulu Saturday to noon zulu on Sunday. The exchange is RST plus state, province or country, plus membership number (or for non-members power output). A QSO with a member scores 5 points, a non-member two in the same continent, four in a different one. Same stations can be worked on each band for QSO and multiplier credit. The multiplier is each state, VE province and DXCC country worked on each band. Each QSO has a power output bonus: 4-5 watts times 2; 3-4 watts, times 4; 1-2 watts times 8; and below 1 watt times 10; Over five watts the contact rates only check log status. In addition there is a further multiplier of two for the use of solar or wind power, or 1.5 watts for battery power provided the source is used for the whole contest. Look for them on 1810, 3560, 7040, 14060, 21060, 28060 kHz. Another spot is the novice frequencies around 3710, 7110, 21110, and 28110 kHz for those stations which have authority on these frequencies—one can hardly expect to persuade a novice to work split!

Again on the same weekend is the RSGB 21/28 MHz Phone Contest, 0700-1900z. Details can be obtained from the appropriate issue of *Radio Communication*.

One week later there is the RSGB 21 Mhz Contest on CW, again 0900-1700z, on October 20. Logs again to go to G3HCT at the Contests Committee.

Jamboree-on-the-Air is October 19-20, and those who are taking part will know what's what. For the rest of us, a contact with a JOTA station who is short of QSOs is fair enough, but in the main they will want to work other JOTA stations.

Finally, October 26-27 is the weekend for the CQ WW DX Contest; the rules are the same as last year—and we suggest a careful reading of the disqualification clause. Logs into the post by December 1, addressed to CQ Magazine, DX Contest, 76 North Broadway, Hicksville, NY 11801, U.S.A. November 23/24, is the CW weekend, and logs entries for this to be postmarked January 15 latest.

Eighty

Not a lot in the way of reports on this band. Those of us at the G4BUE event ended up, of course, in Chris's shack, where G4HYY, G4LQF, G2HKU, G3RJV himself, and of course G4BUE, all used the rig to work GOATS in Cornwall.

G2HKU (Sheppey) referred to the G4BUE session as being "at our Sussex retreat" and notes that such arch QRO merchants as G3FXB even are being sucked into the idea of QRP. Ted's main activity on the band indeed has been with the QRP, and CW, a mode which made his day when he worked GW3SB/P.

August on Eighty CW for G2NJ was notable for the number of pre-war calls heard in the afternoons. One afternoon Nick got a double surprise when he first worked G2AA (Leicester) and then GB2JVD operated by G3YY, as both these stations were colleagues from W.W.II days. Those who collect gear would have been envious had they heard the signal from G6RO (Baildon) who was putting out a very nice 599 signal from a 19 Set—wonder how Ron managed *that*? G2DAR of Rotherham had just finished a CO-PA rig at ten watts and G2NJ was the first contact with it. G0AQY, Jean, from Downham Market got a surprise when she worked G4GBG and found she was in the TOPS CW Club net; but she overcame nervousness to the extent that they hope she will join them again. Incidentally if you hear GW6AQ on the TOPS nets as controller, it is of interest to note Phil, who is Hon. Sec. of the Club, is using a CO-PA rig first built in 1939 and running just ten watts.

G4VFG (Ivybridge) built a rig using a 6J5 VFO, 6J5 BA and 6V6 PA with 250 volts of HT; it runs about six watts of CW and with it Peter worked various people until he began to find himself with an aching elbow—but the little rig managed to get out to East Germany with a 559 report.

Ten Metres

G4JBR (South Molton) says he is seeing plenty of action on the band, but not

everyone has had the time to work more than 100 countries in 1985 so far, as some have done. However, Peter reckons that to support the RSGB ten-metre countries-worked Table or any other activity must help to hold our grip on the band, and so deter the intruders *and* the people who covet the band for other applications. On the other hand, Peter isn't too sure about the Maidenhead Squares proposal; as he says, there is a lot of talking to do if you have to explain all that to a non-VHF operating EU station. Seeing that the band has some of the characteristics of a VHF band, G4JBR wonders whether we should use a calling channel set-up, and then QSY, thus helping with the problem that arises when the band opens and everyone huddles into the lower end of the band—he suggests 28.111 for CW and 28.333 MHz for SSB for those who are looking for inter-G contacts.

On now to G3NOF (Yeovil) who found lots of Sporadic-E signals in the first half of August from early morning to late at night; but after that and until he wrote, Don found very little activity and made no contacts.

G4EZA (Streatham) found the band quite lively; just listening at evenings and weekends was enough to find 33 countries on the band. Some East Coast Ws are said to have been audible in this country at the beginning of August although Tim's best was 4X6IF and, at the other end of the scale, GI0BFO for an all-time new country on the band using ten watts of FM! G4EZA concludes his letter by noting that the silences will grow longer as the days grow shorter, and so more CQ calls will be needed, and then goes on to note a 3-way group around 28.3 MHz when there was some five minutes of two people talking at once and then a comment "you're still doubling, both of you!"

G4ZZG (Warrington) notes in his log layout the days when the beacons were audible and includes with them that Italian robot thing; it is noticeable how the openings have reduced in number since June, with no one beacon being audible on more than eleven days. Charles notes the pattern of band occupancy as: CW in the lowest 50 kHz and indeed many to the lowest 20 kHz, and so being buried in local CB QRM; 28.050-28.2 empty, 28.2-28.3 beacon, 28.3-28.5 empty, and SSB on 28.5-28.6. Above that are just the 10/10 International Chapters for their nets, satellite down links and the FM operators at the top. We don't cavil in the slightest at this assessment of the position, but we do think that the bottom end of the band CW is so placed usually to deter local CB QRM—and rightly so. Finally, G4ZZG notes the number of assorted creepy-crawlies which increasingly inhabit the band, and opines that few if any have DTI approval! Beacons heard were DL0IGI eleven times, IY4M eleven times, LA5TEN twice. Stations worked included

CW to G3XCP, DL3GBO, EA1BTC, YU3QS, OK1KTA, DL2RAH, G3HUI, DL4MDL, IK2JIH, SP3CB, plus SSB to IK2DZN, HG5AAP, EA1CUB, DF5AY, OH0MA, DF1NH/P/OH0, SM4NFL, I3QKO, SP9AI, HA7RI, IK2DZN, SM5DYC, G4RPM, G4OMM, G4PVI, and YU2EJK.

The last report covering this band comes from G4VFG, who seems to have found most of the available openings; with new ones in the shape of ZB2IB and 4U1ITU; C30BDS was heard on CW but not raised, although he was in the end snaffled on 21 MHz. Interesting openings occurred on August 17/18, when all EU was on at good strength, the short-skip extending down to 14 and 21 MHz; and on August 27 when, in between working EAs on VHF, PU2LOK and I5NZK were worked on CW—a check on 21 MHz showed silence on this occasion.

"CDXN" deadlines for the next three months:

November issue — October 3rd
December issue — November 7th
January issue — December 5th

Be sure to note these dates

Fifteen

Hardly a mention this time, save in negative terms. G6QQ (Hoveton) found virtually nothing save on the afternoon of the WAE contest, the odd PY, Ws, NP4 and VP2 on the Saturday—the Sunday was dead.

Just one SSB contact noted by G3BDQ (Hastings) which was JY4MB.

Nothing at all was noted by G2HKU who still awaits the return of his ZL skeds.

G3NOF says he noted Sporadic-E signals during the earlier part of the month. When this ceased there were just a few Europeans during the day. In the evenings from 1700z South America was heard, with the band still open as late as 2300z; and there was but one opening to W noted, that on August 27 from 2000, when signals from the East Coast were noted. SSB contacts were made with CE3BFZ, CX8BBH, PP8JJ, TG9AL, and 5B250A.

Another one to note a signal contact was G4VFG who used CW to C30BBS; but he also seems to have had one SSB QSO, that with KP4IH (QSL *via* NP4HB).

Top Band

Not a lot of reports here either, although we have to say it isn't really the most active time of year on the band.

Let G2HKU take the first spot; Ted offers SSB with UZ1AWF, while other

QSOs on CW included UB5WEU, SP5HS, RP2BIL, OK4CYQ/MM off Hamburg, UV3DGR, OL5BML, UZ1AWF, DJ8WX, EA5AIO, and EA5TX.

Turning to G3BDQ (Hastings), John seems to have been sending notes on the construction of his 'steeple' aerial to all sorts of interested enquirers. He says the QRN on Top Band was really quite awful at times, and several times the rig was turned on and then off again in a matter of seconds once the QRN level was noted! Sympathy, therefore, was indicated to Top Band types in the tropics where nothing less than S8 will break the QRM. John's tally of stations worked included UZ1AWF, UC2LBX, RP2BIL, UZ4FWO, UZ6HZA, EV4AW, 4N2E, who turned out to be a YU in disguise, I4ZFY, I5VDJ, I1YLU, YU7JDE, 4X4NJ, K2SG, VE1ZZ, a second contact with J28EI, who peaked S8 at 2244 GMT, OH0MA on Market Reef, and a new one on the band in the shape of TR8JLD. An interesting local one was with G2HKU—both use the Corsair rig, and so of course there was the extra incentive to hear how one's signal sounds to others.

Forty

Love it—or hate it! G2HKU tried CW on it and found K1ZM, UA9SA, EA7TH/8, and YV5ANE.

A delightful letter from DJ6FO (Bad Bodendorf) came in fact from Norwich where we assume Dieter was on holiday—wonder if he met up with G6QQ or any of the locals in the Norwich area? Dieter has been a regular reader of this piece for quite a while now, and notes the lack of overseas reports, so . . . on Forty, DJ6FO on CW worked TA1CK, UL7BY, UA0ABL and UA9OG, using his FT-401 and FT-505. On the aerial side, there is a sloper system of four half-wave dipoles plus a quarter-wave ground-plane—all in a cherry tree which in some magic way seems to help the low-angle radiation. The main area of activity is in fact on the new bands as we shall see.

CW on Forty for G3BDQ included contacts with UD6DHM, UL7IBQ, TA2TAT who asked for QSLs via YLQ, EA5YU/EA8, ZS1AAX, PY1MAG, JA1BLA, JA5BIN, JA5AJQ, and JA6BSM, all working during the evenings around sunset time.

The New Bands

DJ6FO has a fine collection on 10 MHz, CW, including VK2BHK, VK3MR, VK2PA, VK2VA, V13XB, V12MY, V12FIP, ZL1HY, VE2LI, ZS3KC, W3ARK, W2GDV, WA4GAX, W1AGE,

K3DV, KU7H, KA1HSS, N4SU, N4LBJ, J28EI, and FG5XC who was worked several times around 2300z. Turning to 18 MHz, Dieter made it to LU5DJ0 and LU1DOW. We hope that while this is the first, it won't be the last of the DJ6FO reports to appear in this piece.

G6QQ spent much more time on 10 MHz, using his 40/80m. G2DYM trapped dipole, tuned with the Z-match, with the centre at 28 feet and the ends at 12 feet—the centre being held up by courtesy of the bungalow TV mast! This was good enough to raise N4NFG, VK3NC and VK3MR in sessions around 0600-0700z; others worked included G, GM, Y22, HB, OE, F, DK, OZ, SM, LA, OK, EA, I, EL0ZX/MM off Corsica and G6ZY/EA6, while ZS and 5B4 were heard but not raised. Finally, a last minute interpolation shows OY7ML added to the list of those worked. David has developed quite a liking for the band, and reckons that the general level of behaviour is good and the primary user services well spaced.

A lot of static crashes and general noise, complains G4VFG, who nonetheless worked his CW out to W3VA, N4LBJ, W8EGB and VE3DTR; on the other new bands Peter didn't hear a thing!

G2HKU brings up the rear this time, offering VK2FIP and VK3MR on 10 MHz CW, plus on 18 MHz CW contacts with OZ1W and DL1BS. Between times Ted made a nice fly screen door for the kitchen, only to discover that the wasps can penetrate it with ease. Back to the drawing board!

Twenty

As ever, where most of the DX traffic is carried on; but we get the feeling that the activity is lower (or conditions worse) than at the last sunspot minimum back in the mid-seventies.

G2HKU found SSB enough to get over to G6ZY/EA6, while CW went out to HK3HY, W7CE, UH8DC, EA9CE, UA0ABL, UA9XR, JA6LDD, UH8EA, I4ALU/ID9 (Lipari Is.), I2KGM/IG9 (Lampedusa Is.), HP1AC, HK1BDO, UI9AWD, and UG7GWD.

At G4VFG the folded dipole was improved by a bit of judicious pruning and an improved balun, an exercise which Peter feels was time well spent. On CW, ZD8KM (QSL to G3IFB), KH1EFO, TK/HB9ASZ, PY2GSA, VE1AGF, HB0/DL1GK, PS7HMB, and an assortment of EUs, while HK3HYK was a gotaway. SSB made it to W1, W2, PP2DD, PY8AHA, A71AD, VP9JY, OD5KP, VP2MO, TU2CJ, VU2GI, JH4FEB, OA4OA, 6Y5NR, V85HG (QSL to Box 228, BSB, Brunei) and

JA5RH. Peter uses an aerial on this band which has its feedpoint at about 15 feet, its high end at 20 feet and its low end at 12 feet, the results of residing in a mobile home, and one must say that the results achieved with this aerial are quite encouraging.

The usual day-time QSOs are noted by G6QQ, as W1, W2, W3, W4 on CW, JW3CC (Spitzbergen) for a new one, and HL1CG.

G3BDQ offers CW contacts with UA1ZFE/1 (Pesyatov Land in the Arctic), UL7QF, UH8BBQ, UI8AP, UM8MFA, RF0FWW, plus many less interesting Russians chased for oblast numbers, FM5DJ, FY5BO, CO2FR, HK3HY, JA0YCL, OX3LK, TI2LK, TA4BN, DF8AN/HV, N7DF/TT8, JG1FVZ/5N0, 5N4CJN, KC7UU/5N6, KH6IJ, KH7KJ, 5B25FN, TK/HB9ASZ, VE7QH for a ragchew, XJ2CP, XO1AW, HB9AXR/MM off SW Africa, and just one SSB QSO with A71AD to set up some Top Band skeds for later in the year.

Finally, G3NOF, who found no VKs on the morning LP route, although a few were heard around 2300 on the short path. In the mornings around 0730z there were a few ZL, KH6 and KL7 signals, with VE8RCS a regular at this time. East Coast Ws were noted between 1100 and 1300, SE Asia around 1600z, and W7s at 1500z and again at 2300z. SSB contacts were made with A4XKH, A29EM, A71AD, CG9ANH (Canada), CG9XG, CN8CC, CN8MC, CT2CQ, CX9CO, CR9AI (who was in Selvagens Is, not Macao), EA8BCJ, ED1ISI (Sisargas Is.) FP5HL, HC8E, HH2YF, HK0HEU, I2KYM/IG9, ID9ON, J5WAD, J6LPT, J28EI, JY8FH, OE3HGB/YK, OH0RJ, PS7ADN, PY7SV, T47AM (Cuba), TG9HH, TG9NX, TZ6FZ, UA9WEE, UI8BP, UI8LB, UW9WW, VE5ADA, VE7FNZ, VK8DN/MM off OY, VP5EE, W2NQ/7, W7KSA, W7OC, WA6PBJ (Arizona), YB4FW, YB0TK, ZB2FX, ZC4AP, 5B25JE, 5B25OA, 8A0PPI (another YB), 9M2AP, 9M2DF, 9M2MM, 6Y5NR, 5X3BH, 9X5BJ and 9Y4LDK.

Deadline

This is as shown in the 'box' in the body of the piece and is for the arrival of your letters addressed to your conductor, SHORT WAVE MAGAZINE, 34 High Street, Welwyn, Herts. AL6 9EQ. Notice, not — *please not* — to the home address, as a move of QTH is anticipated before long with the resulting possibility of mail going astray.

Meantime, be seeing you.

A Direct-Conversion Receiver for the LF Bands

Incorporating a Crystal-Controlled Converter for 160m.

COLIN TURNER, G3VTT

NOT many people build receivers these days, or so you would think judging by the complicated commercial receivers seen in the glossy advertisements. This may well be true; it is of course difficult to duplicate the latest receiver's performance on the proverbial kitchen table. However with a little thought and ingenuity a receiver of creditable performance can be manufactured over the course of a week or so.

The receiver about to be described evolved, as do all good projects, over the long winter break one Christmas. It was built using components to hand with circuitry that is best described as basic and well proven.

No doubt the printed circuit board homebrew experts could duplicate this circuit in a quarter of the space but the writer, being a refugee from the valve era and having stubby fingers to boot, prefers the tag strip and large pitch Veroboard technique for home construction. Although the advantages of printed circuit boards are well known and numerous, by using this 'battleship' method of building at least everybody has a means of duplicating the circuit with a good chance of success. If you read *S.W.M.*, February 1985, "A Stable Sure Fire VFO", you will at least appreciate that this receiver has a very stable VFO on the 80m. band.

Description

As can be seen from the photograph the receiver is built in three Eddystone die-cast boxes. The boxes are expensive but have the virtue of mechanical stability and they can be drilled and filed with considerable ease. They are almost bullet-proof, too.

The upper left-hand box contains the 80m. VFO and has a tuning graph on the lid to aid receiver calibration. A similar graph

is used on the lid of the right-hand box which contains a 160m. converter. Calibration is more than adequate when using the imported dial shown — in fact one other famous receiver, apart from this one, uses the same idea to good effect. (Hands up all those who know how to read the HRO tuning dial and graph!)

The lower box contains the 80m. receiver mixer, audio pre-amp, CW filter and audio output stage. The CW filter is a passive type using two 88mH toroids to give a good degree of selectivity.

The block diagram shows the complete receiver outline. The basic receiver tunes from 3.5 to 3.7 MHz with the values of the tuning capacitor and coil given in the table of values. The writer's primary interest is CW and really only the first 100 kHz of any band is of interest. For 160m. operation a converter is switched into circuit which uses a 5485 kHz crystal to tune from 1.985 MHz to 1.785 MHz. The 80m. section of the receiver is then tuning 'backwards' from HF to LF. Ideally a 5.5 MHz crystal should have been used for this converter local oscillator, but it is the same old story: I found 5.485 MHz in the junk box and why pay lots of money for an exact crystal on 5.5 MHz? If you want to have an exact tuning range, *i.e.* 3.5 MHz being equivalent to 2.0 MHz, you will have to find a 5.5 MHz crystal.

When switching from 80m. to 160m. a triple-pole two-way switch is used to switch the aerial from 80m. receiver to converter input, converter output to receiver input, and switch the converter HT supply of 12 volts on and off.

The basic 80m. receiver has a simple grounded gate FET RF amplifier which feeds signals to a two-tuned circuit preselector tuned by a double-gang capacitor. The use of a double-tuned circuit has been found particularly useful in keeping out unwanted signals.

General view of the
80/160-metre receiver.



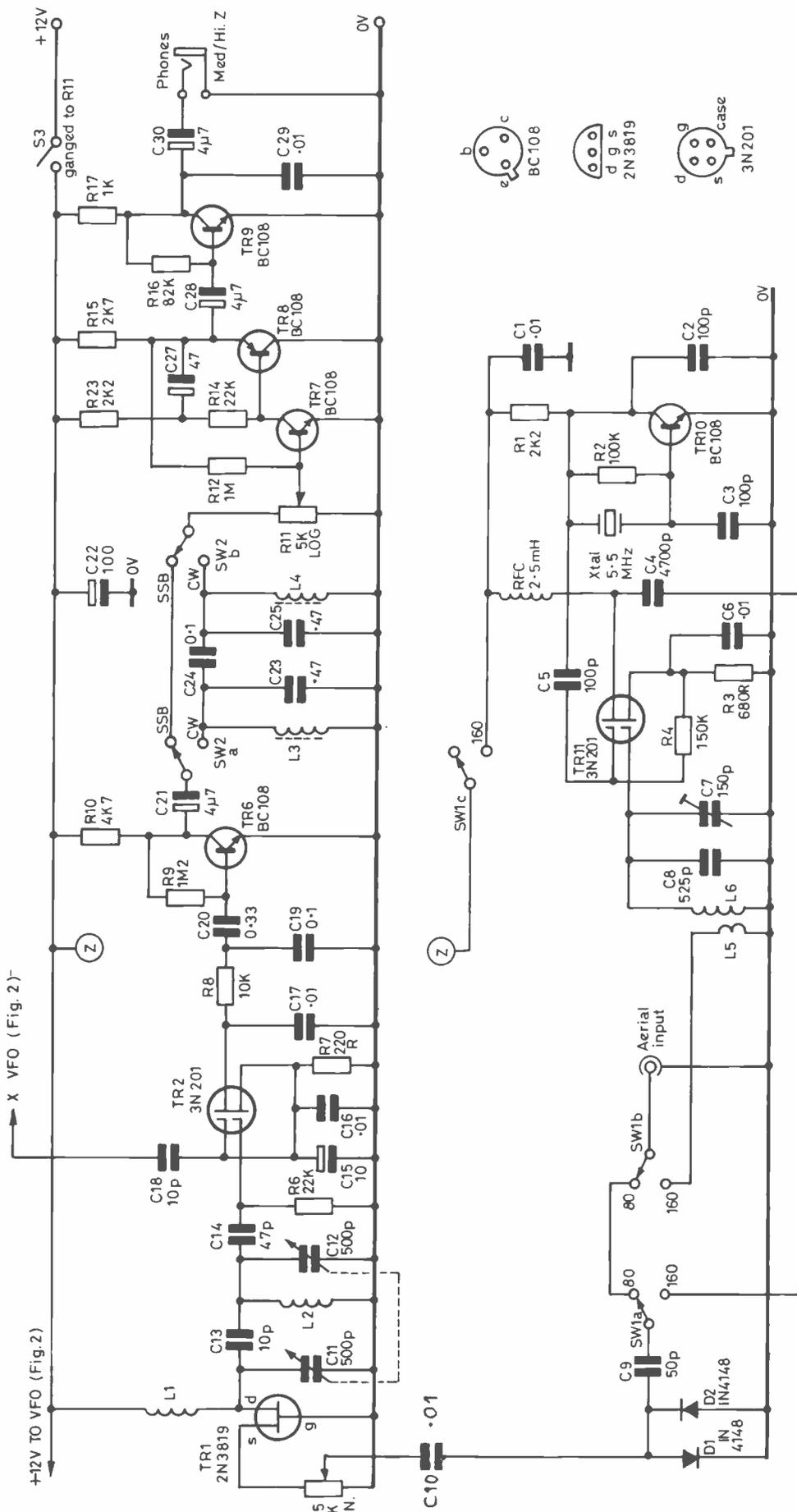
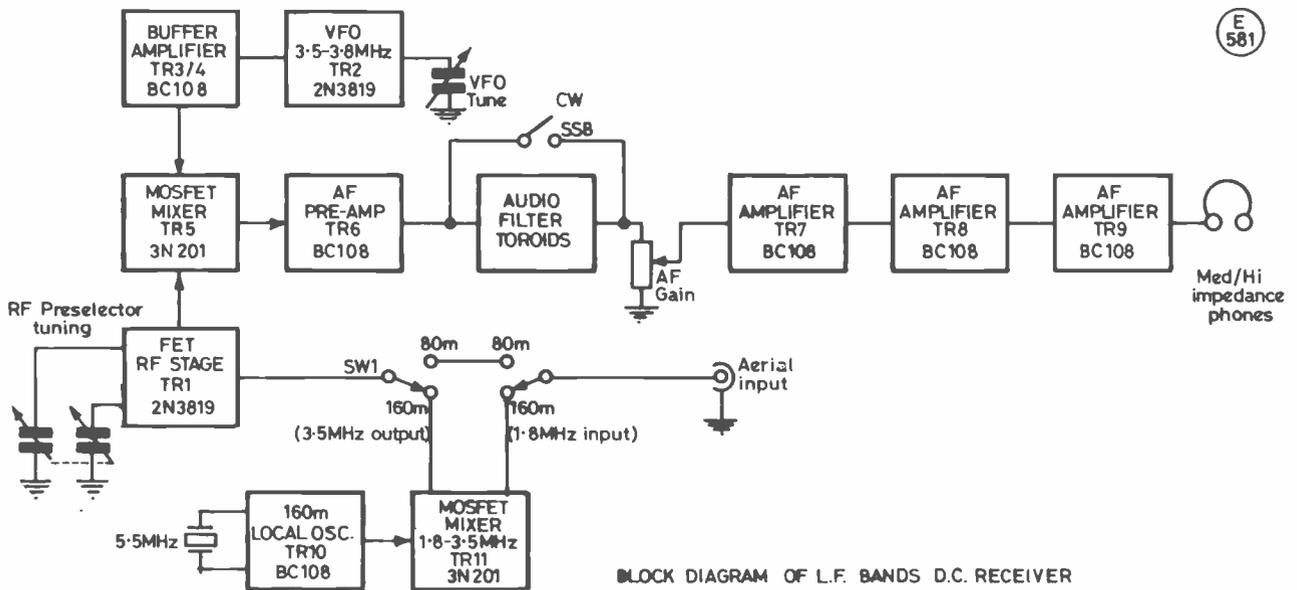


Fig.1 CIRCUIT DIAGRAM OF L.F. 2 BAND DC RECEIVER

E
581

After amplification the RF signals are fed to a MOSFET double-gate mixer which was used primarily because of its conversion gain. Following the by now well known direct conversion techniques the resultant audio from the drain of the mixer is passed through an RF filter circuit to an audio pre-amp transistor and then *via* the CW filter to the audio gain control.

The CW filter is a passive type which utilises two 88mH toroidal inductors. If you want a good audio filter for a homemade receiver project, then try this one. Selectivity is good at around 400 Hz, the only word of caution being to ensure that the filter is terminated in a high impedance at either end. In this receiver the filter can be switched in and out of circuit to give SSB or CW selectivity.

The final audio stages are a three-stage DC coupled amplifier giving around 100dB of gain. In any direct conversion receiver the major part of the receiver overall gain is in the audio stages and good quality components must be used to keep audio noise to a minimum. Any noise will tend to mask the low level weaker signals.

To ensure the audio stages are low noise always use transistors from a reputable source and make sure that the types you purchase are not rejects. Many of the cheaper devices suffer from a high internal noise level.

Construction

One or two constructional hints are now possibly in order. The two 88mH toroids are mounted between a 'sandwich' of two pieces of thick paxolin, or as an alternative perspex, sheet. The complete sandwich is fixed to the chassis by two 4BA nylon bolts and spaced by two thin washers. The writer always feels happier if coils, particularly those of the toroidal variety, are spaced away from any surrounding metal work. Both the toroids in the 80m. VFO and the 160m. converter RF stage are fixed to their respective boxes by a nylon bolt and a fibre washer on a pillar of some non-ferrous material. Any non-ferrous material can be used to mount toroids, so have a jolly good rummage through your junk box, or failing that the kids' toy box often yields a useful piece of plastic. ("You don't need this do you young James?")

The photograph shows the internal layout of the 80m. receiver portion. At the lower left-hand corner is the double-gang tuning capacitor which in the original version had an inbuilt slow motion drive; this is useful but not an absolute necessity. Above the tuning gang, which is in effect a preselector control, is the board for the RF, mixer and audio pre-amplifier stages. To the right hand of the box is the three-stage DC coupled amplifier and to the left of this the CW filter.

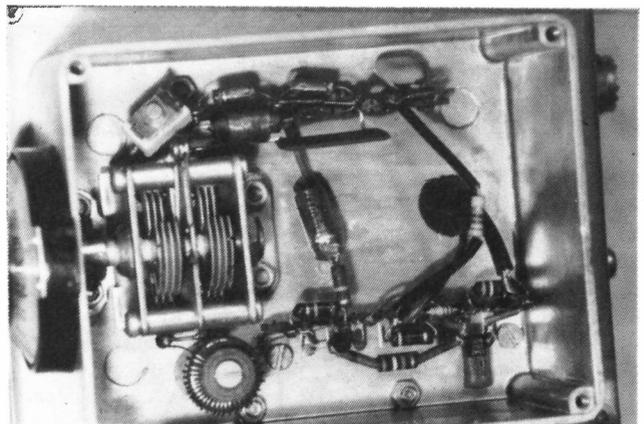
Both boards were made up using large pitch (0.15") Veroboard and they were secured to the chassis box by four 6BA nuts and bolts with a small spacer at each corner. If you have nimble fingers then 0.1" matrix Veroboard could be used, or if you want to burn a hole in your carpets with ferric chloride you can always try your hand at printed circuit board construction.

Tag strips are used for all other parts of this receiver. One word of warning, if you purchase tag strips in any large amounts at the various rallies up and down the country always give the tag strips a jolly good clean before fitting components to them. Time and time again the writer finds he cannot get the tags to tin and components have to be removed to clean up. The best tool without doubt for this job is one of the small 'Radiospares' fibreglass pencil brushes. They are available from RS with both fibreglass and brass refills and they make very easy work of cleaning components, particularly solder tags, before tinning and soldering.

Another tip that may be of interest to other constructors is the method used for front panel markings. This is one of the super ideas coming from the Hon. Sec. of the G-QRP Club, G3RJV.

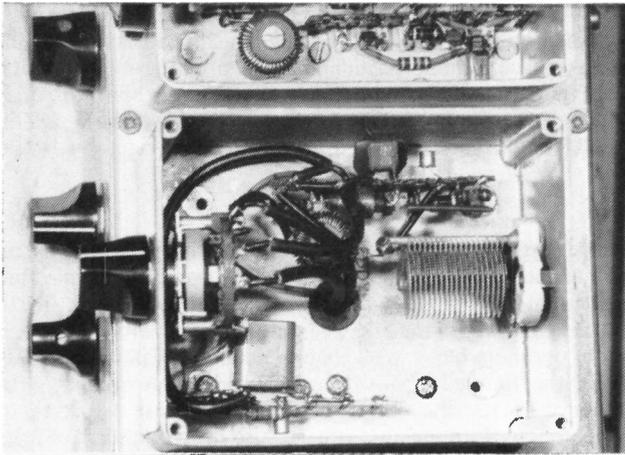
A piece of card is cut out to form a 'frong panel' or 'facia' just slightly smaller than the overall size of the box being used. With some care a really eye-catching colour of thin card can be chosen. Various colour cards are available from art shops. The card is then marked and punched to position the holes for the various shafts and spindles, volume control, RF gain, etc.

The card should then be lettered with a stencil of some type, or



Inside the 80m. VFO: note how the VFO coil is secured.

photos: G3ROO



Inside the 160m. converter section.

Letraset. In fact for this receiver a *Rotring* set was used which was expensive but gave excellent results. The finished card can be held in place with 'Prittstick' or another of those tacky substances whilst the volume control and other shafts are tightened. The whole card can be firmly stuck down before final tightening of the volume control nuts by a sheet of clear plastic film such as is used for book covering.

Obviously some experimentation and practice may be needed to perfect this method. The initial outlay on stencils may be

expensive but after that you should not have to spend too much to obtain decent results.

Finally, perhaps a few words about the two tuning graphs on this receiver would be in order. The main tuning drives are imported vernier types available from *Messrs. Ambit*, and no doubt a few other suppliers. They have a fairly smooth action and can be made surprisingly accurate by using the aforementioned tuning graph. After the receiver is completed the VFO should be adjusted to give the required tuning range, in the case of this particular receiver 3.5 MHz to 3.7 MHz, a calibrated receiver or transmitter can then be used to plot the vernier scale readings against frequency. Lady Luck dictated that on the original '60' on the tuning scale gave a frequency 3.560 kHz. To set the receiver up on a particular frequency that frequency must be plotted against a vernier setting on the graph. Incidentally normal graph paper was used for the scale which was protected by clear adhesive film used for book covering.

Conclusion

So here you have a simple two-band receiver that will fulfil a variety of uses such as stand-by receiver, companion receiver for that QRP transmitter project, or portable receiver.

It can be easily duplicated by the novice to home construction. By building it section by section, starting with the audio stages and then progressing to the mixer and VFO sections, it can be tested piece by piece. If you wish you can build it in a more elegant box or even make it using printed circuit boards. However you tackle it why not try your hand at a homemade receiver soon?

• • • "Practically Yours" • • •

with GLEN ROSS, G8MWR

WHEN I first started this column I said that we would provide ideas covering all frequencies from DC to microwaves. We have certainly got down to DC and at the high end we have got up to 13cm. with an SWR bridge design. However, the lads on the frequencies above that have so far had a thin time. This month we put that right with a design for a reliable frequency marker for use on the 10 GHz (3cm.) band.

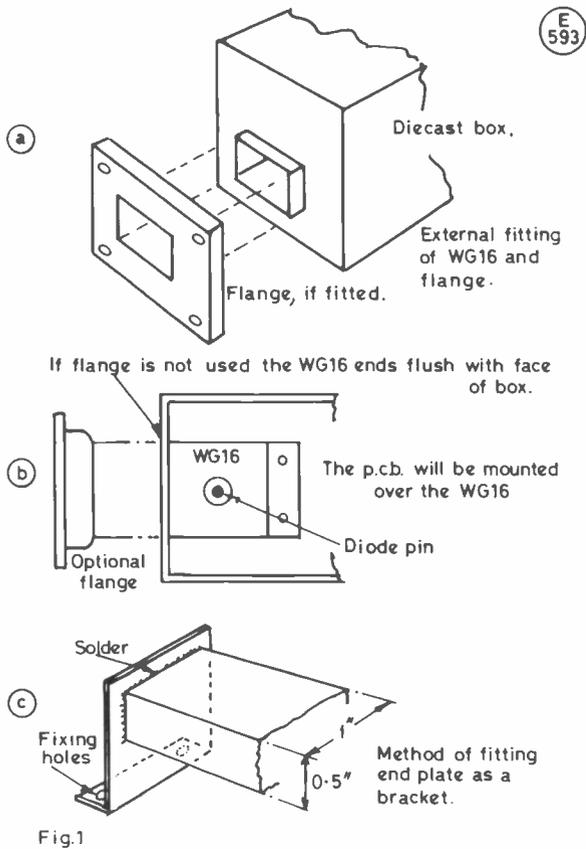
Basic Concept

The design is, in effect, an extension of the ideas used in the 1296 MHz marker which was recently described. It is simply a matter of hitting a diode with RF at a lower, easily generated frequency and then using the diode to generate harmonics at the required frequency. The one you want is then selected with a tuned circuit and you have your marker.

Microwave Generator

The known driving frequency can be provided in several ways but the heart of the unit is the harmonic generator. Most people get scared off at the idea of high accuracy 'plumbing' but this design is easily built using normal hand tools and kitchen table technology.

The waveguide used is WG16. This is commonly available in scrap lengths at rallies and is easily recognised by its outer dimensions of 1 inch by 0.5 inch. The piece used may be of any convenient length, the excess length simply acting in the manner of co-axial feeder on the lower bands. First square off both ends of the waveguide and then measure 27mm. in from one end and drill a 1/8-in. dia. hole through both wide faces of the waveguide, see Fig. 1. Open out one side to 1/4-in. and carefully remove any burrs or swarf from the inside faces. Now close one end by fitting



a metal plate to it. This may be easily soldered to the WG16 by the aid of a small blowtorch but it is *essential* that *no* solder is allowed to get onto the inner surfaces of the waveguide: solder acts like a sponge at these frequencies and the smallest amount will mop up most of the 10 GHz signal you are trying to generate. One method of avoiding this problem is to cut the plate slightly oversize and then solder around the lip. It would also be possible to make this plate act as a mounting bracket for the unit.

Diode Mounting

The main fixing for the diode is obtained by breaking up an old control knob! (See Fig. 2 and Fig. 3a.) The type you need is the sort that fits a standard $\frac{1}{4}$ -inch shaft (*not* the metric variety). If you break away the plastic material you will be left with a brass insert, this should be carefully centred over the $\frac{1}{4}$ -inch hole and soldered into place; check that no solder has entered the waveguide. The diode used is of the 1N23 or similar type. These units have a ceramic body with a pin connection at one end and a cap at the other; there is a small flange at the cap end and this should be removed by carefully filing it away. When this is done

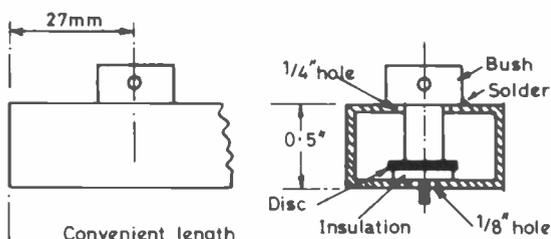


Fig. 2 Details of Diode mounting.

check that the diode will fit into the boss which was previously mounted on the WG16 and that the pin end comes through the opposite face without touching the edge of the $\frac{1}{8}$ -inch hole. If it does touch, carefully remove some metal from the waveguide with a small file until there is clearance around the pin. This should not be required if the original holes were carefully drilled.

Decoupling

The next item required is the decoupling disc, Fig. 3b. This can be fabricated from a thin piece of brass or copper or you may find a coin that is no longer legal tender (and therefore not a crime to deface!) that will fit the bill. The dimension shown for the disc is about optimum but a small change either way will not seriously affect the finished performance. The last item needed is the insulator for the disc. The usual method is to use two layers of Sellotape cut to fit the disc; you can also use a thin piece of mica sheet and this could be obtained from a transistor or diode mounting kit.

Connecting Flange

The unit shown in the diagrams uses a standard WG16 flange to enable connection to other equipment. This should be square or round to mate up with your existing system. If you are going to use the unit simply as a signal generator, the flange is not required as the signal produced can be heard over a distance of several feet; in this case the waveguide could be cut flush with the outside edge of the box in which the unit is mounted. If a flange is to be fitted it should be attached and soldered before the diode is fitted into its holder.

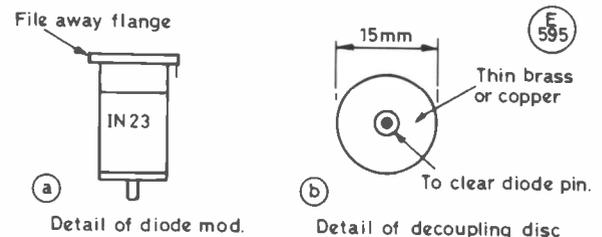


Fig. 3

Construction

The unit is best constructed in a die-cast box about four inches long and two inches square. A hole 1-inch by $\frac{1}{2}$ -inch is cut in one end face to accept the waveguide (a flange could be used as a template) and the waveguide is inserted from the inside of the box. If the rear closing plate was made oversize this should now be formed to make a secure mounting. Alternative methods are to use a flattened Pyroclip soldered to the WG16, or to solder brass nuts to the narrow faces of the waveguide. The unit is then bolted into position. The various diagrams should make all the above notes clear.

The Driver

No other metalwork should be done until the type of driver is decided upon. There are several systems available and we shall discuss the advantages and disadvantages of the two main types next month. If difficulty is experienced in obtaining the waveguide components contact the Microwave Society at 81 Ringwood Highway, Coventry. They can provide the material at reasonable prices and can also help with a lot of practical advice on using all the bands above 10 GHz.

Amateur Radio Computing

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

REV. R. P. BUTCHER, G4NWH

WHAT possible use is a computer to the radio amateur?

In the August edition of *Short Wave Magazine*, this new column which Paul, G4NIP, and I are to be sharing was billed as "a new, regular bi-monthly feature for all those with a radio station and a computer". So I may be stepping outside of my brief in my first contribution by addressing myself as much to those who don't use a computer in their radio station as to those who do.

Now, I have to confess to being a bit of a computer freak, although blessed with far more enthusiasm than knowledge. But it's not just for that reason that I am saddened to read or to hear over the air the opinion that using a computer in amateur radio is somehow cheating or degrading the hobby (a rare view, usually expressed by those who turn up their noses at any signal which is not CW sent from homebrew equipment). Someone ought to tell those chaps that amateur radio is not only for the wizards with the soldering iron and those with mesmerizingly delicate fists but also for the competition experts and the doyens of design, for the technical innovators and for Joe GI who asks for no more from life than a friendly chat as he drives around. One of the most attractive things about amateur radio is the breadth of the hobby: there's always something new to try. And part of the attractiveness of the microcomputer is the way in which it opens up new modes and techniques.

Anyone who has spent long hours with pencil and paper working out the effects of different component values on a circuit will instantly have appreciated the help of a calculator. How much more helpful is the program which saves the repeated entry of formulae. 'Number crunching' is what a computer does best but how little advantage we take of its facilities! Most of us never used to bother working out the 'grey line' or calculating MUFs because it wasn't worth the effort but why do we still not bother when the only effort required is to load the program and read the screen? Properly used, the computer can greatly enhance the effectiveness and enjoyment of amateur radio.

Of course the use of the micro also opens up all sorts of new areas in the hobby. Everyone knows about the ease with which the micro can handle RTTY and most of us have seen and admired the near-perfection of AMTOR operation. SSTV is available to the micro-owner and, 'state-of-the-art' this year is packet radio. All of these modes are available also to those who don't own a microcomputer but, in each case, with substantial additional cost. The micro owner can apply his one machine to all of these modes (and a lot more besides) with minimal expenditure on peripherals and interfaces.

However, if the microcomputer is to be a real help in the shack (and a real money-saver too) then there are certain criteria which are all-important in the selection of a micro in the first place. If

you haven't already got a micro and are thinking of buying one, or if you've got a fairly primitive machine and are considering upgrading, then these few thoughts may be of help.

The major consideration could well be popularity. The more folk have a particular micro, the more software will be available and the more experience will have been built up in its use. If you go out and buy a micro that no-one else is using, you'll have to sit down and write the software yourself (although that may not be as bad as it seems, as so many programs written for one machine are easily adaptable to most others).

Almost as important is "interface-ability". If the micro you buy has a "User Port" (i.e. a parallel data input/output port), it's going to be a lot easier to design and test equipment which feeds audio and control signals between the micro and your rig. The BBC micro, for instance, does have such a port and also other useful interface points. Some microcomputers (like the ones designed as little more than games machines) really place quite a barrier between the inside of the machine and the big world outside, a barrier often overcome only at additional expense.

In some microcomputers the ordinary 'cassette' port can provide a really useful interface. When the detection of cassette input tones is controlled by software within the machine's operating system it is comparatively easy to alter that software to detect, for instance, RTTY tones; SARUG members, I know, have had great success with "interfaceless" RTTY programs and the like for the Spectrum. If you have a BBC micro, on the other hand, the cassette tones are sorted out by hardware and there's not a lot you can do to muck about with it.

Another, very important, consideration is cost. You can pick up a second-hand Dragon quite cheaply and ZX81s are so cheap that you can afford to rip them apart and use the bits in a dedicated application (like a RTTY unit).

To some extent, like everything else, it's swings and roundabouts; what one machine boasts the other needs and what one lacks another has. That's why I rate the availability of software and hardware so highly (and availability stems from popularity for all the obvious commercial reasons).

Next time I write I intend to give an overview of the AMTOR programs currently available. If you have any experience of AMTOR with any microcomputer, could you write to me (c/o *Short Wave Magazine*) so that I can make my comments as broad and as helpful as possible?

In the next "Amateur Radio Computing", Paul will review RTTY and SSTV with special reference to the Spectrum.

As Paul mentioned last time, if you want details of our respective user-groups please write to S.W.M. at Welwyn marking the envelope "SARUG" or "RAMTOP" as appropriate, and enclosing a stamped addressed envelope.



"You're not obliged to give a report, but if you do . . ."

The Tono Theta-9100E Communications Terminal

A User's Review

KEN MICHAELSON, G3RDG

AS a confirmed keyboard addict in the field of amateur radio, it was quite an experience to review the **Tono Theta-9100E** communications terminal. Because that is precisely what it is, a Communications Terminal. It arrived well packed, and when opened I found that connecting coax, phono plugs, etc., were all supplied.

It requires a separate VDU to be connected to the COMPOSITE output on the rear apron, and a power supply of 12-14 volts at a minimum of 1.5 amps. I must say, at this point, that it is *vital* that you read the manual fully and understand it, otherwise full use of the many facilities cannot be obtained. And there are many facilities to be used, of which I shall only mention a few.

First of all, the unit will receive and transmit in four different modes, namely Morse code (CW), Baudot code (RTTY and KCS), ASCII code (RTTY and KCS) and ARQ/FEC code (AMTOR). KCS by the way, stands for 'Kansas City Standard'. In the CW mode, the unit will automatically track the receiving speed, and when sending CW you have a choice of between 5 and 50 words per minute by merely depressing the key marked 'SPEED' followed by a number from 0 to 9. One can either choose Auto PTT or Manual PTT by means of a keystroke. 'Auto' will switch the transmitter to 'transmit' immediately a key is depressed, whereas 'Manual' is just what it says. Just in passing, it is possible to connect a hand key to the unit if you feel that you want to give your own character to CW sending. Just connect the key to "TTL IN" on the rear apron.

Then we come to the next mode, Baudot. There are options for both the Low tones and High tones in 170, 425 or 850 Hz shifts and 'KCS' at 1200 Hz shift. These options made it very convenient for me, as I use FSK with the High tones in my transmitter with 170 Hz shift. The shifts are called 'Narrow', 'Medium' and 'Wide' and are selected by pressing SHIFT-TONE followed by a number from 1 to 7. It is also possible, by means of another keystroke, to reverse the polarity of either the received or transmitted signal, or both. This is done by typing 'SENSE 1' for the received signal and 'SENSE 2' for the transmitted signal. These instructions act on a 'toggle' principle: one keystroke reverses, and the next puts it back to normal. There are four different screen formats available, of which more later. The initial format is 80 characters by 24 lines but this can be altered with the keystroke 'ESC 8'. The PTT alternatives mentioned in relation to the CW mode also apply to the RTTY (Baudot) mode.

It is possible to change the number of characters before a CR/LF is sent by typing 'CR/LF' followed by a number from 1 to 3. Typing 'CR/LF 0' cancels the automatic CR/LF, and you have to remember to do it yourself! There are two methods of helping with the trouble of the received message changing case — that is to say, giving you all figures instead of the message. When the received message goes into Figures, one can press the key marked CASE, and change it back to Letters, or use the 'Unshift-on Space' method which, when activated, changes the case back to Letters automatically on receipt of a 'Space' signal from the other end. The instruction for this is 'ESC Y'. There are several more facilities in the RTTY (Baudot) mode, but I shall not describe them all. There is the DIDDLE ON/OFF, which inserts an 'Idle' signal when you are thinking of the next thing to say. There is a fine adjustment of 'Speed', which can be used with good effect if

you have an oscilloscope connected to the outlets on the rear apron. It is possible to tune exactly to the received signal with beneficial results to the text being copied. There is the CW ident which should be sent at the end of a transmission; this has a data storage of 32 characters which is ample for station callsign, name and QTH. The transmission of this is generated by 'ESC I' and the words 'CW ident follows' are sent automatically before the actual identification. On completion of the transmission, the unit automatically returns to RTTY standby.

The ASCII mode of transmission is identical to the RTTY (Baudot) mode, except that, obviously, you have to press the key marked 'ASCII', so I shall not repeat them all. When in the ASCII mode one may also select FULL DUPLEX mode. In that case one 'talks' to another computer by landline at speeds up to 9600 bauds (selected by various keystrokes), and one may receive and transmit at the same time since the receive and transmit data circuits are completely separate. Obviously it is necessary to ensure that the host computer can be used with the **Tono 9100E**. RS232 levels are used for data in and out and full instructions are given in the manual. I must comment though, that it might require two or three rehearsals to get the thing going properly. There are so many variations and facilities that I found myself reading and re-reading this particular section of the manual before I was able to program to my satisfaction.

The **Tono Theta 9100E** has yet another facility to offer. That of using a 'Light Pen' to write on the screen. You connect the Light Pen to the connection on the rear apron, key 'ESC-L', and small graphic elements are displayed on the screen. By holding the Light Pen horizontally against the screen while keeping the 'LP' key on the keyboard pressed, every element touched by the Light Pen is changed from a blocked-in square to an inverted 'U'. By this means one can draw a design or a part of a circuit, etc., and transmit it to another station. However, the other station must be equipped with another **Tono Theta 9100E** already switched to the graphic mode. The distant end, of course, with his **Tono**, can transmit drawings, etc., to you by the same means. Intriguing, I must say, though during the review period I did not find another station to whom I might transmit my drawings!

The unit supports a selective calling system, 'Sel-Cal', in all modes except AMTOR and is not to be confused with the 'Selcall' used in that mode, about which more later. I understand that this method of operation is contrary to the terms of the Amateur licence in Great Britain. However, I will describe it briefly. It is possible for another station to call you, using a previously agreed Sel-Cal. This Sel-Cal activates the station whereupon the **Theta 9100E** starts decoding and keys the REMOTE line to external equipment, such as a tape recorder, thus recording the message. On receipt of the closing Sel-Cal (which must be different to the first one), the unit stops decoding, sends the answer back and reverts to the receive/standby state.

I have dealt with CW, RTTY and ASCII, and last on the list of modes available to the owner of this sophisticated piece of equipment is AMTOR. I shall not attempt to discuss the workings of this mode as it has been done by several writers recently; however, in my opinion, it is certainly superior to ordinary RTTY because of its error-correcting circuitry. There are three options available in this mode, 'ARQ' (automatic request for retransmission), 'FEC' (forward error correction) and mode 'L', (listen to



an ARQ contact). All these are selected by various keystrokes, fully tabulated in the manual. Before actually operating in this mode, you have to enter your own Selcall. This consists of the letters of one's callsign, e.g. G3RDG gives GRDG, etc. In the case of callsigns such as that of a friend of mine, G6VS, his Selcall becomes GGVS. Full keying instructions are given for inserting the Selcall into the memory. In fact your Selcall goes into channel 6 section 9, and can always be displayed by pressing 'ESC 1'. If you are calling a definite station using his Selcall, then that can be displayed by pressing 'ESC 2'. The unit is equipped with a standby battery, and so all this information can be saved for the next time of operation by pressing 'ESC M'. This applies to all the other modes and is a very useful facility, since having set up your requirements (shift, tone, etc.), they are there ready and waiting next time the unit is switched on.

I have to tell you that there are seventy-five different keyed functions available in the instrument, plus approximately eight to be used in the AMTOR mode, so you will appreciate that I cannot list them all. There is a Pre-load function (write the message before sending), Automatic CR/LF, Word mode operation, Line mode operation, Word-wrap-around (prevents last word on the line from becoming split), Automatic 'Idle' signal in the RTTY mode, Two test messages (RYRY and Quick Brown Fox), CW practice function (connect a key to the unit and the letters appear on the screen, CW random generator (very helpful for CW practice), CW Ident and many more.

Yet another facility in this machine is the option of two screen displays. One is 80 characters by 24 lines in which the send/receive screen contains 134 lines (10,720 characters) and the buffer memory contains 39 lines (3,120 characters). The actual screen display shown is 14 lines for receive and eight lines for transmit. However, the display can be scrolled up or down to search for anything you might have missed! The second screen display is 40 characters by 24 lines, and in this case the send/receive screen contains 268 lines (10,720 characters) and the buffer memory contains 78 lines (3,120 characters). This screen display is also available for scrolling up or down, and actually shows 18 lines for receive and two lines for transmit. The screen format in the graphic mode is 80 elements wide by 72 elements high (total of 5,760 elements). In addition to this there is the option of having a split screen in the 80 by 24 format, giving nine lines showing for the receive data out of a total of 124, and eight lines showing for the transmit data with three lines showing the start of the buffer contents, which are 39 lines in all. The same option can be called using the 40 by 24 format, and this gives eight lines showing for receive data out of an available 259, eight lines transmit data and

two lines displayed from the buffer, which in this option has 78 lines available. Quite a job to make up one's mind as to exactly what screen display would be best! I used the 80 by 24 split screen format and found that very suitable.

The photograph shows the external view, and it will be seen that the unit is very compact for the number of options offered. I used the equipment for a number of weeks more or less every day, and have had several satisfactory QSOs in the CW mode at a speed of about 15 wpm. I felt that to go faster was cheating(!) because the efficiency of the CW decoding on receive was so fantastic that I am sure I could have had a QSO at 30 wpm if the other end wanted it. The automatic speed tracking made things absolutely simple and so long as the rig itself was tuned correctly there was no trouble. The RTTY mode provided the majority of my contacts, mainly on the 14 MHz band. They were all concluded satisfactorily, and, except for the fact that I had to refer to the Manual on several occasions to make sure I was keying the right keys the unit functioned perfectly. The AMTOR mode 'A' also worked satisfactorily, although when the transmitted signal was monitored on another receiver there appeared to be an extra tone being emitted completely out of phase with the 450ms pulses of AMTOR; this caused some difficulties at the start, but I did have satisfactory contacts in this mode. The unit functioned excellently in the AMTOR 'L' mode, and I earwigged on a number of QSOs! AMTOR mode 'B' also performed in an excellent manner and achieved a number of QSOs. I had my monitor oscilloscope connected to the equipment during use, and I found that it was of very great help in tuning stations. In fact, I would go so far as to say that an oscilloscope or some form of monitor 'scope would be a necessary adjunct to operating. I do not think that the 'Space' and 'Mark' tuning LEDs are sufficient.

All in all, this is a very sophisticated piece of equipment and the number of facilities it offers, bearing in mind the overall size, is, to my mind, incredible. I notice that the grouse I had against the *Tono Theta 5000E* has been altered. That is to say that the connections for the oscilloscope have been taken from the printed circuit board itself, and are now on the rear apron of the steel case. Very much better. For someone who wants the most compact type of multimode keyboard unit, this is it. The only addition required is a VDU or monitor. Naturally, a 12/14 volt DC power supply is needed, but then most amateurs today have this type of power supply available, and its requirement is only 1.3 amps. At a price of £799 inc. VAT it *must* be value for money, and I was very sorry to have to return it. Thanks are due to *Thanet Electronics* of 143, Reculver Road, Herne Bay, Kent, for the loan of the equipment for this review and from whom, of course, full specifications are available.

An American Experience Part 2

Three Weeks to Remember

**CHRISTOPHER PAGE, G4BUE,
and COLIN TURNER, G3VTT**

The N4AR Antenna Farm

AFTER saying cheerio to the QRP gang at Dayton, we climbed aboard Bill Maxson's, N4AR, Scout vehicle and headed south on Route 75 to Kentucky. We had arranged to meet Bill the previous evening in one of the DX hospitality suites, and although we had both had many QSOs with him, that was our first meeting with him personally.

Bill's signal has always been one of the consistently loud ones from the U.S.A., on every band, which when you consider how far west he is located compared with the majority of W4 stations, is quite remarkable. We also knew that he specialised in antennas, particularly yagis, and had several very high towers, including two of almost 200 feet. He had given a presentation at Dayton about constructing and erecting yagis as part of the Antenna Forum, and from remarks that we overheard afterwards, it was very successful.

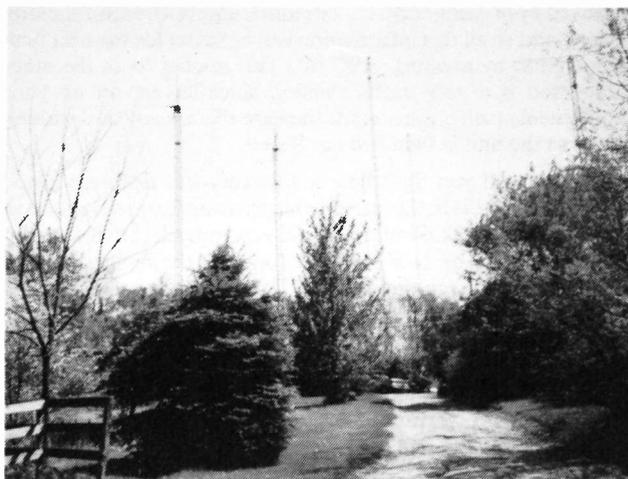
The N4AR QTH is located on a ten-acre site at Nicholasville, a few miles southeast of Lexington, Kentucky. As we got near to it, we could see the tops of the higher towers across the fields and over the trees. As we got closer other towers came into view, and details of the antennas on them began to become visible. When we reached the entrance to Bill's drive the full height of the towers was becoming apparent, and when we stopped and got out by his house we just looked up in sheer amazement.

Bill took us for a walk round his fields describing the towers and antennas. The full extent of his antenna farm gradually unfolded and we just stood there looking, rather hypnotised, and trying to take it all in. When you have never seen amateur antennas on towers higher than about 75 feet, the sight of four stacked 4-element yagis for 14 MHz on a 200-foot tower takes some getting used to! Bill is a very modest man and was unable to understand what we found so amazing, but to be fair to him, he has never been to the U.K. where towers in excess of 60 feet are rare.

Fig. 1 shows a layout of Bill's garden, and Table 1 describes the towers and antennas. As will be seen there are a total of nine towers, and Bill told us that he originally started with one and the others just happened along! He erected everyone of them himself, single handed, and also built all the antennas and erected, tuned and matched them himself. He is rather proud of the fact that his whole antenna farm cost very little money, and he knows every part of it inside out. Bill's first love in amateur radio is operating, but his second is antennas and radio propagation; he religiously monitors WWV for the latest propagation reports, and notes them in his log book. Perhaps Bill can best be described as a homebrewer of antennas. More recently he has had some assistance from Hank, K4FU, who lives 75 miles away in Louisville. Hank has a 'thing' about climbing towers, and although he is retired is able to give Bill valuable assistance, who is continually changing the antennas, trying new ones, different arrangements, etc. As we talked to Bill we realised two not

altogether surprising things. He is a very knowledgeable man on antennas and tower construction, and his antenna farm is his pride and joy. Being a contester, he gives the excuse that he has to have high towers to compete with the W4 stations on the east coast.

N4AR is a doctor at a hospital in Lexington and also a very slim fit man, and during the drive down from Dayton we had asked him how he kept himself so fit. He replied that climbing up and down the towers gave him sufficient exercise to keep him slim, adding that some days he went up and down a dozen times. Looking at all the towers and the obvious maintenance needed for the antennas, we were beginning to realise what he meant.



Above and below, the sight on arrival at Bill Maxson's N4AR, antenna farm in Kentucky.



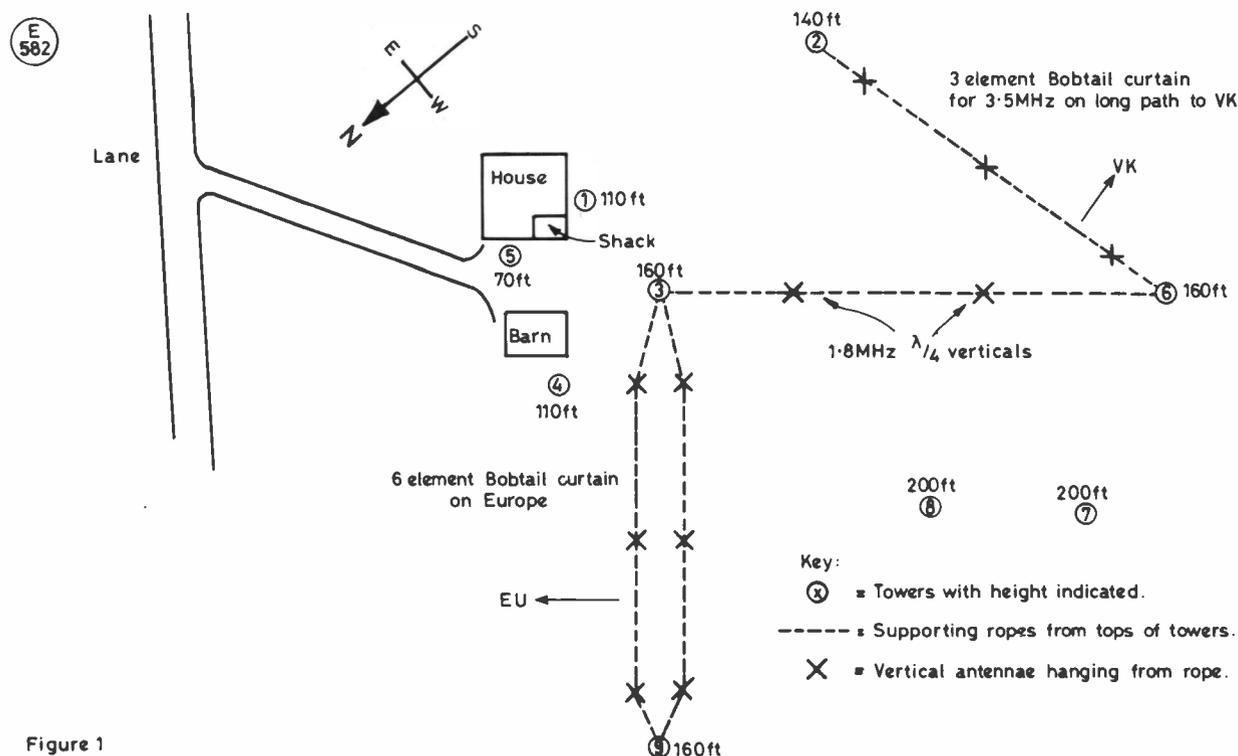


Figure 1

TOWER	HEIGHT	ANTENNAE
1	110ft	5 element Yagi for 28MHz at 110ft 3 " " " 7MHz " 100ft
2 See Fig.2	140ft	Stacked 4 element Yagi's for 28MHz " 6 " " " 21MHz " 5 " " " 14MHz
3	160ft	3 element Yagi for 7MHz at 160ft 4 " " " 14MHz at about 100ft 4 " " " 21MHz " " 70ft
4 See Fig.3	110ft	Stacked 6 element Yagi's for 21MHz 5 element Yagi for 14MHz at about 100ft 6 " " " 28MHz " " 70ft
5	70ft	4 element Yagi for 28MHz 5 long Yagi's for 14MHz
6	160ft	Holding rope to support 3 elem. Bobtail curtain for 3.5MHz and two $\lambda/4$ verticals for 1.8MHz
7	200ft	6 element Yagi for 21MHz
8	200ft	4 stacked 4 element Yagi's for 14MHz
9	160ft	Holding rope to support 6 element Bobtail curtain for 3.5MHz

TABLE 1.



Because of the different antennas continually being tried out, this necessitates many trips up and down the towers.

All the yagis have been constructed using the standard measurements in text books. They are all tuned with the gamma-match system, which is the system much preferred by Bill. His latest creation is the 16-element array, consisting of four 4-element yagis stacked for 14 MHz on the 200-foot tower (number 8). Actually, the tower is only 198 feet high because U.S. Air Regulations state you have to fix red flashing lights on radio towers in excess of 200 feet!

The forward gain of a four-element yagi is approximately 9dB, and this is increased to 11.5dB by stacking two of them. Stacking two more 4-element yagis increases the gain to 13.5dB, but after that it would require four more 4-element stacked yagis to achieve

a further gain of 2dB. When conditions are good on the HF bands it is generally accepted that the difference between various yagi systems is very small, but when conditions are marginal, the superior antenna systems come into their own. This was very well illustrated to us the following morning. We worked several stations in the U.K. on CW despite the very bad conditions at that time. (The bands were still recovering from a very large solar flare from the previous week. Bill had told us that this was very unusual at the low part of the sun spot cycle, and the flare had been one of the biggest he had been aware of.) We were using the 16-element system and the signal reports we gave the U.K. stations ranged between S4 and S7, but the interesting thing was that while we were making the QSOs, unbeknown to us Hank, K4FU, had been listening on the frequency at his QTH in Louisville. He called on the two-metre repeater to say that he had been unable to hear some of the U.K. stations we had been working, and he uses a four-element yagi on a 101-foot tower! That gives you some idea what sixteen elements on 14MHz feels like!

The other 200-foot tower (number 7), which is about 150 feet away, has a six-element yagi for 21 MHz on the top, but we both noticed there was plenty of room below it to add three more yagis to make a similar stacked array to compliment the one for 14 MHz!

There are two separate systems of stacked six-element yagis for 21 MHz. One is on a 140-foot tower (number 2), which also sports stacked five-element yagis for 14 MHz and stacked four-element yagis for 28 MHz; the arrangement of the yagis on the tower is shown in Fig. 2. The other system is on a 110-foot tower located near the garage (number 4), which also has a five-element yagi for 14 MHz and a six-element yagi for 28 MHz on it, see Fig. 3. In addition there are smaller yagis for 21 and 14MHz on the 160-foot tower (number 3), which mounts a full size three-element yagi for 7 MHz. Bill told us the lower yagis were to cater for the conditions when radiation angles are high. He explained that by having such high gain antennas, the angle of radiation is very low and there are times when they are actually inferior to less gainy antennas at lower heights. To cater for both conditions he has erected the single yagis, which are also useful for comparisons with the stacked arrays.

Using stacked arrays, especially for more than one band, on the same tower presents problems rotating them. Tri-ex manufacture

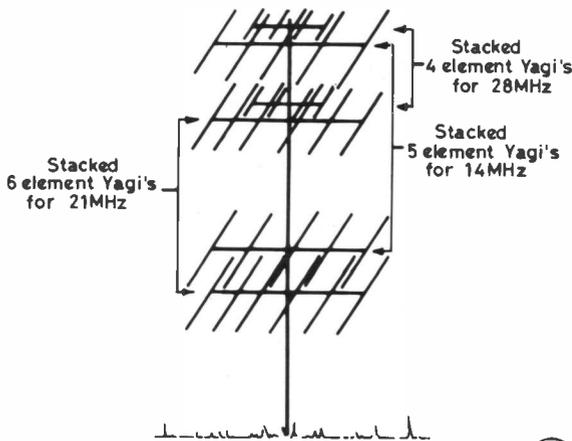


Fig.2 The 140ft Tower No.2

E 583

a tower, known as the Christmas Tree, which completely rotates (we saw one of these later in our trip at the QTH of K4FW in Tennessee). A very large rotator is positioned at the base of the tower, and when operated the whole tower, including antennas is turned. This has two draw-backs: it is very expensive and you cannot use it to hang wires for LF antennas. Bill therefore had to find a way round the rotating problem, and he accomplished this by fixing the antennas to the towers as shown in Fig. 4. The position on the boom that the yagi is fixed to dictates how many degrees the antenna can be rotated, but full 360 degrees is not possible due to the tower being located between the elements. Some of Bill's towers have one of the yagis fixed in a favoured direction, say Europe, and the second one rotatable. The system is therefore stacked when it is in the direction of Europe and a single array in other directions, but a switching system has to be introduced for the different feed lines.

Bill initially tunes each yagi from the top of the tower with an antenna noise bridge, an essential piece of equipment for anyone erecting and experimenting with antennas. Again, Bill has tried various methods of tuning the antennas, but has found the noise bridge totally accurate and reliable, whether it be for yagis or straightforward dipoles, inverted-vees and other wire antennas.

The system used by N4AR to enable him to tune the antenna at the top of the tower is shown in Fig. 5. Two of the rotator wires at the top of the tower are disconnected from the rotator and attached to a small loudspeaker; the other ends are attached to the audio output of the receiver, the VFO of which is tuned to the frequency on which it is desired to tune the antenna. The noise bridge is set for the desired impedance (in Bill's case 50 ohms) and is then inserted between the gamma match and the feed line to the receiver. The bridge is connected directly onto the gamma match, thus ensuring no false readings due to any faults that may exist in the feed line. The gamma is then adjusted until a null is heard in

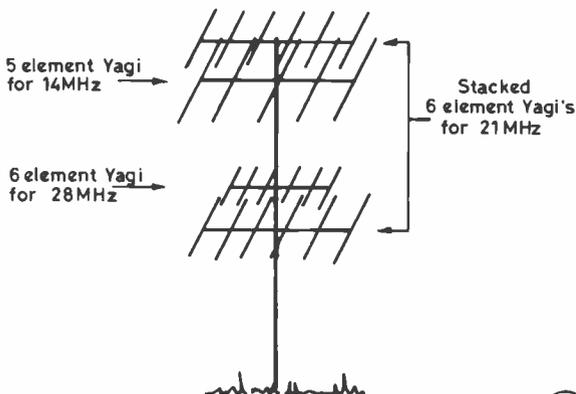
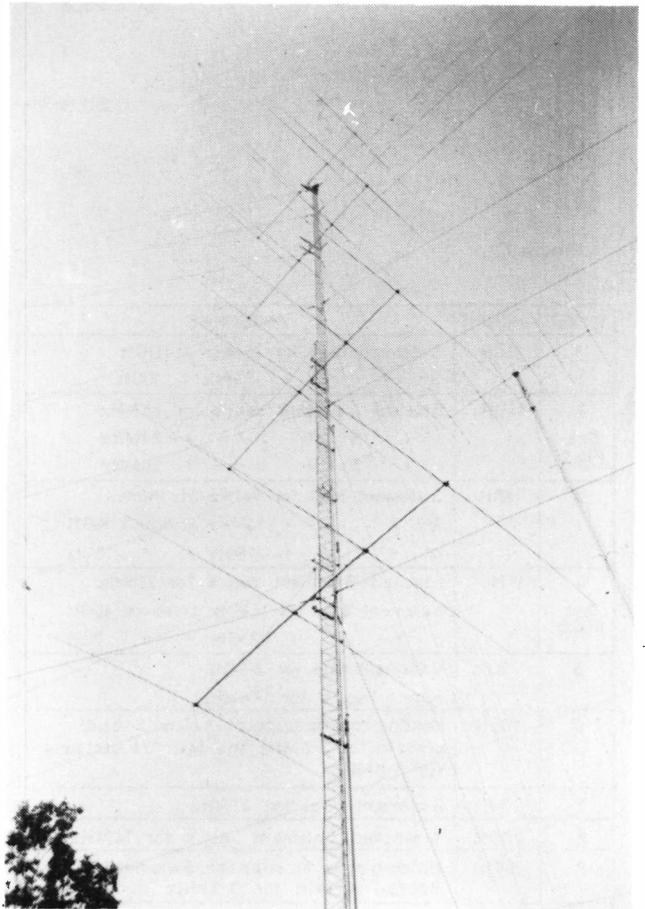


Fig.3. The 110ft Tower No.4

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the noise in the loudspeaker. The bridge is then disconnected and the feed line re-attached to the antenna. The noise bridge is then inserted between the other end of the feed line in the shack and the receiver, and by changing the VFO of the receiver, a check is made to ensure the audio null coincides with the desired frequency. If it doesn't, it means there is something wrong with the feed line. Once this has been done, a check with a SWR bridge should indicate a 1:1 reading.

This system can be used for any antenna that requires adjustment at the antenna end of the system. Where the feed line is suspect on fixed antennas, such as dipoles and inverted-vees which are resonant and have an impedance which is measureable on the bridge, the bridge can be inserted directly at the feed point of the antenna and a measurement made. To do this two wires can be run from the station receiver, which has been set to the desired frequency, on which to attach the loudspeaker and if the noise bridge is adjusted for an audio null, the impedance of the antenna



The 16-ele array for 14 MHz (four stacked 4-ele Yagis) on a 200-foot tower.

is obtained. Assuming this coincides with the impedance of the feedline when the noise bridge is inserted at the shack end, a similar reading should be obtained if the feedline is in order. A check with a SWR bridge will again obtain a 1:1 reading.

Most noise bridges only have a variable potentiometer with which to set the impedance, but by inserting a variable capacitor, the bridge can be made much more versatile. In the case of dipoles and inverted-vees, the bridge is set to the required impedance, and adjustment of the variable capacitor made until the audio null is heard in the loudspeaker. The reading from the variable capacitor will show whether the antenna is capacitive or inductive, and whether it needs lengthening or shortening to bring it to resonance at the required impedance.

As a result of talking to Bill about antennas, we were beginning

to have some doubts about the efficiency of our own antenna systems back home. Prior to leaving the U.K. Chris had been quite confident that his four-element tri-band yagi was matched and tuned correctly, but now he wanted to be sure. In addition we were both beginning to get new ideas for antennas, and being QRP-ers had been convinced long ago that time spent in paying attention to the matching, adjustment and tuning of antennas will pay dividends in the long run, especially when you are using QRP and voluntarily giving away 2 or 3 'S' points to your QRO colleagues.

We therefore decided that an antenna noise bridge was going to be an essential piece of equipment for us, and during the Greyhound coach journey from Kentucky to Massachusetts a couple of days later, a study was made of those commercially available. As mentioned above they have only a potentiometer to set the impedance and no variable capacitor, and having spoken on the merits of home construction at the QRP Forum at the Dayton Hamvention, we decided we should build our own. Whilst we were sitting in the coach station at Cincinnati, Ohio, waiting for our connection, the "Greyhound" noise bridge was born. At the time of writing it is still in the course of construction, but details will be made available in due course together with the results achieved with our new antenna systems.

7 MHz is Bill's favourite band, and his main antenna is the full size three-element yagi on the 160-foot tower mentioned earlier (number 3). This tower also supports a four-element yagi for 14 MHz and a similar one for 21 MHz which are used when the radiation angles are high. The 7 MHz yagi is supported by another three-element yagi on a 100-foot tower (number 1) which also has a five-element yagi for 28 MHz on it. Due to the length of the elements there is considerable droop, but this does not seem to detract from the performance of them, as anyone who has heard N4AR on 7 MHz in the U.K. will testify. Being his favourite band,

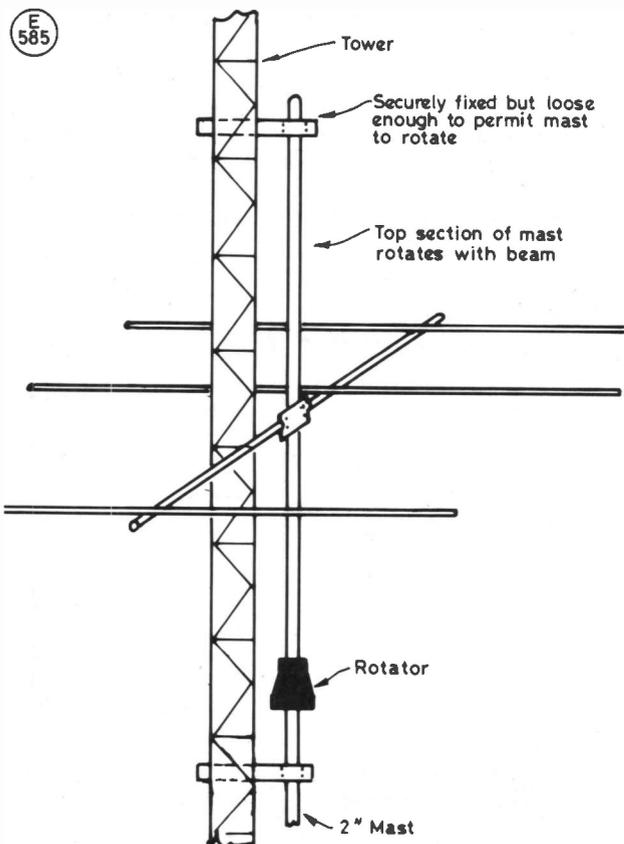
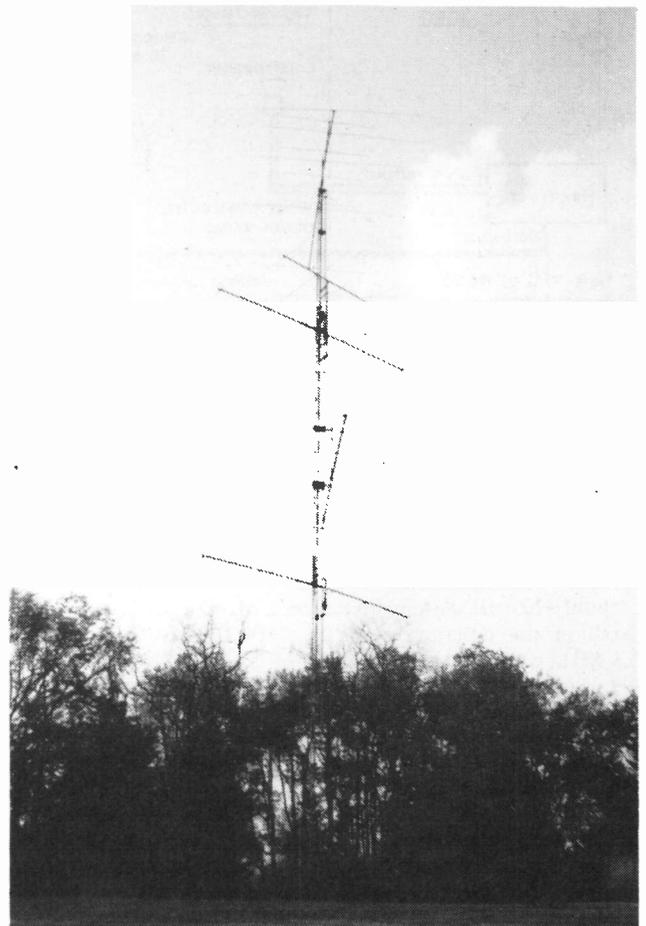


Fig. 4. System used by N4AR to permit a number of Yagi's to be mounted on the same tower and rotated independently of each other. They can only be rotated through 180° instead of 360°



The 140-foot tower with stacked 5-ele Yagis for 14 MHz and stacked 4-ele Yagis for 28 MHz.

Bill always listens on 7 MHz first, only changing to another band if conditions are poor. He says this has been the case for a long time, and has resulted in him having worked every DXCC country on the current ARRL countries list, with the exception of two, those being Albania and Marianne Islands. A magnificent achievement.

The antennas for 3.5MHz are a 6-element Bobtail Curtain array and a 3-element array supported by ropes from the 160-foot towers. Bill describes the two 160-foot towers used solely to support the ropes (numbers 6 and 9) as trees; he says that nature did not cause trees to grow tall enough for his requirements, so he had to 'grow' his own! He has tried many different systems for 3.5 MHz and has finally come down in favour of the Bobtail Curtain. The 6-element system is shown in Fig. 6, and consists of a basic three-element Bobtail Curtain with three additional elements acting as a reflector spaced a quarter of a wavelength behind. It radiates in the direction of Europe, while the three-element version radiates on the long path to VK. Listening to 3.5 MHz and switching from one to the other is quite staggering. Signals that cannot be heard suddenly come up out of the noise. Although it is highly unlikely that any amateur in the U.K. would be able to erect either version used by Bill, it is possible to use variations of it scaled down for the HF bands for those who are unable to erect rotary yagis. The more usual three-element version is shown in Fig. 7 and the measurements required for the other bands set out in Table 2.

For 1.8 MHz Bill has an inverted-vee off the top of one of the 160-foot towers (number 9), and two quarter-wave verticals spaced five-eighths of a wavelength apart and fed 90 degrees out of phase (Fig. 8). They are supported by a rope stretched between two of the 160-foot towers (numbers 4 and 6) and fed through an 'L' match. Directivity is obtained by feeding them 90 degrees out

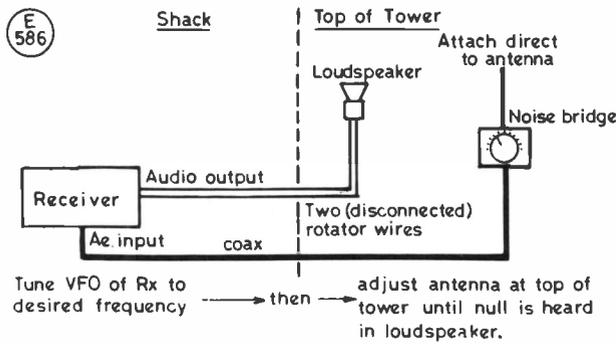


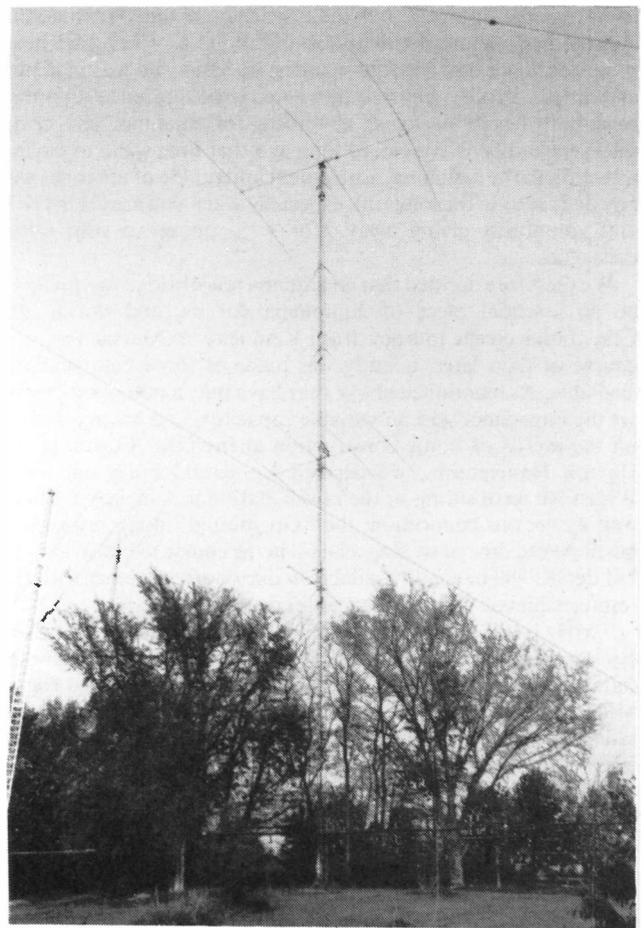
Fig.5 System used by N4AR to tune antenna with a Noise Bridge attached to antenna at the top of Tower.

of phase, the direction being selected by switching the feed-line from one to the other. The phasing is obtained by connecting a length of coax, five-eighths of a wavelength long, between the two equal lengths of coax connected between the 'L' match and the verticals. The velocity factor for the coax used has to be taken into account when calculating this length, and this is described in more detail in the description of the N4WJ antenna system for 3.5 MHz which is described later.

Listening to East and West Coast stations on 1.8 MHz and switching from one direction to the other indicates a very good front-to-back ratio for the system. Again, although it is very doubtful that any U.K. amateur could erect such a system at 160 feet for 1.8 MHz, the basic system can be scaled down for the other bands, and the measurements required are set out in Table 3.

A secondary interest of Bill's is satellite communications, and the small 70-foot tower (number 5) close to his house supports a four-element beam for 28 MHz and a number of yagis for 144 MHz.

We met N4WJ who lives in Lexington, and he also uses verticals for 3.5 MHz. Frank has a 70-foot tower for his HF beam, and just below this has fixed a wooden boom, an eighth of a wavelength long, (about 33 feet). From the ends of the boom he hangs two quarter-wave verticals, the bottoms of which are joined through an 'L' match to equal lengths of coax to a convenient position on the ground to meet the coax feed-line from the transmitter, see



The 160-foot tower carrying the 3-ele Yagi for 7 MHz.

Fig. 9. The two verticals are fed 90 degrees out of phase to give directivity, with the feedline to the transmitter being switched to provide selection of the direction. The 90 degree phasing is obtained by attaching another length of coax, one-eighth of a wavelength long, between the ends of the two equal lengths of

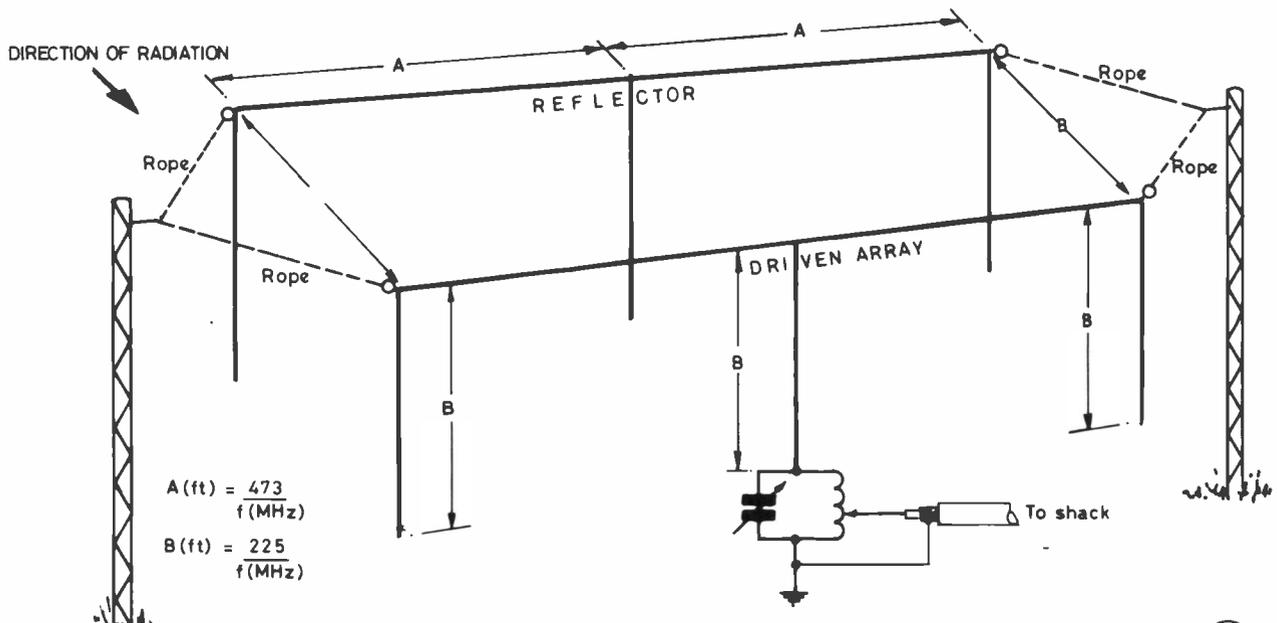


Fig.6. Six element Bobtail curtain array for 3-5MHz as used by N4AR

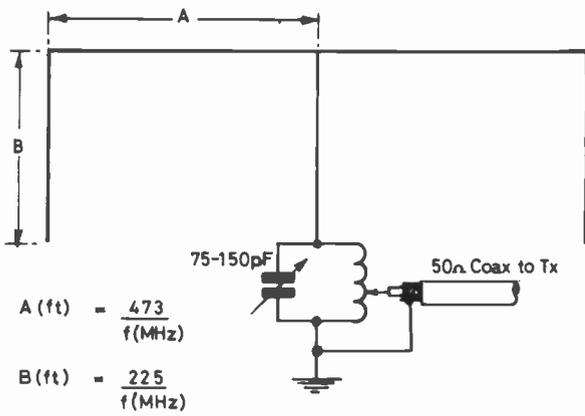
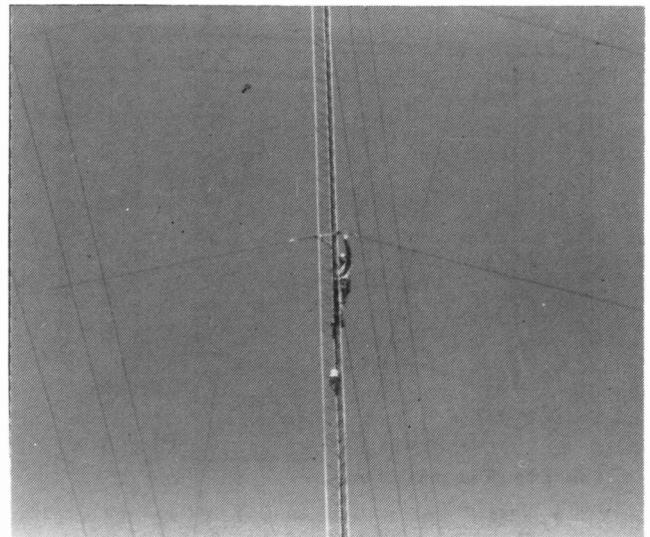


Fig.7 More usual three element version of the Bobtail curtain.

BAND	CW		SSB	
	A	B	A	B
10	16.9	8.03	16.57	7.88
15	22.5	10.7	22.21	10.56
20	33.72	16.04	33.2	15.79
40	67.33	32.03	66.85	31.8
80	134.18	63.89	126.13	60.0

Table 2: Measurements - in feet - of Bobtail curtain for the Amateur Bands.

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The intrepid G4BUE ascending!

coax. This has to be calculated in accordance with the velocity factor of the coax used, which is usually in the region of 0.66. Anybody wishing to duplicate this system would be well advised to check the velocity factor of the coax used with the manufacturer's specification. The velocity factor has the effect of reducing the length on 3.5 MHz from 34 feet to approximately 22 feet. The existence of the metal tower between the two verticals obviously has some interaction effect, but this does not appear to be sufficient to detract from their performance.

Frank enjoys chasing DX on the LF bands, and has acquired Five Band WAZ Certificate No. 30. In addition he has worked 219 DXCC countries on 3.5 MHz, which is quite an achievement from Kentucky. A bonus of Frank's system is that it also loads up nicely on 30 MHz with a SWR of 1.4:1. The system can also be scaled down for the other bands and Table 4 sets out the measurements required. Make certain that you take the velocity factor of the coax into account when cutting the length of the one-eighth wavelength phasing line.

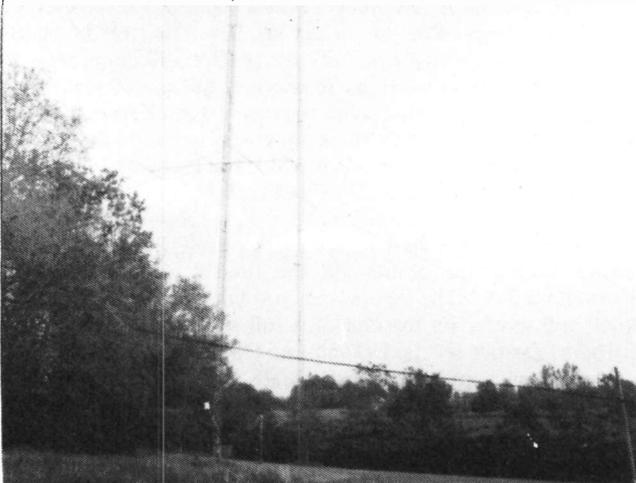
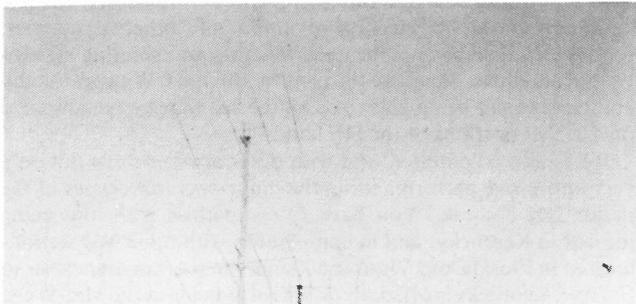
The following afternoon Hank, K4FU, drove over, and after more talk on antennas it was suggested that if we were really interested in N4AR's yagis we ought to see them *in situ* on top of the towers. This was an invitation we couldn't turn down and we both elected to examine the yagis on top of the two highest towers at 200 feet. Where else are two amateurs from the U.K. going to have the opportunity to climb 200-foot amateur radio towers? Colin was to climb the tower with the 16-element 14 MHz array (number 8), and Chris the one with the 6-element 21 MHz yagi (number 7); they are located about 150 feet away from each other.

Before we started Bill explained his golden rules on climbing towers:—

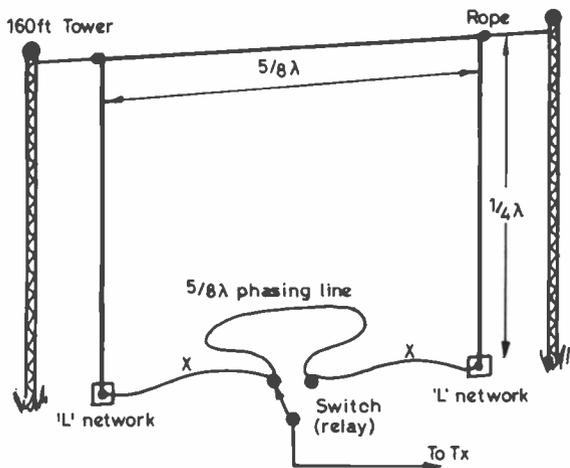
1. Never climb without a safety belt.
2. Never climb when you have been drinking or are tired.
3. Never climb when darkness is approaching.
4. Never climb when bad weather or a storm is approaching.
5. Always climb knowing exactly what you intend to do and with the right tools for the job.

You may feel the above is common sense, but Bill says that every year, accidents are reported in the U.S.A. where people are killed and injured for not observing these rules. Height does not worry Bill as he says that everything above 30 feet is irrelevant! You are likely to kill yourself if you fall above that height whether it be 40 feet or 140 feet — and as he is a doctor, he should know!

Having put on our safety belts we started climbing, and after climbing for what seemed ages we paused for breath, and looked up. It appeared we had made very little progress, but on looking down, we realised how much progress we had made! Eventually we reached the tops, and it was an exciting feeling talking to each other across 150 feet of space two hundred feet above ground. Bill



The two 200-foot towers climbed by G4BUE and G3VTT.



X = Equal lengths of coax.

Fig. 8 Phased $1/4\lambda$ verticals as used by N4AR for 1-8 MHz. The switch changes the 90° phase and hence the direction of radiation. See text for notes re velocity factor of phasing line.

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BAND	CW		SSB	
	$1/4\lambda$ Vertical	$5/8\lambda$ spacing and phasing line	$1/4\lambda$ Vertical	$5/8\lambda$ spacing and phasing line
10	8-77	21-74	8-62	21-54
15	11-7	29-25	11-55	28-87
20	17-54	43-85	17-26	43-16
40	35-01	87-54	34-77	86-92
80	69-78	174-56	65-6	164-0

Table 3 : Measurements—in feet—for N4AR system of two phased (switchable) verticals for the amateur bands. (See text re velocity factor of coax for $5/8\lambda$ phasing line).

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had followed Colin up the 14 MHz tower, and during the half hour that we stayed at the top gave us a very full account of the mechanics and construction of the yagis.

Looking down we could just make out Hank, who had remained on the ground to take photographs. Hank was quite proud of the fact that he had climbed every one of Bill's towers to the top. It was also a unique experience to look down onto the tops of the 7 MHz yagis, and even the one at 160 feet looked small!

The weather was sunny with not a cloud in the sky, and from our vantage points the surrounding Kentucky countryside looked really beautiful. Bill drew our attention to the mountains on the



The view from on high!



Bill Maxson, N4AR, in his comprehensive shack.

horizon, 100 miles to the southeast, which he said were part of the famous Appalachians. He told us that when he and Hank had been extending the towers to 200 feet they went up in ten feet stages. As each section was fixed into position nothing on the horizon changed, until the last section was fixed: as they climbed up to the 200 feet level, the Appalachians came into view.

We climbed down after taking Bill's advice to be careful of the last 30 feet. That is when many accidents occurred, due to people thinking they were almost down to the ground, and relaxing their concentration. The experience was completed with ice cool beers and it was then that we learnt we were the first overseas visitors who had accepted Bill's offer to climb to the tops of his towers.

Bill's shack is just what one would expect with such an antenna farm. There are five Drake 'C' Lines and a TS-830, all with their own amplifiers. In addition there is a FT-920R for satellite communications. A selection of keyers and other accessories, together with some complicated switching and rotating systems for the antennas, complete the picture. Bill is a CW operator and confesses to not being able to recall the last time he even listened on the SSB portions of the HF bands.

Bill is also a contester, and with other amateurs can put on a very impressive performance in the multi-operator classes of the major DX contests. You have to sympathise with him being located in Kentucky, and in competition with other W4 stations located in Florida and Virginia 800 miles to the east and closer to Europe. Kentucky is officially classified as being in the Mid-West, and should therefore be part of W0 land, says Bill. One wonders how he would get on if it were possible to move the shack and antenna farm to the east coast!

After we made the 14 MHz QSOs to the U.K. described earlier, the band eventually closed to Europe and we turned our attention to 7 MHz and the three-element beam at 160 feet. Chris could not resist the temptation of firing up his little 'OXO' QRP transmitter, and seeing what 600mW of RF could do on such an antenna; perhaps one extreme to another! Bill looked at the little transmitter with curiosity, trying to prevent himself from thinking out loud, "what do they think they were going to work with that!" A few minutes later when W8FET in Hubbard, Ohio (200 miles away), came back to Chris's CQ call and gave him 569, Bill began to get more interested.

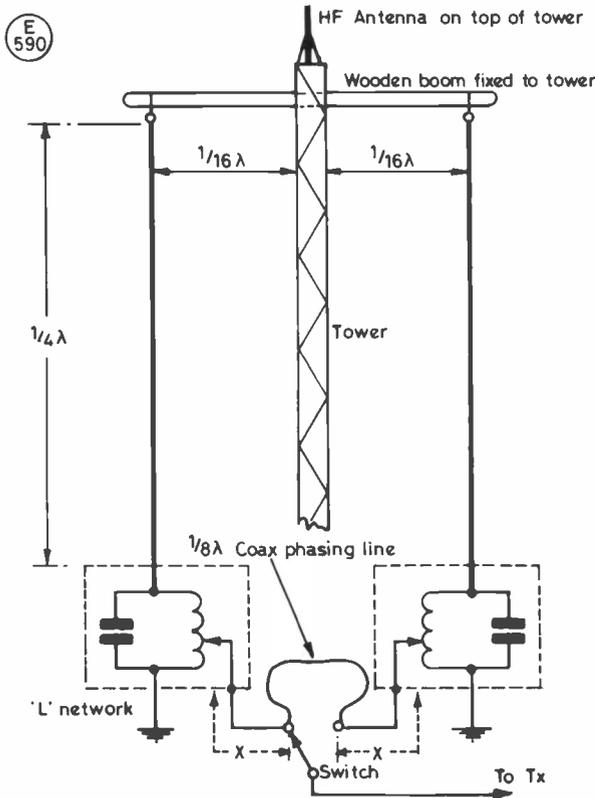
Now that Bill was showing some interest in QRP, Colin got his Howes CTX80 transmitter out and fired it up to the Bobtail Curtain on 3.5 MHz. Again, can you imagine the little Howes QRP transmitter on the end of a full size six-element Bobtail Curtain? Despite several CQ calls, no QSOs were made, and Bill explained that being located so far south, it was extremely unlikely to make QSOs on the LF bands around the middle of the day due to the high angles of radiation. He had been very surprised that W8FET had been worked on 7 MHz, and said that we would probably have received a better signal report with a dipole at 30 feet than the yagi at 160 feet!

Next, we decided to introduce him to the FAG BOX(O) transmitter, which Chris had shown at Dayton. Being a CW operator, Bill was very intrigued at the keying arrangement, and we soon had him calling CQ QRP with it, we think the first time that N4AR has been heard signing QRP.

We decided to give Bill the Howes transmitter, so he could continue with his new found interest of QRP after we left him. A week later when we were staying at the QTH of WIRM in Burlington, Connecticut, we had a QSP from Bill that he had boxed the transmitter and wanted to try a QSO with us that evening on the crystal frequency of 3579 kHz. At the arranged time we called N4AR, and back he came giving us a 449 report. Bearing in mind we were QRP-ers and in order to enter into the spirit of the contact, we had persuaded Pete, WIRM, to reduce the drive of his TR-7, and with a Bird thru-line meter we had



N4AR calling CQ with G4BUE's "FAG BOX (O)" QRP transmitter.



X = any length of coax but must be same length each side. See text re velocity factor of coax of 1/8λ Phasing line. 'L' network requires a high 'C' (about 1000pF) and a low 'L' as the impedance of verticals is approximately 32 ohms.

Fig. 9. System for 3.5MHz as used by N4WJ making use of his existing tower. Two switchable 1/4λ verticals, spaced 1/8λ apart and fed 90° out of phase gives 3.5dB gain and 10-15dB front to back ratio.

BAND	CW		SSB	
	1/4λ vertical	1/8λ spacing and phasing line	1/4λ vertical	1/8λ spacing and phasing line
10	8.77	4.39	8.62	4.31
15	11.7	5.85	11.55	5.77
20	17.54	8.77	17.26	8.63
40	35.01	17.50	34.77	17.38
80	69.78	34.89	65.6	32.8

Table 4 : Measurements -in feet- for N4WJ system of two phased (switchable) verticals for the amateur bands. (See text re velocity factor of coax for 1/8λ phasing line).

adjusted the output for one watt RF. Pete was amazed to hear Bill's signal, who was 459 over the 700 mile path. The QSO lasted quite some time while we both exchanged several comments with Bill. Having heard the very high static noise levels at Bill's QTH, the fact he was copying us so well, spoke very highly for the efficiency of the Bobtail Curtain array. Pete was pleased when we explained that his 80-metre antenna system, a loop, was also working very well to radiate a one watt signal over 700 miles. We think this is probably the first time the Howes CTX80 has been used on a two-way QRP QSO in the U.S.A.

The time spent with N4AR went all too quickly, and on the Tuesday lunch time it was time to leave Lexington and travel to Massachusetts where we were to stay with WIDA for a couple of days before attending the F.O.C. (First Class CW Operators' Club) North American Dinner at Danbury, Connecticut.

We caught the coach and settled down for the 24 hour ride, but we soon found our minds wandering back to the towers and antennas at N4AR. The visit to Bill had done something to change our outlook on amateur radio, and at the risk of becoming rather controversial we will explain how. Even with Bill's magnificent high gain antennas, it was still very much of a struggle to QSO many of the stations in the U.K. during the poor conditions we experienced at his QTH. It made us realise the differential between signals heard in the United States between the average U.K. station and stronger European stations. On the other hand, it was a real pleasure to QSO one or two U.K. amateurs who we knew had taken the trouble to go one stage further with their antenna design, which resulted in a better signal being radiated.

As mentioned previously, both being QRP-ers, we had long ago been convinced of the benefits of having an efficient antenna, and the visit to Bill, together with the QSOs we made to the U.K., had really bought this home to us. Whereas we accept that many amateurs are unable to erect towers or beams, we do not accept that every amateur who wants to work DX has erected the best possible antenna system for his particular QTH. We get the impression that many U.K. amateurs are content to continue to use the first piece of wire they put up that will radiate, instead of experimenting with others and trying to improve it. We have both heard amateurs admit this and also that they attempt "to ride on the backs" of the large antenna systems used by their U.S. counterparts.

Chris had purchased the new edition of the ARRL *Antenna Book* at Dayton and this, together with the notes we had made whilst visiting Bill, was used as the basis for planning alterations to our own systems when we returned to the U.K. Colin has started work on a tower on which can be placed an HF beam and Slopers for the LF bands. We have since both agreed that we would assist each other with our respective systems to radiate the best possible signal from our respective QTHs. The "Greyhound" noise bridge mentioned above is another step along this path.

to be continued

VHF BANDS

NORMAN FITCH, G3FPK

RATHER an uneventful month this time, with no brilliant openings, only minor, short-lived lifts for those able to be around at the right time. Nevertheless, a reasonable postbag especially bearing in mind the holiday season.

Awards News

The 144 MHz QTH Squares Century Club now has its 56th member who is Ian Parker, G4YUZ, (ZL20d) from Hoddesdon, Herts. His certificate was dated Aug. 19 for exactly 100 squares confirmed out of 159 worked. The analysis shows 11 CW and 89 SSB QSOs with 78 on tropo., 18 via MS and two each via Es and Ar. Ian was licensed as G6DFT in 1981 having become interested in the hobby three years earlier. His first station comprised a Trio TS-120V HF transceiver with transverter and a 4CX250B amplifier. The present equipment is a Yaesu FT-225RD and Tempo amplifier with a 17-ele. Yagi at up to 15m. on a tower, the QTH being 50m. a.s.l. He would like to try some E-M-E on 2m.

Keith Hewitt, G6DER, now has his first sticker for 125 squares confirmed and it was issued on Sept. 5. His membership no. is 42. The breakdown was eight on tropo., two via Ar and seven each via MS and Es. When submitting cards for certificates and subsequent stickers, please make certain they are for the appropriate band and show the locator in the case of the QTHCC applications. When applying for QTHCC stickers, please quote your certificate number as the records are kept in numerical order. For details of the VHFCC and QTHCC programmes, send an s.a.e. to the VHF address.

Beacon Note

The Cornish beacon, GB3CTC, is now operating again on 4m. on 70.030 MHz beaming towards the Midlands. Following the death of the previous keeper Bill Colclough, G3XC, in May, GB3CTC and local repeaters are under joint management. Reception reports would be welcomed by John Birkbeck, G3WKC, who is QTHR.

Repeaters

Geoff Brown, GJ4ICD, reports that all the hardware for the GB3GJ VHF repeater has been acquired. What the group lacks is practical experience of logic control so he asks for guidance from other groups on this matter. GJ8KNV is project manager but, as his particulars are not listed in the latest Call Book, it would seem that correspondence should go via GJ4ICD.

The Space Shuttle

Further to the "SSTV from Space" paragraphs in last month's VHF, Roderick Clews, G3CDK, told your scribe that he has compiled a ten minute tape of pictures received from WOORE on board Challenger. These were taken on his Robot 1200C in 36 seconds colour. Rod has kindly offered to show them to local clubs. He lives in Wallington, Surrey and is QTHR.

Satellite News

Oscar-10 has now emerged from the severe eclipse period and new operating schedules were mentioned in the *VoSAT Bulletin* no. 141, dated Aug. 30. These were preliminary estimates from ZL1AOX, subject to refinements worked out with VE1SAT and DJ4ZC. For the up-to-date situation, listen to the RTTY and/or CW bulletins on 145.810 MHz, the Mode B General Beacon on 436.040 MHz and the Mode L Engineering Beacon.

The first mobile-to-mobile QSO via O-10 has been reported by G3IOR between G4CUO/M and G3PXT/M at 1600 on Aug. 19, using SSB on 145.957 MHz down-link. Both were running less than 10w e.r.p. yet RS56 reports were exchanged.

As a result of an article in the *Guardian* newspaper, *AMSAT-UK* has been receiving lots of correspondence from non-radio amateurs who have assumed that *AMSAT-UK* is a company selling software. In fact, the article was part of the *University of Surrey's* campaign to get publicity for its *VoSAT* activities. While there is nothing wrong in that, this is not the first time that *AMSAT-UK* has been unwillingly involved in the aftermath of such activities. Ron Broadbent, G3AAJ, the secretary of *AMSAT-UK*, has suggested that if these inquirers care to send a donation to *AMSAT-UK*, he will send them the satellite "starter pack". Your scribe has suggested that an advertisement in the *Guardian* along these lines might result in publicity and income to *AMSAT-UK*.

The copyright of a very comprehensive publication on satellites by Robert J. Diersing, N5AHD, has been acquired by *AMSAT-UK*. This is a 140 page "Bible", apparently, and personally autographed copies of the limited first print run can be had by making a donation of £10, or more, to *AMSAT-UK* funds. The first fifty

copies will be specially bound. The normal purchase price for the next printing after December will be £8.50. For full details of *AMSAT-UK* membership and services, send an s.a.e. to *AMSAT-UK*, London, E12 5EQ.

Contests

In case your copy of this issue arrives on time, a reminder that the last of this year's *AGCW-DL* Contests is on Saturday, Sept. 28, 1900-2300, and that the European QTH Locators are used in the exchanges; see page 281 in the September VHF. The second leg of the *IARU* Region 1 Contest is on Oct. 5/6, 1400-1400, for all bands 430 MHz and higher. This is a Single-op. or All-other event, QSOs scoring at one point per kilometre. The points multipliers are one for 430 MHz, five for 1,296 MHz, ten for 2,300 MHz and 20 for all other bands. The *RSGB* version runs concurrently, the only difference being there are no band multipliers. Entries for either event go to the VHF Contests Committee, c/o 20 Harcourt Road, Wantage, Oxon. OX12 7DQ.

The first two legs of the 432 MHz *Cumulatives* are on Oct. 8 and 24 from 1930 to 2200 with separate sections for Fixed and All-other stations. The first leg of the 1,296/2,320 MHz *Cumulatives* is on Oct. 16, 1930-2200, with the second session on Nov. 1 from 2030 to 2300. Separate scoring for each band with crossband QSOs counting for half points from 2,320. No separate sections for these affairs.

The 70 MHz Fixed Contest is on Oct. 27, 1000-1500 and this requires the QTH to be sent as well as the locator code. Entries to G4HWA at 39 Green Lane, Blackwater, Hants. GU17 9DG. For RTTY addicts, the *BARTG's* Autumn VHF/UHF Contest is between 1800 on Oct. 12 and 1100 on the 13th with a declared four hours rest period. Bands are 144 and 432 MHz and no satellite or repeater QSOs. The messages shall comprise:— Time (GMT) in four figures of start of contact, this info. passed in both directions; RST report; serial no. starting at 001; European QTH locator, i.e. not Maidenhead, or distance and bearing from a town identifiable on a 1:500,000 map. Radial ring scoring. Entry forms and log sheets from G6LZB at 464 Whippendell Road, Watford WD1 7PT on receipt of an s.a.e. Logs to that QTH by 23 Nov. postmarked.

Six Metres

Up to Sept. 9, there was no official statement concerning the general release of the 50 MHz band. Following the holiday season, the decision-makers were at a conference of the International Frequency Registration Board. So, it could be some time before there is any definite news. It is perhaps worth repeating that the British proposal to grant

its radio amateurs an allocation at 50 MHz is being strongly opposed by some other Region 1 countries who wish to use it for land mobile services.

The only reader to mention 6m. this month is Dave Lewis, GW4HBK, (GWT). He heard several permit holders working into the U.S.A. on July 2 but could hear nothing in Blackwood. He missed the July 30 opening admitting to being fast asleep. Throughout August, Dave found conditions deteriorating with ZB2VHF copied on the 5th and 17th. F/G4JCC was worked crossband to 10m. *via Es* on the 9th, while on MS the same day, he completed with LA9DL direct.

Four Metres

Nick Peckett, G4KUX, (DHM) has worked most of the recent DX-peditions, including GW4HRC/P (YN), GM3UKV/P (WP), GB4ZAP (YT) and GB2XJ (XJ). Others worked are G3IKR (YM), G4CVI (ZK), G4JEC and G4YUZ (ZL) and G4PSS (ZO) in Tyne and Wear. Roger Greengrass, G4NRG, (ESX) also contacted GB4ZAP *via* MS on Aug. 5, completing with them in 30 mins. He was using only 10w to a 3-ele. *Yagi* and reckons it has whetted his appetite for 6m.

Jerry Russell, G4SEU, (WKS) sent a copy of the *Four Metre News Letter* which he and Roger Banks, G4WND, compile. The first one, dated Aug. 7, was sent to 17 stations, "... in an effort to create activity for GM4ZUK ..." who advised of MS activity on SSB from YR on Aug. 10-13. Anyone interested in a 4m. N/L may like to contact Jerry and/or Roger, concerning future funding and circulation. Jerry's QTH is:— 49 Lincoln Avenue, Nuneaton, Warks. CV10 9LX, Tel. 0203 395294.

G4SEU's "highlight of the month" was his first ever MS QSO on Aug. 10 with GM4ZUK (GRN). However, although he listened for GM3UKV/P on Islay for four evenings, only one complete CQ call was heard. G3VVT (CBA) on the 4th was a new 1985 county and other new, or returned, stations were G4UFU (NHM), G4YTL (OFE) and G3XPU (LEC). Jerry has been out portable twice in August. On the 13th to Hackpen Hill, near Swindon, when 10 stations were worked in two hours, and on the second trip to Holme Moss, (YSW) date not stated, he worked seven stations in 2½ hours.

G4YUZ had successful SSB MS QSOs with GB4ZAP on Aug. 10 and with GM4ZUK on the 12th. Ian has also been having successful CW MS skeds with stations on 6m. including LA6QBA (FT) on the 10th, and GM3WCS (YQ) on the 13th. He is preparing a list of stations active on 4m — call sign, county and locator — and would welcome information. He can be telephoned after 6 p.m. on Hoddesdon (0992) 463478, or *via Prestel* on 9924 63478. (Scope here for liaison with G4SEU, Ian?)

ANNUAL VHF/UHF TABLE

January to December 1985

Station	FOUR METRES		TWO METRES		70 CENTIMETRES		23 CENTIMETRES		TOTAL Points
	Counties	Countries	Counties	Countries	Counties	Countries	Counties	Countries	
GW4TTU	—	—	87	33	63	11	31	6	231
G6DER	—	—	68	22	61	14	36	9	210
G4TIF	37	3	68	15	50	14	—	—	187
G1KDF	—	—	92	17	69	7	—	—	185
G4SEU	59	6	60	11	37	10	—	—	183
G4MUT	40	4	59	17	30	6	12	2	156
G6ZPN	—	—	76	17	46	8	—	—	147
G6HKM	—	—	59	16	46	14	—	—	135
G6WZO	—	—	47	7	45	7	18	4	128
G1EFZ	—	—	64	19	38	6	—	—	127
G6MGL	—	—	45	12	37	8	19	5	126
G4YCD	—	—	75	15	32	4	—	—	126
G6AJE	—	—	58	11	48	8	—	—	125
G3BW	34	5	36	22	—	—	13	5	115
G6XVV	—	—	64	12	31	4	—	—	111
G4WXX	—	—	89	20	—	—	—	—	109
G4HGT	2	1	63	20	18	2	—	—	106
GW3CBY	30	4	46	8	12	3	6	2	103
G6XLL	—	—	61	13	21	4	—	—	99
G6ECM	—	—	75	22	—	—	—	—	97
G6YIN	—	—	54	9	25	5	—	—	93
G3FPK	—	—	75	18	—	—	—	—	93
GW6OFI	—	—	65	19	—	—	1	1	86
G1INK	—	—	32	9	37	8	—	—	86
G8RWG	—	—	50	10	23	3	—	—	86
G4VXE	—	—	47	5	28	3	—	—	83
G1EGC	—	—	60	17	—	—	—	—	77
G8PNN	—	—	—	—	33	9	25	8	75
G6XSU	—	—	35	9	21	7	—	—	72
G4ARI	16	1	47	7	—	—	—	—	71
G8XTJ	—	—	56	14	—	—	—	—	70
G4VKE	—	—	60	7	—	—	—	—	67
G4YIR	—	—	53	13	—	—	—	—	66
GW6VZW	—	—	51	13	—	—	—	—	64
GW1JCB	—	—	53	8	—	—	—	—	61
G1JOU	—	—	50	10	—	—	—	—	60
G0CAS	—	—	51	9	—	—	—	—	60
GM4CXP	5	2	34	10	6	2	—	—	59
GM0BPY	—	—	31	10	9	9	—	—	59
G1LAS	—	—	49	10	—	—	—	—	59
G4CMZ	26	3	23	4	—	—	—	—	56
G4WHZ	—	—	38	7	4	1	—	—	50
G6XRK	—	—	37	13	—	—	—	—	50
G2DHV	10	1	28	6	1	1	—	—	47
G4WJR	—	—	39	7	—	—	—	—	46
G4WND	25	2	—	—	14	4	—	—	45
GW4VVX	—	—	38	7	—	—	—	—	45
GW4HBK	41	4	—	—	—	—	—	—	45
G1HGD	—	—	36	8	—	—	—	—	44
G4EZA	—	—	36	6	—	—	—	—	42
G0BPS	—	—	30	7	—	—	—	—	37
G6CSY	—	—	11	4	5	1	13	1	35
G6SIS	—	—	16	4	1	1	—	—	22

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

GB4HBK wrote that DK1PZ was copying EI4RF on Aug. 6. Dave worked the GB2XJ folk on the 10th and GM4ZUK *via* MS on the 12th. On the 17th, he contacted F/G4JCC who was on 10m. Dave is keen to work northern counties for his *Senior Award* and would welcome skeds. His tel. no. is:— Blackwood (0495) 228516.

Two Metres

Mark Page, G1EGC, (BKS) describes the six weeks period up to Sept. 3 as reasonably interesting. He spent much time monitoring for DX-peditions but heard none. However, he did hear some good reflections in the *Perseids* meteor shower. In the contest on Aug. 4, EA2LU/P (ZD) was worked, while on the 18th, between 0730 and 0811, he lists assorted Fs in BE, BF, BG and CE. On the 28th, there was another lift down western France which brought stations in ZE and ZF.

Bob Nixon, G1KDF, (LNH) has now worked 92 of the possible 104 counties in the British Isles, in eight months. He lists best DX in August as GB2FI (GNS) on Flatholm Is. on the 24th, GUIPMY, GU4GXU/P and GU6EFB on the 28th, all in Guernsey, G6EBH/MM (AO) on the 29th and GU2FRO (SRK) on the 31st. EA1BLA was heard on the 27th and two Fs in ZF and ZH on the 30th through a wall of southern G QRM.

Bill Hodgson, G3BW, (CBA) managed MS contacts in the *Perseids* with Y24NL (GL), EA1TH (YC), EA5DFY (AY) and OH5IY/4 (NV) to bring his total to 269. He reckons that to get among the 2,000 kms.-plus stations though, he will have to install a *Gasfet* preamp. at the antenna. Bill suggests that many operators have become a little greedy in calling for one hour MS skeds. These often fail due to there being insufficient time to get the final "Rogers".

Colin Smith, G3GHY, (HPH) describes August as, "Indeed a wicked month!", the

one bright spot being his first two EAs on the 27th which helped towards another 38 stations in his CW Ladder score. Kev Archer, G4CMZ, (DYS) with his QRP CW raised GM4RTN (CTR) at 390 kms. and GD3AHV at 250 kms. for his best DX of the month. He is aiming for one kilometer *per* milliwatt.

Paul Whetton, G4DCV, (KNT) has added seven more squares recently, five *via* MS. These were LA6HL/OY (WW) on SSB on July 28, and GB4ZAP on the 7th of August, EA3BTZ (AB) on the 11th, LA8OW (DU) on the 12th, OH8NW (MY) on the 12th, all on CW. Tropo. mode on July 23 brought I2FAK (EF) while the next day he worked F/HB9RM (DG), F6END (DF) for a new square, OE9s NHI and UHI (EH), IW1AHH (DF) and I1MXI (EE) for the pick of the bunch, all on SSB. EA1DAV (WD) on CW was new on Aug. 27, the following day bringing more EAs in XD and YD. Paul lists EA4DTA who was in fact signing "portable one" when he felt like it. The *Perseids* brought random SSB QSOs with I4XCC, YU2CKL (HD), OK3LQ (II), YU3JY (HF), YU2EZA and I4VOS.

Peter Atkins, G4DOL, (DOR) was also active in the shower but thought it poor compared with last year. On the 11th, he completed with I4BXN (FE) and OE3OBC (II) and the next day with HG8ET (KG) and IV3HWT (GF). In the late evening of the 12th, Peter heard TK4DL (EC) on 144.200 MHz on tropo. TK5EP was also heard *via* MS. The period Aug. 27-29 brought some excellent tropo. to Spain and QSOs with EA1s OD, CYE, BLA, TA, BRK, DSQ, SK and DDU. On the 29th at 2300, the band was very quiet, but a "CQ EA" call was answered by EA2LU (ZC) at RS53 each way. Fs in ZE and ZF were also contacted in this period.

G4KUX reckons 1985 to have been the worst one for tropo. propagation for years in spite of Nick's having a very good station now. So he has been resorting to MS where his "hit rate" has been about 85% successful, which is extremely good. Notable failures were HB0/DL0TAU, who were at least 1.5 kHz too low in frequency causing the first three periods to be missed; OH3AWW (MV) who seemed rather inexperienced, and UA1ZCL (RC) which Nick confesses was a bit ambitious at over 2,600 kms. on Aug. 11 at 1000-1100.

To compensate, UA1MC (PT) and UA1ASL (PU) were worked, thanks to OH5LK who telephoned the Russians to make the skeds since they do not appear on the VHF net. In a good *Aurora* on the 12th, first noticed when Nick was working GM4DHF/P on Skye *via* tropo., only LA6HL in DT was new. OH5LK was a very good signal now that Jussi is using four 15-ele. *Cue Dee Yagis*.

G4KUX lists 34 completed MS skeds between July 5 and Aug. 24, nine on SSB, the rest on CW. How's this for a sample?

Station	ANNUAL CW LADDER				Points
	4m.	2m.	70cm	μ Wave	
G4TWD	—	535	—	—	535
G3GHY	—	407	11	—	418
G4WHZ	—	330	28	—	358
G4UKM	6	295	24	—	325
G4SFY	—	244	—	—	244
G4WGY	—	213	15	—	228
G4YIR	—	194	—	—	194
GW4TTU	—	—	147	38	185
G4NZU	7	162	2	—	171
G4ZTR	—	135	—	16	151
G4VXE	—	127	7	—	134
G4CMZ	39	92	—	—	131
G4ARI	7	118	—	—	125
GW4VVX	—	109	—	—	109
G4EZA	—	75	—	—	75
G4OUT	—	74	—	—	74
GW4HBK	57	—	—	—	57
G2DHF	21	34	1	—	56
G6ZPN	—	44	5	—	49
G6VMQ	—	47	—	—	47
GM4CXF	3	38	1	—	42
G4LVE	—	23	—	—	23
G0CAS	—	22	—	—	22
G4PSS	—	10	1	—	11
G0BPS	—	11	—	—	11

No. of different stations worked since Jan. 1.

SM2LTA (JY) on Aug. 7; SK3LH (JX) and LA8KV (FW) on the 8th; OH6PA (KW) on SSB on the 11th completed in one long burst with a tropo-like 31 to 52 report; OH6AI (JY) and YU2CKL (HD) on the 11th; T77V (GD) in San Marino on SSB on the 12th, and SM2CEW/2 (JZ) on the 16th.

G4NRG reports MS QSOs with SP6FUN (IL), EA3FBO (BB) and OK1OA (HK) on Aug. 12, but not a ping was heard from five other *Perseids* sked partners. All were SSB contacts. Welcome to Ian Comes, G4OUT, from Little Haywood, Staffs., whose main VHF interest is 2m. CW. He joins the Ladder with 74 points. His wife, Janice, is G4THY and they use either a *Yaesu* FT-102 with FTV-107R transverter or an FT-290R with 25w amplifier. The antenna is a 12-ele. *ZL-Special* at 40ft. on an *Altron* tilt-over mast. The QTH is 350ft. *a.s.l.*

G4SEU missed the openings to EI and EA towards the end of August, but Jerry did manage ON6CK/LX on the 31st, for a new one. Ray Baker, G4SFY, (NOR) asks why have we started using the abbreviated counties instead of locator squares. The main reason is that it is useful for all those who participate in the Annual Table to know the county. Ray has been busy on MS and has bumped up his squares total to 183 now. His August successes were:— I4VOS (FE) on SSB on the 6th, and OE3OKS (IH) on CW; HG6KNB (JI) on CW on the 9th; YU2JL (HD) on CW on the 10th; IK2ABJ (FF) on SSB and LA1K (FX) on CW on the 12th; SP6FUN (IL) on CW, I2FHW (EE) on SSB, I4MKN (GE) on SSB and SP9AMH (JK) on CW all on the 13th and SK7JD (IR) on CW on the 25th.

Dick Phipps, G4TWD, (KNT) reckons it was a poor month apart from the 29th, when the band was open all day to PA, D and GU. Mini Page, G4UKM, (BKS) reported over two months and has added another 62 CW stations to her total. June

Charles, G4YIR, (ESX) has added another 25 stations on CW. On Aug. 27, EA1KC was heard, plus stations in ZE, ZF, ZG and ZH, but they all got away. On the 28th, she did get FIADT (ZE) and F6DBI (YI) on SSB.

G4YUZ is a confirmed MS addict and Ian's recent successes were FIJG (CD) on SSB on Aug. 8; OH5FY/4 (NV) on CW on the 10th; I3LGP (GF) and LA9FY (EU) on CW on the 11th; SP3MFI (JL) on SSB and YU2CCB (IF) on CW on the 11th, and GM4KGC/P (YU) on CW on the 14th. Two other skeds were incomplete and nothing was heard from either UR1RWX (MT) or EA1CYE (YD). The OH was Ian's best DX so far at 1,938 kms. *via* MS.

Mike Johnson, G6AJE, (LEC) was QRT for a while, "... due to a slight disagreement between the mast and the wind." This, with poor conditions, made for a dull month. He suggests the few tropo. lifts that have occurred this year have favoured southern stations. He notes that when there is a southerly lift, it is difficult to get through the pile of GW stations, yet when you want to work the Glamorgans for the table points, you never hear them.

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

November issue — October 2nd
December issue — November 6th
January issue — December 4th

Please be sure to note these dates

Graeme Caselton, G6CSY, (KNT) operated as GW6CSY/P in NFD from Mid Glamorgan for his first-ever GW stint. QSOs included EI7DJ/P (VM), GI4MFT/P (WO) and G8YB/A (WJ) in the Scilly Is. 1w from an *FT-225RD* was used. He reports scant U.K. activity in the French *REF* and *CQ WW WPX* contests, when he was signing G6CSY/P (KNT). Keith Hewitt, G6DER (YKS) landed GB4ZAP (YT) on Aug. 8 and GM4DHF/P (WR) on the 12th *via* tropo. and GB4ZAP again on the 12th, but *via Ar*. In the *Perseids*, he got YU2JL (HD), OK3LQ (II), I6CXD (GD), I4YRW and I2FHW (EE), also YU2CCB. On the 12th, YU1EU and the next day DH2NAF (FI).

Ela Martyr, G6HKM, (ESX) was beginning to wonder if there would be anything to write about, then along came the end-of-the-month tropo. to the south. On the 27th, she got EA1CYE (YD) for a new square and new 1985 country. Richard Mason, G6HKS, (NOR) completed with Y24ME and DK400 (FI) for a new square *via* MS on Aug. 10. Tropo. successes were F6EBF (BE), LX2GB (CJ) on the 18th, EA1CYE on the 21st, GB2FI and GB0CIH (WQ) on the

25th, EA1BLA (VD) on the 27th, assorted Fs and EA1OD (XD) and EA1CYE again on the 28th.

Mike Higgins, G6XRK, (ESX) copied F1CNE (CI) on Aug. 3 and heard an EA in ZD. He worked some new squares in the lift on the 27th, while nearer home, LA0DT/MM (BM) was new on the 7th. Colin Morris, G6ZPN, (WMD) had eight *Perseids* skeds lined up but all failed for various reasons, however, he did get I1MWP on random SSB on the 11th. The last two G counties — CVE and NLD — were worked in August and GM1CYB/P (GRN) in YQ was an all-time new one on the 18th. EA1CYE was also worked on the 18th as was EA1BLA on the 27th. On the 29th, six EIs were contacted.

John Fitzgerald, G8XTJ, (BKS) reports an uninspiring month but did work John Tindle, GW3JXN/A (DFD). GU1DUX and GU4WRP were new this year, and EA1CYE was a good signal for a couple of days on Aug. 27/28. The EAs were working into ON, PA, D and OZ much of the time. John is another WAB fan and now has his "VHF Silver" for 750 areas worked. Your scribe worked EA1OD on the 27th, as did most all other VHF operators, and Charlie is one of the better Spanish VHF-ers. His idea, prevalent on HF, of calling for specific countries, and for stations by numbers — e.g. "Any fours?" — speeded up his QSO rate. The majority did fall in, but there was always the odd "wally" trying it on. "The G4W come again", only to be answered by G1XYZ.

Philip Murphy, G14OMK, was very active in the *Perseids*. Of 40 skeds, 11 were completed resulting in nine new squares. Up to 2300 on Aug. 11, he reckons it was "... a disaster", but after that it was much better and he reckons the peak was 00-02 on the 12th. Before 00 on the 12th, only two out of 19 skeds came off, but afterwards, nine from 21 were successful.

All Philip's skeds were on SSB and the completed ones were:— SM71WG (HR) on the 8th; DK4OO (FI) 10th; DF8VK (DJ), OE3XUA (HH), HB9DBM (EH), SM6GWA (FS), F8CS (CH), and DJ3VI (FL) on the 12th; OE6WIG (HG), HA4KYB (JH) and SM5BEI (JU) on the 13th. G14OMK is 5 kms. south of Belfast and uses an *Icom* IC-251E, an *MB-1016* amplifier with 200w through *Heliac* feeder to a 16-ele. *Yagi* at 13m. *a.g.l.* He uses an MGF-1400 pre-amp. Jonathan Eastment, GW4LXO, (GNS) added another new square in August, LA6HL (CS) *via* MS and is now at 228 on the band.

Paul Baker, GW6VZW, (GWT) has been on a fortnight's "wet holiday" during which he operated -/P from Powys. Using 20w and a 5-ele. *Yagi*, he worked into Cumbria and down to GB2XJ. Then, at river level, surrounded by mountains, he contacted GM4ZRB/M (DGL) and G1HAH (HBS). From home, an unusual QSO was with G3YPQ/MM

QTH LOCATOR SQUARES TABLE

Station	23cm.	70cm.	2m.	Total
G3JXN	72	110	172	354
G4NQC	61	90	211	362
G3XDY	61	112	161	334
G8TFI	51	109	126	286
G8PNN	50	83	126	259
G4MAW	45	106	52	203
GJ4ICD	42	116	238	396
G3COJ	42	97	170	309
G4FRE	42	112	68	222
G3PBV	41	106	198	345
G8ULU	36	91	127	254
G8FMK	36	70	80	186
GW4LXO	35	76	228	339
G3UVR	35	92	202	329
G4ZTR	35	57	82	174
G8KBQ	34	99	214	347
G6DER	33	74	155	262
GW4TTU	29	75	224	328
G4MCU	25	82	201	308
G4ROA	25	61	65	151
G6MGL	24	56	129	209
G8HHI	22	77	135	234
G4ROK	20	67	182	269
G6CMV	17	53	144	215
G6YLO	16	38	61	116
G8WPL	16	70	105	191
G6CSY	15	25	75	115
G3BW	15	38	269	322
G8BBDX	13	29	41	83
GW3CBY	11	38	106	155
G1EZF	9	50	135	194
G4MUT	6	76	123	205
G8GXP	5	71	289	365
G4NRG	5	40	125	170
G8MJV	3	26	101	130
G8VR	2	24	251	277
G4HMF	2	35	152	189
G4RSN	2	23	88	113
GW8UCQ	1	70	120	191
G6JNS	1	48	117	166
G8ROU	1	43	88	132
G6XVV	1	30	52	83
GW6OFI	1	—	67	68
G3IMV	—	101	380	481
G3POI	—	—	433	433
G4IJE	—	—	338	338
G4KUX	—	36	277	313
G4DCV	—	68	242	310
G4ERG	—	16	261	277
G4TIF	—	93	167	260
G4DHF	—	—	252	252
GM4IPK	—	—	245	245
G4DEZ	—	—	242	242
G8XVJ	—	73	169	242
G4OAE	—	46	190	236
G4BWG	—	68	160	228
9HIGG	—	—	225	225
GW4EA1	—	—	218	218
G6HKS	—	38	173	211
G3FPK	—	—	209	209
G6HKM	—	74	129	203
GM4CXP	—	27	175	202
G6ECM	—	—	192	192
G4HFO	—	70	120	190
G4SFY	—	—	183	183
G8LFB	—	—	182	182
G8TGM	—	—	181	181
G6DZH	—	63	117	180
G3BDQ	—	—	164	164
G4IGO	—	—	163	163
G4MEJ	—	—	160	160
G4TJX	—	60	110	160
GM0BPY	—	—	93	159
G4FRX	—	66	159	159
G4YUZ	—	—	140	152
G4MJC	—	12	140	140
G4DOL	—	—	135	140
G8ZDS	—	31	104	135
G6XLL	—	33	95	128
G4COM	—	52	75	127
GW8VHI	—	41	83	124
G4GHA	—	6	112	118
G8RWG	—	12	103	115
G6AJE	—	32	83	115
G4XEK	—	—	110	110
G6HCV	—	—	109	109
G0CAS	—	—	108	108
G1KDF	—	29	73	102
G1LSB	—	44	55	99
G6YIN	—	20	77	97
G1ECC	—	—	97	97
G6XRK	—	—	87	87
G8XTJ	—	—	84	84
G1HNK	—	42	42	84
G6XSU	—	50	32	82
G4UYL	—	—	81	81
G4WHZ	—	8	49	57
G0BPS	—	—	50	50
GW6VZW	—	—	40	40
G1JOU	—	—	39	39
G4WJR	—	—	37	37
G6SIS	—	—	30	30
G2DHV	—	3	17	20

Starting date January 1, 1985. No satellite or repeater QSOs. "Band of the Month," 23cm.

on the *Q.E.II* near Cherbourg on Aug. 17. Next day he got EA1CYE. On the 28th, Paul heard a G8 working EA8XS.

Seventy Centimetres

G1KDF was on holiday in Germany for much of August, however on the 24th, he managed GB2FI, EI9Q (Waterford) 25th, GB6SDX (GRN) in ZR 26th, and GM0BPY (BDS) 30th. FC1GXX (ZF) was heard at good strength on the 30th, but Bob could not get through the southern pile-up. G4DCV's band notes only mention July 24 when Paul worked HB9RCJ (DH), FC1JRX and F1FEN, both in new square CF.

Mark Marment, G4MAW, (DVN) caught the lift to Spain on Aug. 27 working EA1s BLA, NU and CYE in YD, his 106th square. 'NU and 'CYE were contacted again on the 28th. GB2XJ was worked, too. G4SEU lists G3ZNU (SFK) for an all-time new county on Aug. 19. G6AJE found Aug. 24 rewarding bringing Mike G1FBH (SXE), G4ZDK/P (SRY), G1LHK (ESK), GB2FI (GNS), G8RWG (SRY), G4YCD (AVN), G4HXU (OFE), G1JGS/P (IOW) and G4VXE (GLR). On the 26th, GD8EXI was contacted and the next day, EA1BLA was copied, stronger on 70cm. than on 2m. G6YLO (KNT) and G1KKY (SXE) were worked from Ratby.

The Low Power Contest on July 27, provided G6CSY QSOs with "many regulars" but no GWs worked. G6HKM was listening to EA1CYE on 2m. on Aug. 27 just as he was about to QSY to 70cm. so Ela quickly got on the band and worked him after one call for her first Spanish and YD contact. Early on the 28th, she worked F1ADT (ZE) for a new one.

G6HKS lists five new squares on the band:— GM4YPZ (YQ) on Aug. 11, EA1BAL (VD) 27th, F6ECI (AF) and EA1CYE (YD) on the 28th and DG1BP (DN) on the 29th. GB2FI was worked on the 27th. Richard's station comprises a *Yaesu* FT-790R, 20w to a 21-ele. *Tonna Yagi*. G6ZPN used CW to work EA1CYE on Aug. 18 for Colin's first EA on 70cm. On the 27th he got EA1BLA on SSB

Pete Hizzey, G6YLO, (KNT) says he had a wonderful 4th July; the fan in his K2RIW amplifier caught fire, but all has been repaired. GW4LXO has worked EA1BLA many times recently and on Aug. 18 got EA1CYE for a new square.

The Microwaves

G4MAW is now up to 45 squares on 23cm. Mark worked EA1BLA on the 27th and GB2XJ was another new square. In the Low Power Contest on 23/13cm. on Aug. 18, G6AJE operated -/A from the home of G8LMW. Mike made 34 QSOs at an average DX of 133 kms. on 23cm. G6DER finally worked G8PNN (NLD) on Aug. 18, also G3JYP (CBA) and G8HPD (HFD) and is now up to 36 counties this year.

G6CSY found the contest most enjoyable. Graeme worked G8ECI (AN) for a new square. G4CBW (YN) and G4NVA/P (ZN) were both over 200 kms. DX, and his best DX was G4MGR (MSY).

The station was a Yaesu FT-225RD, Microwave Modules 144/1,296 transverter at one watt output to a 23-ele. Tonna Yagi. New counties for Gordon Emmerson, G8PNN, (NLD) in the contest on 23cm. were G4ALE/P (KNT), G8ZQB (LEC) and G4MGR. On the 25th, he got GM8BDX (BDS) to add four more to his score.

G6YLO has completed his 13cm. transverter which was inaugurated on July 23 with a QSO with G8FEZ (AL). G3JXN (LDN) was worked the next night and G3OSS heard. The station comprised 600mw to an 18 inch dish, hastily cut dipole feed, indoors at 4m. *a.s.l.*

Pete was out -/M for the contest and he worked G0BPU (AM) on 13cm. The mobile station was on 750 cc Suzuki; there's a novelty. On 23cm. new squares were G4OIG (ZM), G4NVA/P (ZN), G4CBW (YN) and G8CHW (ZL). He has almost completed a ring-of-four 2C39 amplifier for 23cm., courtesy of Luc, ON4ASL. He would greatly appreciate a copy of the original QST article entitled, "A Ring of Four", and will reimburse all costs. His QTH is 199 High Street, Herne Bay, Kent CT6 5AE.

Geoff Brown, GJ4ICD, (YJ70d) now has an array of two 50-ele. Quad Loop Yagis bayed, by G3JVL, and a measured 200w at the antennas. Beacon GB3PBO (AM77j), QRB 399 kms., is now audible all day. He is now up to 42 squares worked on 23cm., the latest addition being ON4ASL (BL) on Aug. 28, which Geoff is claiming as a GJ/ON "first". GW4LXO's list of 23cm. activity went back to June. On July 12, EA1BLA (VD) copied Jon's signal but Jon could not copy his QRP. On Aug. 22, GW3JXN/A (XM) was contacted.

DX-Peditions

GW4LXO has sent a summary of the Square Bashers Expedition Group's very successful trip to XJ square in Cornwall, under the call GB2XJ. On 4m, GM4ZUK (YR) and GB4ZAP (YT) were worked via MS. On 2m. best tropo. DX was EA1CYE and best MS DX, YU7AU and YU1EV, both in KE. They made 91 complete QSOs via MS in 54 squares. 57 skeds were on CW using one minute periods and six were on SSB. Five were random CW contacts and 23 random SSB. In all, around 800 QSOs were made on the band in 23 countries and 99 squares.

On 70cm. their best DX were PE1CKK and PA0EZ, both in CM, out of a total of some 200 contacts. On 23cm. about 60 QSOs were made, best DX being PE1GHG (CL), while on 13cm. they had five QSOs with best DX G4KDH (AL). The weather and band conditions were poor throughout the trip. To end on a culinary note they say, 'The Square Bashers thoroughly recommend the cuisine at the Regent Cafe, which is managed by Jim Blaxland, G4WSH'.

Mark Page, G1EGC, is thinking of organising a radio expedition to France next summer and envisages a group of about eight lads from his school. An 8-10 days trip is likely and he was thinking of XH or YG square towards the end of August. Ideas on sites would be welcomed from any readers familiar with the areas.

Light Relief

Heard on 2m. by G6AJE. "CQ from India Oscar Square". (It is, after all, only about 1.4 million square kilometres in extent. Ed.) And another gem: "The QSB is taking you from four-over-zero to five-over-zero". As Mike remarks, who says the RAE is too difficult?

Locators — Again

Since the comments on page 255 in the August VHF/B appeared, a number of contributors have commented on the use of Maidenhead locators. Like they say in the cat food commercial, of those who expressed a preference, only two, G4WXX and G6AJE, said they did not mind which system, *i.e.* Maidenhead or European, was used. The latter suggested that, with the future release of the 6m. band, the new system would come into its own, since the Ws were using it. More on that later.

So far, 25 readers have come out against Maidenhead. Some say they hate it, the majority thinking in unnecessary to scrap the E-QTHL system which they propose to continue using except in contests where, for the time being, there is little option. The remainder of the regular and occasional contributors have not mentioned the topic at all, but most seem to prefer to use the E-QTHL code in their reports. It would be interesting to hear from more VHF/UHF operators of some years experience, such as those who participate in the DUBUS Magazine Tops List tables, whether they approve of the change. However, since they have already voted over 80% for the E-QTHL, the result will be a foregone conclusion.

We now have a stupid situation where the real backbone of the VHF/UHF fraternity resents the change forced upon it by a few IARU "officials", on the one hand while on the other, it would seem that the RSGB is committed to Maidenhead by printing and selling maps of the system to all the newcomers. Maybe other national societies are similarly committed.

Now it was suggested when Maidenhead was proposed that it would be taken up by HF operators too, perhaps with new awards for working fields. Your scribe has yet to hear anyone, other than perhaps on the VHF net, mention his or her locator on any LF or HF band. Nobody is interested since on HF, it is the country or zone which is important to DX-ers, not their latitude and longitude which is all that locator systems are about. When G3FPK works a VK5, an FO8 or a VS6, there is no need for any exchange of silly letters and numbers like IO91WH, nor is there the slightest interest in computing the distance either. It is doubtful if 50 MHz operators will bother with that aspect either. Did those permit holders in the U.K. who worked over to the U.S.A. this summer exchange Maidenhead locators? Have any bothered to calculate the distance?

The majority of participants in contests only do so to give some points away and/or to try to work something new for themselves. If they should only ever give their E-QTHL, it would cause chaos with the log sheets of those who enter. Perhaps the contesters would then complain to the organisers and suggest that we revert to the original system. They ought to welcome this as there are only five characters to get wrong instead of six.

Sign Off

With that wicked thought we conclude this month's feature. The deadlines for the coming months are in the box; please note them in your diaries. All your news, views and claims, as usual to:—"VHF Bands", SHORT WAVE MAGAZINE, 34 High Street, WELWYN, Herts. AL6 9EQ. 73 de G3FPK.



Just introduced by Philips is the Model D2935 short wave receiver, features of which include continuous coverage 150 kHz to 30 MHz, VHF/FM and the marine bands. Price is about £169.

BOOK REVIEW

“THE RADIO DATA REFERENCE BOOK”

ALTHOUGH an increasing percentage of newer radio amateurs seem to be little more than appliance operators, there are still thousands who are keenly interested in how electronic devices work and who derive satisfaction from designing and constructing projects for themselves. This latter group will find the fifth edition of the **Radio Data Reference Book** to be a mine of useful information.

In the preface, the joint authors R. S. Hewes, G3TDZ, and G. R. Jessop, G6JP, state that their aim was to arrange the book in sections to simplify retrieval and that they assumed readers would have enough fundamental knowledge for direct application of the data. In other words this is not a text book written to teach the fundamental of radio circuits.

There are nine parts, the first of which is *Units and symbols* wherein all the familiar, and some less familiar, units are defined; e.g. “The unit of magnetic flux density called the tesla is the density of one weber of magnetic flux per square metre.” Did you know that a femtofarad (fF) is one thousandth of a picofarad, or that one petahertz (PHz) is one million gigahertz, though? The numerous circuit symbols, block and logic diagrams, component colour codes, semiconductor outlines, and *Pro-electron* and *JIS* nomenclatures for semiconductors are included.

Part 2, *Basic calculations*, includes all the fundamental formulae covering capacitance, inductance, resistance, impedance, etc., and a section on noise with useful charts relating dBm and voltage, and noise figure and noise temperature. Part 3, *Resonant circuits and filters*, comprises 38 pages packed with charts covering the inductance of coils, transmission line

resonators, wideband couplers, *Pi* and *L-Pi* networks and a table of self-resonant frequencies of typical capacitors. It includes a comprehensive section of filters of the elliptical, Butterworth, Chebyshev, constant-k and m-derived types.

Part 4, *Circuit design*, runs to 45 pages and covers bi-polar and field effect transistor circuits, heatsink calculations, valve and power supply calculations, voltage stabilisers and phase locked loops. In Part 5, *Antennas and transmission lines*, there is information on typical dimensions of *Yagi* arrays, charts relating to broadside arrays, dish antenna gain and beamwidth, transmission lines, waveguide sizes, U.K. and U.S.A. RF cable characteristics, baluns and coaxial connectors. Part 6, *Radio and TV services*, includes the WARC 1979 designation of emission tables, RTTY and SSTV standards, lists of standard frequency stations, coastal radio stations, maritime VHF services and copious details on U.K. VHF FM and UHF TV stations, plus similar details of certain overseas TV channels.

Part 7, *Geographical and meteorological data*, includes great circle calculations, the Beaufort wind scale, cloud classifications and a not quite up-to-date map showing the sea areas used by weather forecasters such as Dogger, Thames and Wight. Part 8, *Materials and engineering data*, includes copious information on metals, corrosion, insulating materials, screw threads, wire gauges and tables, twist drill sizes, cables, batteries, and lots of details about ferrite materials. The last part, *Mathematical tables*, consists of logarithms, natural sines, tangents and cosines, and degrees of radians. There is an adequate three page index to complete the book.

Of course, a great deal of what is in this book can be found in other publications, but it is very handy to have so much useful information in one publication. Consequently, the **Radio Data Reference Book** must be highly recommended. It is a 244 page book in hardback cover, excellently produced in 230 x 150mm format and published by the *RSGB*; every shack should have a copy. It is available from *S.W.M. Publications Department* at 34 High Street, Welwyn, Herts. AL6 9EQ at £8.90 including postage and packing.

N.A.S.F.

CONTEMPORARY BRIEFS . . .

SHORT-CIRCUIT-PROOF TRANSFORMERS

FUSES are the most obvious means of protecting components from damage from excessive current, the only problem being that they have to be replaced. **Avel-Lindberg Limited** offer an alternative with a new range of miniature transformers which incorporate an internal positive temperature coefficient (P.T.C.) device which automatically disconnects the primary circuit if an overload condition occurs. Once the transformer has cooled down, the P.T.C. resets.

All the transformers have a standard 240v, 50/60Hz primary with single secondary windings of 6, 8, 9, 12, 15, 18 and 24v. Dual windings of 6, 8, 9, 12, 15 and 18v are available. Single secondary models are rated at 1.0VA, dual secondary ones at 2.0VA. Overall dimensions are 44 x 37mm, the height being only 33mm and they are mounted by direct soldering to a PCB. Maximum operating temperature is 40°C above ambient and these transformers conform to IEC 65 Class 2, BS 415 Class 2 and VDE 0551 Class 2.

The manufacturers are **Avel-Lindberg Limited** of South Ockendon, Essex RM15 5TD. Telephone no. is South Ockendon (0708) 853444 and the Telex no. is 897106.

N.A.S.F.



Cambridge Kits

The latest edition of “Kit News” from *Cambridge Kits* contains several useful tips and ideas, including an extension to the atomic clock, how to predict auroral openings for VHF operators, and for SWLs details on receiver range extension and a circuit for adding an upwards-reading ‘S’ meter — and more. A copy can be obtained by sending a stamped addressed envelope (or 2 IRCs overseas) to ‘Free Kit News’, Cambridge Kits, 45(S) Old School Lane, Milton, Cambridge CB4 4BS.

G3RJV's WORKSHOP NOTEBOOK

A NOISY TRANSISTOR CHECKER

THOSE readers who, like me, frequent the smaller stalls at amateur radio rallies will be familiar with the 'Bargain Bags' of transistors. Usually these are sold as untested for a good price. Very often it is possible to get a selection of good general purpose devices from these bags but some simple means of testing the transistors is required. For a lot of simple applications a go/no-go test is all that is required. The little item of test gear described here will give a relative check of the "goodness" of a small signal transistor. It excludes the luxury of a meter, costs very little to build and tests the transistors under working conditions.

Circuit

In this circuit shown in Fig. 1, the transistor being tested becomes part of an audio oscillator circuit. The circuit is a Hartley oscillator using a transistor output transformer to provide an audio tone. When the transistor is in the circuit, and works, the output from the collector is inductively coupled into the base winding of the transformer, producing audio oscillation. Some adjustment of the feedback, controlled by VR1, helps to test the transistor further by checking how much the feedback can be reduced before oscillation ceases. A simple form of gain test.

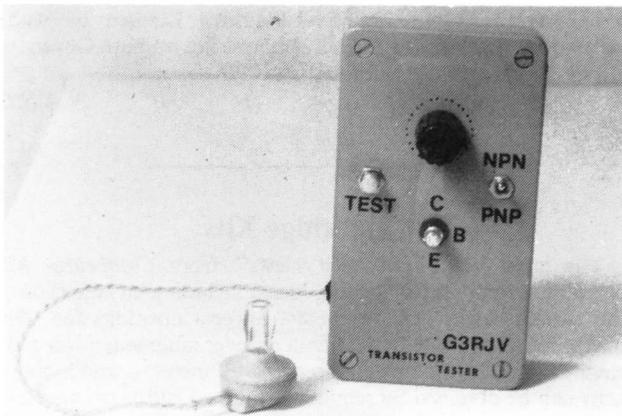
The switch SW1 provides for both PNP and NPN types to be tested by reversing the battery polarity. It might even be required to check which type of transistor is under test. The indication is instantaneous by pressing PB1, a small press switch, to give an audio bleep in the crystal earpiece. A rather subjective, but positive, indication that the transistor is working.

Construction

The circuit is built up on a small piece of 0.1" matrix Veroboard. A piece 1.4" by 1.5" is required, the sort of piece that could be an offcut from some other project. Never throw bits of Veroboard away — it's expensive stuff and these little pieces often seem to find a use later. One of the early classics of 'RJV meanness' was once joining up three pieces of Veroboard to make up a circuit board when I thought I might have to buy a piece large enough for a job in hand!

The first stage is to cut and prepare the Veroboard. The piece of board should have at least 13 holes clear along the copper strips and 12 clear holes along the other plane. One large saw cut break in the strips is required across the strips. The position of the cut is shown in Fig. 2. Use a sharp hacksaw blade and check that copper burrs do not short out adjacent strips on the cut board; slow, light pressure, cuts are best. Some people use a sharp marking knife to cut the strips . . . I usually cut my hands as well, so avoid this method.

It is easiest to begin by locating the position of the transformer leads and soldering this into place first. The transformer is named as an LT700 Audio Output transformer. These are easily available but the average junk box might reveal a transformer from an old transistor radio which will do the job for nothing. Perhaps like me you have a small pile of these ill-conceived and ill-built AM radios from the Far East with which sub-teenagers use to pollute the air. Many of these use a push-pull output transformer and this would serve the purpose very well. Take care, though, because many of these cheapie radios also have a push-pull driver transformer as



The completed transistor checker.

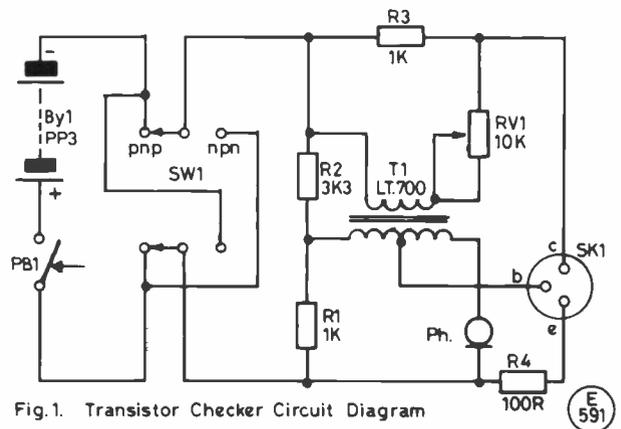
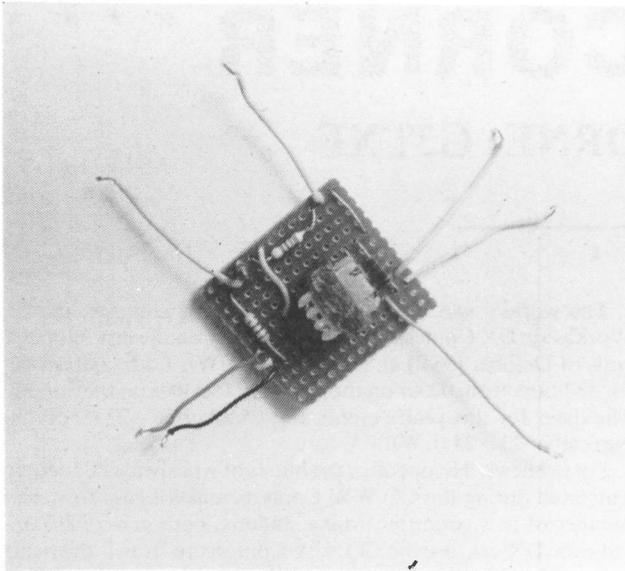


Fig.1. Transistor Checker Circuit Diagram



Layout of the transistor checker on Veroboard.

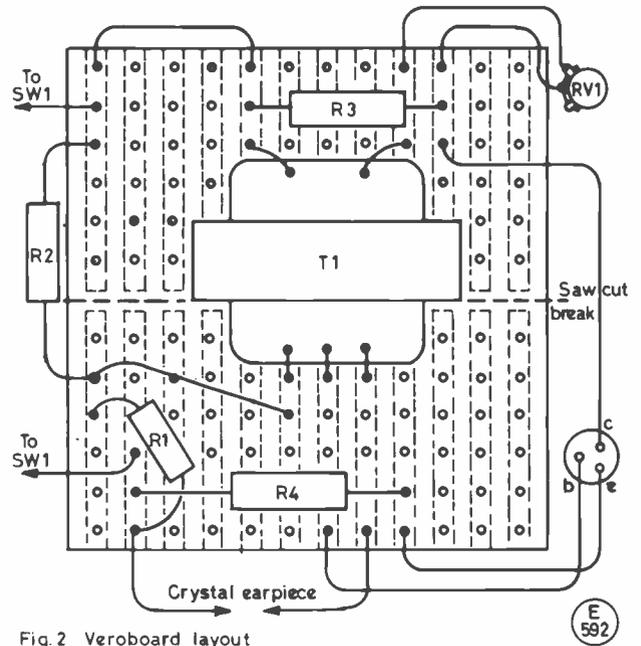


Fig. 2 Veroboard layout

well. Go for the one that appears to deliver the signal into the speaker. Any transformer with a ratio of 1K-2K centre tapped primary to 3-8 ohms secondary will be suitable. In types other than the LT700, if oscillation does not occur try reversing the leads on one side of the transformer in case the windings are cross phased. A lot of these surplus transformers are much smaller than the LT700 and may require holding down onto the board; use a blob of Bluetack.

Add the four resistors next and complete the wiring by adding the leads to the various items not on the board. A transistor holder is required and sometimes these are not available from the average junk box. The Tandy chain of stores do sell these but a packet with a few of them in it will have to be bought. A snap-on connector for the PP3 battery is useful and these can easily be obtained. A better, cheaper, source is to rip the connectors off a used PP3 battery and solder wires onto the bottom and use this as a connector. (PP3 batteries seem to specialise in applications where they are replaced every few minutes so old used ones should not be difficult to find.) Crystal earpieces are not as common as they once were so if one is not available, use a jack socket and plug a pair of high impedance headphones into the socket when making a test

The prototype tester, shown in the photograph, was built into an ABS plastic box. These come in all sorts of shapes and sizes and a suitable one should be found to hold the board and the controls and socket. It would be possible to fit the whole tester into a 1oz (some say 25 gms) square tobacco tin. However a little plastic box is ideal as the circuitry does not require screening and they are very easy to cut and work.

Operation

Using the tester is simplicity itself. The transistor to be tested is placed into the socket with the wires in the correct holes. SW1 is used to select PNP and NPN, if known, and the press switch is engaged. If the transistor oscillates, it is good, or at least, active. Rotating VR1 will show the point at which oscillation ceases. This gives a crude indication of the in-circuit gain of the device. No exact measurements can be made in this way, but transistors could be compared with known good devices used in the tester. In some cases a transistor will oscillate on all settings of VR1. This is fine, indicating a good transistor with high gain. The tester is good for a

vast range of bipolar types although it must be remembered that this test is performed at audio frequencies and does not indicate anything of the worthiness of the device at radio frequencies.

A limited little item of test equipment but it is simple and cheap to build and worthy of a place on the workbench for quick testing of transistors.



"Nice signal, OM . . . who markets Homebrew?"



OBLAST CORNER



NIGEL CAWTHORNE, G3TXF

AS HF conditions descend from bad to worse, oblast chasing remains possible even when there is not much other DX about. However poor the conditions, there is always a chance of hearing a new oblast or two!

Trying to find and identify new USSR oblasts can be a challenge for SWLs, newer licencees and old-time DX hounds alike. Tony Blackburn, BRS87156, finds that "listening with a purpose is more rewarding than simply listening." Richard, G4ZFE, notes that oblast chasing gives "the more recently licensed G4/G0 stations a chance". John, G3BDQ, "still concentrates on listening and checking every UA0 and U1, when looking for 'real' DX!"

Special Prefixes

Although the flurry of Victory 40 special prefix activity has now passed, there is no shortage of 'special' USSR prefixes around the bands. EU1Q, EW2C, EM8CCM were noted during the LZ Contest in early September. Some UA0 stations have been using the special EN0 prefix.

Paul, G4PWA, notes that "the EN0 stations seem to follow the same scheme as the EMs, EOs etc, *i.e.* the first letter after the prefix gives the republic, the 2nd letter gives the oblast and the 3rd letter gives the city name". Paul reports hearing EN0s AJB, ALK and ASI.

In a QSO with the writer, EN0ALW gave his oblast as 107 (UA0L), which ties in with the above.

"Radio"

The USSR monthly magazine *Radio* includes several features devoted to amateur radio, as well as covering more general topics in electronics.

Amateur radio in the USSR is considered as a 'sport', and the April '85 issue of *Radio* lists the top ten radio sportsmen of the USSR for 1984. These are UA1DZ, UL7QF, UQ2GDQ, UB5AAF, UH8EAA, UR2QD, UB5FDF, UL7CT, UA0QWB and UA9SAX. Regular CW contest operators will recognize all these callsigns. The ten best 'club' stations are listed as UK4FAV, UK6LAZ, UK0QAA, UK7PAL, UK2PCR, UK5IBB, UK9AAN, UK6LAA, UK9HTT and UK9FER. The club calls listed are those used up to May 1984 before the new calls came into effect.

It is not known how the 'sportsman' ranking is calculated, but judging by the callsigns of the winners, international contest operating is sure to feature somewhere in the formula!

The same issue of *Radio* carries a letter from UC2IDW. Under the heading 'Dream comes true', UC2IDW tells that he got the idea of building an RA3AAE transmitter after reading "QRP News" and "CQ-U" in *Radio* and that he got the 8W transmitter first to work in February 1984. Using an asymmetric dipole for 3.5 and 7MHz, UC2IDW says he has made thousands of QSOs since then.

In a comment that will strike a cord with QRP-ers worldwide, UC2IDW notes that "operating skill and brevity are necessary when using QRP equipment. If you're a little late with your answer or don't tune just right, the other fellow vanishes!"

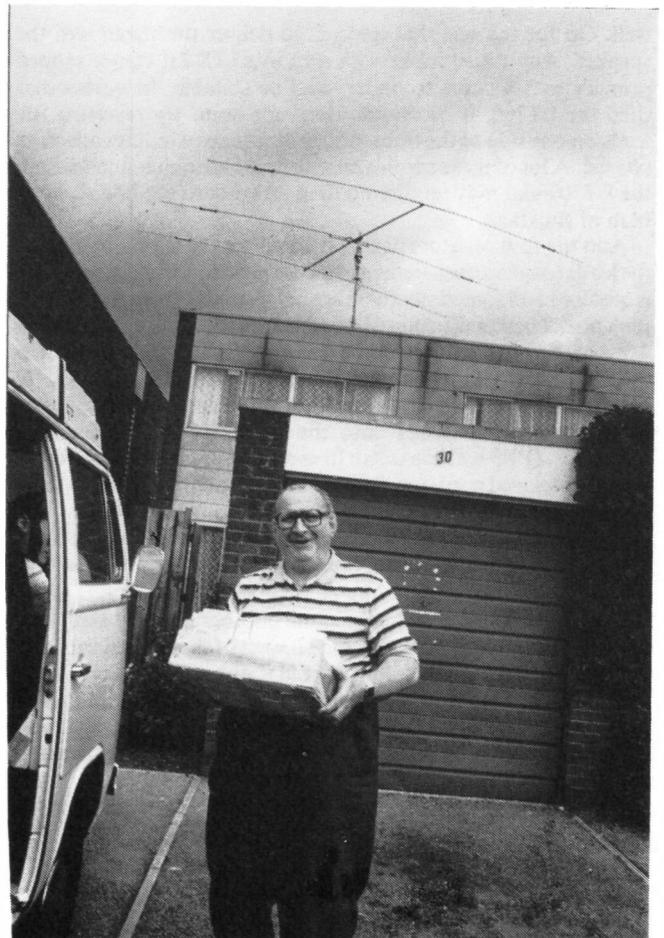
CQ WW Contests

International contests are a good opportunity to make many QSOs with USSR stations and possibly to pick up a few new oblasts.

The world's two largest international DX contests, the CQ Worldwide DX Contests, are held annually on the last full weekends of October (SSB) and November (CW). Both contests run for 48 hours from 0000z on the Saturday to 2400z on the Sunday. The dates for this year's events are: October 26-27 (SSB) and November 23-24 (CW).

For the newer HF operator the bursts of worldwide DX activity generated during the CQ WW Contests make it easy to work a number of new countries. Many stations, both newcomers and old-time DX-ers, use the CQ WW Contests to 'trawl' the bands just looking for the odd new one. This applies to oblast chasers too!

In recent years there have been major contest expeditions to



En route to Box 88! Ted, G3DRN, takes delivery of a bundle of QSLs that represents just a small fraction of the RSGB QSL Bureau's daily throughput. All in-coming and out-going 'G' QSLs pass through '30 Bodnant Gardens'. Ted denies rumours that some of the tens of thousands of unclaimed QSLs that accumulate in the Bureau each year are used to hold down the guys on his triband beam!

Photo: G3TXF

OBLASTS 'WORKED' TABLE

Station	1985	All-Time
G3BDQ	138	—
G4OBK	119	138
G4MQC	116	131
G3TXF	111	172
G2DAN	110	115
G4OII	102	131
G4PWA	100	170
G4WSX	97	108
G4ZSQ	97	100
G3YRW	—	100
G4UNH	86	114
G4XRX	74	111
G8KP	70	167
GW4PXQ	65	94
G0AMH	65	—
G4XTM	63	83
G4TWX	61	109
G3RJB	55	159
G4EZA	45	117
G3URA	45	76
G4LZZ	42	54
G3LQI	39	124
G4VDX	39	56
G4ZFE	38	46
G4GOF	25	115
G4VFG	23	46
G4YWG	23	36
G4VXU	21	145
G4YIR	21	30
G3DOP	19	—
G3ICG	18	95
G4ARI	2	61

OBLASTS 'HEARD' TABLE

Station	1985	All-Time
BRS1066	136	169
SWL Frank Dunn	130	171
BRS25429	106	151
SWL Arthur Miller	104	161
BRS87156	102	102
BRS37186	92	112
BRS87259	83	83
BRS86766	69	69
BRS32601	64	148
BRS28198	64	—
BRS44984	37	90
G14386	—	108

Table 1. "All-time" maximum total is 191 (including 7 'deleted' oblasts), whereas the 1985 'in year' maximum total is 184. See page 559 in February 1985 SWM for full oblast listing. Send your entries to G3TXF by 21st October for December issue.

some of the rarer Russian countries by USSR amateurs, using special contest calls like EW6V, RG6G or U0Y.

The CQ WW Contest exchange is an RST signal report followed by the CQ Zone number. The world is divided into 40 CQ Zones; the U.K. is in CQ Zone 14.

However poor the conditions, there will always be plenty of interesting stations to be heard or worked during the CQ Worldwide DX Contests.

Other Contests

The RSGB's Second 1.8MHz CW contest, which runs from 2100z on Saturday, November 9th to 0100z on Sunday,



The R-100-Oblast diploma is issued by the Central Radio Club of the USSR for contacting 100 different oblasts or regions of the USSR. Each oblast are identified by a number and the oblast can usually be determined from the callsign. Photo: G3TXF

November 10th, should attract a good amount of USSR 160-metre activity. Similarly the all-band OK DX Contest on November 10th (000-2400z) also generates much activity.

All-Band SWL

Several oblast chasers keep a separate check-list for each band. Brad, BRS1066, has recently analysed his SWL logs back to July 1980 and came up with an oblasts 'heard per band' breakdown of 1.8MHz:100; 3.5MHz:93; 7MHz:127; 14MHz:153; 21MHz:92; and 28MHz:96. Getting the 'ton' on Topband is no mean feat!

Double-Vision

Through not pressing the appropriate 'delete' button on the writer's computer some entries in the August oblast table appeared twice. Apologies for any confusion caused.

Table Entries

Send your entries for the "All-Time" and "1985 In-Year" oblasts heard/worked tables to reach G3TXF at Holt Cottage, Kingston Hill, Kingston-upon-Thames, Surrey KT2 7JH, by October 21st for the December issue.

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

CLUBS ROUNDUP

By "Club Secretary"

BY the time this comes to be read the autumn season of club life will be well on its way. We hope that in all the clubs, everywhere, it will be a pleasure and a success.

The Letters

We start, as so often before, with **Abergavenny and Nevil Hall**, where the locals have a room every Thursday, over Male Ward 2 in Pen-y-Fal Hospital, Abergavenny. Amongst the activities, a constant is the Morse class held on club nights.

At **Acton, Brendford & Chiswick** the monthly meeting is on Tuesday, October 15, for a talk on impedance matching to be given by G3IGM. Venue is Chiswick Town Hall, High Road, Chiswick.

If you are into computers and live in the Fareham area, a club for you is **AMRAC**; their next session is at "The Crown" in Bishops Waltham, Hants. For the date, contact the Hon. Sec. — see Panel.

If you are into RTTY, or better still 'data communications' as they like to call it these days, then **BARTG** is the one for you. The latest issue of their *Datacom* newsletter runs to a solid 120 pages of good stuff. Get all the details from the Membership Sec. at the address in the Panel.

October 15 at St. Marks Church Hall is the one for the **Biggin Hill** members, when the talk will be about the BT 'Cellnet' service.

Now we turn to the **Binstead** club, on the Isle of Wight, and based at the Hq. of the 1st Ryde (1st Binstead) Scouts in Binstead, where they gather every Wednesday evening at 7.30. More details from the Hon. Sec. at the address in the Panel.

The **Bishops Stortford** group is based, for formal meetings, at the British Legion club in Windhill, on the third Monday of the month. However, they also have an informal gathering at the "Nags Head" pub, on the A120 Dunmow Road, where there is lots of parking available, and the members can usually pre-empt use of the bay end of the saloon bar.

Braintree is not all that far from Bishops Stortford, and indeed they were once joined by a branch railway; the Braintree club nowadays has Hq. at Room 1, the Community Centre, Victoria Street — this seems to be a reversion to their old Hq. They get together on the first and third Wednesday of each month.

The **Bristol RSGB** group will be meeting in the Small Lecture Theatre, Queens Building, University Walk, Clifton, Bristol, on October 28, when they will be welcoming and listening to the RSGB's Zonal Rep, plus John Nelson of RSGB Hq.

October 8 is the club Construction Contest at **Bury** and it will be judged by G3RJV of G-QRP Club fame; he will also preach his sermon on QRP operation. This club has Hq. at the Mosses Centre, Cecil Street, Bury, where they meet every Tuesday evening, the other ones being informal.

Now **Cambridgeshire Repeater Group** who are the people who run the local repeaters, mostly from Barkway. They have meetings informally at Friday lunchtimes in a 'local', and they put out a very fine newsletter, even if one contributor who claims to love curry does try to bend the Laws of Nature on occasion! Get all the details from the Hon. Sec. — see Panel.

Turning to **Cheltenham** we find an optimist in their newsletter who seems to think a frequency synthesizer is inherently more stable than a crystal oscillator . . . but the VFO design then presented is a cracker. They have their place at the Stanton Room, Charlton Kings Library, Cheltenham on October 4 and 18. The first date was still open at the time of their letter, but on 18th it is home constructors' contest night.

At **Cheshunt** they meet every Wednesday evening at Church Room, Church Lane, Wormley. We hear that they have been trying to persuade their landlord to improve the Hq. somewhat as an alternative to a change of meeting place, so if you have any difficulty in finding them you could try a call to the Hon. Sec. — see Panel.

Chester next, and this means the local Rugby Union Football Club, Hare Lane, Vicars Cross, Chester, every week on Tuesdays. October 1 is a committee meeting, and on 8th they have a surplus sale. October 15 is devoted to 'underground communications', and on 22nd G3TZO and G4JMF join forces to tell about marine radio licencing and operating. October 29 is the Hot Pot Supper.

'Bring along a computer', is the cry at **Chichester** for October 1, in the Long Room at Fernleigh Centre, 40 North Street. October 17 is a junk sale in the Green Room at the same address.

It is nice to hear of the revival of a club that has been inactive for some years, and this is the case at **Cirencester**; they will be meeting, aptly, at the Phoenix Centre, Beeches Road, on alternate Thursdays, giving October 10 and 24. More details from the Hon. Sec. — see Panel.

Down west now, to **Cornish** where the venue is the Church Hall, Treleigh, on the old Redruth by-pass, on October 14, when there will be a talk on AMTOR by G4BHC.

The **Coventry** members have their AGM on October 4 and on 11th there is a night-on-the-air. October 18 is down for a quiz, and on 25th they have another night-on-the-air. The address to head for is Baden-Powell House, 121 St. Nicholas Street, Radford, Coventry.

Deadlines for "Clubs" for the next three months—

November issue — September 27th

December issue — October 25th

January issue — November 29th

February issue — December 19th

Please be sure to note these dates!

For the latest details of the **Crawley** October doings we must refer you to the Hon. Sec., although we believe that on October 3 they have a quiz against Mid-Sussex, at Burgess Hill. Get the latest gen from the Hon. Sec. — see Panel for his address.

The **Crystal Palace** crowd has its meeting on October 19, for a junk sale at All Saints Parish Rooms, at the junction of Beulah Hill and Church Road, opposite the IBA mast in Upper Norwood, London.

For the details of the **Dartford Heath D/F** club hunt meetings we must refer you to the Hon. Sec. — but you could also try going to the informal pre-hunt session on October 15 at the "Horse and Groom" at Leyton Cross, near Dartford Heath.

At **Derby** they have the top floor at 119 Green Lane, Derby, and they are in session every Wednesday evening. Doubtless because of holidays we are, for once, without the detailed programme.

For the details of the **Dudley** get-togethers at the Allied Centre, Greenman Alley, off Tower Street, we have to refer you to the Hon. Sec. However, we can make an educated guess and suggest that alternate Mondays might be the routine.

The **Edgware** newsletter tells us that they have their club Hq. at Watling Community Centre, 145 Orange Hill Road, Burnt Oak, on the second and fourth Thursday of each month. October 24 is noted as a film evening.

Monday, October 14 is the day for **Exeter**, at their Hq. at the Community Centre, St. Davids Hill, Exeter. This one is the AGM, and all members are asked to make the effort to turn up.

Fareham continues to be based at Portchester Community Centre where they have been for many years. October 2, 16 and 30 are sessions on the air and nattering; on October 9 the *Davtrend* company will be coming along to demonstrate and talk about

their equipment. On October 23, G3CCB will be talking about a "better way with end-fed aerials".

The **Farnborough** crowds have films on October 11 and a surplus equipment sale on October 23. Both are at the Railway Enthusiasts Club, Access Road, off Hawley Lane, Farnborough, Hants.

We were saddened to hear that the **Fylde** club's PRO is in the hospital, and we hope to hear from him again very soon. Meanwhile he was quick to press-gang the club Chairman into activity, so we can tell you the October 1 meeting is down for a talk on propagation principles by G3KEN, and a G3IOR tape lecture from RSGB, also on propagation, fills in October 15. Both are at the Kite Club, Blackpool Airport.

As we have no programme — doubtless the recent AGM accounts for that — we have to refer you to the Hon. Sec. at the address in the Panel for details and dates of the **Glenrothes** activities at Provosts Land, Leslie, Fife.

Our next one must be the **G-QRP** Club and we would recommend everyone who either likes low-power operation or home construction to become a member. Apart from the regular 28-page *Sprat* newsletter, there are of course the social gatherings which seem to be an increasing feature of the club and such good fun too.

At **Grafton** the club has a place at the "Five Bells", East End Road, East Finchley; enter the pub and go straight through to the yard at the back; cross this yard and you come to the clubroom door. As for the dates, try the second and fourth Friday evening.

October 24 is down for a talk on the 'Sharp End of Broadcasting', by G4HPE, for **Greater Peterborough**, at their base at Southfields Junior School, Stanground, Peterborough.

October 3 is AGM time for **Grimby** where the group is in session at Cromwell Social Club, Cromwell Road, every Thursday.

At **Harrow** the locals get together every Friday evening at Harrow Arts Centre, High Road, Harrow Weald, which is opposite a pub called "The Alma" which in turn is next to a bus garage. October 4 is the G2UV Talk Challenge, October 11 and 25 are activity nights, and on 18th the CEGB will be giving their talk on 'Making Electricity'.

The **Hastings** lads have the third Wednesday booked at West Hill Community Centre, Croft Road, Hastings, and in addition there are informal natter sessions every Friday evening at Ashdown Farm Community Centre, Downey Close, off Harrow Lane and just before the DoE.

The programme of events at Fairkytes Arts Centre, involves the **Havering** crowd having talks about 'business' (by way of the quarterly business meeting of the club) on October 2, while on October 16 they have the Home Construction Trophy. G3RWL will be talking to them about *Oscar* on October 30, and the intervening Wednesdays are informals.

The **Hereford** crowd has two sessions every month; October 4 is all about calculating distances across the Earth's surface, and on 18th there is an informal club meeting. Both, of course, are at the County Control, Civil Defence Headquarters, Gaol Street, Hereford.

For details of the **Hilderstone** society and its meetings at Hilderstone Centre on the Isle of Thanet we must refer you to the Hon. Sec. — see Panel for the details.

On October 2 the **Hornsea** crowd will be watching the RSGB Video Show; October 9 is an Open Meeting, and on October 16 they will be preparing for an event called "Elhoex '85" which happens on Sunday, October 20. Naturally enough there will be a post-mortem on the event to fill up October 23, and then on



The newly reformed Mid-Cornwall Beacon and Repeater Group. Back row, left to right, G4XGF, G4NTX, G6CEP, G8GOR and G3VVB; front row, left to right, G3GHS (secretary), G3WKC (chairman), G3YJX (treasurer) and G3XFL. The beacon under their control is GB3CTC on 4m., 2m. and 70cm., together with repeaters GB3NC and GB3HB on 2m. and 70cm. photo: G3GHS

Friday, October 25 they have the AGM. All the Wednesday meetings are taken at The Mill, Atwick Road, Hornsea.

October at **Ipswich** means Morse tuition on 9th, and planning the J-O-T-A station on 16th; Jamboree-on-the-Air, of course, is the weekend October 19/20. On October 30th there is a bring-and-buy sale, though not at the usual venue. Normal meetings are at the Rose and Crown, 77 Norwich Road, Ipswich, at the junction with Bramford Road.

Over the water now to **I.R.T.S.** and this is the place to apply for all the details of amateur radio in EI-land; although IRTS is the national society for EI, they also have their local groups, and keep track of the other clubs in the Emerald Isle.

From EI we now head for **Jersey** where the locals write to advise us they are going to be active on the J-O-T-A weekend using GJ4HXJ on 144 MHz and GJ4ICD on 14 MHz, plus GB4JSA and GB0JSA on 3.5 and 7 MHz respectively. The venue will be The Mill, St. Quens. More details from the Hon. Sec. — see Panel.

The **Lincoln** club has its base at the City Engineers' Club, Central Depot, Waterside South, Lincoln. October 2, 16 and 30 are all CW/RAE nights. October 6 is a committee meeting, October 9 is an activity night, and on October 23 they have G8AGN and G3PHO to tell them all about microwaves.

October 16 is the date for the AGM at **Maxwelltown**, and although we believe they foregather in the "Tam o' Shanter Inn", Queensberry Street, every Wednesday, check this with the Hon. Sec. — see Panel.

On the first Tuesday of each month, the **Oswestry** crowd fills up the clubroom at the Bell Hotel, opposite the Parish Church. Contact the Hon. Sec. for the latest details of their activities.

Every Thursday the Carleton Community Centre in **Pontefract** is populated — or at least the top floor is — by radio amateurs and SWLs. On Mondays they have an informal gathering too. October 3 is a sad occasion, when they will be selling the gear of silent key G4PRE. They will be active in J-O-T-A, and then on October 24 they have a talk and slide show by G3SVW/VP3LK, subject to confirmation.

Subscription rate to *Short Wave Magazine* is £16.00 for a year of twelve issues, post FREE.

SHORT WAVE MAGAZINE LTD., 34 HIGH STREET, WELWYN, HERTS. AL6 9EQ

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Talking Newspapers

With a cross-head like that we have to be talking about QTI-TNA. The group exists to read radio magazines on to tape for the benefit of invalid, disabled and blind radio amateurs who can benefit. They recently ran an EGM, at the Lincoln Rally to amend Rule 5 of the Constitution to call for the AGM to be either at the NEC Exhibition or, alternatively; in March. What a pity the Lincoln Rally was on September 3 and their letter wasn't posted until mid-August. However, that doesn't alter their need for support and help in their activities — get the details from the Hon. Sec. at the address in the Panel.

RAIBC is of course the prime aid for the blind and disabled radio amateur and SWL; and in order to do what they do they are always in need of representatives, supporters, donations, and full

members — these are the blind and disabled people the club aims to help. All the details from the Hon. Sec. — see Panel.

If you have been a licensed amateur for twenty-five years or more you are entitled to join the Old-Timers group, RAOTA. All the needful details from the Hon. Sec. — see Panel.

October 15 is the date for the Reigate meeting at the Constitutional and Conservative Centre, Warwick Road, Redhill; doubtless by now they will have filled in the details of the programme for that night.

Now to the Royal Navy group, for past and present members of the Royal Navy, or the merchant marine, with associate membership for those in foreign navies. The details can be obtained from the Hon. Sec. — see Panel.

SARUG is the Sinclair computer user-group of radio amateurs. They put out a very nice newsletter every so often and there always

seems to be a useful program listing for amateur radio application. Details from the Hon. Sec. — see Panel.

At **Shefford** the locals are to be found in the Church Hall, Amphill Road, Shefford, every Thursday evening. October 3 is a talk about understanding SWR measurements, and on the 10th they have an Interference Forum chaired by G3UFB of the RSGB EMC Committee. October 17 is a demonstration of amateur radio computer programs, and on 24, G8AFN discusses satellite TV reception. October 31 is the last one of the month, and is given over to G8OFA for his talk on starting on 10 GHz.

October 27 is the date for the Rally of the **South Bristol** crew. This one is at the Youth Centre, Hareclive Avenue, Hartcliffe, Bristol. Turning to the club meetings, these are at Whitchurch Folk House, East Dundry Road, Whitchurch, Bristol, every Wednesday evening.

For details of the **Southdown** meetings this time we must refer you to the Hon. Sec. — see Panel. This is not a slip-up on anyone's part, just that the reprinting of the newsletter title page which normally carries all the information has been deferred as a result of impending changes to the committee listings.

The **South Manchester** activities at Sale Moor Community Centre, Norris Road, Sale, are every Friday evening. In addition we believe they have informals on Mondays — but all the latest details can be obtained from the Hon. Sec., see Panel.

On the first and third Mondays of each month the **Surrey** club foregathers at *TS Terra Nova*, 34 The Waldrons, South Croydon, in the first-floor mess deck. October 7 is a surplus sale.

Downs Lawn Tennis Club is host to the meetings of **Sutton & Cheam** on the third Friday of each month. The October 18 date should be very interesting, with G2FKZ talking about propagation — and who better to do so? On October 4 they have an informal chat session in the bar at Downs, and again on November 4.

For the latest details of the **Swale** club, covering the Sittingbourne area, we must refer you to the Hon. Sec. — see Panel.

The **Telford** club has a committee meeting on 2nd of October, and a video and film night on 9th. October 16 is a Guest Speaker, G4AZV, discussing SSB generation. October 23 is an HF activity night, and on 30th there is a natter night. Hq. is at Dawley Bank Community Centre, Bank Road, Dawley, Telford, Shropshire.

The first Tuesday each month is **Thames Valley** meeting night; try Thames Ditton Library, Watts Road. The meeting will be the Carnarvon Trophy for home-construction, followed by a talk on 50 MHz.

Thornton Cleveleys club has Mr. Heaton of NORWEB on October 7 to talk about electrical power, and on 14th there is an informal and on-the-air night. October 21 is the AGM, and on 28th they have G3AOW to talk on aerials.

At **Todmorden** the club headquarters is at the Queen Hotel, where they are booked in on the first and third Monday of each month. October 7 is an evening of construction hints and on 21st there is a surplus equipment sale.

On October 26, **Torbay** members will be seeing an RSGB video, plus some slides if time permits, at the ECC Social Club, Ringslade Road, Highweek, Newton Abbot. In addition they have the regular Friday evening informals, with average attendances of 35.

October at **Wakefield** is started with a natter night; this is on October 1, and then on 15th they have the G6CJ Aerial Circus video from RSGB. October 29 they are 'out' for a pie and pea supper at the "Rose and Crown" at Methley. The normal venue is Ossett Community Centre, Prospect Road, Ossett, on alternate Tuesdays.

Every Monday the **Welland Valley** crowd heads for the Welland Park Community College, Market Harborough. In the coming months they plan to have various activities, outside speakers, and so on.

For details of the **Westmorland** goes on at the "Strickland Arms", Sizergh, near Kendal, we must refer you to the Hon. Sec. — see Panel for his details.

The **West of Scotland** new headquarters have now been formally opened by Joan Heathershaw, G4CHH, this year's RSGB President, and they are in use every Friday evening. Find them at 154 Ingram Street, in the centre of Glasgow.

The club in **Wirral** which we have been calling the Wirral (West Kirby) crowd, has its base at Irby Cricket Club; for the rest of the details we must refer you to the Hon. Sec.

Nowadays the **Wolverhampton** group are 'at home' in the Wolverhampton Electricity Sports and Social Club, Chapel Ash, where they have the AGM on October 1. On 8th there is a discussion night, and on 15th a talk by G3BA. October 22 is down for a members' slide and film show.

Worcester are at the Oddfellows Hall, New Street, on October 7 for a visit by *Dewsbury Electronics*. The informal is on October 23.

We have a little problem with the **Worthing** data: it was addressed to us but requests us to give publicity to their meetings in *Practical Wireless!* However, if we disregard that little slip of the computer we find them still based at Lancing Parish Hall, South Street, Lancing, every Wednesday evening. October 2 is the 'main' meeting — venue not given — and is the AGM.

The **Yeovil** Hon. Sec. notes that on October 10 they have a briefing for the QRP Convention, and on 17th G3MYM will talk about the 'electron density profile of the ionosphere'. October 24 sees the topic change to capacitance, and on 31st there is a natter night. November 7 is another G3MYM one, on the square law in propagation. Find them at the Recreation Centre, Chilton Grove, Yeovil.

Finis

That's it for another month; the deadlines for the next few months are in the 'box' in the piece and are of course for *arrival* of your letters — the late ones wait until next month! The address is: "Club Secretary", **SHORT WAVE MAGAZINE**, 34 High Street, Welwyn, Herts. AL6 9EQ.

Rallies

October 20, 'ELHOEX 85', at the Floral Hall, Hornsea, East Yorkshire; organised by Hornsea A.R.C. Full details from N. Bedford, G4NJP, on 0262-673635. **November 2, North Devon** Radio Rally, Bradworthy Memorial Hall, 10.30 to 5.00 p.m., bring-and-buy stand, etc., talk-in on 2m. (S22). More details from G8MXI, QTHR.

Special Event Stations

Angelika Voss, G0CCI (*ex-G5CCI*), will be operating **GB4URC** on **October 12** as part of a fund raising campaign for the rebuilding of Lion Walk United Reformed Church, Colchester, the aim being to contact as many stations as possible during the period 1000-1600 local time on both HF and 144 MHz. People are sought who would sponsor the station based on the total number of QSOs completed (*e.g.* a few pence per dozen QSOs); contact G0CCI by writing to P.O. Box 49, Colchester, Essex, or ring 0206-396610.

Marlborough Brandt Group will be operating **GB4OWW** on **October 25/26** as part of their One World Week festivities; venue is St. John's School, Stedman Building, Marlborough, Wilts. Work them on 2m. SSB and FM, and 432 MHz; special QSL cards will be issued.

Radio Amateurs' Examinations

The next Radio Amateurs' Examinations will be held on December 2nd, 1985, and May 12th, 1986. Prospective candidates should apply to their nearest examination centre *immediately* for the December exam. and by mid-February for the May sitting. A list of centres may be obtained from the RSGB by sending them a large *s.a.e.* marked 'RAE Centres'; their address is Lambda House, Cranbourne Road, Potters Bar, Herts. EN6 3JW.

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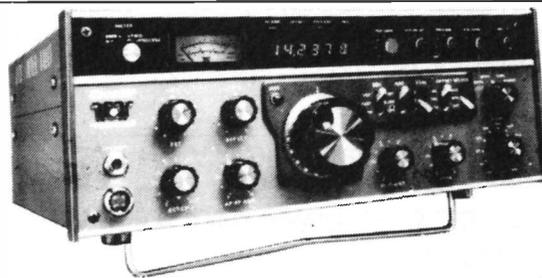
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