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Advertising: Charles Forsyth

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Telephone: 04-3871 5206 & 5207

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AUTHOR’S MSS

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

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LOWE SHOPS

Whenever you enter a LOWE ELECTRONICS' shop, be it Glasgow, Darlington, Cambridge, London or here at Matlock, then you can be certain that along with a courteous welcome you will receive straightforward advice. Advice given not with the intention of "making" a sale but the sort which is given freely by one radio amateur to another. Of course, if you decide to purchase then you have the knowledge that LOWE ELECTRONICS are the company that set the standard for amateur radio after-sales service. The shops are open Tuesday to Saturday and closed lunch 12.30 till 1.30 pm.

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In the North East the LOWE ELECTRONICS shop is found in the delightful mall on 38 Union Street, (telephone 0325 468 0115). The shop's address is Darlington. That is on the A19, town. A huge free car park and supermarket and bistro restaurant make a visit to Darlington a pleasure.

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2M MULTIMODE

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HF RECEIVERS

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<td>6490</td>
<td>ICOM IC8000</td>
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3 WAYS ANTENNA SWITCH 1KW SW2282. Good to 2 metres. £17.50 Ex Stock. Or 4th position to suit output £39.80 Ex Stock.

SENTINEL 2M POWER LINEAR PRE-AMPLIFIER

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<th>Price</th>
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<td>SONY IC70000</td>
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- Setability 0.5ppm
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- 3 Gate Times

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<table>
<thead>
<tr>
<th>Model</th>
<th>Frequency</th>
<th>Price (£)</th>
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<tr>
<td>METEOR 100</td>
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<td>METEOR 600</td>
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<tr>
<td>METEOR 1000</td>
<td>1GHz</td>
<td>184.86</td>
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Illustrated colour brochure with technical specification and prices available on request.

muTek limited – the rf technology company

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Canaries on Seventy

WHAT is believed to be the first QSO on 432 MHz via tropo between the Canary Islands and the British Isles took place on July 4 at 1749 GMT between EA8XS (SO73d) and Philip Hollings, G8ZDS, (XK64a) from Camborne in Cornwall. The distance is 2,613 kms. RS51 reports were exchanged. Later, about 1900, Dave Whitbread, G4WIO, who was a regular visitor to the area, worked Salvador. On July 5, EA8XS was again on the band and, at 2108, worked Dick Magadan, EI1QV, (W6M6d) for the first EI/EA8 QSO on 432 MHz tropo, a QRB of 2,771 kms. EI12CA has visited the area and recommends a site in WL02J (IO61DW) as access to the previously proposed one was difficult. Call sign for the 2m. tropo, CW MS and SSB MS will be EI2VXP/P. On 70cm. tropo SSB only, EI3VBP/P, and on 23cm. and 13cm.. SSB only, EI3VPC/P. No call sign available yet for 10 GHz operation, and another EI2V call is awaited for 20m. VHF net and 4m. use, and for any CW QSOs on SHF. Time permitting, some operation on 2m., 70c. and 10 GHz from W/WM and VM squares is awaiting for 20m. VHF net and 4m. use, and for any CW QSOs on SHF. Time permitting, some operation on 2m., 70c. and 10 GHz from W/WM and VM squares is possible. All stations contacted will be sent a QSO and it is hoped to have them printed before departure. A QSL manager for incoming cards will be G6ABU whose home telephone no. is Nottingham (0602) 298122.

Your scribe spoke recently to Dave Johnson, G4DHF, about his group's trip to SX80d which commenced on July 23 and continues to Aug. 4. They have booked a cottage in XR90 for the duration and should be on the 20m. and 80m. VHF nets using the call GM4ODA/P for arranging instant skeds. On 2m. GM4ODH/P on 144.25 for SSB tropo and 144.028 MHz for CW MS operation. GM451V/P, the club call of the Five Bells Contest Group, should be on 432.215 MHz. Dave suggested some operation from XT square might be possible.

Contest Notes

Eddi Ramm, DK3UZ, reported the results of the March 17 432 MHz AGCW-DL contest which attracted a paltry total of 15 entries in the three classes. The highest number of QSOs made by any station was just 18. The last event is the 144 MHz one on Sept. 22; details next issue.

The 432 MHz CW contest on April 8 was poorly supported too, with just 19 entries. The winner was G3UVR with 298 pts., G3LCH/P coming second with 286 and G4NDG/P third with 269, according to the GB2RS news on June 17.

Coming attractions are the 432 MHz Low Power contest on Aug. 4, 1700 - 2300 with Tx output 10w p.e.p. maximum. Radial ring scoring multiplied by total of counties and countries worked. Next day, 0900 - 1700 is the 144 MHz QRP event with Tx output 25w p.e.p. maximum. Again radial ring-times-multiplier scoring. In both contests, the county code letters or full name must be exchanged. These are two section events, fixed and All-other.

To promote 13cm. activity, a new event is held on June 19, 0900 - 1700. Scoring at one point per kilometre with RSGB Rule 8b to be used when they compile the final table. This is an Open and All-other contest.

Sept. 1/2 sees the 144 MHz Trophy and SWL contest, 1400 - 1400, a Single-op. and All-other event. Radial ring scoring for the RSGB affair, and on pt./km. for the concurrent IARU version.

Satellites

Little news about current satellite activity. Steve Reading, G4LZD, (Devon) is the only reader to mention the Soviet RS "birds," the downlinks of which are in the 29.4 to 29.5 MHz region of the 10m. band. He complains about the increasing terrestrial FM activity which interferes with reception. This problem is exacerbated by the ready availability of converted CB transceivers covering 29.3 to 29.7 MHz which cannot detect SSB and CW signals no doubt.

G4LZD is now up to 29 countries via RS-5 to 8. CW on June 21 through RS-6 produced QSOs with VE2LI, KE0Y (Iowa), UA1ZCL and TP3XUU/8. June 23 was some kind of Soviet celebration day as all four satellites were QRV. Steve has also worked RS3A and SV1DO.

Adrian Chamberlain, G4ROA, (Coventry) is getting better telemetry copy from UOSAT-2 now that its attitude is being corrected and hopes the time/date stamp will have been reset by now. He took his gear into the garden during recent good weather and operated through 0-10 working JA1KSO, UBSMGW and lots of Ds and PAs. Adrian has realised why he gets better signals in and out of 0-10 when it is poised over the Caribbean region: there are no QRO merchants in the Atlantic Ocean to clobber it! When in range of the European "alligators," the 22 dB attenuator pad comes in — and that is a lot of attenuation in a receiver.

Alex Scott, GM8BDX, (Borders) operates through 0-10 when it is between SE and NE. Reg Woolley, GW8VHI, (W. Glam.) is now up to 59 countries with no antenna elevation. On June 1/2 he lists VP2ESE, UB5MGW, CX7BZ, PY6ASV and VP2EME, and many JAs in May.

Concerning whether the amateur bands are the appropriate place for the operation of University-type research satellites. Dave Sellars, G3PBV, (Devon) thinks that 137 MHz would be more suitable. He states: "I understand that University authorities do not like it (UOSAT?) to be referred to as an amateur satellite."

The latest issue of AMSAT-UK's...
journal Oscar News, June 1984, carries news of the AMSAT Phase 3G satellite which could be launched during an Ariane 4 test firing from Kourou in 1986/7. The main difference from G-I0 is that the apogee motor will be a simple hydrogen type, the gas being produced when required by water electrolysis using current from the spacecraft's power supply. From safety and cost aspects, this is an ideal solution, the drawback being the very low thrust of four Newtons — about one pound. This means it will take about a year to drive the spacecraft into the planned 57° inclination orbit.

The cost of the project is estimated as one million DM — about £270,000 — of which half has been financed by AMSAT-DL. The group hopes the rest of the cash can be raised by donations over the next three years. Meanwhile, construction has commenced in a special "clean room" which AMSAT-DL has at its disposal.

Oscar News no. 47 also carried an item about the Japanese amateur satellite, JAS-1, due for launch on Feb. 4 next year. A circular orbit at 1,500 km altitude, 50° inclination is suggested, resulting in seven consecutive passes, averaging 20 minutes, daily for amateurs in "modest" latitudes. The micro-computer in-house unit (IHU) in JAS-1 provides the basis for the PACSAT facility. This is described as a "flying mailbox" being a packet radio, storage and forwarding system. The JAMSAT group has mostly completed radiation testing of the NMOS and CMOS hardware, the former chips surviving 5,000 RADS unscathed.

Repeater News

Robin Waitt, GM6LJE, Secretary of the Anglo-Scottish Repeater Group, wrote on June 22 that the VHF relay GBIEV, R4, at Appleby, Cumbria, was operating at reduced power pending the arrival of replacement parts for its dead PA stage. This group is also responsible for GB3AS, R1, at Caldbeck and for the UHF relay GB3CA, RB13, in north Carlisle. It publishes a newsletter and further details can be obtained from GM6LJE at Orchard Cottage, Canonbie, Dumfriesshire, DG14 0RZ.

Six Metres

The big news this month concerns Dennis Robinson, GJ3YHU, who, between 2230 on June 30 through 0100 the next morning worked 47 North American stations in eight U.S. states and one Canadian province. This follows a big Es opening to Britain in the early evening of the 20th on 2m. The maximum distance inland he worked was about 300 miles and signals varied from S1 to S9-plus, many of the Ws running just 10w to a dipole antenna. Dave Sellars, G3PBV, (Devon) monitored some of it and heard eight U.S. stations very weakly near Newton Abbot, the best being W1GKE. The Ws were copying ZB2VHF but it faded when GJ3YHU came up. This fits the usual pattern of Es "clouds" drifting northwards in our hemisphere. G3PBV suggests the propagation mode was double-hop Es.

Brian Bower, G3C0J, (Bucks.) reports that GW3LHD has now taken over as secretary of the U.K. 6m. Group and is getting things moving again. Brian worked W6JKV/OX on June 24 when he appeared on his long expedition to Greenland. G5K, GW3MHW, G3NOX, G4CUT and GW3LDH also worked him. When he was in Newfoundland on June 19, W6JKV heard the Angesy beacon, G3BSIX, at good strength on a hand-held transceiver.

Kevin Piper, G87TMG, (W. Sussex) was monitoring the band on June 30 from 1533 to 1555 and heard ZB2BL working crossband 6m. to 4m. Derrick Dance, GM4CXP, (Borders) heard Jim's SSB on the same day at 5945 on 50.038 MHz and shortly after ZB2VHF when ZB2BL started up on 70 MHz. This beacon was peaking S9 again between 2028 and 2055 at GM4CXP.

John Baker, GW3MHW, (XM60d) now has a new QTH in Dyfed and hopes to use some VHF antennas soon. He contacted EI0RTS at 2308 on June 26 for his 11th country on 6m. The Irish licence was a special one for three weeks from 0000 to 1800 daily. John copied SB4CY on 50.501 MHz for half an hour from 0710 on May 24, peaking S9, G2AOK (Gloucs.) receiving it a little later. Stations further north heard nothing. GW3MHW has contacted 30 of the 39 permit holders and on June 2 he worked GM3WOJ via SSB MS. In a letter dated June 29, Dave Lewis, GW4HBK, (Gwent) said he had not heard W6JKV or E10RTS. On June 8, he worked SM6PU crossband 6m./6m. and 4GC 6m./4m.

Four Metres

Tim Raven, G4ARI, (Leics.) worked ZB2BL during the June 30 Es, his sole addition to the Annual Table total for the band. Roger Greengrass, G4NRG, (Essex) worked ZB2BL on June 17 on SSB for the first time and again on the 30th. On the 26th, G3HFN was another new country and square. Martyn Jones, G4TIF, (Warke) added G4VOZ (Leics.) to his county total on the 4th. On the 30th, at 1700, he heard Spanish stations on FM Band 2 and at 1720, heard ZB2VHF for the first time.

Arthur Breese, GD2HDZ, took part in the contest on June 3 and worked six more countries for the table, including G4ADV/P in Cornwall and GM4JLD in Strathclyde region, also a new 1984 country. GM4CXP has only recently become available at present and heard ZB2BL at S9 at 1605 on June 30, and half an hour later, ZB2VHF at S7 on 70.120 MHz. GW3MHW is back on the band using a pair of Eimac 35-T valves. He tried T740s but although good at 50 MHz, they proved poor on 70 MHz. John has started nightly skeds with G2AOK on 70.21 MHz at 1900. He is on 3.718 MHz at 0830 local time for
Europe. He worked OZ6BL (FP) at 1037G4YIR on the 19th. She has heard some Es from Colchester but no QSOs so far. Welcome to Sue Frost, her morse test on June 8 and got her Class A licence, G4YIR, on the 19th. She has QSOs so far. Sue now has a beam up our Annual Ladder with 41 QSOs so far. Welcome to Sue Frost, heard some Es from Colchester but no A licence, G4YIR, on the 19th. She has

Two Metres

Ladies first, and congratulations to June Charles, ex-G6WXX, who passed her morse test on June 8 and got her Class A licence, G4YIR, on the 19th. She has heard some Es from Colchester but no QSOs so far. Welcome to Sue Frost, her morse test on June 8 and got her Class A licence, G4YIR, on the 19th. She has QSOs so far. Sue now has a beam up our Annual Ladder with 41 QSOs so far. Welcome to Sue Frost, heard some Es from Colchester but no

This is the 5-over-5 6m. antenna system of Jeremy Royle, G3NOX, which was installed at the end of April; the Yagis are by the well-known French firm Tonna. The first Sporadic-E QSO in 1984 was with ZB2BL in Gibraltar at 1440 GMT on April 23 with S9-plus signals each way.

The June 8 Es event was very widespread. LA1JU, one of the operators of LA1JK, told your scribe that LA5MK (FX) had some Es QSOs. LA6QBA had about 150 contacts including UD6DO (YA) and 4X4AS (RR). OY5NS and a portable OY station worked into HG, YO and YU. Paul Galea, 9H1BT, (HV) worked 125 stations and made the rust and YU. Paul Galea, 9H1BT, (HV) worked 125 stations and made the rust and YU. Paul Galea, 9H1BT, (HV) worked 125 stations and made the rust and YU.

hours of Es to Iberia, contacting EA7s AKS (WX), DGS (WZ), XD and CEC in XX, AJX (YX) and PZ (WZ), plus EA1MO (XB), CT1WW (WB), CT1QP (VV) and CT1NT (WA). He heard EA8AAE (RO) whom he called but the Canary Is. station was working Italians. The QRB would be around 3,000 kms. A nice one on July 1 was E15EZ/P in VP70b. John Heys, G3BDQ, (E. Sussex) missed the June 8 Es but did operate in the latter part of the June 30 event, coming on at 1825. He got CT1s AYC, QQ and BZT in VY, ALF in VZ and AEX in VB to make it 177 squares on 2m. He mentioned one G6 who was spelling out his lengthy QTH and named "three times phonetically to a CT1, and a G station who was telling a CT1 to get off the calling frequency. These incidents are obviously the result of inexperience of the Mercurial nature of Es propagation. G3BPV found the June 8 Es frustrating as he seemed to be right at the far end of things. UC2AAB was heard on SSB at 1742 and UA3LAW (PO) on CW at 1755. Other Russians were heard till 2028 up to S9, but no QSOs for Dave. Better luck on the 30th, though when 10 QSOs were concluded in ten minutes from 1728. HB9s MED and POM (EG), IW3s ESG, EYG and YEG, and 13FGX in FF, YU2NDV and IV3HWT in GF and YT3V in HF. At 0930, 9H1CD (HV) was worked on the 25th. Henry was S9 for 10 seconds and had disappeared in 25. On the 30th, 14MKN (GE) and 13FGX (FF) were contacted around 1715, but the later Es to Iberia went over Weymouth. He reminds us of the strong Es backscatter signals from GI4OPH and northern Gs in this event.

Mick Allmark, G1EZF, (Leeds) only had 3w available on June 8/9, so only worked SP6BTN (KM) on the 8th via Es. However in a tropo, lift on the 9th he contacted HB9ACA (DG) and FS in AI, BH, CG, CH and DH squares. He thinks he may have worked EA3ADW (BB) at 1750 on June 9 but is unsure if the EA got his call correct. During the QRP Contest on June 17, there was Es propagation on and off all day but only 10AKP (GB) was winking out of the QRM. A weak Aurora was heard on the 18th but GM3J1J was not worked. On June 30, Mick enjoyed two

on tropo on June 9. Peter Atkins, G4DOL, (Dorset) also got HB9RSO, plus Ds in DK and EJ on the 9th, and on the 17th, GM4RPO/P (YO) who was running 2½ w. EI3VDP/I (WL) was a new square on the 24th at 0752. Via Es, Peter worked 9H1BT (HV) at 0852, and I8MIB (IY) at 1205 on June 17. I501SE (EZ) was heard at 0930. 9H1CD (HV) was worked on the 25th. Henry was S9 for 10 seconds and had disappeared in 25. On the 30th, 14MKN (GE) and 13FGX (FF) were contacted around 1715, but the later Es to Iberia went over Weymouth. He reminds us of the strong Es backscatter signals from GI4OPH and northern Gs in this event.

Tim Charles, G4EZA, (Surrey) lists his best June 8 DX as RB5AOB (QL) at 1958, and on the 30th, CT1WB (VB), in which opening 17 different CTS were logged. G4LZD worked UC2AA (NN) and RC2WBR (NP) on CW in the June 8 Es, but the 30th June affair was far too near Steve in Dartmouth for him to work anything. On June 10, he had a tropo QSO with EI6BLB/P (WM) and on the 21st with EI3VDP/P (WL).

Ken Osborne, G4IGO, (Somerset) is now QRV again on MS and recently completed skeds with LA1JK (FX), SM0HAX (JT), 13s LGP and TQJ (GF), SM6EAN (FR), Y27BL (GL), EA6FB (AY), SM6AFH/6 (FS), SM4KZW (HT), YU2JL (HD), YU2CBB (IF), HG8CE (KG) and DL7YS (GM) all on CW, with I2FAK (EF) on SSB. In the June 8 Es, the first definite signal was UC2AAB at 1735 and he worked several of the Russians, including UA3LAW (PO) at 1755, on CW. There was a gap between 1815 and 1854, then at 1903, Ken contacted UA3LAW on SSB. Last station heard was UC2AAB at 2028.
On June 30, G4IGO heard GWs in YL square calling an I0M, but the first station heard in YK07T was IS5N (FD) at 1724. Up to 1744, Ken heard/worked 15 Is in EF, FD, FE, FF, GD, and GE, plus YU2JL (HD) at 1739. He also heard G4OPH (XO) at 1744 via backscatter at 125° azimuth before the propagation altered to Iberia. 16 stations were heard, CT4FPI (VZ38J) being worked at 1759, between 1745 and 1903, in VZ, WB, WX, XB, XA and YX squares, also G4OPH again at 1855 via backscatter at 180°.

Ken reports that EA7CPW (YX12) worked 114 stations between 1730 and 1905 in the more northerly W, X, Y and Z squares in the British Isles. On June 17, G4IIO recorded Es signals at various times between 0823 and 1450, and the period 0900 to 1015 brought snatches from 9H, 16 and 17. He complains about stations who sit on the calling frequency discussing what they are hearing, so preventing others making contacts.

Jon Stow, G4MCU, (Essex) picks out his best Russian DX of June 8 as RP2PED, (MP), RC2WBR (NP) and RB5AO (QL) for three new squares, the last a new country, too. On June 17 at 1214, 9H1BT was worked on SSB, then on the 30th, Jon managed CT1s ZX (YY), WW (WB) and AWO (YZ) for three more new squares and another country. Tropo on the 9th brought 12FAK at 0944 and 11KTC, also in EF, at 1028, both SSB. Terry Hackwill, G4MUT, (Berks.) only got 1BTS (IZ) at 1245 on June 8, but none of the Russians in the evening due to QRM. On the 30th, the EA/CT Es favoured the more northerly squares.

Roger Greengrass, G4NRG, (Essex) reports tropo QSOs with DL and LA on June 8, with OZ on the 9th and with F6 and V8 on the 17th, while he contacted UC2AAB on the 8th, some 9H1s on the 17th, and two CT1s on the 30th, via Es mode. Mark Turner G4PC5, (Bed.) heard 9H1BT at 0835 on the 17th, then worked 18DVF (HA23A) and 1K8DYD at 1012. Dave Dibley, G4RGRK, (Bucks.) missed the 18s at midday on the 8th but did work five Russians later on CW. He was appalled at the chaos and poor operating on SSB, though. G4ROA was in the end of the Russian opening on the 8th and only got CR2AA (NN).

Rod Burman, G4RSN, (Surrey) was due to move QTH on July 17 and wrote about the Es to Iberia on June 30, in particular the very selective nature of it; DX at S9-plus a few miles away, yet inaudible with him. Your scribe knows the feeling. He noticed many Gs had backscatter flutter on their signals and that Spanish TV on Band 1 channel 4 faded out before the 2m. signals from Spain did. Ray Baker, G4SFY, (Norfolk) sent in another very neat report showing a number of Russians worked on June 8 on SSB and CW, plus tropo QSOs to LA and D. HB9HB was copied all day on the 9th but no Swiss amateurs were heard. Ray worked some GMs in XR, YQ and YR in an Ar event at 1815 on the 18th.

In order not to occupy the whole of this issue with VHF Bands material, the individual reporting of the Es events of June 8 and 30 will be summarised. Kevin Piper, G8TGM, (W. Sussex) reports 18, T9 and 9H11 QSOs on the 8th. Those making Russian contacts that day included G4TIF; Mick Cuckoo, G6ECM, (Kent); Richard Mason, G6HK5, (Cambs.); Laurie Segal, G6XLL, (London); John Lenay, G8KAX, (Essex); G8TGM and Kelvin Weaver, G4ATTU, (Gwent).

In the June affair to I and YU, those reporting QSOs include Philip Hocking, G8ZDS, (Cornwall); Roy Webb, GW3CBIY, (W. Glam.) and Reg Woolley, GW8VHI, (W. Glam.) In the later opening to Iberia, QSOs to EA and/or CT were made by G4TIF; Keith Hewitt, G6DER, (S. Yorks.); G6ECM; Gordon Emmerson, G8PN5, (Northumberland); G8TGM; Don Hughes, G8WPPL, (G. Mchstr.). Derrick Dance, G4MC4XP, (Borders) and GW8VHI.

Continuing with the individual reports on other modes, G4TIF worked 16E6LB/P (Wicklow) on June 9 and EI9Q (Waterford) on the 18th on tropo. Welcome to Paul Smith, G4T0N, from Caistor, Lincs. who enters the Annual CW Ladder. He runs a Yaesu FT -77 plus transverter with a 10-ele. Yagi. A 25ft. a.g.l. He reports good CW activity in his area, but hopes the Ladder will not be made into a kind of contest ... . No, Paul, when G4ARI suggested it, the idea was, and still is, to encourage more CW activity, especially among the newer Class A licensees.

G6DER reports on the high activity in this year's WAB Contest on June 24 in Class A licensees.

No. of different stations worked since Jan. 1.

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<th>Wave</th>
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On June 16, he worked EI4ALE/P (VN78h) in Galway and EI4FM (VM49c) in Tipperary. Counties Meath and Kildare were added in the month, also. Robert Hamer, G6NVQ, (Lancs.) worked another nine counties, plus Guernsey in June, including GM4RCN (YQ) in rarish Central Region. He asks for details of club awards to be sent to him by any club secretaries who read this column as this information seems hard to acquire.

G6XLL took part in the WAB contest and made 164 QSOs, thus adding some new squares to his tally. G8KAX runs 150w to a 9-ele. Yagi at 26ft, the new QTH in Chelmsford being 110ft. a.s.l. John has bad TVI to the southwest, though. G8PNN took part in the Practical Wireless QRP contest on June 17 which provided Gordon with 11 more counties and another country for the 1984 table. G8TGM has been using SSB MS and did not complete with HG8CE (KG) on June 7, but did with EA6FB (AY). Nil heard from YU3TS — 4th sked — Y22ML and EB7NK, but I2FAK was copied from EF on the 8th. Via tropo on the 8th, Kevin worked OZs in EQ and FQ, and DLs in EN and EO. In the 9H Falcon contest, he scored over 36,000 points.

G8WP1 now has a 17-ele. Yagi aloft and has added GM3J1J (WS) and DL5LAH (EO) for new squares. John Fitzgerald, G8JXJ was one of many who worked the 40th Anniversary of D-Day station F01MY/P on Utah Beach. Best DX on tropo on the 8th was DC4OS (EM). He heard LA1BM/M (CT47c) from 1800 for about half an hour before the Russian Es started. In the WAB contest, 70 stations were worked.

John Eden, GM6LXN, (YS2Q) from Thurso in Caithness, is a new contributor who worked many PA, D and ON stations on tropo on June 8. He points out that the distance is similar to that from the south English coast to Italy, to put it into perspective. Much of his DX-ing is via AR mode and on the 19th he worked EI8EF (VO), G3BW (YO), G4KLX (ZN), G4KUX (ZQ) and G8ECl (AN) on SSB, at QTE 35° from 1800.

G4WATTU, with GW5NF, G8TF1 and G4XVE, operated from YL24J in the Practical Wireless QRP contest, using an FT290R and 4CX250B amplifier, with 16-ele. Yagi. A 25ft. Yagi. They have been working lots of stations on CW in the B, C, D, E and F rows of squares. He is now QRV on CW MS at 800 l.p.m. and hopes to get on in the Perseids. On June 30, he completed with OK2PEW (IJ), the next day bringing completed QSOs with Y27BL/A (GL), OZ11UK (GQ) and PA3CIM/P/OE6 (HH).

Some final notes about the June 8 Es.
While more southerly stations were working into Russia, the northern ones were contacting Polish stations. Dave Dodd, G6DOX, (Cumbria) lists SP5s EPT and IWV (KM) and Neil Clarke, G8VFV, (W. Yorks.) worked SP2DDV (IN). In the period 1720-1804, GM6LXN, the most squares added were contacting Polish stations. Dave working into Russia, the northern ones also worked the Swiss station. G6HFF (BI), F1GNQ (AI), F1FDW (CG) and G1EZF mentions QSOs with F6GCT. Tropo propagation was up on June 9 and G8KAX mentions QSOs with F6DZK at 465 kms. and F1DED at 464.

F6DZK at 465 kms. and F1DED at 464.

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

**Final Miscellany**

George Haylock, G2DHV, (Kent) has a 10 GHz “EXE” dish working on a G3JVL, lightweight support. G8WPL advises that from Sept. 29 for 28 days, GB8HCC will be QRV on 2m. and 70cm. SSB. It is a special event station concerned with a new building for a Salvation Chapel Church. G8BDX has suggested the adoption of specific calling channels between 144.240 and 144.350 MHz to ease the congestion on 144.300 during flat conditions. Alex’s idea is that Midlands stations on ‘260, etc. To your scribe, this seems like a return to the old idea, in the days of crystal controlled rigs, to a zonal specific calling plan which the Short Wave Magazine invented. Readers’ comments are sought.

**Deadlines**

Quite an eventful month. With the Perseids meteor shower due to peak on Aug. 12, there is much to anticipate. The September issue deadline is Aug. 8 and the following one is Sept. 5. Please make sure to note these dates. Everything to: — "VHF Bands," SHORT WAVE MAGAZINE, 34 High Street, WELWYN, Herts. AL6 9EQ. 73 de G3FPK.
DX Antennas for the Lower Bands

AERIALS THAT WORK!

A. P. ASHTON, G3XAP

This article was prompted by a comment in "Communication and DX News" where G2BON asked for an article on low band antennas that were suitable for gardens of 150 to 200ft. He asked that the antennas described should be proven successes and not just "text book lifts".

The author has used the 160, 80 and 40-metre bands extensively for DX working from a garden somewhat smaller than the size quoted above, and has experimented with many different antenna types with some success. It is hoped that readers will accept a 1.8 MHz WAC (with 9 watts input) and 250 countries worked on 7 MHz and 180 countries worked on 3.5 MHz (with 150 watts input) as sufficient qualification for my answering G2BON's request.

Antenna Height

The point to be appreciated when considering antennas for the lower frequencies is that any antenna erected by an amateur operator is likely to be positioned at a height that is low in terms of wavelengths. As an illustration of this point, let us assume that we have a horizontal antenna which is 70ft. above the ground (and this is high in amateur terms) — this translates to A/8 on 1.8 MHz, A/4 on 3.5 MHz and A/2 on 7 MHz. To fully appreciate the significance of these heights, consideration of Fig. 1 will give an idea of the sort of radiation angles that can be expected from such an antenna. It will be noted that this antenna will radiate most of its energy straight upwards when it is used on 1.8 or 3.5 MHz, and it is only when we get up to 7 MHz that its radiation angle is becoming low enough to be of use for consistent DX working — about 30°. To achieve this 30° angle with a horizontal antenna we need to erect it at least 140ft. from the ground on 3.5 MHz, and 280ft. from the ground on 1.8 MHz. Horizontal antennas at heights lower than these will work DX, but their performance will tend to be unpredictable and they will not be consistent "DX performers".

With the possible exception of 7 MHz, therefore, we need to look for an approach other than erecting a horizontal antenna at great height in order to achieve the sort of angle of radiation consistent with reliable DX performance. One method of introducing some low angle radiation into a simple antenna is to erect a half-wave dipole in the so-called "inverted V" configuration.

Inverted-V Dipoles

A large number of successful "low band DX-ers" use the inverted-V dipole which, as its name implies, is a dipole with its centre at a height somewhat greater than its ends. Fig. 2 shows the configuration and it will be noted that it takes the form of two sloping, top-fed quarter-wave wires. Although the author has seen no published information on directivity, radiation angles, etc., for this device, he has worked with scaled down versions on 28 MHz, and various tests have indicated that maximum low angle radiation occurs in the direction of the wires; this is contrary to the conventional horizontal dipole from which maximum radiation occurs at right angles to the wire. Because the ends are brought down close to the ground and the antenna is no longer in a 'straight line' configuration, the inverted-V dipole will resonate at a lower frequency than a horizontal dipole of the same length, and will have a lower feed impedance. It is not possible to give an accurate formula for the length since this is influenced by several factors such as:

1. The angle of slope of the two halves of the antenna.
2. The mean height of the device from the ground.
3. The material from which the centre support is made.

It is suggested that the antenna should be constructed about 1 or 2% longer than would be expected for a horizontal dipole for the same frequency, and the ends trimmed until it resonates at the desired point in the band. The material from which the centre support is made is an important factor, and wood is preferable to metal for this purpose — especially if the antenna is to be fed with balanced feeder. A good compromise is to have the top 5 to 10ft. of the mast constructed from wood, the major part being of metal tubing, as this enables us to keep the twin feeder away from the metal section of the mast, and also keeps the high current (and hence the maximum radiating) section of the antenna a few feet away from the metal.

If an SWR bridge is used to "tune" the dipole, it should be realised that an indicated VSWR of 1:1 will not necessarily indicate resonance! In fact it is most unlikely that a VSWR of 1:1 will be achieved at resonance and even then only by accident. The author would recommend that a noise bridge is either built, bought, begged, borrowed or stolen for the purpose of tuning the antenna, and that VSWR's of higher than about 2:1 are dealt with by use of a matching unit at the transmitter end of the feeder. VSWR's of 2:1, or below, with a resonant antenna are of no consequence at the frequencies in question and may safely be ignored.

Invert©D-V dipole will be rather greater than the 150 - 200ft. mentioned earlier, and it may therefore be necessary to bend the ends of the dipole in order to accommodate it on the site. This is an acceptable practice but it is recommended that:

![Fig. 1 Vertical Plane radiation patterns for horizontal half wave antennae at various heights.](image)
Performance, the vertical tested being successively base, centre
ago the author carried out a very extensive investigation into the
inductance somewhere along the antenna's length. Some years
lengths of less than a quarter-wave in order to obtain resonance,
finishing up with an inverted-L! This technique was covered in
a previous article, and a typical inverted-L antenna is depicted in
Fig. 4; this antenna can also be 'extended' in the same way as that
discussed with the vertical in order to improve feeder VSWR and
raise the point of maximum current some distance from the
ground. Using antennas of this type, the author obtained a 1.8
MHz with a genuine 9 watts DC input, details being described in
two separate articles.

The author uses a vertical section constructed of suitably guyed
2in. diameter scaffold pole with the loading wire consisting of
heavy gauge, multi-strand, PVC insulated wire, the length of this
wire being trimmed to achieve resonance. (With 'extended'
devices, the variable capacitor is adjusted to achieve resonance).
For the self-resonant device, the combined length of the vertical
plus the loading wire should be around 70ft. for 3.5 MHz and
140ft. for 1.8 MHz — these lengths are somewhat greater than are
required for a pure quarter-wave vertical, the extra length being
necessitated by the capacitance that exists between the vertical
section and the loading wire. With the 'extended' inverted-L's the
total length should be 79ft. for 3.5 MHz and 158ft. for 1.8 MHz if
50-ohm feeder is used, and 88ft. and 176ft. for a 75-ohm system.

It is stressed that the constructor should strive to make the vertical
section of the antenna as long as possible (although having said
this, a PY station was worked from G3XAP with a self-resonant
inverted-L on 1.8 MHz the vertical section of which was only 35ft.
— the report received by G3XAP was 579 with 9 watts input!) The
author can practically guarantee good results on 1.8 or 3.5
MHz with inverted-L antennas of the type described, provided
that the reader accepts two things. Firstly, the fact that a vertical
or inverted-L antenna will tend to be very noisy on reception
because much man-made RF noise tends to be vertically polarised
and such noise seems to abound on residential sites. It may often
be found that although the vertical will almost certainly radiate a
far stronger signal to DX locations than a low, horizontally
polarised antenna, the latter device may sometimes receive DX
signals better since it will often pick up far less noise than a vertical
and, although the received DX signal will be weaker on the
horizontal device, the signal to noise ratio may be far higher. The
second point that must be appreciated by the reader is of far
greater significance, and this is that unless he is prepared to
provide a good earth system for his vertical or inverted-L antenna
he is, quite frankly, wasting his time! A potentially superb DX
antenna can be rendered practically useless by failure to recognise
this requirement, and the author is convinced that the vast
majority of complaints regarding poor performance by vertical
antennas are a reflection on the ground system used rather than the
vertical itself.

The purpose of the ground system is twofold — it provides a
'return circuit' for the RF current we are feeding into the antenna
and it also provides a 'reflective mat' for radiation that is directed
and top loaded. However, the results showed that inductive
loading of vertical antennas yielded results that were always
poorer than those obtained by a technique which the author
chooses to refer to as 'linear loading'. Basically, this technique
involves taking the antenna vertically upwards for the greatest
possible length and then continuing in another direction —
Fig. 2 The 'Inverted-V' Dipole

(1) Both legs of the dipole are bent at the same point and to the
same angle in order to maintain symmetry.
(2) Rather than bend the ends 'inwards' to run directly under
the main part of the antenna, they should be bent to run at 90°
to the antenna's main direction — this will prevent the reflection
of radiation upwards at very high angles.

Vertical Antennas

At the sort of height that the average amateur is able to erect his
low band antenna, perhaps the most effective way to obtain
radiation at reasonably low angles is to use a vertical antenna, or
one that has its high current portion in a vertical rather than a
horizontal portion of the device. At 7 MHz, a quarter-wave
vertical antenna poses no great constructional problems, being
only 33ft. in height, but with 3.5 and 1.8 MHz the situation is not
quite so straightforward, quarter-wave devices being respectively
66 and 135ft. in height!

Considering 7 MHz first, as it is not too difficult to erect
verticals of lengths more than 33ft., it is recommended that
consideration be given to making the antenna slightly over a
quarter-wave in length. This has two effects: firstly, it raises the
area of maximum current up slightly from the ground and,
secondly, it raises the feed impedance — and by picking the
correct length, an impedance of 50 or 75 ohms can be achieved,
making a perfect match for our coaxial feeder. Because such an
'extended' vertical will no longer be resonant, we must insert a
variable capacitor in series with the feeder; this removes the
reactance and restores the system to a resonant condition. Fig. 3
shows the antenna which, for a 50-ohm feed impedance requires a
length of 37ft. 6ins., and for 75-ohms, 41ft. 6ins. The variable
capacitor should be about 200 to 250PF maximum value, and,
since we are in a low impedance area of the antenna, very wide-
spaced devices are not normally required, although flash-over
may be experienced with very close-spaced components.

Resonating the antenna is simple since it is practicable to insert
an SWR bridge right at the feed point and false readings due to the
effect of the feeder will not be obtained. The variable capacitor is
adjusted until a minimum VSWR is achieved, and the author has
found that with the antenna lengths quoted, VSWR's of below
1.2:1 are always obtained. If a high voltage variable is not
available, the resonating can be carried out with low power and a
close-spaced capacitor, the capacitance required for resonance
then being measured; this value is provided by making up a
combination of high voltage ceramic or mica capacitors which are
then fastened permanently into position and waterproofed.

With verticals for 1.8 or 3.5 MHz, we can consider loading
lengths of less than a quarter-wave in order to obtain resonance,
and the most common method employed is to insert an
inductance somewhere along the antenna's length. Some years
ago the author carried out a very extensive investigation into the
effects that a loading coil had on a vertical antenna's
performance, the vertical tested being successively base, centre

Fig. 3 An "extended" vertical antenna for 7 MHz

Variable capacitor
Coaxial feeder
Ground system

Height = 37° 6' for 50 ohm feed
41° 6' for 75 ohm feed

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The G3XAP Directional Antenna

The author has also spent some time trying to develop an antenna for the lower bands which displays some directivity and gain and he has described a device that achieves this\(^4\)\(^-\)\(^5\). Basically this antenna is an inverted-L, but instead of having a total length which resonates the device as a quarter-wave, it is a three-quarter wave, and considerable DX gain is achieved in the direction indicated in Fig. 6. The loading wire should slope away from the vertical section, and it is the interaction between the radiation from this 'top fed sloping wire' and from the vertical which gives the antenna its directivity. On 1.8 MHz the device will be somewhat too large for most locations, but it is a possibility on 3.5 MHz for those amateurs who have an available span of around 140 to 150ft. For 7 MHz the vertical section should be around 35ft, because if the sloping wire is reduced to much under a half-wave in length, directivity and DX gain appear to suffer.

The first prototype of this antenna was constructed for 3.5 MHz and had a vertical section of 60ft. — the sloping wire thus being a little over a half-wave in length, and the first QSO was with a station in Malta on SSB. The Maltese station was working G stations with signal reports varying between 5—6 and 5—9. At first the Maltese operator believed G3XAP to be a pirate operating close to him because the G3XAP signal was holding his 

'S' meter needle "on the pin" at S9 + 50dB! Many W stations were also worked, G3XAP's poorest signal report being an S7 from a station in W0 — the power used for these contacts was around 150 watts p.e.p. input. It was necessary, however, to change the direction of the sloping wire in order to "point it" in the direction of interest, and this is a disadvantage of the device since, on most sites, the antenna would need to be erected as a unidirectional device. Fortunately the author had the required space, and over 100 countries were worked on 3.5 MHz in under two weeks! On 7 MHz the antenna will be more easily accommodated and any reader wishing for consistent DX results on this band will find the device to be very potent!

Because this antenna is resonated as a three-quarter wave rather than a quarter-wave, its feed impedance is somewhat higher and when resonated it will be found that the VSWR on a 50-ohm feeder will be very low — the prototype discussed above was about 1.15:1.

Loop Antennas

Perusal of the standard texts shows that one method of lowering angles of radiation from horizontal antennas is to "stack" them vertically one above the other, but a disadvantage of this approach is that feeding them can be difficult. The feed impedances of two stacked dipoles close to the ground will differ considerably which means that unless we insert matching devices at their feed-points, we will supply different amounts of power to each antenna and this can detract from the desired vertical plane radiation pattern. However, if we stack two half-wave dipoles...
vertical, a quarter-wave apart, and bend their ends so that they meet, we end up with a square, each side being a quarter-wave in length — Fig. 7 shows this technique. Since it is the low current portions of the two half-waves which were bent, the actual distortion which the bending introduces into the radiation pattern is minimised and we have the advantage of now having only one feed point to consider. The square is better known as the Quad Loop, and when such a device is used at low heights, the angle of its major radiation lobes is somewhat lower than those of a single half-wave horizontal antenna erected at the same height. However, when we are considering the lower frequencies, sheer size once again becomes a problem and compromise is usually necessary, although on 7 MHz the problem is less acute since it is possible to mount the top horizontal wire at a height of 40ft. and still have the bottom wire reasonably clear of the ground.

The device is usually supported by ropes secured to appropriate support points, and a suitable method is seen in Fig. 8. With 3.5 and 1.8 MHz the ideal square shape usually has to be dispensed with and the loop will take the form of a rectangle with its horizontal sides somewhat longer than its vertical sides, but, provided that the total length of wire is kept to a wavelength, the antenna still functions well and will be superior to a single horizontal half-wave device. The length of wire required for loop antennas is 143ft. for 7 MHz, 280ft. for 3.5 MHz and 560ft. for 1.8 MHz. The author has direct experience of a 3.5 MHz loop antenna which had vertical sides of 40ft. and horizontals of 100ft., the bottom wire being only about 5ft. from the ground, and he can say that with regard to the working of DX stations it was superb!

It has the advantage over a vertical or inverted-L of being a very “quiet” antenna on reception, but has the disadvantage of being bidirectional and displays very deep nulls in the two directions in the plane of the vertical wires, maximum radiation being through the plane of the loop — i.e. vertically into and out of the page in Fig. 8. It also has the very significant advantage of not requiring a ground system (although, of course, any HF antenna is influenced by the conductivity of the ground over which it is mounted). A full-wave loop antenna has a feed impedance of between 80 and 140 ohms, the actual figure being influenced by the height at which it is erected, the conductivity of the ground beneath it and the ratio of lengths of horizontal and vertical sides (its Aspect Ratio). For no-compromise results, an open wire feeder is recommended, with a suitable matching unit in the stack capable of dealing with twin feeder, and this method has the advantage that the loop can be used on any band in much the same way as a dipole with open wire feeder. Coaxial feed should be avoided unless a balun and a matching unit are fitted at the feed point.

A compromise feed method for single band operation is to assume that the feed impedance is around 110 ohms (mid way between the two figures quoted above) and to use a quarter-wave of twin feeder which will transform the impedance down to 51 ohms at its input end (the twin feeder used being 75-ohm). A 1:1 balun can be inserted at the input end of the twin feeder, enabling 50-ohm coaxial cable to run from here to the transmitter/receiver. This was the system used on the 3.5 MHz loop mentioned above, and the VSWR on the 50-ohm coax was about 1.5:1, which is insignificant. 75-ohm twin feeder has a Velocity Factor of 0.66 to 0.75, depending on its type, which means that a quarter-wave transformer will be up to 25ft. long on 7 MHz, 50ft. on 3.5 MHz and 100ft. on 1.8 MHz; this last figure may be too long to make this approach of value on 1.8 MHz, and an alternative may need to be found.

**Sloping Antennas**

Much success has been achieved on the lower frequencies using sloping antennas, and many outstanding signals from North America are a result of this technique. The directional antenna mentioned earlier can be described as a "top fed sloping wire fed by a vertical section", and the author has noted that if the loading wire is horizontal rather than sloping, the gain disappears! An inverted-V dipole can similarly be described as "two top fed sloping quarter-waves", and it is known that low angle radiation occurs in the direction of the slope with antennas of this type. It is not unreasonable to assume, therefore, that the action of sloping a wire does give rise to radiation at angles somewhat lower than those achieved with horizontal antennas erected at the same height. Some experimental work has been carried out on sloping dipoles for 28 MHz at G3XAP, these antennas being compared at DX with both quarter-wave ground mounted verticals, and horizontal half-wave dipoles. As with any HF antenna comparison, results were not conclusive, but indicated that for DX working results from the "slopers" lay somewhere between the results for the other two types. Therefore if the reader is deterred by the amount of spade work necessary to provide a decent ground system for a vertical or inverted-L, the sloper does provide a good alternative, although, as with some of the other devices discussed, it does have the disadvantage of being substantially unidirectional in terms of low angle radiation.

An ideal angle for a sloping antenna is about 45°, but this instantly poses problems in that if the antenna is a half-wave dipole, this necessitates a mast 47ft. tall for a 7 MHz device, 95ft. tall for 3.5 MHz and 190ft. for 1.8 MHz. However, acceptable results will be achieved even if a shallow slope is all that can be obtained, but the obvious rule is to support the antenna at as a great a height as possible. A 1.8 MHz sloping dipole used by the author was supported on a 60ft. mast and sloping towards W/VE and many transatlantic QSOS were made with competitive ease; this probably would not have been the case had the antenna been a horizontal half-wave dipole at 60ft.

**Summary**

It is apparent that although it is possible to construct antennas for DX work on the lower bands, they often need to be compromised because of their physical size, although this obviously applies less to 7 MHz than it does to 3.5 and 1.8 MHz. In terms of actual results achieved the author favours vertical or inverted-L antennas partly because they are substantially
omnidirectional, but also because he has had considerably more success with antennas of this type than with the others discussed. The need to provide an efficient ground system is a disadvantage, as is the fact that such antennas can be incredibly noisy for reception.

Antennas of the dipole and loop type are quieter on reception, do not require extensive ground systems and have electrical efficiencies somewhat higher than those normally achieved with verticals. G2BON’s request in "CDXN" was for ‘proven successes’ — G3XAP has worked DX with all of the types discussed above and each is, therefore, a proven success in that sense of the word, but it is up to each individual to weigh up the pros and cons of each device in order to choose the one that suits him best.

The only thing that the author can guarantee is that no matter which antenna is chosen, its construction and evaluation will provide much enjoyment, much frustration and, more important, much knowledge. "The best school is the deep end".

References:

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Windspeed to Wind Force
AN AID TO CHOOSING A BEAM AND ROTATOR
D. J. REYNOLDS, G3ZPF

This article is effectively a continuation of the one in the June 1984 issue of "S.W.M.", entitled "Assessment of Local Windspeed".
It is assumed that the reader has already read that article, and has a copy to hand.

Wind Loads for Any Speed

As previously stated, from determination of local windspeed for a specified QTH it is possible with the further guidance of CP3: Chap. 5: Part 2 (henceforth referred to as the "Code") to convert said wind speed into a force. At first glance this might be thought only to be of use to those actually building their own tower, but in fact the information can be of use to the rush-out-and-buy-one brigade too.

Aerials are often advertised as having a certain windload at a stated windspeed, which is fine if that coincides with the local windspeed at your QTH, but what if it does not? If you are lucky the 'wind area' will also be stated, from which it will be possible to determine wind load at any speed. If you are not so lucky then you will have to work it out from the lengths and the diameters of the elements, which is a relatively simple task given that the dimensions are stated.

Although this article will primarily be concerned with the wind loads on beam elements, the procedures are directly applicable to tubular towers too. Applying the techniques to lattice masts is not so easy, but fortunately most towers used in this country are made in this country, so the makers should be able to advise you of the headload of their towers for any windspeed . If they can't/won't then go elsewhere; and the author does not think it likely that homebrew towers will be of the lattice type, as tubular ones are so much easier to fabricate with limited facilities for the heights likely to be attained by most amateurs.

With aerials the story is quite different, as most of them are not made in this country, and the importers may have little or no information on their strength other than that quoted in the sales literature. With the vast majority of verticals (which can also be checked out simply) information is often limited to "does not require guys for most situations", which hardly inspires confidence.

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Fig. 1 CONVERSION CHART FOR WIND SPEED AND DYNAMIC PRESSURE
Fig. 2. Airflow around circular section, showing wake in sub-critical flow conditions. Fig. 2b, as Fig. 2a but showing super-critical flow conditions. Note the reduced width of the wake and the shift in position of the separation point.

Dynamic Wind Pressure

Section 6 of the Code gives the formula for deriving wind pressure from windspeed as:

\[ q = k \times V^2 \]

where \( q \) is the wind pressure, \( V \) is the design windspeed, and \( k \) is a coefficient whose value is as follows:

- \( k = 0.613 \) in S.I. units (i.e. \( V \) in metres/sec and \( q \) in Newtons/m²)
- \( k = 0.0625 \) in technical units (i.e. \( V \) in m/s and \( q \) in kgf/m²)
- \( k = 0.00256 \) in imperial units (i.e. \( V \) in mph and \( q \) in lbf/ft²)

Fortunately for those without a mathematical bent, Fig. 1 gives a graphical interpretation of the above formula for each set of units and is taken from the Code.

We have already determined \( q \), and \( A_c \) will be relatively straightforward to derive, being dependent on tube length and diameter, but what about this \( C_f \)?

For most shapes the force coefficient would be defined as a constant over the whole range of windspeeds, but for circular sections it will vary depending on the way that the wind flows around it. For the sake of simplicity it will be convenient to take the worst case of \( C_f \), which comes out as a figure of 1.2, although some readers may prefer to use the graph in appendix G of the Code.

The variation in force coefficient, for those who like technicalities, is all to do with a non-dimensional parameter called the Reynolds number (no relation) which is derived from the velocity and kinematic viscosity of the wind. So there! To try and explain in a non-technical way, consider Fig. 2a and Fig. 2b which show the ‘wake’ of the airstream around a circular section at low and high windspeeds. At low speeds the wake is broad \((d_w)\) and the point at which the airstream "breaks" from the section is toward the front(s); but above what is termed the critical speed, the wake narrows dramatically, and the separation point moves around to the rear of the section. The critical speed is dependent upon the windspeed, the diameter of the section, and the smoothness of the section’s surface. At the critical speed the force coefficient drops sharply, corresponding to the dip in the graph shown in the Code, and then starts to rise again.

Consider Fig. 3 which shows the plan view of a 3-ele monoband HF beam, together with a section parallel to the boom. The effective wind area

The figure of 1.2 for \( C_f \) is for a circular section of infinite length, and to allow for ‘end-effect’ of sections of finite length yet another coefficient is needed, although fortunately the length-to-diameter ratios of most elements mean that it can be taken as 1.
Fig. 6. It is good practice to 'cage' a rotator, especially if there is a significant height between the rotator and aerial. On lattice masts there is usually a flat top to fix the cage to, but on tubular masts a double-cage is needed to stabilise the assembly.

Proportions have been exaggerated to aid clarity. With the wind broadside onto the elements, the wind area will be $D \times L$ for each element, giving a total wind area of $3 \times D \times L$ for the entire array. Purists will scream that this will only be true of HF arrays where the large physical separation of the elements prevents the upwind one partially shielding the others. For VHF arrays accurate information is often available, and even if the windload at one windspeed is quoted it is possible to “backtrack” mathematically to find effective area and hence windload at any speed.

No mention has been made of traps, which are inevitably of a larger diameter than the element, but it is a simple matter to allow for these, as shown in Fig. 4, which represents half of one element with a trap part-way along. The total area for a 3-ele array would thus be: $6(L_1 \times D_1) + (L_2 \times D_2) + (L_3 \times D_3)$.

In practice, each element in an HF array will be slightly different in length, so the more fastidious may wish to work each out separately, and then add the results.

**Torque on Rotators**

The foregoing gives the required windload for only two out of the three conditions that must be met, namely that of the load at the head of the tower, and the overturning moment on the body of a ‘free’ rotator (Fig. 5). The third case to be considered is the required torque resistance of a rotator, but before moving onto that it seems a suitable point to warn against mounting a rotator as shown in Fig. 5. It is better to take the trouble to use a ‘cage’ to take out any overturning moment on your rotator; the slight extra cost involved in using a cage will be far less than replacing rotators which have their bearings worn, or cases cracked from excessive overturning moments. Manufacturers often quote a ‘safe’ overturning moment, but it is far better to have none at all if you wish to use your rotator for any length of time. See Fig. 6.

With wind force on the entire array, any twisting effect will be balanced, assuming the array is supported at its centre of gravity, but it is necessary to consider the case of the ‘edge’ of a wind gust catching just half of the array (Fig. 7). In the case of long boom VHF/UHF arrays, Fig. 8 might be a worse case.

Fig. 7. When the wind force acts over all the aerial, any twisting force on the rotator is effectively zero. To obtain the maximum twist effect consider the case where the edge of the wind gust loads half the aerial, as shown. Multiply the windload on half the aerial by a quarter of an element length to find the torque on the rotator.

Fig. 8. With long boom VHF/UHF arrays, the sideload on the boom plus any boom support arms may be the worst case.
Summary of Procedure

In case readers are feeling rather lost in coefficients, the design procedure is outlined below, including the initial determination of local windspeed, for which you will need the previous article.

1) Determine Basic Windspeed from the map shown in the previous article, for your particular QTH. Interpolate between the wind speed contours where necessary.

2) Multiply by the Topography Factor which you get from Table 1 in the previous article.

3) Multiply by the Ground Roughness/Height Factor obtained from Fig. 2 in the previous article, and the resulting figure is the "Design Wind Speed" for your QTH.

4) Determine the Dynamic Wind Pressure from \( q = kV^2 \), taking care with your units, or read it off Fig. 1 from this article.

5) Calculate the Effective Area for both 'full load' and torque conditions, as shown previously.

6) Obtain the Wind Force from \( F = C_f \times A_e \times q \) using a figure of 1.2 for \( C_f \), unless you have a copy of the Code and are happy with maths.

7) Determine Torque Moments by multiplying the wind force by the distance from the centre of the rotator to the line of action of force.

Going Further

From the information determined so far, it is possible to find the speed at which the elements of a beam, or the stem of a vertical will collapse. This involves knowing the diameter and wall thickness together with the tensile properties of the material used. At this point the information is of use to those designing their own mast beam, or vertical, but in cases where the only information is available from Fig. 1 or 2 in the previous article, the resulting figure is the "Design Wind Speed" for your QTH.

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7) Determine Torque Moments by multiplying the wind force by the distance from the centre of the rotator to the line of action of force.

Conclusion

Hopefully readers will find help rather than confusion here, and an insight into what to ask about when choosing a substantial equipment. This involves knowing the diameter and wall thickness together with the tensile properties of the material used. At this point the information is of use to those designing their own mast beam, or vertical, but in cases where the only information is that a vertical "should not require guys in most cases" it would still be of help to purchasers of commercial equipment. As it involves an introduction to section properties, bending moments, and another Code of Practice it will have to wait for a subsequent article.

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AN UP-DATE ON THE NEW RUSSIAN CALLSIGNS

N. S. CAWTHORNE, G3TXF

On May 1st, 1984, there was a quiet revolution in Russia. A new amateur radio callsign system was introduced. The April issue of S.W.M. carried an article describing oblast hunting and explaining how to identify oblasts (administrative regions) from Russian callsigns.

This follow-up article is to update the information given in the April issue and to bring it into line with the new USSR callsign structure that has been in operation since 1st May 1984.

Club Calls

The most significant change is the abolition of the UK prefix for club stations, which was introduced in the early seventies to identify all club stations. From 1st May club stations are identified by two means. Where the last two letters of a three-letter suffix are in the series WA-ZZ, then the station is a club station; individual stations with three-letter suffixes will have the last two letters in the series AA-VZ. This sounds complicated, but it is very easy to get used to!

The second method of identifying a club call applies only to the Russian SFSR, which consists of the areas commonly known as UA1, UA2, UA3, UA4, UA6, UA9 and UAO. In these areas club stations will also be recognizable by their UZ prefix. The well-known contest station UK9AAN is now UZ9AYA. The immediate advantage of abolishing the UK prefix for club stations is that the republic of the club station is now more easily recognized. Previously with clubs using the UK, UK6, UK7 and UK8 prefixes it was necessary to “decode” the oblast identifier before being able to say which republic the club station was in. For example, with the club station UK8QAC, the oblast identifier “8Q” had to be used to determine that this club station was in UM8. With the abolition of the UK prefix, this will no longer be necessary, because “M” will form part of the club call prefix.

Prefix Change

As well as the UK prefix for clubs, the novice prefixes of EY and EZ that could until recently be heard on 160m, have also been abolished. There is now a new wider ranging set of normal prefixes for all of the republics other than the Russian SFSR referred to above. The first letter R as well as U will now be in regular use, and no longer restricted to 1.8 MHz/2.8 MHz/VHF licenses and special calls as was the case in the past. Individual calls like RA3DX and RC2AA are now being heard regularly on the bands.

Republic Identification

Table 1 lists the key letter that is used to identify the republic. The key letter is always the second letter of the callsign, no matter whether the first letter is a U or an R; both RC2AA and UC1AWZ are in the Byelo-Russian republic. The significant change to note here is that the number in the callsign no longer has any significance in identifying the republic. As seen from Table the second letter B or T identifies the Ukraine; thus RB7GA is in the Ukraine. The “7” in this call is not significant as a republic identification. The writer stumbled across this station in the recent

<table>
<thead>
<tr>
<th>Identifying Letter</th>
<th>USSR Republic</th>
<th>Formerly</th>
<th>Examples of callsigns</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-N-Y-W-Z</td>
<td>Russian SFSR</td>
<td>UA1-2:3-4</td>
<td>RA3DX, UN1NA, RW3DA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>UA6-9-0</td>
<td>UZ6HWW, RV9FF, UAO0L</td>
</tr>
<tr>
<td>B-T-Y</td>
<td>Ukraine</td>
<td>UB5</td>
<td>UT4UI, RT5UB, RB7GA</td>
</tr>
<tr>
<td>C</td>
<td>Byelo-Russia</td>
<td>UC2</td>
<td>RC2AA, UC1AWZ</td>
</tr>
<tr>
<td>D</td>
<td>Azerbaijan</td>
<td>UD6</td>
<td>UD6DHC, UD7DWZ, UD6DFY</td>
</tr>
<tr>
<td>F</td>
<td>Georgia</td>
<td>UF6</td>
<td>UF6CR, UF6QQ</td>
</tr>
<tr>
<td>G</td>
<td>Armenia</td>
<td>UG6</td>
<td>UG6GDR, UG6GAE</td>
</tr>
<tr>
<td>H</td>
<td>Turkoman</td>
<td>UI18</td>
<td>UH8EWW</td>
</tr>
<tr>
<td>I</td>
<td>Uzbek</td>
<td>UI8</td>
<td>U18SAI, U18IBB, U19AWX</td>
</tr>
<tr>
<td>J</td>
<td>Tadzhik</td>
<td>UJ8</td>
<td>U18JAS, UJ8AS</td>
</tr>
<tr>
<td>K</td>
<td>Kazakh</td>
<td>UL7</td>
<td>UL7FWW, UL8GGW, RL8PYL</td>
</tr>
<tr>
<td>L</td>
<td>Kirghiz</td>
<td>UM8</td>
<td>UM8MAH, UM9QWC</td>
</tr>
<tr>
<td>M</td>
<td>Moldavia</td>
<td>UO5</td>
<td>UO5OB, UO5OCI, UO5OGR</td>
</tr>
<tr>
<td>P</td>
<td>Lithuania</td>
<td>UP2</td>
<td>UP1BZA, UP1BWO, UP2BEX</td>
</tr>
<tr>
<td>Q</td>
<td>Latvia</td>
<td>UQ2</td>
<td>UQ1GWE, UQ2GDR, UQ2ON</td>
</tr>
<tr>
<td>R</td>
<td>Estonia</td>
<td>UR2</td>
<td>UR1RWX, UR2RJJ, UR2RND</td>
</tr>
</tbody>
</table>

Table 1. Under the new USSR callsign system it is the second letter of the callsign that is used to identify the republic. This now applies equally to club stations as well as to individual stations. Except for the Russian SFSR, the number in the callsign is no longer significant for identification of the republic.
Table 2. List of the reallocated oblasts 184 and 185 and the new oblasts 186-191. The six new oblasts are city areas within previous oblast areas as identified above. The original oblasts from which the city oblasts came are still separate oblasts. Six existing oblasts have now each been split into two. See text for an explanation of how the oblast-identifier now works.

<table>
<thead>
<tr>
<th>New Oblast</th>
<th>Oblast Identifier</th>
<th>Oblast Location</th>
<th>Previously part of Oblast</th>
</tr>
</thead>
<tbody>
<tr>
<td>184</td>
<td>UI-Q</td>
<td>Navoy</td>
<td>UI8LN — reallocated</td>
</tr>
<tr>
<td>185</td>
<td>UM-T</td>
<td>Talas</td>
<td>UMBPN — reallocated</td>
</tr>
<tr>
<td>186</td>
<td>UT-U</td>
<td>Kiev city</td>
<td>065 UB5U now UB-U</td>
</tr>
<tr>
<td>187</td>
<td>UT-J</td>
<td>Sevastopol city</td>
<td>067 UB5J now UB-J</td>
</tr>
<tr>
<td>188</td>
<td>UC-A</td>
<td>Minsk city</td>
<td>009 ex-UC2A now UC-C</td>
</tr>
<tr>
<td>189</td>
<td>UI-A</td>
<td>Tashkent city</td>
<td>053 ex-U18A now UI-B</td>
</tr>
<tr>
<td>190</td>
<td>UL-G</td>
<td>Alma Ata city</td>
<td>018 ex-UL7G now UL-Q</td>
</tr>
<tr>
<td>191</td>
<td>UH-A</td>
<td>Ashkabad city</td>
<td>043 UH8H now UH-H</td>
</tr>
</tbody>
</table>

CQ-M contest, and was convinced for some while that it was an UL7, even though the oblast number sent was an UB5 oblast!

Under the new system it is important to remember that apart from the Russian SFSR the number in the callsign no longer has any significance as a republic identifier.

The advantage of this new system is that it releases a large number of potential new callsigns. In the course of time we shall probably be hearing all the prefixes in the ranges RBI-RBO and UB1-UB0 just from the Ukraine alone!

**Oblast Identification**

The basic oblast identification system has not changed significantly, but there are several points that should be noted.

For all republics other than Russian SFSR (UA1, UA2, UA3, UA4, UA6, UA9, UA0) it is now the letter before the number and the first letter after the number in the call that together positively identify the oblast. Previously it was the number in the callsign and the first letter of the callsign after the number. See Table 1 on page 88 of April Short Wave Magazine.

For the Russian SFSR it is still the number in the callsign (i.e. 1, 2, 3, 4, 6, 9 or 0) in combination with the first letter of the suffix that identifies the oblast. For example UA1NA is still identified as being in oblast 136 from the “1N” combination in the callsign.

**New Oblasts**

Six new oblasts have been created and two deleted under the new system. The new oblasts created are all city areas, where the amateur radio population is probably outgrowing the callsign blocks available.

The six cities involved are Kiev in the Ukraine (UB5), Sevastopol in the Crimea (UB5), Minsk in Byelo-Russia (UC2), Tashkent in Uzbek (UI8), Alma-Ata in Kazakh (UL7) and Ashkabad in Turkoman (UH8). The new oblast numbers for these cities are shown in Table 2.

The Arctic and Antarctic oblasts of 171 and 172 have now been deleted.

The highest oblast number is now 191. There are a total of seven deletions (11, 32, 35, 61, 65, 171 and 172), which leaves a total of 184 current oblasts.

**Old-Time Callsigns**

The older individual callsigns have not been changed. UI8BI, regularly heard in contests was in oblast 053, but is now in the new Tashkent city oblast of 189. These older callsigns were not always immediately identifiable as to oblast under the old system and are still not under the new. Many new two-letter individual calls using both the U and the R first letter have appeared on the bands over the past few weeks since the introduction of the new callsign system. The newly issued two-letter individual calls do appear to be “oblast identifiable”.

**Oblasts 184 and 185**

The very rare callsigns 184 and 185 have been allocated new callsign blocks as shown in Table 2. Previously both these oblasts shared oblast identification letters with other oblasts.

**CQ-M Contest**

The CQ-M Contest held annually on the second weekend in May was a very lively affair this year, with all the new Russian callsigns and prefixes coming on the air en masse for the first time. Operating as G3TXF on CW for 21 hours of the 24-hour multimode contest, 116 different oblasts were contacted including five of the six new ones. Most of the new callsign examples in Table 2 were those heard during this year’s CQ-M contest.

**Acknowledgements**

Data to produce this up-date was drawn from various sources including the RSGB’s DX Newsheet, K1KT’s USSR Tidbits, Geoff Watts as well as from some of the USSR stations contacted during the recent CQ-M Contest.
The "Dover" Frequency Meter, Part 1

A 100 Hz TO 600 MHz COUNTER WITH READY-MADE PCB'S AVAILABLE IF REQUIRED

IAN KEYSER, G3R00

When it was decided that a frequency counter would be the club project, I, as usual, put my big foot in it and suggested that I constructed the prototype. After several discussion periods a basic outline of what was required evolved. The final (loose) specification was for a 100 Hz to 600 MHz counter with commercially produced PCB's to make construction as simple as possible. Also to this end, design could be a little more complex to reduce the 'off PCB' wiring to a minimum.

A feature that is lacking in many designs, especially in the lower price bracket, is full decimal point placing, meaning that there is a decimal point every three figures and these points shift to suit the prescaler range and timebase gate period in use. This feature has not only the advantage of easy readability, but means that switching is far simpler avoiding mistakes and expensive, complicated switches.

The Prescaler/Counter PCB

This board contains all the counting and prescaling circuitry and therefore can be used as a counter in its own right. The counter section of the circuit uses the famous 10 MHz chip from Intersil, the 7216C. Anyone wishing to have more information on this device should obtain a copy of the data sheet from Intersil or

Table of Values

<table>
<thead>
<tr>
<th>Component</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1, R8, R17, R19, R20</td>
<td>10K, 1/4w</td>
</tr>
<tr>
<td>R2</td>
<td>1M, 1/4w</td>
</tr>
<tr>
<td>R3, R6, R7</td>
<td>1/4w</td>
</tr>
<tr>
<td>R9, R11, R15</td>
<td>470R, 1/4w</td>
</tr>
<tr>
<td>R4</td>
<td>68R, 1/4w</td>
</tr>
<tr>
<td>R5</td>
<td>2K7, 1/4w</td>
</tr>
<tr>
<td>R10</td>
<td>10R, 1/4w</td>
</tr>
<tr>
<td>R12</td>
<td>680R, 1/4w</td>
</tr>
<tr>
<td>R13</td>
<td>150R, 1/4w</td>
</tr>
<tr>
<td>R14</td>
<td>100R, 1/4w</td>
</tr>
<tr>
<td>R16</td>
<td>100K, 1/4w</td>
</tr>
<tr>
<td>R18</td>
<td>22M, 1/4w (2 x 10M suitable)</td>
</tr>
<tr>
<td>C1, C2, C5 to C15, C17</td>
<td>0.01 µF cer. plate</td>
</tr>
<tr>
<td>C3</td>
<td>22 µF tant. bead</td>
</tr>
<tr>
<td>C4</td>
<td>22 pF cer. disc</td>
</tr>
<tr>
<td>C6</td>
<td>22 µF tant. bead</td>
</tr>
<tr>
<td>C16</td>
<td>39 pF cer. disc</td>
</tr>
<tr>
<td>C18, C19</td>
<td>68 pF cer. disc</td>
</tr>
<tr>
<td>C20</td>
<td>1000 µF, 15V elec.</td>
</tr>
<tr>
<td>CV1</td>
<td>3-50 pF min. var.</td>
</tr>
<tr>
<td>X1</td>
<td>HC25 or HC18</td>
</tr>
<tr>
<td>TR1</td>
<td>2N3819</td>
</tr>
<tr>
<td>TR2, TR3</td>
<td>BSX20</td>
</tr>
<tr>
<td>IC1</td>
<td>7404</td>
</tr>
<tr>
<td>IC2, IC3</td>
<td>74H00</td>
</tr>
<tr>
<td>IC4</td>
<td>RS8680B</td>
</tr>
<tr>
<td>IC5</td>
<td>74LS196</td>
</tr>
<tr>
<td>IC6</td>
<td>7420</td>
</tr>
<tr>
<td>IC7</td>
<td>1CM7216C</td>
</tr>
<tr>
<td>D1 to D5</td>
<td>1N4148</td>
</tr>
<tr>
<td>Display</td>
<td>two RS 587-024</td>
</tr>
</tbody>
</table>

When designing a frequency meter, it is important to consider both commercial and custom elements. The choice of components should be made with care to ensure reliability and ease of use. This design, with its focus on simplicity and readability, represents a valuable contribution to the field of frequency measurement.
from one of the suppliers, as it is far too extensive to cover in this article.

Fig. 1 shows the input circuit plus the logic control circuitry to steer the outputs from the amplifiers/dividers to the output of the prescaler section on the junction of R10 and C4; this output is fed to the input of the 7216C counter.
This design could have been simplified somewhat, but in doing so would have increased the complexity of the 'off PCB' wiring. There are two inputs, one common for the LF and HF inputs, and the second for the VHF input. On the club models these have been switched onto one socket, but to avoid this two sockets could be included on the front panel instead. For this description we will trace through the LF/HF input first and then follow with the VHF input.

The incoming signal (100 Hz to 30 MHz minimum) is fed via the protection circuitry of R1, C1, D1 and D2 to the gate of the input amplifier. This is a source follower to enable a high input impedance, and to match to the input of the amplifier TR2. The amplifier signal is fed to one section of a HEX inverter (IC1, 7405) for further amplification and then into two other stages for signal shaping. The signal is now TTL compatible and can be fed into TTL gates.

A word about NAND gates for those who do not understand them. In simple words they are building blocks with two inputs in a high, or logic 1 state (near the supply voltage), and the output is normally in a low, or logic 0 state. If either input is pulled to a logic 0 state the output will change to a logic 1 state; when this has occurred it does not matter what happens to the other input. In other words, the output will only be in logic 0 state when both inputs are at logic 1.

If we feed the signal from the input amplifier into one input of a NAND gate and keep the other input in logic 1, the signal will appear at the output but inverted. If the unused input is then taken to logic 0 the output will be held in a logic 1 state and the signal will disappear. This is what happens in IC2a and IC2b. The signal is fed to one input of IC2b and the other input is held at logic 0 by the output of IC2a, and so no signal can pass through IC2b. If we now take the two inputs of IC2a to logic 0, the output goes to logic 1, allowing the signal to pass through IC2b. That describes the action in the HF mode.

The output signal from the shaping circuit is also fed to one input of IC2c which you will note is controlled in the LF mode by IC2d. The signal can be steered to either pin 6 or 8 of IC2 depending on which control pin is at logic 0. Continuing with the LF control at logic 0, the input signal is steered to the input of IC3c, and provided the other input on pin 9 is held high the signal will pass without any prescaling to the output via the low pass filter of R10 and C4. We ensure that the output of IC5 is held high by holding pin 1 of this device at logic 0 when in the LF mode.

If we now select the HF mode and allow the LF control to go to logic 1, IC2c output goes high allowing the input on pin 9 of IC3 to pass to the output. Also with the HF control at logic 0, the input signal can pass through IC2b and IC3d to the input of the HF divide-by-ten stage, IC5. The HF input signal up to 30 MHz (min.) is now divided by ten and the resulting signal is passed via IC3c to the output. This divider is also used in the VHF mode when the input signal is divided by 100.

The VHF input signal is amplified by TR3 and fed into the 600 MHz divider, IC4. The resulting signal is passed by IC3b and IC3d to the input of the HF divider, IC5. The resulting signal (up to 6 MHz) is then passed to the counter chip in the same way as the HF signal.

This circuit is fairly complicated, but by the use of two very cheap integrated circuits, very neat control over the signal path is achieved and as a bonus one HF divider which would have been required in the VHF prescaler stages is saved.

(to be continued)
COMMUNICATION and DX NEWS

E. P. Essery, G3KFE

The Mail

STARTING with Ten, and here we have to say that there is a definite need for us to do something about the intruders: 28.305, 28.295, 28.285 MHz and in the CW area 28.005, 28.010 and 28.015 MHz are always heavily used, even swapping details of their addresses over the air. The change in the law which will put some power in the hands of the authorities and the slipping down of some of these pests as a result, is much to be welcomed — when it happens! Meantime, a strong effort is required to make them go away — and these frequencies seem quite ideal for aerial measurements. G40BK (Chorley) noted the band as being pretty flat otherwise, and deplores the lack of activity.

G6QQ (Hoveton) didn't find a lot on the band. He worked a few Europeans in the course of a regular scan through it, but only one outside; this being CE1BDW. G3NOF (Yevoli) found the band very poor for DX; a YB was heard one afternoon, and on June 15 there was an opening to HP and 9Y4, plus spells of short-skip to Europe, and long dead-band spells. The only QSO noted is the one with 9Y4BA.

G4HZW (Knutsford) was operating for part of the month as GM4HZW/P — of which more elsewhere — but still found some use for the band from home. His SSb got out to ZS4DJ, UH8HDE, TR8AMO, LU5DL, and GM3YBI/P, plus most European countries on Spot-E propagation. Tony also noted the bottom end of the band positively swarming with EU-based 'woodentops' and spent some time sending CW on top of them until they got the message and went back into their own patches.

G2DHV (Sidcup) stayed on FM and noted a good QSO with EA3CTE, but also comments that the EA3 was complaining of QRN 'from the local breakers'. On a quite different tack, the ten-metre beam which was difficult to tune up on the band has developed into a very effective 21 MHz beam, apparently by magic — your scribe could do with that sort of spell!

Top Band

G4AKY (Newport, Essex) is definitely back on the band; the writer, G3TVW and G4AKY had a three-way at the top of the band ten days ago to swap 59 reports over what is a very difficult path. The G4AKY temporary aerial is about seventy feet long; some fifty feet out from the house form a flat-top at twenty feet high, dropping down to ground at the far end — it divides into three at the point where it begins to drop to ground, and each of these ends is grounded by way of wires soldered to pet-food tin cans pushed into the ground. To this is added one quarter-wave radial wire lying on the ground, and a couple of 20-foot aluminium scaffolding poles are also attached to the earth system. Not in a very promising set-up but it was putting in a very strong signal to the writer. Thus Dave set out to try it in earnest, and this is what happened; CW accounted for PA0BUD, PA0AUV, GM3FPQ, 4U1ITU, E10CZ, SM7ALC, seven OK/OL stations, 11MX1, 12U1Y, IK1EQF, DL1PM, SP3LPR, SP4EEZ, VE1BVL, RA3DOX, U31UWG, UC1CWDB, RB4IOZ, UA3UEW, PT2KT (Brasilia), DF5SM/IS0, LZ2CJ, OZ8AE/OY, DL6YE/LX, and UL7MAN; giving four of the six continents worked in a month at a bad time of the year for the band and with a most unpromising aerial system.

G4AAW (Maidstone) finally raised South America by way of LU9EIE, and remarks on what a patient man he is — no less than six overs before he could get the callsign right. Also worked were SV0AA/9 in Crete, OZ3DL/OY, OZ8AE/OY, ZB2EO during NFD, AA1K, K1ZM, W1RR, K2EK, VE1ZZ, and VG1ASJ. Gotaways included C8XDT, C8PSH, HZ1AB, and OD5LX. G2HKU (Minster) says he has been so busy since retirement that he doesn't understand how he ever found time to work — and that doesn't take into account the garden! However, Top Band saw the usual SSb with PA0PN, plus CW to UA2FJ, E12CA, GM3FPQ, GM3ZRT, and 4X4NJ.

G3BDQ (Hastings) had a short holiday in London for the first part of the month. One foray on Top Band was at 0300 on July 1; very noisy and lots of static crashes, plus European signals. He tried calling CQ DX PY/YV several times only to be called eventually by AA1K: a short QSO and then he went back to bed. Next time out, in August, and then again in September, the counterpoises and the rest will come out for an airing.

G40BK has been getting up at around 0345 clock, and most times found PY and LU were audible. The idea was to stick around till 0500, then back to bed for an hour before up to go to work at 0615 — which is a bit expensive in matchsticks to keep the eyes open at work! Gotaways were CX8DT and ZS5BH, but on the other hand an envelope with PY1BVY's QSL was very welcome, and it contained a note that Ron is arranging a DX-petition to Trinidad Is. in December this year, to include activity on Top Band. Phil worked I2AY, 4U1ITU, VE1Z2Z, OE7CK1, LU9EIE for a new country, OZ5DL/OY, LU9EIE again, PY1BVY, K1ZM and K2EK. This makes the G40BK countries score now 62 worked and 53 confirmed.

Eighty

First let's look at the report from G4KKI (Swinton) who, after ten years as a Royal Signals radio-op is now back in civilian life, driving a truck and taking his pleasure in home-brew and QRP — obviously one of Rev. Dobbs' converts! At the moment Bill has a rig operational on Eighty; a 3.5 MHz VFO, buffer and driver into a BTF39 PA at 750 milli-watts output; then there is an outboard 'pair of boots' comprising a pair of 2SC1969 ex-CB transistors, with an output usually of three watts but capable of eight. For Forty there was a home-brew rig also, but that has succumbed to the rebuilding urges of G4KKI at the time of writing. There is a Lowe SRX-30 general coverage receiver (that's to show Bill doesn't actually object to commercial gear!) with all the ancillaries such as power supplies, power meter, VSFR indicator, ATU and so forth being of the G4KKI-special breed. That's a bit more like amateur radio used to be. For the weekends, Bill is searching for a box-kite, and while looking for this is trying his hand with a sled kite, for some /P forays. Anyone out there know of a box-kite in need of a good home? — it would make a difference to G4KKI as he is very stuck for aerial-farming space at home. Early morning sessions have been with G3NSA, G8JR, G2MJ, G3FPB who had ten watts, and G4FEJ; afternoons brought in a QSO with G2NJ for the first time, and last thing before bed was the time to find LA5AA.

Next month we understand the 7 MHz rig will be operational again, and that should be interesting as the home station aerial at G4KKI is probably at its best on that band, and past results tend to confirm this.

It was QRP all the way for G2HKU on Eighty, with his four watts of CW getting out to DJ0OS, GM4SJD, and GM4TVB. G3NOF remarks how the presence of the GB stations can liven things up the LF bands; he was tempted to on Eighty by all the D-Day commemorations, and mentions as pleasing the GB4BLC QSO from Southampton. On a different tack altogether, Don notes the presence of
G3BDQ in this piece, and recalls how as SWL McLean, he was able to meet G3BDQ back in 1947 and be taken to visit Tommy, G6QB, who was for so many years (until 1966) the conductor of this piece, and Tommy, G6QB, who was for so many years (until 1966) the conductor of this piece, and

Tommy, G6QB, who was for so many years (until 1966) the conductor of this piece, and remembers how as 280

THE SHORT WAVE MAGAZINE

- largely as a result of the D-Day evacuation from Sale.

No doubt about it, this was the 'biggie' - largely as a result of the D-Day evacuation from Sale.

New Bands

Only two reports, both on 10 MHz. G2HKU keyed with N4FNG, W1PXA, OZ1HET, and Y24DO. G40BK checked the band four times, to find and work HB9ACM, N2ERQ and KA4VXT.

Farewell

With sorrow we hear of the death of Arthur Kerford-Byrnes, G6AB, of Holland-on-Sea, in hospital on June 13. At the end he was unable to speak or hear, and tapped out his last words to G2HKU on to the latter's hand. Apart from his contributions to magazines for which he was well-known, he was a keen operator of HF bands, and did much to encourage SWLs. In pre-war days he was a member of the RNY(W)R, and served his country throughout the war, mainly on Atlantic convoy duties as a Communications Officer. He was a fine artist, an expert in Heraldry, and a member of RAIBC and RNARS. We know of many readers who will be deeply saddened by his passing, and he will be sorely missed.

Here and There

All sorts of things to note here. Firstly some advance warning of a new category in the CQ WW DX Contest this autumn: a team contesting. A team comprises any five radio amateurs each operating the various commemorative stations, and notes one in particular as being very much in demand, GB4ANL, which was put on from Paignton by the Devon and Cornwall Police. Les also notes the reappearance in good numbers of the 5Ps, and of Antarctica — the latter in the form of 4K1A on June 25, doing a roaring trade from all over Europe and down to the Mediterranean, with 9H1EU particularly strong amongst the pack. G3NOF went on the band — as did so many others—to work the D-Day stations and sorted himself out QSOs with GB4ANL (Torbay), GB4DD (R.A.F. West Drayton), GB4DDDA (Gosport), F01MT/P (Utah Beach), F0IMY (Utah Beach), F0V0AP (Caein), TK6JUN (Utah Beach), for a nice little collection.

G4HZW spent an enjoyable week at Loch Garten Nature Reserve as a volunteer warden for the eleventh year. He took along the TS-820 and strung up a 7 MHz dipole at twenty feet between a couple of pine trees. He found a very good location — no TV timespans or any sort of QRN, and so worked loads of G5 at very good strength, heard lots of DX but only worked a couple: thus it was SSB with P7THS, P7Y7OBV, UM8EWW worked, and CE, LU, FM7, OA, HK, VK7, VK2, ZL, YV, RL0 and 4K1GAG were all heard but not hooked.

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Forty

No doubt about it, this was the 'biggie' — largely as a result of the D-Day celebrations.

Right through the wall of EU QRM, G3BDQ managed a completed QSO with BV0JA, who was a 579 signal when he was not buried under the QRM; but the QRM was such that it took a while for John to come back, so David decided to give Forty a whirl and was surprised at the results. As G6QQ remarks, it is a lot of use in DU as they are being discontinued there; so dollar bills are easier to handle.

Now look to the other news. The place for this is DXNS in U.K., or TDXB from the States. Looking at the DXNS first, we notice that one of the editors, G3ZAY, and G3CWl, who is ex-VP8ANT, are both going to Lord Howe Is., and by the time you get to read this they should have given lots of people a QSO.

T31AT has been quite active from Central Kiribati, and we hear of at least one QSO with G on Forty.

Those looking for Pitcairn should note that VR6KY has regular skeds twice weekly with her QSL Manager, NE5C, and that this results in a very fast QSL route — twelve days from the QSO is being reported by various folk. VR6CT is also noted as being around on occasion.

Turning to 1S1CK, we hear that DU1CK has run out of QSLs for this operation, so producing a hang-up. G4DUW/DU1 also says that IRCs aren't a personal score for a specified radio club. Awards to the top five teams. A list of the team's members to be received by CQ before October 15 for SSB, and November 15 for CW (two weeks before the contest, therefore) addressed to CQ Magazine, Team Contest, 76 North Broadway, Hicksville, NY11801, U.S.A. After the contest, send the list of the team member's scores plus the total claimed score before the normal contest deadlines. One assumes that this means that each team member will submit his own contest log.

The EDXC CW contest takes in the weekend August 11/12, and the SSB section on September 8/9. A new rule this year allows U.S.A. states to count as multipliers; the other main one is the requirement for a dupe sheet on any band on which 200 or more contacts are made. Logs should be sent to: DARC, PO Box 1328, D-8950, Kaufbeuren, West Germany, attention WAEDC Contest Committee.

August 25/26 is the weekend for the All-Asian contest CW leg, rules being the same as for the SSB leg in June. Logs to reach the committee by November 30, addressed to JARL, PO Box 377, Tokyo Central, Japan.

"CDXN" deadlines for the next three months:

- September issue—August 9th
- October issue—September 6th
- November issue—October 4th

Please be sure to note these dates
If you come across IK0CAK/OX he is on from a position about 72°N 25°W in Scoresby Land, all in the cause of propagation research. So — if you work him he will, we assume, be more than grateful for a QSL with any extra useful data you may have on it. The QSL route is to IO3AJ.

Lots of people have been getting all het-up over 4U1UP, the 'University of Peace' set up in Costa Rica by UN — personally we don’t see how this, any more than the other UN enclaves, will get a DXCC rating.

Turning to *The DX Bulletin*, we note with some glee the 3W8AG asking for QSLs "via the Bureau" — is there a QSL Bureau in Vietnam? Vietnam Slim for sure!

However, one place where Slim was not was Mt. Athos, where the buzz reaches us that that DJ5CQ operation was all tickety-boo.

If you are aghast for a Spratly QSO and card, you look to be in for a wait; we get the impression that the DU4CK operation proposed and in the pipeline is looking a bit fraught — the pipe is very long and someone’s welded a plug over the end. The diplomatic temperature there is going ever upwards, even if the piracy isn’t!

More changes in the DXCC listings; the old country of Baker Howland and American Phoenix is, dead, and replaced by the new one of Baker and Howland. The reason is that the British Phoenix now become Central Kiribati.

We hear that a big wind has clouted Tristan da Cunha, and the aerials are mostly down — certainly those of ZD9BV and ZD9YL.

### 21 MHz

G2DHV returned to the band and heard VU11TU, SVITL, some PP6, PP7, PP8 PT8 and PT9 stations and PT9 stations for Brazil, and 4NO2Z — pretty obviously a Russian call PT8 and PT9 stations for Brazil, and VUIITU, 9V1TL, some PP6, PP7, PP8 and ZD9Y L.

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An interesting report from G3BDQ on his contacts with JA4AC and W4JFE/7 in Oregon; both were first heard on the longwire aerial, but for once the vertical his contacts with JA4AC and W4JFE/7 in Oregon; both were first heard on the longwire aerial, but for once the vertical

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### Finale

And that, my friends, winds down the curtain for another month. If you have had your holidays, commissarizations; if you’ve got them to come, good luck with the weather; and if you’ve not even thought about 'em — good DX!

Deadline date for the arrival of your letters for the September issue is August 9th, addressed, as always, to your scribe. "CDXN", *SHORT WAVE MAGAZINE*, 34 High Street, Welwyn, Herts. AL6 9EQ.
**Gain Blocks**

There are many reasons for requiring more gain for a particular application. Maybe you have a 'scope that suits you from a frequency response point of view but is woefully short on sensitivity. Some of the earlier Heathkit 'scopes and most of those found as "rally surplus" come into this group. Perhaps you have a good AC voltmeter but want to be able to read down into the millivolt levels. Probably the most common requirement is to get the sensitivity of some of the earlier scanning receivers up to a more acceptable level.

As is now so common in all areas of electronics, that which used to take many dedicated components to build can now be bought as an integrated circuit — and that is the case with the present requirement. These ICs vary in their specification but one of the most versatile is the RS Components type RS560C. It can be set up to have high gain, wide bandwidth or low noise figure and these parameters can be set to your own requirements. They are also ideal in another respect... they are cheap!

The circuit of Fig. 3 is for a broad-band low noise amplifier. The response is sensibly flat right up to 150 MHz with a gain which can be switched between 13 or 23dB and it provides a noise figure of 2.5dB across this range. Just the thing for that old scanner!

Remember that all these circuits are "wide open" and if the full frequency response is not needed they should have suitable tuned circuits or filters incorporated. If the circuit is only required to operate over a small frequency range a simple series tuned circuit placed in series with the output will usually suffice.

**Construction**

Very little can be said here as the construction will depend very much on the requirements of the individual constructor; however some guidelines can be offered. The units should be built on double-sided PCB with one surface used as an earth plane. All decoupling capacitors should be mounted as close to the pins as possible and should be disc ceramics of good quality. The required supply voltages may be obtained from a 12 volt line via a resistor and decoupling capacitor. If a Zener diode is used it must have a 1 nF disc capacitor connected straight across it to bypass the RF noise generated in these devices. There is no point in making a high-gain low noise amp and then building a noise generator into it. A noise generator — now there is an idea! Perhaps next month?

Your comments and ideas are still arriving and are most welcome. Please send them to S.W.M., or direct to me at 81 Ringwood Highway, Coventry CV2 2GT.
An Audio Frequency Keying Monitor

SIMPLE AND USEFUL

P. C. COLE, G3JFS

The small unit to be described is a self-contained AF oscillator circuit designed for use as a CW keying monitor that could be used with a variety of transmitters having different keying arrangements. Like all good home-brew projects it has also filled other needs in the shack, including use as a Morse practice oscillator, a general purpose AF source for signal tracing and the modulation of an HF marker oscillator.

Circuit Description

Fig. 1(a) shows the circuit of the monitor unit as built; all quite simple and needing but a brief description. TR1 is a unijunction transistor connected as a free-running oscillator which produces a sawtooth waveform of about 700 Hz across C1. This gives a rather harsh-sounding tone to the output of the monitor—but this is in fact the sort of note that many keen CW operators prefer as they find it less fatiguing when used for long operating sessions than the pure tone of a sinewave oscillator. R1, C1 determine the frequency of oscillation so the value of these components may be changed if a different note is preferred—increased R or C will lower the note and vice versa.

The sawtooth from across C1 is then coupled to TR2 which is a small signal type silicon NPN transistor connected as a common emitter amplifier to give a few milliwatts of AF power output. Despite this low power level, when using the specified balanced armature 'loudspeaker', there is more than enough sound output for use in a relatively quiet indoor shack. Some extra output could of course be obtained by using a more efficient transducer with accurate matching. However the additional expense is hardly warranted for such a simple design as this, and it would be more realistic to use a much larger amplifier when operating in a noisy location.

For normal operation the keying contacts of the monitor may

```
"I wonder if he's a chief whip...?"
```

### Table of Values

<table>
<thead>
<tr>
<th>Component</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1</td>
<td>390Ω</td>
</tr>
<tr>
<td>R2</td>
<td>68Ω</td>
</tr>
<tr>
<td>R3, R4</td>
<td>56k</td>
</tr>
<tr>
<td>R5</td>
<td>15k</td>
</tr>
<tr>
<td>R6</td>
<td>4.7K</td>
</tr>
<tr>
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<td>1K log. pot.</td>
</tr>
<tr>
<td>C1</td>
<td>470nF</td>
</tr>
<tr>
<td>C2, C5</td>
<td>1µF</td>
</tr>
<tr>
<td>C3</td>
<td>0.1µF</td>
</tr>
<tr>
<td>C4</td>
<td>0.001µF</td>
</tr>
<tr>
<td>TR1</td>
<td>2N2160 or similar UJT</td>
</tr>
<tr>
<td>TR2, TR3</td>
<td>2S104 or similar small signal silicon NPN transistor</td>
</tr>
<tr>
<td>D1</td>
<td>OA90 or similar</td>
</tr>
<tr>
<td>RFC</td>
<td>1mH RF choke</td>
</tr>
<tr>
<td>LS1</td>
<td>medium impedance balanced armature insert from old Pye hand mic.</td>
</tr>
<tr>
<td>SW1</td>
<td>single-pole on/off switch</td>
</tr>
<tr>
<td>By1</td>
<td>PP3 battery or similar</td>
</tr>
</tbody>
</table>

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Fig. 1a MONITOR UNIT CIRCUIT DIAGRAM

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Fig. 1b TTL level

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Fig. 1c
be connected in parallel with a transmitter keying line which has up to about +30 volts across it during key up and 0 volts with the key down. TR3 is then connected as a diode, as shown in the diagrams, when it has little effect on circuit operation except to reduce key clicks in the monitor output. If this method of keying the monitor is not compatible with the transmitter then Figs. 1(b) and (c) show how TR3 can be connected to allow keying from a TTL level, or from a radiated RF signal.

Construction

Fig. 2 shows how the components can be arranged on a piece of miniature tag strip. However, as there is nothing critical about either the components or the layout, other methods of construction such as assembly on a printed circuit board or a matrix board would be just as suitable. One point to take note of, though, is that the UJT could be affected by strong RF fields; for example, if it is used near to an end-fed aerial which comes into the shack. In this case it would be advisable to house the unit in an earthed metal box or use extra decoupling to prevent RF currents getting into the oscillator circuits.

Power Supply

Power consumption of the monitor is about 5mA at 9 volts. In order to keep the unit portable and self-contained, this is supplied by a PP3 dry battery which even with regular daily use should last for many months. As an alternative it should be possible to find a low voltage point in most rigs from which to 'steal' the few milliamps needed.

The "We" and "There" Syndrome Gets Some Stick

'OLD FANGLER' FULMINATES UPON SOME ELECTRONIC SEMANTICS

JACK HUM, G5UM

TRADITIONALLY, the club’s last gathering of the season was called the “Anything Goes” meeting. It was the meeting that had no set subject and no agenda and almost no form (except when Mister Chairperson made some attempt to call it to order at around 8.23 p.m. with a plea for a reduction in the high level of loquacity permeating the clubroom).

Down the years there had inevitably been those who disapproved of the title “Anything Goes” because if you shortened it to “AG” it sounded rather like two thirds of “AGM”, and of course nobody would want to go to a boring thing like an AGM, would they? (the strange thing was that they did: the “Annual General” always brought a high attendance of members eagerly anticipating the frisson of a vocal rumpus — and generally getting it).

But all that was six months off. Right now, the “Anything Goes” meeting as always, pulled them in from miles around. To older hands it had become known by the abbreviated designation of “The Ack George”, to the mild hilarity of newer members whose pre-licence instruction had taught them to use the Alpha Bravo phonetics: they thought “Ack George” sounded a bit old fashioned. What was not in doubt, though, was the general agreement that the “AG meeting” came into the definition of A Good Thing for the opportunity it gave members to let fly on any subject they liked. It also happened to be the one meeting of the year when clubs from far and wide throughout the county were invited along to enjoy the proceedings.

And indeed the proceedings were enjoyable. For one thing, there was that chance “to hear the other members sounding off”. For another there was the opening address by Mister Chairperson with his reminiscent look back upon the past season’s activities; this itself could be, as they put it, a bit of a hoot if The Gaffer felt really wound up.
On this occasion he did. He harked members' (and the visitors') minds back to that meeting when blows were almost exchanged and blood nearly boiled (well it got as far as 209 degrees F) because those present were exactly divided in the great debate about whether or not the HF bands were played out. Then there was that hilarious occasion when Ethelbald thought a forthcoming meeting was to be about Maritime Mobile because he had heard something said—ing the weekly 76cm. net about High Seas. Everyone else knew it was to be about Eye Sees, meaning ICs, added Mister Chairperson.

He reminded the OMs (and YFs and YLs) present of a rather extraordinary sentence: the IC lecture-man who rolled up in a company car so swish that it could have contained a year's output of Silicon Valley had pleaded the members by leaving for each one of them a present of a sample 16-leg beastie. But "present" was a misnomer: the beasties would not work when the members tried them out at home. "You may recall", added Mister Chairperson with a chuckle, "that Pin 15 had been neatly snipped from each of them".

"Ah, well, it was mildly educational" interjected The Man at The Club: "That was probably the first time a lot of our members had ever seen an IC at close quarters... they are too scared to open their Japanese black boxes and take a look inside".

A distinct rise of the ambient psychological temperature in the clubroom could be detected as the barbed shaft launched by TMC found a few targets. Silencing the dissent murmur with a lift of his hand, Mister Chairperson observed that it was about time he stopped reminiscing and that the remark made by TMC could serve as a useful first contribution to the evening's discussions. Now what had the rest of them to say? After all, it was their evening and anything went on Anything Goes night.

Favourite Targets

Taking the hint, Virginibus leaped quickly on to his high horse to charge into his favourite target, repeaters. Politey the meeting indicated that they had heard it all before. Equally politely Virginibus went QRT.

Now came the turn of the hornied-handed son of Morse to boom forth his conviction that a man who didn't use The Code was "only half a ham". This really set felinis domesticus among the avians, marked by roars of dissent from the two score Class-B persons present who averred that they got on quite well without avians, marked by roars of dissent from the two score Class-B Virginibus went QRT.

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Old Fangler looked diffident. He reminded his hearers they had just closed down Virginibus on account of his prejudiced remarks about repeaters which they had all heard before; he didn't, he said, feel very keen about uttering further prejudiced remarks about operating practices which, again, most present must have heard many a time and oft.

"P'raps we have, Old Fangler", soothed Mister Chairperson, adding that always in any club there were many members who hadn't heard it all before, who might have been absent last time operating practice was discussed, who might indeed be new members, perhaps among that flock of ex-CB operators keen to learn as much as they could now that they were real radio amateurs. "Yes, let's here what you have to say."

Old Fangler allowing himself to be persuaded went on to utter a rather extraordinary sentence: "When I was driving up here, there, I was surprised to see, there, a DHSS van standing outside the next building to our clubroom here, there, and I wondered what was going on, there. I approached the driver, there, and asked him, there. He told me, there, that he and his mate, there, had come up to their storeroom here, there, to collect four score of floor mops for use in the hospital downtown, there."

"I'm, I think I understand what he's on about", murmured TMC.

"Very interesting, O-F. Pray proceed", invited Mister C. Old Fangler proffered thanks to Mister Chairperson and said he would proceed... he hadn't quite finished what he wanted to say.

"Before we came up to tonight's meeting" he went on, "We asked our wife Glutina if she would like to accompany us to the Anything Goes meeting. She said she would, there, and we arrived home by eleven o'clock, we told her."

("Our wife? Do I detect bigamy?" whispered Mister Moneybags to TMC in the next seat.)

It appeared that Glutina's reaction had been a sharp one, to say the least: "What's all this we stuff? You can go if you like but
"include me out" she had replied, evoking the grump from Old Fangler that, "Ah well, then, we'll have to go on our own".

"Not we, Old Fangler, just you!" Glutina was alleged to have retorted: "And you can take your royal plural along with you, too!"

**A Newer Voice Was Heard**

As Old Fangler sat down the silence in the clubroom was such that you could have heard an 8BA nut drop. Then came a voice from somewhere near the back of the room not far from Highly Tech Gent's customary position. But it didn't belong to HTG. Nor did it sound wreathed in smoke.

"The reason I don't have a Yagi is because I think they're unsightly."

"Ah, welcome Mister Wuntyme Corkbeer!" said Mister Chairperson: "We don't often have the privilege of a contribution from you to our debates... now's your chance."

To many members Wuntyme Corkbeer was a bit of an enigma. He had belonged to the club for no more than a few months, saying little but listing a lot as he hovered around the conversing knots of OMs and YFs/YLs that formed up around the teabar after meetings.

Part of the enigma was his peculiar name. "Wuntyme" sounded redolent of the 11m (eleventh millennium) period of medieval jousting in the lists. Few members could bring themselves to address him by his first name. One who had tried a few months back was Virginibus. He had blushed somewhat when he had tried to address the then new member as "Wuntyme" and said he would use his initials instead. He blushed more than somewhat when in the split second he realised the faux pas he had made.

By now Wuntyme was on his feet keen to have a go in "Anything Goes":

"I've listened with great interest to what Old Fangler has been saying in his allegorical way" was his opening gambit, and he went on:

"I know exactly what O-F has been hinting at and that's to stop us using the word 'there' as a punctuation point when we are talking on the air. And he doesn't like to hear an operator say 'We' when 'I' is intended. D'you know, Mister Chairperson and members, these things don't bother me at all!"

"Oh, but they bother a lot of other people" interjected TMC affably.

"Me too!" came an S9 comment from Ethelbald half way down the room: "I'm a 'me' not a 'we'."

Wuntyme Corkbeer refused to be ruffled. In his few months with the club he had learned to enjoy its lifestyle of candid comment among members, yet never a hard thought, word or deed, even though at times mayhem seemed not far off. So he felt quite confident, he said, in asserting that amateur radio anyway used such artificial and stylized forms of conversation that to say "We" and "There" was no more objectionable than the use of the Q-code on telephony.

"Amen to that... see you further down the dog, as the big flea said to the lesser flea" came from Highly Technical Gent between puffs at his smoking saxophone.

To these observations Mister Money Bags found himself totally opposed. Putting on his poshest pin-striped pontificatory tone of voice he gave it as his opinion that exchanges between radio amateurs over the air should be in as plain-English as you would use over the landline telephone, or come to that, in face-to-face conversation.

("That would be one way of eliminating all the Q-code talk" murmured HTG between puffs).

It was time for Mister Chairperson to hint discreetly that, as so often happened at the annual "Ack George" the trend of discussion seemed to be running along several different and not always parallel tracks, and wasn't it nearly time for tea? (Cheers from the assembled multitude.) But a final-final thought had just occurred to him, he said: Wouldn't "Operating Practices" make a really marvellous starter to next season's calendar of meetings?

Gripping the elbow of Virginibus to steer him towards the tempting tintinnabulation of the teacups TMC said: "Time for the cup that cheers, young man—and please try this time to keep off the subject of the Boston Tea Party!"

Virginibus with a grin replied: "We'll do our best, we will, there!"

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**Address for Greenwood Electronics**

Greenwood Electronics has introduced a new range of miniature low voltage soldering irons, the Oryx Micro Series, specially designed for intricate circuit work. The range includes 5, 6, 9, 11, 12, 18 and 25 watt models, and operating voltages of 6, 12, 24 and 50 volts. A power supply station stand and cleaning facility, with optional variable temperature unit, is also available. Full information is obtainable from Greenwood Electronics, Portman Road, Reading, Berks. RG3 1NE (tel: 0734-595844).
CLUBS ROUNDUP

By "Club Secretary"

The Clip

A BERGAVENNY & NEVILL HALL is in residence every Thursday evening at Pen-y-Fal Hospital, Abergavenny, over Male Ward 2. On August 4 they will be operating GB2PYF for the Hospital Fete.

August 21 is the date for Acton, Brentford & Chiswick. They will learn about the real radar experts—the bees. This will be given by G3XPC, at Chiswick Town Hall, High Road, Chiswick, London W4.

The great outdoors will becone for Axe Vale on August 3 when they have a 144 MHz Foxhunt. Presumably this will start at the usual time—7.30 p.m.—from the Cavalier Hotel in West Street, Axminster, which is the club Hq. If you miss them, though, there is always September 7, when the talk will be "Your RGB." September 7 will be the first meeting of the new season for Bangor in Gl. This will be the AGM and of course everyone is asked to attend. Find them at the Sands Hotel on Bangor's seafront, the start being at 8 p.m.

For details of the Barking events we have to refer you to the Hon. Sec.—see Panel. However, we can say that this very active club has something going on at the Westbury School Hq most evenings.

Now we head for Basingstoke, which means the "Swan Inn", and the second Tuesday of each month. This Hq is in Sherbourne St. John, a nearby village. More details from the Hon. Sec.—see Panel for the needful.

Turning to Bishops Stortford we find them on the third Monday of the month at the British Legion club in Windhill; there is also an informal on the first Thursday of each month at the "Nags Head," Dunmow Road. For August it is traditionally all-informal, to get up to date with the year's jokes.

Braintree has its place at the Community Association Centre in Victoria Street, next door to the bus station in the centre of the town. Here they are to be found on the first and third Monday evenings; August 6 is live operating, and August 20 a computer evening.

B.A.R.T.G. covers the interests of all who operate in the RTTY mode, whether they do it mechanically or electronically—details from the Hon. Sec.—see Panel for his vital statistics.

Up at Bury the Mosses Community Centre is the place, each Tuesday evening—for the latest details we must pass you over to the Hon. Sec. At this time of the year their main activity is entering other club's D/F hunts with a view to places in the National Final! Barking also has its place on the top floor of 119 Green Lane, Derby, where they are to be found every Wednesday evening—details on the programme from the Hon. Sec. at the address in the Panel.

Every Monday evening seems to be the routine at Dudley, where the venue is the Allied Centre, Greenman Alley, off Tower Street.

Deadlines for "Clubs" for the next three months—

- September issue—July 27th
- October issue—August 31st
- November issue—September 28th
- December issue—October 26th

Please by sure to note these dates!

Our only information on East Kent is that they have had to cancel, for reasons outside their control, their August mobile rally; for all the details of the club we refer you to the Hon. Sec.—see Panel.

It's the second and fourth Thursday for Edgware, at 145 Orange Hill Road, Burnt Oak, Edgware. However in the current newsletter we only see mention of August 23, for the SSB NFD briefing.

At Exeter you can find the troopers at the Community Centre, St. Davids Hill, Exeter, on August 13, when the Constructional Contest will be in contention — there is a cup to be won. More details from the Hon. Sec. —see Panel.

Fylde means a visit to the Kite Club at Blackpool Airport, of which they are members, and which is their Hq. They foregather on first and third Tuesdays; August 7 will be a talk on RTTY by G4RSA, and on August 21 they have the informal.

August 19 is the date for the Glenrothes lot, and the venue is Provosts Land, Leslie, Fife, where they will have films and then a forward planning session.

Now the G-QRP Club where the members are interested in low power operating and home-brewing of equipment; both interests
Names and Addresses of Club Secretaries reporting in this issue:

ABERGAVENNY: D. F. Jones, GW3SSY, 80 Craeseron Place, Abergavenny, Gwent NP7 6PE. (0832 788747)

ACTON, BRENFOORD & CHEAM: W. G. Dyer, G3GEH, 18 Gunnery Avenue, Acton, London W3 8LB. (01-992 3778)

AXE VALE: R. H. Newland, G3SVW, 'Ham House', Lyme Road, Upham, Lympne, Dover, Kent. (0305 874401)

BANGOR: S. Mackay, G4OOC, 11 Delmourt Park, Bangor BT20 2AU. (Bangor 549649)

BARKING: R. Woodbury, G4YZV, Barking Radio Club, Westbury Recreation Centre, Westbury School, Ripple Road, Barking IG1 7TP.

BASINGSTOKE: E. C. Thompson, G4SQZ, 21 Wigmores Road, Tadley, Basingstoke, Hants. RG26 4HJ.

BISHOPS STORTFORD: S. Mammott, G4HHK, 31 Atherton End, Sawbridgeworth, Herts. CM21 0BS. (0727 724669)

BİRINTREE: Mrs. P. Penny, G61AE, 13 Newnham Close, Braintree, Essex. (0376 264780)

B.R.A.T. G. J. Beedie, GM6OK, 161 Tudor Road, Hayes, Middx. UB3 2QG. (01-561 0010)

BURY: B. Tyldesley, G4TBT, 4 Colne Road, Burnley, Lancs. (Burnley 24254)


CHELTENHAM: Mrs. G. Hartshorn, G4GCH, 42 Leckhampton Road, Cheltenham, Glos. (Cheltenham 25162)

CHESHUNT: R. Frisby, G4GAIA, 2 Westfield Road, Hoddesdon, Herts. EN1 9QX.

CHESTER: T. M. Allen, G4ETU, 2 Hillside, West Stow, Chichester, Sussex PO19 9BZ. (West Stow 43635)

CHERTLE: Mrs. C. McDonald, G4QD, 27 High Road, Wadhurst, Wadhurst, East Sussex, TN5 6DP.

CORNISH: S. Rodda, G4PEM, Cliff Hotel, Penrose Terrace, Penzance TR18 2HH. (Penzance 3948)

CAMBRIDGE: B. McCartney, G4DYO, 123 Reading Road, Cambridge, Cambs. (Cambridge 60924)

CRYSTAL PALACE: G. M. Stone, G3FZL, 11 Liphook Crescent, Croydon, Surrey CR7 7EE. (Croydon 54948)

CRAWLEY: D. L. Hill, G4HMQ, 14 The Garrones, Worth, Crawley, West Sussex RHIO 4YT. (Crawley 88264)

CORNWALL: S. Alexander, G6LRZ, 66 Downs Road, Camborne, Cornwall TR14 8UL. (Camborne 68065)

DERBY: Mrs. J. Shardlow, G4EYM, 19 Portreath Drive, Darley Abbey, Derby DE3 2BJ. (0352 35675)

DUDLEY: Mrs. C. Wilding, G4SQP, 92 Ravenhill Drive, Codsall, Wolverhampton, West Midlands WV8 2BB. (Codsall 5639)

EAST KENT: S. Alexander, G6LZG, 66 Downs Road, Canterbury, Kent. (Canterbury 60924)

EDGWARE: J. Cobhey, G4RMD, 4 Briars Close, Hatfield, Herts. (Hatfield 45422)

EXETER: R. Tipper, G4KKX, 11 Chancel Court, Chancel Lane, Pinhoe, Exeter. (Exeter 60056)

FYLDE: H. Fenton, G4GGS, 5 Cromer Road, St. Annes, Lytham St. Annes, Lancs. FY8 3HD.

GLENROTHES: A. Givens, GM3YOR, 41 Veronica Crescent, Kirkcaldy, Fife KY1 2LH. (Kirkcaldy 200335)

GREATER BOROUGH: F. Breiley, G4WJR, 27 Lady Lodge Road, Orton Longueville, Peterborough. (0733 213848)


HARINGEY: D. Atkins, G8XBZ, 25 Maxwell Close, Rickmansworth, Herts. (Hertford 24254)

HASTINGS: D. Shirley, G4NQV, 93 Alfred Road, Hastings, Sussex. (Hastings 42068)

HAYMARKET: C. Cowlin, G4KM, 22 Hilary House, Reading, Berks. (Reading 50186)


HORNSEA: S. Mackay, G4YXW, 124 Lifford Close, Rainham, Kent.

HORSEMEAD: G. E. Storer, G3DDR, 14 Rotheringham Road, Hornchurch.

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know about clubs in Eire, and how to join them, is almost certainly obtainable from the I.R.T.S. Hon. Sec.—see Panel for his details.

As far as Leith Nautical College is concerned, there will be no meetings until the end of September when the terms start again. Doubtless we shall hear something of the new term from the Hon. Sec.—see Panel—in due course.

It’s the second and fourth Wednesday of the month at Lincoln, with the remaining Wednesday evenings at the same venue used for RAE and Morse classes. All are at the City Engineers’ Club, Central Depot, Waterside South, Lincoln. More details from the Hon. Sec.

August 3 sees a talk at Medway on satellite working by G8XLH, and on 17th the same person will demonstrate operation through a satellite; both talks are at an unspecified venue; back to the Hon. Sec.—see Panel!

The Midland club has gone from strength to strength since the days of the Digbeth Institute, and now has some 217 paid-up members, who congregate at the club Hq, 294A Broad Street, Birmingham; August 21 is a special discussion.

At the “Dolben Arms” pub, Finedon, near Wellingborough, the members of the Nene Valley crowd foregather each week. August 1, 22 and September 5 are all natter sessions, and on August 8 G8AFN will talk about the solar factual data. He is followed by G4ENB, who will talk about SS/TV, both colour and B/W; and on August 29, G4BAO will talk about Six Metres.

It is always the fourth Wednesday for the North Devon club, on the even months they are at Pilton Community Centre, Barnstaple, and on the odd ones it is Bideford Community College, Abbotsham Road, Bideford.

The R.A.I.B.C. full members are invalid or blind; the supporter and representative members are those who find the time, one way or another, to be available if required to help out in the matter of raising funds, putting up aerials, reading the magazine on to tape, or whatever. Details from the Hon. Sec.—see Panel.

Turning to Reigate we see the Hq is still at the Constitutional and Conservative Centre, Warwick Road, Redhill, Surrey, where the group is to be found on the third Tuesday of each month.

The Royal Navy club is open to all those who are present or retired members of RN or MN, or of foreign navies. Details from the Hon. Sec.—see Panel.

The Sefton club has itself a problem; they have been asked to run a special-event station at the International Garden Festival between the beginning of June and mid-October, with GB1HGF, GB1GZ and GB6IT as the calls. They reckon on some 6000 QSOs and to be QSL’d, and would appreciate any help or sponsorship in their task. Details from the Hon. Sec.—see Panel.

As for the club, they are in session on alternate Wednesdays at the Walton Prison Officers Club, Hornby Place, Walton, Liverpool.

Every Wednesday evening the South Bristol club members head for the Whitchurch Folk House, East Dundry Road, Whitchurch, Bristol; August 1 is a talk on digital techniques, and August 8 a “Pocketfone Rally”. August 15 is VHF CW activity night, and on 22nd the club VHF DX contest ends. August 29 is a QRO activity night and on September 5 they have the AGM.

At Southdown there seems to be a hint of a change of Hq in the wind; perhaps therefore it would be wise to check with the Hon. Sec.—see Panel for his address—before turning up on the first Monday of the month at Chaselsey Home for Disabled Ex-Servicemen, Southcliffe, Eastbourne.

Now for Southgate the big thing is the Mayor’s Appeal; both Mayor and Mayoress of Enfield are radio amateurs, and it is intended to use this to help the Appeal. For details of all the club activities, contact the Hon. Sec.—see Panel.

The South Manchester doings are as follows: August 3 a Top Band D/F hunt, followed on 5th by their own heat of the RSGB national event. August 10 is a “QRO Miscellany” by G2HW; all still to be finalised for the rest of the month. The Hq is, as ever, at Sale Moor Community Centre, Norris Road, Sale.

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Change of Hq

This applies to Worthing which seems to have made a move to Lancing Parish Hall, South Street, Lancing, where they will gather every Wednesday evening. This spot has plenty of parking, and lies to the east of Worthing, between the sea front road and the A27, and handy for Lancing station. New members or visitors are welcome.

Useful topics are a part of good radio clubs; Yeovil has such a discussion on August 2, the subject being the effective operation of an amateur radio station. August 9 sees G3MYM instilling the art of making a simple short-wave receiver, and on 16th he tackles harmonic mixing. August 23 sees him discussing how to fit an amateur band into 180 degrees of bandspread. Finally, August 30 is the natter night.

It's every Friday at York, at the United Services Club, 61 Micklegate, York—and, if the letters are anything to go by, a very nice bunch of members to be visited!

Finis

The bottom of the pile again, and once more we have to remind you of deadlines—they're in the 'box'—and those dates are for arrival, addressed to “Club Secretary”, SHORT WAVE MAGAZINE, 34 High Street, Welwyn, Herts. AL6 9EQ. And, please make sure you send all the required primary information about your club!

**Rallies**

August 26, B.A.R.T.G. Rally, Sandown Park Racecourse, Esher, Surrey. 10.30 a.m. to 5 p.m., B.A.R.T.G. TU kits, etc., on sale, trade stands, refreshments, ample parking, talk-in on S22. More details from Ted Batts, GRLWY, 01-549 8233. September 9, Telford Mobile Rally, Telford Shopping Centre, Telford, Shropshire, doors open 11 a.m., 80 stands, restaurant, family attractions, free parking and admission. Details from G8DIR (0743-64273), G8UGL (0952-584173), or G3UKV (0952-55416); all QTHR.

**Scottish Convention**

This year's Scottish Amateur Radio Convention on September 8 will again be held in Cardonald College, Glasgow. As well as trade stands and bring-and-buy, there will be lectures by Rev. George Dobbs, G3RJV, Chris Bartram, G4DGU, of MuTek Ltd., and the HADRABS contest group. Facilities include extensive car parks, bar and restaurant. Demonstration stations will be on the air, and talk-in will be provided on S22 and the GL repeater on RB14. Doors open at 11 a.m., admission £1.00. The Convention is organised by the West of Scotland A.R.S., and more details are available from Ian McGarvie, GM4JDU, on 050581-2708.

**COURSES FOR THE R.A.E., 1984-85 — a first listing**

**Abergavenny:** Abergavenny and Nevill Hall A.R.C., course commences Sept. 11th. Full details from tutor, D. Jones, GW3SSY (tel: 0873-78674).

**Borehamwood:** De Havilland College, Elstree Way, Borehamwood, Herts. (01-953 6024), Tuesdays, 7-9 p.m., enrolment Sept. 10/11th 2-8 p.m., course commences Sept. 18th, lecturer G. L. Benbow, G3HB. Full details from the College.

**Bradford:** Bradford & Ilkley Community College, Great Horton Road, Bradford BD7 1AY (0274-733111), starting September, enrolment begins Sept. 11th. Contact tutor, P. Nurse, at the College for details.

**Derby:** Derby College of F.E., Wilmorton, Derby DE2 8UG, (0332-73012), commencing Sept. 19th, enrolment Sept. 10/11th. For further details, contact the course tutor, F. Whitehead, G4MLI, at the College.

**Farnborough (Hants.):** The Wavell School, Lynchford Road, Farnborough, Hants., commencing Sept. 17th. Ring 0252-518305 for enrolment details.

**Hemel Hempstead:** Dacorum College, Marlowes, Hemel Hempstead (0442-63771), Wednesdays, 6.30-9 p.m. (and Tuesdays, 6.30-9 p.m. if there is enough demand), starts Sept. 26th, enrolment Sept. 10th. Course tutor, C. B. Burke, B.Sc., G3VOZ. Further details from the College.

**Leamington Spa:** Mid-Warks. College of F.E., (Dept. of Eng.), Warwick New Road, Leamington Spa CV32 5JE, course begins in September, enrolment Sept. 6/7th. For more details contact Mr. C. Evans at the College, on 0926-311711 ext. 258.

**London (Chingford):** Friday Hill House, Simmons Lane, Chingford, London E.4, Thursdays, 7.30 p.m., commences Sept. 13th, enrolment on first night; tutor Alan Foss, GBEAY. Further details from the above address, or ring 01-529 3380.

**London (Hackney):** De Beavior Evening Institute, Tottenham Road, Dalston, London N.1, Wednesdays, 7.30 p.m., begins Sept. 24th, enrolment week commencing Sept. 17th, 7-9 p.m. Course tutor T. C. Clark, G4BZK, QTHR (01-249 1843).

**London (Hendon):** Williams Building, Hendon College of F.E., The Burroughs, London NW4 4BT, Tuesdays, 7.15-9.15 p.m., enrolment Sept. 12th 2-8 p.m.; tutor Tony Essex, G8WCX.

**London (Paddington):** Paddington College, 25 Paddington Green, London W2 INB, classes twice weekly commencing September, enrolment Sept. 10/11/12th, 1-4 p.m. and 6-8 p.m. Course tutors David Peace, G4KMK, and David Hunt, G6MFR. For more information contact David Peace at the College, on 01-402 6221 ext. 54.

**Loughborough:** Loughborough Technical College (Dept. of Elec. Eng.), Radmoor, Loughborough, Leics. LE11 3BT (0309-215831), Tuesdays, 6-7 p.m. (Morse) and 7-9 p.m. (Theory), commencing Sept. 11th. Course fee £7.30 (Morse) and £15.90 (Theory). Tutor Doug Doughty, G3FLS.

**Manchester (Swinton):** Pendlebury High School, Cromwell Road, Swinton, Mondays, 7.30 p.m., instructor P. Whatmough, G4HYE; also Morse class, Tuesdays, 7.30 p.m., instructor W. Stevenson, G4KKI. Full details from G4HYE (061-794 3706), or from Swinton A. E. Centre (061-794 5798).

**Nottingham:** Arnold and Carlton College of F.E., Digby Avenue, Mapperley, Nottingham NG3 6DR (0602-876503), Wednesdays, 7 p.m., commencing Sept. 19th, for May exam.; crash course for December exam. Thursdays at 6.30 p.m., commencing Sept. 20th. The College also offers other Radio Courses. Enrolment for all classes Sept. 11/12th, 2-8 p.m. Contact the College for further information.

**Slough:** Langley College of F.E., Station Road, Langley, Slough SL3 6BY (0753-49222), Thursdays, 5.30-7 p.m. (Operating Techniques), Thursdays, 7-8.30 p.m. (Morse), Wednesdays, 7-9 p.m. (Theory), enrolment Sept. 11th, 12-8 p.m. and Sept. 12th, 12.30-8 p.m. Further details from the tutor, A. J. Parcell, G8BIX, at the College.

**Walsall:** Walsall College of Technology, St. Paul's Street, Walsall WS1 1XN, enrolment Sept. 4/6/10th, course fee £22. Further information from course tutor, Frank Fear, on Aldridge 52706.

**Welwyn Garden City:** De Havilland College, Applecroft Centre, Applecroft Road, Welwyn Garden City, Herts., Thursdays, 7-9 p.m., commencing Sept. 20th, enrolment Sept. 10/11th, 2-8 p.m. at De Havilland College, The Campus, W.G.C. (tel: W.G.C. 26318/31344).
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