G3RJV begins the "JLD" 14 MHz Transceiver

G4DCV builds an Active CW Filter

FOR THE RADIO AMATEUR AND AMATEUR RADIO
**LANCASTHER & THE NORTH WEST’S LEADING RETAILER IN AMATEUR RADIO. 20 YEARS SERVING THE AMATEUR’S XTRA NEEDS. SPECIALISING ONLY IN AMATEUR RADIO EQUIPMENT.**

**24 HOUR MAIL ORDER SERVICE**

**ANTENNAS**

<table>
<thead>
<tr>
<th>Product</th>
<th>Price (inc. VAT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hy-Gain 12AVQ 3Band Vertical</td>
<td>£78.95</td>
</tr>
<tr>
<td>14AV/16_20 Band Vertical</td>
<td>£106.00</td>
</tr>
<tr>
<td>19AV/26 Band Vertical</td>
<td>£172.00</td>
</tr>
<tr>
<td>TH0MK 2E Tribander Beam</td>
<td>£379.00</td>
</tr>
<tr>
<td>TH0NJ 3E Tribander Beam</td>
<td>£299.00</td>
</tr>
<tr>
<td>20妖A 5 Element 20m Beam</td>
<td>£399.00</td>
</tr>
<tr>
<td>Explorer 1A, Tri-band</td>
<td>£499.00</td>
</tr>
</tbody>
</table>

**Mini Products**

<table>
<thead>
<tr>
<th>Product</th>
<th>Price (inc. VAT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>HQ1 Minibeam 10~15m</td>
<td>£199.00</td>
</tr>
</tbody>
</table>

**NEW TRIO MODELS**

<table>
<thead>
<tr>
<th>Model</th>
<th>Price (inc. VAT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TS730 2m handheld OM-SSB transceiver</td>
<td>£225.00</td>
</tr>
<tr>
<td>belcom LS20E 2M FM handheld transceiver</td>
<td>£138.00</td>
</tr>
</tbody>
</table>

**Microphone Modules, and other equipment also available, including I.C.S. - Diawa - Telereader - RSGB and ARRl publications - Tau - Yaesu.**
ADVERTISERS' INDEX

Amcomm Services .......................................................... 100
J. Birkett ................................................................. 136
British National Radio and Electronics School .................. 135
Colomor Electronics Ltd. ................................................ 138
Datong Electronics Ltd. .................................................. 100
Dewsbury Electronics ..................................................... 101
E.M.A .................................................................. 135
G2DYM Aerials .............................................................. 138
G3HSC (Rhythm Morse Courses) ..................................... 138
Hately Antenna Technology ............................................. 138
D. P. Hobbs Ltd. ............................................................ 136
C. M. Howes Communications ....................................... 102
KW Ten-Tec Ltd. ......................................................... 137
London Car Telephones Ltd. .......................................... 139
MuTel Ltd. ................................................................ 135
P.M. Electronic Services ............................................... 134
Quartslab Marketing Ltd. ............................................... 135
R.A.S. (Nottingham) ...................................................... 139
Radio Shack Ltd. ........................................................... 101
F.G. Rylands ................................................................. 135
S.E.M. .................................................................. 134
Small Advertisements .................................................... 137, 138, 139
South Midlands Communications Ltd. ............................ 102
Spectrum Communications ............................................ 136
Stephen-James Ltd. ...................................................... inside front cover
S.W.M. Publications ..................................................... back cover, inside back cover 136, 137, 139, 140
Thanet Electronics Ltd. .................................................. 98, 99
Uppington Tele/Radio (Bristol) Ltd. .................................. 136
Used Equipment Centre (G3RCQ) ................................ 138
W. H. Westlake .............................................................. 136
Reg. Ward & Co., Ltd. ..................................................... 135
Geoff Watts ................................................................. 136
WPO Communications .................................................. 134

CONTENTS

VHF Bands, by N. A. S. Fitch, G3FPK .......................................................... 103
A Simple Active CW Filter, by Paul Whatton, G4DCV .............................. 107
Self-Supporting Mast Erection: Examples and Hints, by D. J. Reynolds, G3ZPF .......................................................... 110
"SWL", by Justin Cooper ................................................................. 115
"Kitchen Table Technology", No. 9: The J.L.D. Transceiver (Part 1), by Rev. G. C. Dobbs, G3RJW .......................................................... 118
Communication and DX News, by E. P. Essery, G3KFE ......................... 123
What's in a Call Sign? by Stan Crabtree, G3OXC ...................................... 126
"Practically Yours", with Glen Ross, G8MWR ........................................ 127
Clubs Roundup, by "Club Secretary" .................................................. 129
More Mobile Rallies, 1985 ................................................................ 133

Editor: PAUL ESSERY, G3KFE/G3SWM
Advertising: Charles Forsyth

Published at 34 High Street, Welwyn, Herts. AL6 9EQ, on the last Friday of the month, dated the month following.
Telephone: 04-3871 5206 & 5207

Annual Subscription:
Home: £12.00, 12 issues, post paid
Overseas: £12.00 ($17.00 U.S.), post paid surface mail

Editorial Address: Short Wave Magazine,
34 High Street, Welwyn, Herts. AL6 9EQ, England.

Prices shown in advertising in this issue do not necessarily constitute a contract and may be subject to change.

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.

© Short Wave Magazine Ltd.

E. & O. E. VAT Reg. No. 239 4864 25

97
A new exciting set is the ICOM IC-3200E FM Dual-band transceiver (144-430/440 MHz). This is the smallest transceiver available.

The IC-3200E employs a function key for low-priority operations to simplify the front panel. LCD display is easy to read in bright places, showing frequency, VFO A/B, memory channel duplex mode and S-RF meter information.

Other features include a 10 channel memory able to store operating frequencies, Simplex or Duplex. A memory lock-out function allows the memory scan to skip programmed channels when not required. The IC-3200E has a built-in duplexer and can operate on one antenna for both VHF and UHF. Options include: IC-PS45 DC, power supply, HS-15 mobile mic, SM6 and SM8 desk mics, SP-10 external speaker and UT-23 speech synthesizer. A great future is predicted for the IC-3200E.

290D is the state of the art 2 meter mobile, it has 5 memories and VFO's to store your favourite repeaters and a priority channel to check your most important frequency automatically. Programmable offsets are included for odd repeater splits, tuning is 5KHz or 1KHz. The squelch on SSB silently scans for signals, while 2 VFO's with equalising capability mark your signal frequency with the touch of a button. Other features include: RIT, 1 KHz or 100Hz tuning/CW sidetone, AGC slow or fast in SSB and CW, Noise blanker to suppress pulse type noises on SSB/CW.

You can scan the whole band between VFO's/scan memories and VFO's. Adjustable scan rate 144 to 146 MHz, remote tuning with optional IC-HM1 microphone. Digital frequency display, Hi/Low power switch. Optional Nicad battery system allows retention of memory.

Soon to be announced!!

IG-735 New Compact HF and R7000 VHF/UHF Receiver.

* AT THE LAST COUNT

Thanet ICOM Thanet ICOM Thanet ICOM Thanet ICOM Thanet ICOM
At last, permits are now available in the U.K. for the 50MHz (FM) band. If you wish to use this less crowded amateur frequency the IC-505 SSB CW portable transceiver has already gained an excellent reputation world-wide.

The IC-505 features microprocessor frequency control, dual VFO's and 6-channel memories with memory scan. LCD ensures clear visibility even in sunlight. The 505 accepts a standard dry-cell pack, rechargeable nicad battery pack (BP10) or 13.8V external power supply.

Standard accessory circuits such as split switch, noise blanker, squelch and CW break-in are incorporated in the 505. Other accessories available include the EX-248 FM unit, BC-15 charger unit and the LC-10 carrying case.

All these features make the IC-505 a great transceiver that will enable you to operate on the 50MHz band, after all the rest of the world does!

You can get what you want just by picking up the telephone. Our mail-order dept. offers you:

- free, same-day despatch whenever possible,
- instant credit, interest-free H.P., telephone

Please note that we now have a new retail branch at 95, Mortimer Street, Herne Bay, Kent. Tel. 369464. Give it a visit, BCNU.

**Cue Dee Antennas Special Offer!**

CUE DEE antennas are designed to last for decades – the best possible aluminium alloy for this purpose is used (SIS 4212-06).

The booms are made of 28mm tubing with 1.5mm wall, with colour marks clearly indicating where to fit the elements. By using tubular boom, and a synthetic guy wire on the long yagis, the windload is reduced by a factor 0.66 compared to using square shaped material for boom and guying.

- **2 metre Yagis.**
  - 1444A - 4 element, 8dBd gain £19.00.
  - 10144 - 10 element, 11.4dBd gain £37.00.
  - 15144 - 15 element, 14dBd gain £49.00.

Order now while stocks last.

---

**Tono Linear Amplifiers**

- **2M - 100W**, £79.00.
- **MR - 150W**, £139.00.
- **Also available, new G-series with GaAs FET pre-amp.**
  - **2M - 130G**, £159.00.
  - **2M - 90G**, £149.00.
  - **2M - 40G**, £ 89.00.
  - **4M - 70G**, £179.00.

all inc. VAT.

Carriage charge is free for Cue Dee and Tono special offers.
Why own a 1st Class Radio with a 2nd Class Sound?

May we suggest an answer?

Now for the first time, a new ingenious compact sound system allows you to hear weak signals like never before, sort out the rare ones and listen to quality like you have never heard from your receiver, handle talkie or scanner. Usually, accessory speakers are no more than 50 pence speakers in fifty pound boxes. Their efficiency, frequency response and distortion levels are minimal and since most of all of the new transceivers have less than one watt of audio, our ability to understand becomes very difficult.

The new SS-2 Heil Sound System contains two five watt amplifiers, a 3.5” woofer with a half pound magnet a 1.5” tweeter with a 12 dB per octave passive crossover network. The tweeter is crossed over at 1500 Hz, right where the response of the human ear starts to fall off and the huge woofer fills out the mid-range and low frequency response. No single cheap speaker can begin to give you this type of response.

The second five watt amplifier can be used to drive a second speaker enclosure and will be used in a dual diversity system using the Heil parametric equalization system which will be introduced very soon.

When most receivers are running at a comfortable listening level, their little one half watt amplifiers are being pushed into extreme distortion levels. The extended response, the added efficiency and additional output power of the SS2 will lower your noise floor, reduce noise and allow you to copy signals that formerly were impossible to hear.

Mobile optional with the new Heil Sound System is unbelievable. The 5 watts of output and the tweeter system really adds to the articulation factor making signals so much easier to copy. The system makes Hand Held receivers come alive!

The SS-2 measures 3 3/4" x 5" x 3 1/4". It weighs 2 lbs. and is housed in a high impact silver beige case. Power requirements are 12-13.8 volts D.C. at 4(X) M.A. A red L.E.D. is mounted on the front panel for power up indication. All input/output connections to the amplifier is made through a 5 pin DIN plug.

You can own this great new addition to your station for only £65.00 inclusive of VAT and carriage. We suggest that you hurry as there is probably someone calling you right now that your present speaker isn’t truly reproducing. Discover the world of high quality audio today!

SS-2 Sound System  £65.00

Active Antennas

Satisfaction for you and your neighbours! Highly unobtrusive yet ideal for DX reception, Datong actives feature a dipole (not a monopole) for optimum rejection of local interference.

Price: AD270 £51.75 inc. VAT (indoors only); AD370 £69.00 inc. VAT (weatherproof)

To order simply dial 0532 552461

or write with cheque or postal order to

Dept SW Datong Electronics Ltd., Spence Mills, Mill Lane, Bramley, Leeds LS13 3HE, England

Access/Barclaycard welcome – Fast delivery service

Catalogue and data sheets on any product available free on request. Dial 0532 552461

We believe the AFR-2000 to be the first device available to feature fully automatic recognition of RTTY baud rate, shift and phase.

Its so easy to use, simply tune in the required station press the buttons, within 5 seconds the POCOMTOR has begun displaying the received text.

In the TOR mode (AMTOR — SITOR — SPECTOR) the unit will automatically determine whether the received signal is

ARQ, FEC selective or FEC collective and within the period of 5 seconds begins to display the received signal.

The AFR-2000 is available equipped for display onto a Video Monitor, via a TV set, or should you have a computer with a serial port can be displayed via the computer. It will also interface with the TELEREADER (CWR610E, CWR670, CWR675, etc) and the TONO range of terminals thus saving the cost of the VIDEO INTERFACE BOARD. A serial Printer may be interfaced via the built in RS232 interface. (300 baud).

PRICES:

AFR-2000 £427.00
CW option £125.00
Option video board £61.00
UHF TV modulator used with video option £12.00
Post and packing £3.75

Full particulars on request. Please include Large SAE.

Available soon AFR-8000 with built in LCD display. Price around £685.00 with features similar to the AFR-2000. Go Portable/mobile/ Maritime Mobile.

Dewsbury Electronics offer a full range of Trio Equipment always in stock.

We are also stockists of DAIWA-WELTZ-DAVTREND-TASCO TELEREADERS-MICROWAVE MODULES ICS AMTOR-AEA PRODUCTS-DRAE-BNOS

Dewsbury Electronics, 176 Lower High Street, Stourbridge, West Midlands.
Telephone: Stourbridge (0384) 390063/371228. Open Monday thru Saturday.

Instant H.P. subject to status, Access, Barclaycard and real money.

RADIO SHACK LTD

(Just around the corner from West Hampstead Station on the Jubilee Line)
Giro Account No. 588 7151 Telephone 01-624 7174 Telex: 23718
**COVER THE SPECTRUM**

**FRG 9600**

60 – 905 MHz Continuous

NBFM, WBFM, AM/W, AM/N & SSB*

100 Memory Channels

7(W) X 3(H) X 8 1/2 (D) ins

*SSB up to 460MHz

Keyboard frequency entry, spin tune VFO, computer control optional for both receivers.

**FRG 8800**

0.15 – 30 MHz (118 – 174 MHz)*

AM/W, AM/N, SSB, SW/W, CW/N

NBFM Standard (WBFM Option)

12 Memory Channels

*Optional Unit

Send large SAE for Details

South Midlands Communications Ltd.

S.M. HOUSE, RUMBRIDGE ST, TOTTON, SOUTHAMPTON SO44DP, ENGLAND. Tel: (0703) 867333.

**C. M. HOWES COMMUNICATIONS**

**FUN TO BUILD KITS BY MAIL ORDER**

Get more fun out of amateur radio with one of our easy to build kits. How about building yourself a station around our CTX transmitter and DcRx receiver kits for portable and holiday use during the summer?

All KITS come complete with a good quality printed circuit board that is drilled and tinned and has the component locations screen printed on it for easy assembly. All board mounted components are included, as are full, clear, instructions. The kits are also available ready assembled. This is an important part of our quality control. Because we assemble the kits for sale ourselves, we are continually checking that there are no design or component problems with the kits. You can be confident that our designs will prove a success in your station.

**CTX80 GRP CW TRANSMITTER FOR 80 METRES**

The CTX80 proving to be very popular indeed. Read the review by G3VTT in the March 85 issue of Shortwave Magazine. This straightforward CW transmitter will run up to about 5W RF output (the power is adjustable) and features key-click suppression and a five element low-pass output filter. The CTX80 is crystal controlled (one crystal supplied), but can be driven by our CVF80 VFO for full band coverage. Easy to build and great fun to use. There are hundreds of stations equipped for GRP CW on 80 Metres, there is no lack of contacts to be had! We will be producing versions of the CTX for other bands when time permits. The CTX80 works on 12 to 14V DC.

**CTX80 Kit £12.95.**

Assembled PCB module £18.95.

CVF80 VFO FOR 80 METRES.

This is a fully featured VFO for use with our CTX80 transmitter or other homebrew equipment. Stable FET oscillator, dual independent buffered outputs, onboard voltage regulator (RTF (calibrated control), etc. The circuit includes nine transistors and can drive both a CTX80 and DcRx80 receiver for transceive operation. Requires a 50pF tuning capacitor for full band coverage. We can supply a suitable device giving just under full band coverage (no chance of inadvertent out-of-band operation) at £1.50. Versions of both a CTX80 and DcRx 80 receiver for transceive operation. Requires a 50pF tuning capacitor for full band coverage. We can supply a suitable device giving just under full band coverage (no chance of inadvertent out-of-band operation) at £1.50. Versions of the CVF for other bands will be available later in the year.


DcRx DIRECT CONVERSION RECEIVER.

This design was originally conceived to meet the needs of the newcomer to the hobby. It enables a simple, single band receiver, of surprisingly good performance, to be built by a novice at a sensible price. The kit was reviewed in the May 84 issue of Shortwave Magazine. This straightforward CW transmitter will run up to about 1W RF output (the power is adjustable) and features key-click suppression and a five element low-pass output filter. The CTX80 is crystal controlled (one crystal supplied), but can be driven by our CVF80 VFO for full band coverage. Easy to build and great fun to use. There are hundreds of stations equipped for GRP CW on 80 Metres, there is no lack of contacts to be had! We will be producing versions of the CTX for other bands when time permits. The CTX80 works on 12 to 14V DC.

**XM 1 Kit £16.90.**

Assembled PCB module £21.30.


CO1 TX/RX CHANGE-OVER UNIT.

A PTT or RF switch changed over unit for use with our PA Series linears. Provision for connection of a preamp if required. Many uses around the shack for all sorts of switching requirements as well as use with our linears.


139 HIGHVIEW VIGO, MEOPHAM KENT DA13 OUT

FAIRSEA T (0732) 823129

If you would like more information on any product, simply drop us a line, enclosing an SAE. We have an information sheet on each kit.

PLEASE ADD 60p P&P to your total order value.

Delivery normally within 7 days.

From Dave, G6CQH, Technical Manager.
VHF BANDS

NORMAN FITCH, G3FPK

CONDITIONS have been quite mediocre for some weeks, consequently the post bag was not so bulky as usual. Due to illness at the printer's, the April issue was a few days late which, with the early deadline, did not help either. The main March highlight was the Convention, rather than anything that happened on the radio.

**VHF Convention**

March 23 saw another record-breaking attendance at the RSGB's 30th National VHF Convention at Sandown Park. One of the RSGB VHF Committee members said that over 2,600 tickets had been sold so the final attendance figure was likely not far short of 3,000. As always, the main concourse was crowded with bargain hunters. There was a severe bottleneck two-thirds the way up the hall because part of it seemed to be a "no go" area this year.

There were plenty of traders offering small components and who are seen frequently at the mobile rallies in the summer. There was a good selection of secondhand test gear for sale and the antenna makers and distributors were much in evidence. As usual, the RSGB's stand was large incorporating the numerous sub-hobby interests such as the irrepressible Charlie Newton, G2FKZ, with his mass of material on Aural propagation.

Buying a VHF/UHF antenna is one thing but you have to figure out how to support it. Commercial masts and towers can be very expensive so it was a pleasure to discover a company named Barengo, from Leicester, with a large range of mast supports, wall brackets, tube clamps, ground stakes, etc., all at very reasonable prices. From their catalogue you can design a mast for almost any situation, tilt-over, fixed, guyed or free-standing. They will also make anything in that line in galvanised steel to your own specification if you cannot find just what you need in the standard range.

The Convention part was officially opened by RSGB President Joan Heathershaw, G4CHH, who announced the RSGB VHF Committee's new 432 MHz award. The presentation of trophies followed prior to the lectures. Your scribe attended Ian White's, G3SEK, talk on VHF/UHF Receiver Front End Design, a curtain-raiser to a four-part treatise in **RadCom**. The next talk in this stream was by Geoff Brown, GJ4ICD, on the construction of high power VHF and UHF amplifiers and it was a full house affair.

The final session was the VHF Committee Forum which was a rather tame affair. The two main topics were random MS procedure and the utter flop of the earlier proposals whereby "your" frequency should be determined by the last letter of your callsign, and the publication of the VHF/UHF Newsletter edited by David Butler, G4ASR. With some justification, some members of the audience questioned why they should have to pay another £4.20 per year to read information they expected to find in **RadCom**'s VHF feature which seemed to include too much repeater information. The respective editors said the two features complemented each other, with the Newsletter including circuit diagrams which Ken Willis, G8VR, is not allowed to include in his column.

This was a very successful event and your scribe had the pleasure of the proverbial "eye-ball QSO" with many readers and regular contributors to this feature. The exhibition was organised by Les Hawkyard, G5HD, while Geoff Stone, G3FZL, organised the convention. Talk-in for the mobiles was run by the *Southwest London Raynet* group and the flea market by the *Echelford A.R.S.*

**Morse for All**

The Morse for Class B licensees experiment started on April 1. To date some 6,000 applied for the necessary letter of variation from the RSGB. Only a week had elapsed when this was being written but very few G1, G6 and G8 folk have been heard on CW at G3FPK. In spite of the recommendations which accompany the document concerning the observation of the band plan, Class B licensees have been heard in the exclusive CW section of the 2m band without voice identification, according to John Hunter, G3JMV.

At G3FPK, a local G6 was heard calling CQ on the key on 144.300 and a G4 with two G1s were running an FM QSO on 144.425 MHz using F2A for the CW. These activities are certainly *not* in the spirit of this experiment and are most unlikely to be appreciated by CW and SSB operators. FM operators ought to know that modulation by a single audio tone cannot fail to generate several "carriers" occupying a considerable bandwidth.

It is suggested that those wanting to practice CW should indicate this when calling CQ on 'phone. Particularly on 2m., bearing in mind the ever-increasing SSB activity, such sessions ought to be confined to 144.450 to 144.500 MHz using SSB for speech, of course. This would leave 144.150 to 144.450 MHz for SSB contacts. Better still, why not use the all-mode section, 144.300-144.845 MHz? With common sense and consideration for other band users, this experiment may be worthwhile. However, if normal SSB and CW operators are provoked by discourteous use of this concession, it is unlikely to be continued after next March 31.

**Telephone QRM**

No sooner the latest "facts" are published concerning the *Ambassador Telephone Saga*, more somewhat contradictory information reaches the office. However, a telephone call from BT confirmed they now have solved the problem. There are several different systems under the *Ambassador* label and the only ones that cause interference in the 144 MHz band are the business "key system" installations of which about 3,000 are in use. Only the ones made by G.E.C. have this problem, the Plessey made models being "clean".

On March 20, a Telex message was sent to all BT service departments instructing that all faulty units must be replaced as soon as they have been identified. Anyone experiencing interference should contact the General Manager of their local BT Area Office, quoting "Ambassador ESS RIJ problem." If the location of the offending telephone is known, a call to the fault repair service on 151 could produce a quick result.

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

- June issue—May 8th
- July issue—June 5th
- August issue—July 3rd

*Please be sure to note these dates*

**Awards Notes**

The 144 MHz QTH Squares Century Club has three more members. Certificate no. 47 was issued to the first key operator, Mrs. Ela Matyr, G6HKM, on March 14 for 100 squares confirmed. Her QTH is Great Waltham in Essex (AL 13g) and station details were given on page 77 in the April issue. However, her husband Roy's call is G3PMX and not C3PMX of course. All 100 confirmations were for SSB tropo. QSOs with stations in 19 countries.
Member no. 48 is regular contributor Dave Sellers, G3PBV, from Hennock in Devon (YK32b) whose certificate was issued on March 16 for 154 confirmed. His present station consists of either a Trio TS-770 or Yaesu FT-221R with a NAG amplifier running 200W. The antenna is a 14-ele. MET Yagi. 146 QSOs were on SSB and 8 on CW. 125 were tropo., 20 via Es, 8 via Ar and one on MS mode all from 28 countries.

Certificate no. 49 was issued to our first Dutch member, Harry Ten Veen, PA3AKM, (DM11j) on March 25. He lives in Steenwijk and was first licensed in 1975 with the call PE1CAL. The A licence came in Dec. 1978 and he was a member of the successful GM5CFJ expedition to the Shetland Islands that year. Harry is not very active but is interested in VHF DX-ing. His 100 squares comprised 99 tropo. and one Ar QSOs, 96 on SSB, three on FM and one on CW mode. His equipment is an Icom IC-211E with BF981 preamplifier running 50w to a PA0MS 10-ele. antenna 14m. a.s.l. The QTH is in the middle of Steenwijk at sea level and Harry's unconfirmed total is 131 squares in 24 countries. He says he has never had the opportunity of making an Es contact; may be this year OM?

There was an error last month. Walter Steinwender, OE61WG, is member no. 46, not 47. For the record, there are QTHCC members in eleven countries but in the British Isles, there are only English members; 31 in fact, but no GMs, GJs, etc.

Two more readers have joined the 144 MHz VHF Century Club with Certificate no. 373 issued to Ella Marty, G6HKK, and endorsed "All Dutch Stations." She also has a 432 MHz VHFCM claim being processed. Mike Gawne-Sheridan, G4WGS, from Greater Manchester in Cheshire, is member no. 374. He was first licensed as G6KGG in 1981 and his 100 stations were worked with a Yaesu FT-480R at 11w with a 16-ele. Tonna Yagi. His present station is an Icom IC-251E with mudeck front end and the power 100w. Mike also operates on 70cm. plus all the LF and HF bands.

The West Bromwich Central Radio Club, G4WBC, promotes an award to commemorate the twinning of Sandwell with Blanc Mesnil, wherever that is. One member of the club has to be worked plus 19 other stations from anywhere. The aim is to collect enough last letters of callsigns to spell out Sandwell Blanc Mesnil. Full details from Mr. W. E. Ansell, 117 Oxhill Road, Handsworth, Birmingham B21 8BH. Presumably a list of club members will be supplied.

Beaconry

Reg Woolley, GW8VHL, writes that EA1TA says the EA1VHF beacon in VDS9e on 144.867 MHz is off the air due to its causing QRM to some other service. A pity that, because it was a very useful beacon but it may be back if they can sort out the problem. John Jennings, G4VOZ, (Leics.) writing at the end of March, reports that GB3CTC on 70.03 MHz "... expired and has not been heard since." RSGB HQ had not been notified of this apparent failure in early March.

DX Notes

Henry Snip, PA3BWY, sent a long and informative letter to the main purport of which was to advise of four periods of operation on the weather ship Cumulus at Station Lima in the North Atlantic. PA3BWY/MM will be there up to May 3, then June 23-30, July 28 to Aug. 25 and Sept. 22 to Oct. 20. The June period is particularly interesting as it is in the peak of the Es season. Last year Henry detected the opening to EA/CT on June 30 so hopes that when there is Es activity this year, people will turn their beams towards 57°N, 20°W and call on 144.300 or 144.050 MHz.

The five meteorological observers and one senior man operate on a shift system. The crew listen to Dutch short wave broadcasts so HF operation between 0700 and 1300 GMT is most unpopular. In the evenings they try to listen to Dutch medium wave stations so 40m. and 80m. operation is out. Henry can operate on 10/15/20m. between 1200 and 1700 GMT and on 80m. with 100w between 2300 and 0400. He often contacts Kathy, G4LMO, around 0200 on this band and will also monitor 14.345 kHz, the European VHF Net QRG, in the afternoons. On 2m. he runs 10w. and the biggest antenna is the 8-ele. Yagi 4m. above the deck. Because of obstructions, there are blind spots about 30° wide, fore and aft. QSO square should be within tropo. range of western Ireland and the western area of Scotland, so it is hoped some E1/GI/GM operators might try to contact PA3BWY/MM to explore this path on 2m.

The Edinburgh VHF Group plan to operate from YQ square during the UHF/SHF contest on May 4/5, from a coastal site. GM8TSL reckons YQ has not been heard on 13cm. yet. They will be on at least twelve hours before the contest on 432.215 and 1,295.295 MHz, the respective calls being GM8TSL/P and GM8MJPV/P. 23cm. and 13cm. skeds can be arranged on 70cm. and the 13cm. station will be GM8MNP/G. GM8TSL can be reached on 0260 276905. On 70cm. they plan to use 400w to an 84-ele. group; on 23cm. 130w to a 92-ele. group and on 13cm., 25w to one metre dish.

Satellites

The only reader to mention any satellite activity is Colin Morris, G6ZPN, (W. Midlands) who has been using O-10 mostly on high elevation, southerly and easterly passes in the early morning hours. He runs about 140w e.r.p. and has
contacted 15 Europeans, three 4XAs, 2 Ws and 5 JAs. "The cream" was 7P8CM, VS6XMT and 8Q7AV. P29JS got away.

In the March VHF, mention was made of Soviet satellites RS-9 and RS-10. From a recent UoSAT Bulletin, RS-10's transponder is 145.96-146.000 MHz uplink and 29.46-29.50 MHz downlink, Mode A. 230nw and one watt beacons are on 29.457 and 29.503 MHz. Another transponder is Mode K, 21.26-21.30 MHz uplink and 29.46-29.50 MHz downlink. A Robot uplink on 21.140 MHz with downlinks on the aforementioned beacon QRGs is mentioned. A third transponder may be carried with Mode K uplink on 15m. and a downlink band of 145.960 to 146.000 MHz with a beacon on 145.957 MHz. Both satellites are reportedly undergoing tests at Kaluga.

Effective on April 1, the new O-10 schedule was Mean Anomaly 32 Mode B; MA 129 Mode L; MA 138 Mode B and off at 201.

Those looking ahead to Phase 3C, the next O-10 type satellite, may have four transponders to use. The first would be a Mode B one, 70cm/2m. up/down but offset from O-10. The second could combine uplinks on 24cm. and 2m. to a 70cm. downlink with an 800 khz bandwidth to be known as Mode J. A third West German group proposal is for a Mode L Packet transponder with 2,400 bps FSK on the uplink and 400 bps FSK on the downlink. A fourth idea is for a 70cm/13cm. up/down transponder suitable for a single FM signal approximately 20 khz wide.

AMSAT-USA now publishes the Satellite Journal, the successor to the discontinued Orbit Magazine. The first issue, Jan/Feb. 1985, is a slim 16 page A4 production with about 9 1/2 pages of editorial matter. It comes with membership of the organisation now $24 per year. Maybe it will improve but AMSAT-UK's excellent Oscar News is far superior.

Contest News

From G2RS, the results of two contests. The 1984 23cm. Cumulative event was won by Chris Easton, G8TFI, with 502 pts. G4NVA/P with 420 was runner-up and G6SNO/A came third with 281. In the Single-op. section of the Dec. 1984 Fixed Station contest, G4MDZ won with 4,201 pts. from 392 QSOs. GM4YX1 3,831/365 was second and G4UXK 3,096/335 came third. In the Multi-op. part, G4NKO won 4,422/452, with G4ANT 4,417/363 second and G6WSM 3,216/381 third.

On May 4/5 there is the 432 MHz to 24 GHz contest from 1400-1400 GMT and Multi-op. stations can operate concurrently using different callsigns. Radial ring scoring on 432 MHz and one point per kilometre on all other bands. On May 12 the second leg of the Microwave Cumulatives is from 0900-2000 GMT, the bands being 10 GHz and 24 GHz.

The 144 MHz and SWL contest is on May 18/19 at the usual 1400-1400 times bands being 10 GHz and 24 GHz. Effective on April 1, the new 0-10 transponder is 201.

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

Two Metres

Steve Green, G1INK, from Malvern, Worcs. has been a reader for two years and reports for the first time. He has been QRV since last September using a Trio TS-780 at 8w with an 8-69 MET antenna. His QTH is 550ft. a.s.l. Mark Brincat, GILAS, from Gravesend, Kent is another first time contributor who has also been reading the magazines for a couple of years. He first got interested in the hobby three years ago while in Malta. He got his licence at the beginning of February and uses an Icom IC-271E. His 9-69. Tonna Yaqi is only 10ft. a.g.l. but he hopes to get it higher soon. Yes, Mark, contest QSOs count for points in all the tables and you need not list all the details of date, time, location. etc. If you claim to have worked say 50 stations, that is good enough for the table.

Bob Nixon, G1KDF, (Lancs.) found conditions generally poor so concentrated on WAB square hunting. He maintains regular weekly contact with Graham Wilson, E15BUB, (VN57J) in Co. Galway, who is G1COR and keen to contact other stations. Colin Smith, G3GHY, is located only 38m. a.s.l. in the
New Forest in Hants. However, it is an open QTH and electrical noise is low. He added another 53 different stations this year to his CW ladder effort.

John Hunter, G3IMV, (Bucks.) noticed a weak Aurora at 1545 on Apr. 1 then worked GM3JII (WS) in the Western Isles and GM4JII (YQ). LA was heard. Nick Peckett, G4KUX, (Durham) missed it but he heard that a mobile station had heard an OH on SSB. G3PBV listened to the French E-M-E contest on Mar. 30/31 and copied KBR2Q for over 30 mins., towards Moon set with a single 9-ele. Yagi. Dave plans to launch four such Yagis with elevation control for further experiments. A duplex FM QSO on 144.010 MHz — no callsigns, of course — plus a high noise level, precluded identification of other E-M-E stations detected.

G4TIF added five more counties including E15FK (Cork) and E13BA (Dublin) on Mar. 9 on SSB. G4UKM enters the CW ladder with 121 stations so far. His DX added another 53 different stations this March. His best DX station heard was W80WM, (a good 400 Welsh watts,)" to make things a bit easier on MS.

At G3FPK, it has been probably the most unrewarding period for years with absolutely nothing new worked. As this was being edited, G6XLL telephoned to report an Aurora on Apr. 9. This was at 1445 and the last signal heard in ZL60j was at 1648. Only a few GM, LA and SM stations were heard during occasional listening and around 1600, signals were reasonably strong. QTE was 0-30° the GMS beaming at 75°.

Seventy Centimetres

New contributor G11JK is QRV on the band with a Trio TS-780 running 50w to a 17-ele. ME7 antenna at 50ft. G1KDF has been on 70cm. since Mar. 28 using a Yaesu FT-7900R, 50w BNSO amplifier and 19-ele. Tonna Yagi at 25ft. G3GHY borrowed a Yaesu FT-726 from G1JAF for the CW contest on Mar. 31 and made 11 QSOs including PA0WWM in poor conditions and high winds. G3PBV reports a brief tropo, lift the evening of Mar. 9 but with very little distant activity. G4TIF added only Essex, G4FUF, on Mar. 9 and Avon, G4YCD, on the 12th. In a 2m. QSO with G6UJB in Cornwall, they tried 70cm. but the contact was not completed. G4YCD got going on Mar. 9 from Avon with a Trio TR-9500 running 10w to a 21-ele. Tonna Yagi. Martin is operating, so how about a campaign to stamp out clarifiers?" Just leave the wretched thing switched off.

Ow to a 21-ele. Tonna Yagi. Martin is

G4ZTR
108
G4YCD got going on Mar. 9

Netting — A lost art

When the transceiver was invented, it was rightly hailed as a brilliant idea; one knob for tuning the receive and transmit frequency. This has now been fouled up by the introduction and misuse of the RIT or clarifier control. Instead of tuning a station in with the main VFO knob which should give true transceiver operation, most operators who have come to the amateur bands from the CB frequencies may be a couple of kilohertz different. This is sloppy operating, so how about a campaign to stamp out clarifiers?" Just leave the wretched thing switched off.

Epilogue

That's it for a rather dull month. Maybe next issue we might have the first ES to report or a nice tropo, lift. All your reports, etc., to "VHF Bands," SHORT WAVE MAGAZINE, 34 High Street, WELWYN, Herts., AL6 9EQ. The deadlines are in the box so please make a note of them all in your diaries. 73 de G3FPK.
A Simple Active CW Filter

PAUL WHATTON, G4DCV

IN common with many other VHF addicts G4DCV has recently begun to look to that ultimate in DX, E-M-E. Each month around perigee surprisingly large numbers of stations will be 'bouncing' from all over the world. A few of these can be heard with the kind of station equipment that many serious VHF DX'ers use on a daily basis: a sensitive receiver, fed with low-loss cable, from one or more long Yagis. It was not long before the shortcomings of the author's receiver, an FT-221R, became apparent, particularly as there is no provision for fitting narrow IF filters. Most of the signals that can be heard are very, very weak and a narrow receiver bandwidth is of great use in "digging them out of the mush." Since strong signals are unlikely to be a problem when listening to E-M-E (!) there is no reason why increased selectivity should not be obtained at audio frequencies.

The active audio filter described here was built using simple op-amp bandpass stages, four of which are cascaded together. This sort of filter finds many other applications, e.g. in direct conversion receivers, and in improving the performance of ageing HF equipment. Because of the narrow bandwidth of this filter, 126 Hz at the –6dB points, problems could be experienced if the receiver is not very stable or if signals drift. Should wider bandwidth be desired then fewer stages could be used, or the filter re-designed around lower Q stages.

Fig. 1 shows the basic bandpass filter building block, no originality can be claimed for this at all as it can be found in all the applications manuals. There is no magic about the values used here, the resistor values were simply calculated around capacitors available in the author's junk box. Increasing the capacitor values will lower the resistor values, thus lowering the input impedance of the filter section but making for a less compact layout.

RA sets the gain, whilst RB determines the bandwidth and RC the centre frequency of the filter section. If the values of the two capacitors CA and CB are made equal (CA = CB = C) then the three resistor values can be calculated from:

\[
RA = \frac{Q}{(Ho \times 2\pi FC)}
\]

\[
RB = \frac{2Q}{(2\pi FC)}
\]

\[
RC = \frac{Q}{((2Q - Ho) \times 2\pi FC)}
\]

Thus taking the filter described here and designing around a centre frequency (F) of 800 Hz, Q = 5, gain (Ho) = 1 and using 1000 pF capacitors we get:

RA = 994 K (use 1M).
RB = 1.99 M (use 1.8 M)
RC = 20.3 K (see text).

More detailed design information can be obtained from the excellent homebrewer's bible "Solid State Design for the Radio Amateur," available from Short Wave Magazine Publications Dept.

An internal view of the filter, showing RV5 soldered directly to S1.

In practice we can make RC a preset pot., in this case 50 K, which allows us to align each of the filter stages "on the nose," thus compensating for the component tolerances and, more importantly, allowing the filter to be set up to the same frequency as the transceiver's sidetone. The author had previously built a passive LC CW filter and much to his dismay found the performance so good that when he pressed the key to call another station, no sidetone at all was audible through the filter! If designing your own filter don't forget to put all quantities into their basic units, i.e. F in Hz and C in Farads, otherwise some very strange resistor values will result!
The filter in use with the author's FT-221R. The two switches are 'filter on/off' and the by-pass switch.
Refering to the circuit diagram, Fig. 2, audio from the receiver tape or headphone output (maximum 2V r.m.s.), is coupled into the first filter section through C2; C1 provides the mandatory RF decoupling, 1000 pF being used for VHF. If HF use is being contemplated then it might be as well to increase both C1 and C15 to 10,000 pF. The supply rail has an electrolytic, C16, decoupling it to earth; this is essential, it was inadvertently left out on the prototype which promptly burst into oscillation at around 2 MHz. R1 and R2 set the bias on the non-inverting input of the ICs to half the supply voltage. Here again the decoupling should not be omitted. Because of the high values of R1, R2, R3, there is a couple of seconds delay after switch-on as C3 charges. The operating voltage is not critical, anywhere between about 9 and 14 V is okay. Diode DI prevents possible damage when the inevitable happens.

The circuit was constructed on a piece of Veroboard (3.5 x 2.5 inches, the layout (which undoubtedly could be improved on) is shown in Fig. 3. Fig. 3 shows both the breaks in the copper necessary with 'Vero' and the minimum number of underboard joins to enable the filter to be built on uncontoured perforated board. The board is enclosed in a metal box with 3.5 mm. jacks used for the input and output. Although designed with a gain of unity, in fact a small (approximately 3 dB) loss is experienced compared with the straight through connection. This is compensated for by a preset pot. in the bypass mode, S1 in Fig. 4, selecting filter on/off. C1 is mounted on the input socket.

Several different op-amps can be used in this filter with similar results, including the LF351, 353, 355, TL061, 071, 081 and of course the trusty 741. Using the LF356 current consumption is about 12 mA, which is provided by an external supply. There is a lot to be said for battery powering this sort of accessory, fewer problems with RF are likely, in which case low power ICs such as the TL061 should be used. With these the consumption should be less than 4mA.

With a change of layout a very compact filter could be built around quad or dual package ICs. An external amplifier and loudspeaker are used with this filter at G4DCV, although there is sufficient output to drive a pair of high impedance headphones directly.

Alignment is simple, first set the pots RV1-RV4 to mid-travel and apply a suitable tone at around 800 Hz to the input. The output from a receiver with its BFO on and tuned to a carrier, or the sidetone from a transceiver, is suitable. Peak RV1-RV4 for maximum output level. The sidetone from the author's FT-221R turned out to be nearer 1 kHz so the filter was aligned on that frequency. Fig. 5 shows the response curve, plotted down to the -60 dB level, which is where G8FUR's test equipment ran out of range.

In use, very weak signals, e.g. VHF beacons, can be "dug out" and their callsigns read when they are barely audible without the filter. The effect on E-M-E signals is very impressive, greatly improving the readability. See you on the Moon!
Self-Supporting Mast Erection: Examples and Hints

D. J. REYNOLDS, G3ZPF

Concluding the design process for self-supporting masts and bases, as outlined in the four preceding articles in "Short Wave Magazine" (The Assessment of Local Windspeeds, June 1984; Windspeed to Wind Force, August 1984; Every Beam has its Moment, October 1984; Concrete Base Design, December 1984 and February 1985).

Case One

CONSIDER the hypothetical case where an amateur in the Scottish Highlands is debating the purchase of a new VHF array. The available information states that the windload of the aerial is 22.5 lb at 80 mph and the maximum survival velocity is 120 mph. What will be the windload at his QTH, and will the maximum survival velocity be exceeded?

The first step here, as is generally the case, is to determine the local design windspeed from the guidelines in the first article. The map of basic windspeeds shows that in the Highlands of Scotland a basic windspeed of (say) 50 metres/sec. could be expected. The next step is to assess the local site conditions and determine the topography factor from table 1, which (for an exposed site) is going to be 1.1.

For a suitably bleak moor, the ground roughness and height factor is on the top line of the graph in Fig. 2 of the first article, and for a mast height of 7.5 metres comes out to be 0.875. From that, the local design windspeed can be calculated as:

\[ 50 \times 1.1 \times 0.875 = 48.125 \text{ metres/sec}. \]

Moving to the second article, the conversion chart shows that to be about 110 mph, so the aerial will not (theoretically) break up in the wind, although doubtless Murphy will have a thing or two to say about that.

Now to set about finding the windload presented by the aerial at 110 mph from the information available. Looking again at the windspeed conversion chart it can be seen that 80 mph coincides with a pressure of about 16.5 lb/ft\(^2\), and since the proposed aerial has a windload of 22.5 lb, it must have an effective wind area of:

\[ \frac{22.5}{16.5} = 1.36 \text{ ft}^2. \]

From the same chart it can be seen that 110 mph relates to a dynamic pressure of 31.5 lb/ft\(^2\), so the aerial at that windspeed will have a windload of:

\[ 1.36 \times 31.5 = 42.95 \text{ lb}, \]

which is almost double the previous figure, even though the windspeed has only increased by about 50%. Provided that the mast can carry a headload of this magnitude, then all should be well.

Case Two

An amateur in the Midlands intends to erect a 33 ft self-supporting mast to carry an HF array which has a windload of 32 lb at 80 mph. He has already determined that the design windspeed for his QTH is 36 m/s (80 mph), so what size of mast will be needed if a tubular steel section is used?

The figure required here is the bending moment at the base of the mast, to determine a suitable size, but unfortunately the bending moment is partly caused by the wind forces on the sides of the mast and it is necessary to make a guessimate to determine a bending moment, and to then check that the guessimated size is adequate.

At the end of this article is an extract from a circular section chart giving the properties of the 'standard' section sizes, which will save having to work out the area and stiffness for each guessimate. The diameters available may seem inconvenient numbers, but are presumably just direct metric conversions of the old imperial sizes.

As an initial choice, try a 193.7 mm dia. tube, with 6.3 mm wall thickness. With a design windspeed of 36 m/s the conversion chart in the second article gives the dynamic pressure to be 800 N/m\(^2\), so using the formula for the force on a circular section,

\[ F = C_f \times A_e \times q \]

where \( C_f = 1.2 \),

\[ A_e = 193.7 \times 1000 \text{ mm}^2 \text{ per metre height} \]

\[ q = 800 \times 10^{-6} \text{ N/mm}^2, \]

gives a value for \( F \) of 185.95 Newtons per metre height, and since the bending moment for a UDL is

\[ M = \frac{wL^2}{2}, \]

the bending moment from the wind on the mast comes out to be 9.3 kNm (= 9300 Newton Metres). The aerial has a windload of
Main mast
Pivot pin
Backstop plate
Locking pin

Fig. 2
A simple tiltover base arrangement for a tubular mast. The backstop plate prevents the mast from going straight over, past the vertical, when erecting it.

32lb, and as 2.25lb are approximately 1kg, this means about 14.2kg. Converting to force units gives:

\[14.2 \times 9.81 = 139.5 \text{ Newtons}\]

The 9.81 is to convert kg into Newtons, in the same way that under the imperial system mass has to be multiplied by 32ft/sec². The bending moment for a point load is:

\[M = W.L,\]

which gives a bending moment from the aerial of:

\[139.5 \times 10 = 1395 \text{Nm}, \text{ or approx. 1.4kNm.}\]

Adding this to the previous figure for the wall of the mast gives a total bending moment of 10.7kNm.

From the section chart (Fig. 12) the following properties can be seen:

\[Z = 168 \text{cm}^3 \text{ or } 168000 \text{mm}^3\]
\[r_0 = 6.63 \text{cm} \text{ or } 66.3 \text{mm}\]
\[\frac{D}{T} = \frac{193.7}{6.3} = 30.7\]

Using the formula \[M = f.Z,\] and rearranging for \(f\) gives:

\[f = \frac{10.7 \times 10^6}{168000} = 63.69 \text{N/mm}^2 \text{ (the actual bending stress).}\]

Now to find the permissible bending stress, using the chart in the third article:

\[\frac{1}{r_0} = \frac{10000}{66.3} = 150.8,\]
\[\frac{D}{T} = \frac{193.7}{6.3} = 30.7,\]

giving the permissible bending stress as 104N/mm², which is greater than the actual bending stress, so all is well. Since the permissible stress is well above the actual stress, it would be possible to check again with a smaller section size, but availability will play a major choice here.

Case Three

A base is required for the previous example, where the housing estate is founded on an old fill site. Enquiries at the local authority offices reveal that the safe ground bearing pressure used by the developer was 80kN/m² (= 0.08N/mm²). A visual check around the estate confirms that no settlement problems have occurred, so adopt this value.

The first step is to determine the overturning moment at the bottom of the base. Since the mast is 10 metres high, and the base one metre deep, this gives a total of 11 metres. A deduction will have to be made for the fact that there is no wind on the side of the base, and this is outlined in Fig. 1.

\[B.M. \text{ from aerial} = 139.5 \times 11 = 1534.5 \text{Nm}\]
\[B.M. \text{ from wind on mast walls} = \frac{144 \times 11^2}{2} - \frac{144 \times 1^2}{2}\]

Giving a total overturning moment of 10174.5Nm (= 10.1745kNm)

Try a 1.75 metre square base, which will have a self-weight of 1.75 \times 1.75 \times 22 = 67.375kN (since concrete = 22kN/m³) and assume that the combined weights of the mast plus aerial come to 3kN. Note that the weight of the mast can be determined from Fig. 12. This gives a total vertical force of 67.375 + 3 = 70.375kN, and since the eccentricity is found from

\[e = \frac{\text{overturning moment}}{\text{vertical loads}}, \text{ then } e = \frac{10.1745}{70.375} = 0.145 \text{ metres}.\]

To provide a firm working surface, especially if the hole is left open for any time, put down a 50mm. layer of 'blinding' concrete on top of some broken bricks and rubble; this will stop the spacers sinking if the ground softens under the wet concrete.

B.M. from aerial = 139.5 \times 11 = 1534.5Nm
B.M. from wind on mast walls = \frac{144 \times 11^2}{2} - \frac{144 \times 1^2}{2}

Giving a total overturning moment of 10174.5Nm (= 10.1745kNm)

Try a 1.75 metre square base, which will have a self-weight of 1.75 \times 1.75 \times 22 = 67.375kN (since concrete = 22kN/m³) and assume that the combined weights of the mast plus aerial come to 3kN. Note that the weight of the mast can be determined from Fig. 12. This gives a total vertical force of 67.375 + 3 = 70.375kN, and since the eccentricity is found from

\[e = \frac{\text{overturning moment}}{\text{vertical loads}}, \text{ then } e = \frac{10.1745}{70.375} = 0.145 \text{ metres}.\]
Always ensure that the centre of the base is slightly higher than the edges, to prevent rainwater ‘ponding’ around the base of the mast.

The value of ‘Z’ for the base (diagonally) is found from:

\[ Z = \frac{b \cdot \sqrt{2}}{6\sqrt{2}} \]

which in this case is \( \frac{1.75 \cdot \sqrt{2}}{6\sqrt{2}} = 0.632 \text{m} \).

The pressures under the base can now be found from:

\[ p_{\text{max}} = \frac{W}{A} + \frac{W \cdot e}{Z} \quad \text{and} \quad p_{\text{min}} = \frac{W}{A} - \frac{W \cdot e}{Z}, \]

which in this case come out to

\[ p_{\text{max}} = \frac{70.375}{1.75 \times 1.75} + \frac{70.375 \times 0.145}{0.632} = 22.98 + 16.15 = 39.13 \text{kN/m}^2, \]

and similarly \( p_{\text{min}} = 22.98 - 16.45 = 6.53 \text{kN/m}^2 \).

Since both answers are +ve, there is no ‘tension’ under the base (and hence the formula is valid), but since the value for \( p_{\text{max}} \) is well below the SGBP of 80kN/m\(^2\) it might be possible to use a smaller base size. Trying a smaller base size might still give acceptable ground bearing pressures, but remember to re-check the eccentricity as this might have gone ‘over the top’.

Note that as with the value of ‘Z’ being divided by \( \sqrt{2} \) for the case when bending about a diagonal, the check that ‘e’ is less than one sixth the side length of the base is also divided by \( \sqrt{2} \). This would soon become apparent as negative values would be obtained for \( p_{\text{min}} \), which are unacceptable.

The remaining thing to check is that the restoring moments are twice the value of the overturning moments. The restoring moment is caused by the vertical loads acting against the wind forces.

Restoring moment = \( 70.375 \times (1.75 \times 0.5 - e) = 51.37 \text{kNm} \),

which is considerably more than twice the overturning moment.

**Practical Considerations**

Mathematical solutions are all well and good, but the practical construction of a mast is just an important part of the design process, if longevity is to be assured. The various sections of simple tiltover masts will now be considered, together with the weather protection for the entire assembly.

**Bottom Cover**

A typical base arrangement for a tiltover mast is illustrated in Fig. 2, and provided the two cast-in sections are maintained plumb and correctly spaced during construction, then few problems will be encountered provided that one or two points of detail are followed.

The first requirement is for there to be some concrete below the bottom of the cast-in sections, as shown in Fig. 3. This is to stop groundwater corroding the steel sections, and a minimum of 50mm. is required, although it would be better to aim for 100mm. to allow for some margin of error. It is very important to ensure that the concrete in the base has been well compacted, preferably with the use of a small poker vibrator as outlined in the previous article. Hanging the steel tubes above the bottom of the hole obviously presents a few practical difficulties, so inevitably some form of spacing pad will be envisaged. It might be tempting to use a brick, but if this is done then it must be an engineering brick (a ‘blue’ brick) since commons or facing bricks are porous, and will deteriorate if permanently saturated. A small concrete block could easily be made up, but as with the base it must be free from voids or ‘honeycombing’, as this will permit the ingress of groundwater.

**Bottom Protection**

Dig the hole for the base in dry weather, and ensure that the base is cast before any further rain, which would soften the soil at the base of the hole. All very easy for small bases, with light mast supports, but for the more ambitious projects other techniques will be needed. Fig. 4 shows a section through the bottom of a base, and the pre-treatment of the bottom of the hole prior to the
base being cast. About 150mm. of broken brick or rubble is put down and compacted, followed by a 50mm. layer of 'blinding' concrete. This provides a stable base to work from, and to position the bottom spacers onto, as well as protecting the base of the hole against dramatic changes in the weather. If poker vibrators are used to compact the base, the blinding concrete prevents the bottom of the hole being churned up into a muddy pool as the main base is cast. That would seriously impair the quality of the concrete around the base of the steel tubes, as well as the fact that the spacers would sink into the mud anyway. Even on a layer of the blinding concrete the spacers need securely fixing in position, as the action of the poker vibrator, plus the concrete swirling around in the hole, could displace them.

**Surface Details**

The point at which the steel tubes go into the top of the base is not only the point at which they are most highly stressed, but the point at which they are most susceptible to corrosion from any rain water that collects there. It is a good idea to slope the top surface of a base, to ensure that no 'ponding' of rainwater occurs around the steel tubes, as shown in Fig. 5. For large bases the sight of a large area of exposed concrete may be considered unsightly, in which case the detail in Fig. 6 may be of interest. It is slightly more difficult to construct, as the raised section needs casting at the same time as the rest of the base, or a crack will occur, and groundwater will percolate horizontally to the steel tubes. When the main body of the base has been poured, a small box shutter is supported in position off the sides of the hole, and the raising piece poured immediately.

However carefully the base is cast, the concrete will shrink very slightly as it dries, and may well open up a small gap around the tubes, as shown in Fig. 7. Any rainwater running down the face of the steel could collect in this crack, so a mastic seal is a useful idea at this point; however, mastic often cracks with age so checks are essential from time to time.

**Pivot Details**

Although tubular sections have been assumed up until now, there is nothing to prevent the use of a rectangular support detail,

![Diagram of Pivot Details](image)

This support detail is not to be recommended, because even with the use of spacer washers any wearing surfaces are curved, and the walls of the mast tube may buckle unless they are fairly thick. See text and Fig. 10. As outlined in Fig. 8. Although it has the benefit of only needing one cast-in section, it does entail the use of welding and is not really a viable proposition unless the constructor has some previous experience in the art, as the welds and plates will be taking the full loads from the mast.

Returning to the twin tube arrangement, Fig. 9 shows a basic pivot detail which has a few shortcoming, but doubtless has been used by some readers. The first snag is that the tops of the cast-in...

![Diagram of Improved Pivot Detail](image)

An improved version of Fig. 9, with all wearing surfaces parallel. The washers (shown black) seal the bearing tubes, and contain the grease pack. The bolt must be a good fit inside the tube, but alternatively a tube plus split pins can be used for the pivot to give a snug fit inside the bearing tube.
tubes are open to rainwater, which will quickly collect inside them unless a cap plate is fitted. Since any corrosion so caused would start from the inside, it is unlikely to be noticed until disaster is imminent. Another snag with the simple pivot detail is that all wearing surfaces are curved, which inevitably means small areas in contact and the gradual wearing away of the tube walls. Although it might seem that the mast will not be frequently raised and lowered, once a quick and easy way of getting aerials up and down is installed, then owners invariably make full use of the facility to experiment with aerials.

Fig. 10 shows a better detail, and one which would be an essential improvement over Fig. 9 for larger setups. The bearing tubes ensure that wearing surfaces are all parallel, and the washers (shown black) contain the grease pack. It is essential that the bolt is a snug fit inside the bearing tube, and it may be necessary to actually use a tube instead of the bolt to achieve this, with split pins at the ends.

**Telescopes and Counterweights**

Once a mast is in the lowered position, the self weight of the mast and that of the aerial now act at right angles to it, and will be difficult to overcome in order to get tall masts upright. Fig. 11 illustrates the problem in general terms, and can be analysed from the principle of moments outlined in the previous article. There are three alternatives, the first being to raise the pivot point to (say) two metres above ground, and the second being to use a winch to get the mast upright. In addition to using a winch for raising the mast vertical, it is possible to telescope the mast down to a shorter length before tilting it. If a square hollow section is used for the lower section of the mast, and a tubular one for the upper section, it can be arranged that the upper section fits snugly into the lower one, but the ‘free’ corners in the lower section can be used to contain pulleys and cable for raising the upper section. A telescopic mast is likely to be beyond the means or abilities of many readers, and since the practicalities will be familiar to most, the author has found a publication entitled the Kompass Index invaluable. This should be available in the reference section of local libraries, and consists of two volumes. It is possible to use the index in two ways. Either to obtain a list of makers of a specific item, or to obtain a list of items produced by a specific manufacturer, together with phone numbers and other company data.

**Painting Steelwork**

No matter how well constructed a steel mast is, it will rapidly rust away and weaken if not suitably protected, and some form of painting is obviously essential. There are dozens of suitable primers, undercoats, and topcoats available from a variety of manufacturers. Each situation will call for its own solution, since the range of requirements is enormous, and the best advice is to contact the technical advice section of any paint maker, who will be happy to advise suitable paint systems. To find the address of a paint maker, or any other product come to think of it, the author has found a publication entitled the Kompass Index invaluable. This should be available in the reference section of local libraries, and consists of two volumes. It is possible to use the index in two ways. Either to obtain a list of makers of a specific item, or to obtain a list of items produced by a specific manufacturer, together with phone numbers and other company data.

**In Conclusion**

The author is well aware that the design of self-supporting masts is only a fraction of the full range of mast types available, or of the support methods either, but at least the principles outlined in these articles may have shed some light on previously unforeseen difficulties. The magnitude of possible wind forces may come as an eye-opener to many, and even the rush-out-and-buy-one brigade will hopefully be able to approach manufacturers more knowledgeably. If the section on underground hazards seems rather an overkill, bear in mind that recently just digging a hole to plant a newly acquired conifer the author came across a service run about two feet below ground, although fortunately no problems ensued. Funny, though, how a conifer suddenly looks much better somewhere else!

---

**Table 1: Section properties for some commonly available tubular steel sections.**

<table>
<thead>
<tr>
<th>Tube Dia. (o.d.)</th>
<th>Wall Thickness</th>
<th>Area</th>
<th>Z</th>
<th>r_y</th>
<th>Mass</th>
</tr>
</thead>
<tbody>
<tr>
<td>mm.</td>
<td>mm.</td>
<td>cm²</td>
<td>cm³</td>
<td>cm.</td>
<td>kg/m.</td>
</tr>
<tr>
<td>76.1</td>
<td>3.2</td>
<td>7.33</td>
<td>12.8</td>
<td>2.58</td>
<td>5.75</td>
</tr>
<tr>
<td>88.9</td>
<td>3.2</td>
<td>8.62</td>
<td>17.8</td>
<td>3.03</td>
<td>6.76</td>
</tr>
<tr>
<td>114.3</td>
<td>3.6</td>
<td>12.5</td>
<td>33.6</td>
<td>3.92</td>
<td>9.83</td>
</tr>
<tr>
<td>139.7</td>
<td>5.0</td>
<td>21.2</td>
<td>68.8</td>
<td>4.77</td>
<td>16.6</td>
</tr>
<tr>
<td>168.3</td>
<td>5.0</td>
<td>40.7</td>
<td>123</td>
<td>4.60</td>
<td>32.0</td>
</tr>
<tr>
<td>193.7</td>
<td>5.4</td>
<td>31.9</td>
<td>146</td>
<td>6.66</td>
<td>25.1</td>
</tr>
<tr>
<td>219.1</td>
<td>6.3</td>
<td>37.1</td>
<td>168</td>
<td>6.63</td>
<td>29.1</td>
</tr>
<tr>
<td>252</td>
<td>8.0</td>
<td>46.7</td>
<td>208</td>
<td>6.57</td>
<td>36.6</td>
</tr>
<tr>
<td>29.1</td>
<td>10.0</td>
<td>57.7</td>
<td>252</td>
<td>6.50</td>
<td>45.3</td>
</tr>
<tr>
<td>33.6</td>
<td>12.5</td>
<td>71.2</td>
<td>303</td>
<td>6.42</td>
<td>55.9</td>
</tr>
<tr>
<td>40.7</td>
<td>16.0</td>
<td>89.3</td>
<td>367</td>
<td>6.31</td>
<td>70.1</td>
</tr>
<tr>
<td>45.3</td>
<td>8.0</td>
<td>42.1</td>
<td>218</td>
<td>7.53</td>
<td>33.1</td>
</tr>
<tr>
<td>41.6</td>
<td>10.0</td>
<td>53.1</td>
<td>270</td>
<td>7.47</td>
<td>41.6</td>
</tr>
</tbody>
</table>

**Fig. 11:** With tall masts and large arrays, the effort required to get the mast vertical can be excessive. A force of 4½ times the mast weight plus 9 times the aerial weight will need to be exerted on the above setup. Either the mast needs telescoping before lowering, or a counterweight will be required.
A THING that seems to be rarely mentioned in your letters is the reception of satellite signals, whether of the Russian RS series or the Oscar ones. Satellite down-link signals are to be heard on 28, 144 and 432 MHz; the ten-metre signals can be heard with simple equipment and arials, but to receive the other two one needs something a bit more dinky in the aerial line, depending on where the satellite lies at the moment in the sky. Obviously a satellite lying low above the horizon can be heard by aiming the beam at it without too much trouble, but if the darned thing is going right overhead then no matter which way you crank the beam around the horizon you'll have no joy. Obviously you need to be able to elevate the beam to look up into the sky: while the super ones are arranged to ‘track’ automatically, for the purposes of a listen to Oscar or RS one can use quite successfully some rather lash-up methods.

However, casual listening on the frequency isn’t really very satisfactory, so one needs to know the satellite predictions. They are published by AMSAT, and the contact is R. Broadbent, G3AAJ, 94 Herongate Road, Wanstead Park, London E12. If you include a fiver it will be enough for the predictions booklet, and an instructional handout, plus putting a bit in the AMSAT kitty — which makes the U.K. contribution to the design and development of any future ‘birds.’ Ron will also no doubt tell you how to become a member, and we recommend joining anyway.

Now, from the predictions and a couple of moments mental arithmetic one can establish, for any operational satellite, on any day, the time and the angle in degrees from true North at which the bird will rise over the horizon, the highest angle it will reach in the sky, in elevation, and the time and direction in which it will disappear below the horizon again. Now you have all you need to know to follow any satellite whose downlink signals are on 144 or 432 MHz, now or in the future.

For the lowest downlink band, namely ten metres, an aerial array such as we have discussed is hardly a proposition. Here though, we can get away with a low dipole and a ground-plane given a sensitive receiver, using the ground-plane most of the time while the bird is low in the sky and switching to the dipole when the satellite is nearly overhead. Try a listen between 29.4 to 29.6 MHz and in due course you’ll probably stumble across signals from one of the Russian satellites which are quite popular and well-used by all countries. However, one must realise that all these amateur satellites live on batteries recharged by solar cells; thus if the batteries show any signs on the telemetry of being a little ‘down’ the satellite will be commanded ‘off’ by a ground station while it’s batteries get in a recharge.

All that remains is to mention ‘Doppler Shift’ in satellite signals. If we imagine an orbit which will take a satellite right over our heads, then we will find that it is apparently high in frequency until it goes over our head, and then low as it leaves us. In the simplest terms we can say our satellite signal will ‘drift’ to a greater or lesser extent, depending on whether the orbit takes it nearly overhead or low to the horizon.

How about a section of the HPX Ladder for signals heard through satellites only?

## Your Letters

Quite a popular area for SWL’s seems to be the one around Hastings; and to kick off we have the letter from N. Jennings (Rye), who now has his Maidenhead Squares data, plus a program for this and for contest scoring to put in his computer. The ladder lists aren’t as long as of yore; partly because Norman’s heard the easy ones and additionally because he has had to cut out the late night sessions on health grounds.

Hard luck on G. Skipton (Rye); George included a G4WCP/squiggle and we just can’t manage to decode the suffix . . . could be /M59 or even HSQ, or maybe something totally different! Please clarify for next time, OM.

Next a first contact with I. Thompson (Rye) who is a communications officer with Sussex Police, and has been an SWL and a reader of Short Wave Magazine for around 30 years. That is a definitely radio-oriented way of life! Ian is taking RAE at Hastings club, and offers a vote of thanks to all RAE class instructors, wherever they may be, for their hard work. For the listings, Ian has a Spectrum, with Masterfile Series 9 program, and a printer which most definitely isn’t of Sinclair origin but gives a nice easy-to-read page.

Old-timer N. Henbrey (Northiam) hasn’t been any too active, except for 7 MHz and VHF contests; Norman went over to see N. Jennings in Rye to score out his VHF contest log, using the Jennings computer and program; the program originated, incidentally, from “SWL” contributor Peter Lincoln.

J. Routledge (Hartlepool) says he has now finished his model railway layout, and so he can pay more attention to SWL. In fact most of that increased attention has been applied to the RTTY mode.

N. Askew (Coventry) put his receiver up in the loft when he went on holiday, and has only recently got around to fishing it out again; and there we gather still a few prefixes to be claimed from 1983-4 . . . such dereliction of duty!

B. F. Hughes (Harvington) is seriously considering a half-sized G5RV. As for the preferred direction of the aerial, it will of course be different on each band as the shape of the lobes — the ‘polar’ diagram — changes. Most of the DX lies either east or west of the U.K., though it is nice to have some

## ANNUAL HPX LADDER

**Starting date, January 1, 1985**

<table>
<thead>
<tr>
<th>SWL</th>
<th>PREFIXES</th>
<th>SWL</th>
<th>PREFIXES</th>
</tr>
</thead>
<tbody>
<tr>
<td>C. Burrells (Stevenage)</td>
<td>465</td>
<td>I. Thompson (Rye)</td>
<td>302</td>
</tr>
<tr>
<td>S. Wilson (St. Andrews)</td>
<td>450</td>
<td>D. Pye (London W2)</td>
<td>219</td>
</tr>
<tr>
<td>J. Singleton (Withernsea)</td>
<td>322</td>
<td>M. Probert (Basingstoke)</td>
<td>205</td>
</tr>
</tbody>
</table>

Minimum of 200 Prefixes to have been heard for an entry, since January 1, 1985. In accordance with HPX Rules, see p. 19, March issue.
coverage of Africa to the south on one band or another. With a half-sized G5RV the writer got pretty fair all round results on Forty using it as an inverted-V, and it was quite good on 14/21/28 MHz too at that time and stage of the sunspot cycle.

P. A. Singleton (Blackpool) is now back on the air thanks to his XYL Shelagh as he had been retired for the benefit of all - heaven forbid that these antics should become a habit! We remember both John and his XYL Shelagh were both dead keen until they discovered speedway - and then they disappeared! On a different tack, John reckons 144 MHz is very interesting indeed.

Now to another returned Singleton - J. Singleton who used, as we recall, to write from Hull many moons ago but has now, after being retired (at least thirty) on medical grounds, moved to a smaller house in Withernsea, a hundred yards from the beach, to the delight of three sons and the dog. We remember both John and his XYL Shelagh were both dead keen until they discovered speedway - and then they disappeared! On a different tack, John reckons 144 MHz is very interesting indeed.

Now to another returned Singleton - J. Singleton who used, as we recall, to write from Hull many moons ago but has now, after being retired (at least thirty) on medical grounds, moved to a smaller house in Withernsea, a hundred yards from the beach, to the delight of three sons and the dog. We remember both John and his XYL Shelagh were both dead keen until they discovered speedway - and then they disappeared! On a different tack, John reckons 144 MHz is very interesting indeed.

Now to another returned Singleton - J. Singleton who used, as we recall, to write from Hull many moons ago but has now, after being retired (at least thirty) on medical grounds, moved to a smaller house in Withernsea, a hundred yards from the beach, to the delight of three sons and the dog. We remember both John and his XYL Shelagh were both dead keen until they discovered speedway - and then they disappeared! On a different tack, John reckons 144 MHz is very interesting indeed.

Now to another returned Singleton - J. Singleton who used, as we recall, to write from Hull many moons ago but has now, after being retired (at least thirty) on medical grounds, moved to a smaller house in Withernsea, a hundred yards from the beach, to the delight of three sons and the dog. We remember both John and his XYL Shelagh were both dead keen until they discovered speedway - and then they disappeared! On a different tack, John reckons 144 MHz is very interesting indeed.

Now to another returned Singleton - J. Singleton who used, as we recall, to write from Hull many moons ago but has now, after being retired (at least thirty) on medical grounds, moved to a smaller house in Withernsea, a hundred yards from the beach, to the delight of three sons and the dog. We remember both John and his XYL Shelagh were both dead keen until they discovered speedway - and then they disappeared! On a different tack, John reckons 144 MHz is very interesting indeed.

Now to another returned Singleton - J. Singleton who used, as we recall, to write from Hull many moons ago but has now, after being retired (at least thirty) on medical grounds, moved to a smaller house in Withernsea, a hundred yards from the beach, to the delight of three sons and the dog. We remember both John and his XYL Shelagh were both dead keen until they discovered speedway - and then they disappeared! On a different tack, John reckons 144 MHz is very interesting indeed.

Now to another returned Singleton - J. Singleton who used, as we recall, to write from Hull many moons ago but has now, after being retired (at least thirty) on medical grounds, moved to a smaller house in Withernsea, a hundred yards from the beach, to the delight of three sons and the dog. We remember both John and his XYL Shelagh were both dead keen until they discovered speedway - and then they disappeared! On a different tack, John reckons 144 MHz is very interesting indeed.

Now to another returned Singleton - J. Singleton who used, as we recall, to write from Hull many moons ago but has now, after being retired (at least thirty) on medical grounds, moved to a smaller house in Withernsea, a hundred yards from the beach, to the delight of three sons and the dog. We remember both John and his XYL Shelagh were both dead keen until they discovered speedway - and then they disappeared! On a different tack, John reckons 144 MHz is very interesting indeed.

Now to another returned Singleton - J. Singleton who used, as we recall, to write from Hull many moons ago but has now, after being retired (at least thirty) on medical grounds, moved to a smaller house in Withernsea, a hundred yards from the beach, to the delight of three sons and the dog. We remember both John and his XYL Shelagh were both dead keen until they discovered speedway - and then they disappeared! On a different tack, John reckons 144 MHz is very interesting indeed.
Nice to hear that C. Burrells (Stevenage) was able to add a few to his score after his recent illness; Charlie is much better now and looking forward to warm weather and fresh air in his garden, but not so keen on the idea of decorating!

E. M. Gauci (Malta) has turned up another oddball, this one being copied as G8QVA/5. This one is a phoney for certain, as the "G" Call Book indicates that no calls in the series 'G8Q' were issued. G0/ZL1SD was one of the new-form reciprocal calls — ZL1SD operating from somewhere in the U.K. The other query is VE3KFI/49X — heaven only knows what that suffix implies, but it can only really count as a VE3. The end result, therefore, knocks Eddie's claim down by two. Never mind!

H. M. Graham (Chesham) has his usual long and interesting letter. Fifteen seem to have produced some quite interesting stuff when open, and certainly there have been ZS signals audible when the band would only support north-south propagation — there is so little activity in the rest of Africa these days. On Twenty, the most interesting aspect was the presence of VKs at 'abnormal' times such as early afternoon, on to teatime. On the WAB front, Maurice seems to have had a thin time on Forty and not much better on Eighty, with new ones for him distinctly thin on the ground.

N. Fox (Wakefield) is now back at work, and since it involves shifts his listening times will alter quite a bit — this is no bad thing really in terms of SWL, as it is well known that the easiest way to bump up the score is to listen at a different time.

J. Chapman (Newark) has lost his shack, converted into a nursery, and doesn't say what he is going to do instead — shed at the end of the garden? Of course there is usually a place in the cubby-hole under the stairs if you don't spread yourself! We recall one such shack, back in the early fifties, with a set of Lecher Lines used for a crude wavemeter mounted on the door, so if one tried to shut oneself in the wires cut into the back of the head!

After a long period of silence, J. Heath (St. Ives, Cambs.) has returned to the fold; domestic business was the culprit. However, John has an update to his score, and hopes to have more time for SWL in the future.

Quite a large increase in the total for E. W. Robinson (Felkstowze); while this was mainly due to the new Russian prefixes commemorating the 40th anniversary of Victory in Europe, there was definitely an element of 'too darned cold to venture out of the shack' about it too, we suspect.

As usual, we have just a list from M. Rodgers (Harwood) taking him up to 1507.

Our final contributor this time is R. Wooden (Staines) who has taken down his half-size G5RV in favour of a sixty-foot end-fed which has bumped-up the received signal strengths a lot but has also 'improved' reception of the local TV line-timebases. Roy has some hopes of securing an improvement by the use of a counterpoise on the earth terminal. Doubtless Roy will report progress next time — we all need ideas on this particular problem!

**SWL Contest**

A very late letter came in from D. A. Whitaker with regard to the SWL Contest set for June 23 — Mid-Summer Day. The contest is to run from 1400 GMT until 2000 GMT, covering 14, 21 and 28 MHz. The object is to test propagation and conditions at this time of the year on the HF bands. Scoring: 1 point for each different station heard on each band. Multiply the points scored on each band by the number of countries heard using the ARRL List as the standard. Modes of operation. Phone and CW. Use separate log sheets for each band, and record the date, time GMT, band, station heard, the station he worked/called, report at listener's QTH, and points claimed. Entries to be postmarked no later than July 15, and posted to David Whitaker, "Hillcourt", 57 Green Lane, Harrogate, N. Yorks HG2 9LN.

And, of course, pass the word on anything of special interest to us! — particularly on ten metres.

**Help!**

We had an interesting letter from an old-timer, William Forsyth, of 'Aldernaig', Avoch, Ross & Cromarty, IV9 8QL. He was, back in those pre-war days a member of BSWL, member number 1056, and is now sitting RAE some fifty years after building his first receiver. More to our point, SWL Forsyth mentions that he used to correspond with another SWL in the Midlands, whose name was Eric H. Bardsey. The latter served in minesweepers during the second world war, and is understood to have written a chapter in a book about these vessels.

If anyone knows of his gentleman's present address will they please put him into touch with Mr. Forsyth.

**QRT**

That brings us to the bottom of the pile for this time. Last time, quite a few letters didn't make it in time, so this time we suggest you try and get your letter into the post a little bit earlier to ensure making the deadline, which is Thursday, May 22, addressed as ever to your old J. C., "SWL", SHORT WAVE MAGAZINE, 34 High Street, Welwyn, Herts. AL5 9EQ. Till then, good hunting!
“Kitchen Table Technology”

A Series of Occasional Articles to put the ‘amateur’ back into Amateur Radio

REV. G. C. DOBBS, G3RJV

No 9: The “J.L.D.” Transceiver – a compact 20m. rig for portable or holiday use

Part 1 – The Transmitter

Was it G.B.S. who said that his idea of hell was a permanent holiday? Certainly holidays can be trying at times and wherever the venue or whatever the style of holiday, the holidaymaker often finds all the spare time on his or her hands difficult to fill. That accounts for the welter of paperback bookshops found at holiday places and travel centres. Watching television in the evening when the children are sleeping is a bit “coals to Newcastle” so out comes the latest popular paperback book.

For many years my wife and I have taken walking holidays, usually hiring a cottage near some hills and spending the daytime “upint t’hills,” as they say around these parts. We have now converted to a motor caravan but still enjoy the outdoor life during the daytime. In the evening I have usually managed to provide myself with a little HF band transceiver and enjoyed some gentle QSOs to end the day. Over the years I have been able to devise what I believe to be the best alternatives for a little amateur radio away from home.

The requirements for a holiday, or “away from home” station are:

1. The station must be small. It has to be an extra amongst the amazing collection of bric a brac that a family finds to put into the holiday suitcases.
2. It needs modest power requirements. There may not be a convenient mains supply so the transceiver ought to be capable of several days operation on smallish rechargeable batteries. A QRP rig is ideal.
3. The station must operate on the band where some QSOs ought to be possible most of the time during the summer months.
4. The antenna required for the station must be small and inconspicuous. Ideally it should be capable of being strung up to the nearest convenient high point and not be spottable by others.

Armed with this simple set of needs, I have found over the years that the simplest alternative is to have a small CW station operating on the 20m. (14 MHz) band. It is possible to have useful QSOs with low power on that band in the summer months. A half-wave dipole cut from thin wire and fed with thin coaxial cable (say RG174) is very easy to transport, can be put up in almost any situation and is difficult to see by “non-desirables”.

The “J.L.D.” Transceiver – a compact 20m. rig for portable or holiday use

Part 1 – The Transmitter

The requirements for a holiday, or “away from home” station are:

1. The station must be small. It has to be an extra amongst the amazing collection of bric a brac that a family finds to put into the holiday suitcases.
2. It needs modest power requirements. There may not be a convenient mains supply so the transceiver ought to be capable of several days operation on smallish rechargeable batteries. A QRP rig is ideal.
3. The station must operate on the band where some QSOs ought to be possible most of the time during the summer months.
4. The antenna required for the station must be small and inconspicuous. Ideally it should be capable of being strung up to the nearest convenient high point and not be spottable by others.

Armed with this simple set of needs, I have found over the years that the simplest alternative is to have a small CW station operating on the 20m. (14 MHz) band. It is possible to have useful QSOs with low power on that band in the summer months. A half-wave dipole cut from thin wire and fed with thin coaxial cable (say RG174) is very easy to transport, can be put up in almost any situation and is difficult to see by “non-desirables”.

The “J.L.D.” Transceiver – a compact 20m. rig for portable or holiday use

Part 1 – The Transmitter

The requirements for a holiday, or “away from home” station are:

1. The station must be small. It has to be an extra amongst the amazing collection of bric a brac that a family finds to put into the holiday suitcases.
2. It needs modest power requirements. There may not be a convenient mains supply so the transceiver ought to be capable of several days operation on smallish rechargeable batteries. A QRP rig is ideal.
3. The station must operate on the band where some QSOs ought to be possible most of the time during the summer months.
4. The antenna required for the station must be small and inconspicuous. Ideally it should be capable of being strung up to the nearest convenient high point and not be spottable by others.

Armed with this simple set of needs, I have found over the years that the simplest alternative is to have a small CW station operating on the 20m. (14 MHz) band. It is possible to have useful QSOs with low power on that band in the summer months. A half-wave dipole cut from thin wire and fed with thin coaxial cable (say RG174) is very easy to transport, can be put up in almost any situation and is difficult to see by “non-desirables”.

The “J.L.D.” Transceiver – a compact 20m. rig for portable or holiday use

Part 1 – The Transmitter

The requirements for a holiday, or “away from home” station are:

1. The station must be small. It has to be an extra amongst the amazing collection of bric a brac that a family finds to put into the holiday suitcases.
2. It needs modest power requirements. There may not be a convenient mains supply so the transceiver ought to be capable of several days operation on smallish rechargeable batteries. A QRP rig is ideal.
3. The station must operate on the band where some QSOs ought to be possible most of the time during the summer months.
4. The antenna required for the station must be small and inconspicuous. Ideally it should be capable of being strung up to the nearest convenient high point and not be spottable by others.

Armed with this simple set of needs, I have found over the years that the simplest alternative is to have a small CW station operating on the 20m. (14 MHz) band. It is possible to have useful QSOs with low power on that band in the summer months. A half-wave dipole cut from thin wire and fed with thin coaxial cable (say RG174) is very easy to transport, can be put up in almost any situation and is difficult to see by “non-desirables”.

The “J.L.D.” Transceiver – a compact 20m. rig for portable or holiday use

Part 1 – The Transmitter

The requirements for a holiday, or “away from home” station are:

1. The station must be small. It has to be an extra amongst the amazing collection of bric a brac that a family finds to put into the holiday suitcases.
2. It needs modest power requirements. There may not be a convenient mains supply so the transceiver ought to be capable of several days operation on smallish rechargeable batteries. A QRP rig is ideal.
3. The station must operate on the band where some QSOs ought to be possible most of the time during the summer months.
4. The antenna required for the station must be small and inconspicuous. Ideally it should be capable of being strung up to the nearest convenient high point and not be spottable by others.

Armed with this simple set of needs, I have found over the years that the simplest alternative is to have a small CW station operating on the 20m. (14 MHz) band. It is possible to have useful QSOs with low power on that band in the summer months. A half-wave dipole cut from thin wire and fed with thin coaxial cable (say RG174) is very easy to transport, can be put up in almost any situation and is difficult to see by “non-desirables”.

The “J.L.D.” Transceiver – a compact 20m. rig for portable or holiday use

Part 1 – The Transmitter

The requirements for a holiday, or “away from home” station are:

1. The station must be small. It has to be an extra amongst the amazing collection of bric a brac that a family finds to put into the holiday suitcases.
2. It needs modest power requirements. There may not be a convenient mains supply so the transceiver ought to be capable of several days operation on smallish rechargeable batteries. A QRP rig is ideal.
3. The station must operate on the band where some QSOs ought to be possible most of the time during the summer months.
4. The antenna required for the station must be small and inconspicuous. Ideally it should be capable of being strung up to the nearest convenient high point and not be spottable by others.

Armed with this simple set of needs, I have found over the years that the simplest alternative is to have a small CW station operating on the 20m. (14 MHz) band. It is possible to have useful QSOs with low power on that band in the summer months. A half-wave dipole cut from thin wire and fed with thin coaxial cable (say RG174) is very easy to transport, can be put up in almost any situation and is difficult to see by “non-desirables”.

The “J.L.D.” Transceiver – a compact 20m. rig for portable or holiday use

Part 1 – The Transmitter

The requirements for a holiday, or “away from home” station are:

1. The station must be small. It has to be an extra amongst the amazing collection of bric a brac that a family finds to put into the holiday suitcases.
2. It needs modest power requirements. There may not be a convenient mains supply so the transceiver ought to be capable of several days operation on smallish rechargeable batteries. A QRP rig is ideal.
3. The station must operate on the band where some QSOs ought to be possible most of the time during the summer months.
4. The antenna required for the station must be small and inconspicuous. Ideally it should be capable of being strung up to the nearest convenient high point and not be spottable by others.

Armed with this simple set of needs, I have found over the years that the simplest alternative is to have a small CW station operating on the 20m. (14 MHz) band. It is possible to have useful QSOs with low power on that band in the summer months. A half-wave dipole cut from thin wire and fed with thin coaxial cable (say RG174) is very easy to transport, can be put up in almost any situation and is difficult to see by “non-desirables”.
I have tried multiband operation, once having a little 40/20m. portable transceiver, but this means having to try more complex aerials and providing an ATU and probably an SWR bridge. On the whole, experiments with very small aerials such as loaded whips and helicals, although interesting, have never produced as many easy QSOs as the simple dipole. I have erected 20m. dipoles in some quite surprising places!

This little project is a simple, inexpensive transceiver that could be used as a holiday rig. Although the transceiver is simple and only runs a couple of watts over a limited frequency range, it is capable of useful contacts on the 20m. band with a dipole. I tested the prototype by stringing up a dipole and going on the band one afternoon when winter conditions were appalling and worked 4 countries in under an hour. The transceiver could be used as a standby rig for home use or the transmitter could be built for use with an existing receiver. So whether it is to be used in a luxury hotel, a tent or in the shack, this little transceiver is a simple, low-cost way to have QSOs on the 20m. band.

The Circuit

The circuit of the transmitter is shown in Fig. 1. In the October 1983 issue of Short Wave Magazine I described a little QRP transmitter for the 20m. band designed for those who had never built a transmitter before. It was called "The Acme Foolproof" Twenty-Metre Transmitter and was built on

![JLD Transmitter Circuit](image-url)

**Table of Values**

**Fig. 1**

<table>
<thead>
<tr>
<th>Capacitors</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1, R9</td>
<td>10K</td>
</tr>
<tr>
<td>R2, R8</td>
<td>4.7K</td>
</tr>
<tr>
<td>R3, R4</td>
<td>220R</td>
</tr>
<tr>
<td>R5</td>
<td>1K</td>
</tr>
<tr>
<td>R6, R7</td>
<td>18K</td>
</tr>
<tr>
<td>VR1</td>
<td>4.7K preset</td>
</tr>
<tr>
<td>C1, C10, C11</td>
<td>0.1 μF</td>
</tr>
<tr>
<td>C2, C4, C12 to C16</td>
<td>0.01 μF</td>
</tr>
<tr>
<td>C3</td>
<td>0.001 μF</td>
</tr>
<tr>
<td>C5</td>
<td>0.1 μF ceramic plate</td>
</tr>
<tr>
<td>C6, C9</td>
<td>180 pF silver mica (see text)</td>
</tr>
<tr>
<td>C7, C8</td>
<td>390 pF silver mica (see text)</td>
</tr>
<tr>
<td>VC1, VC2</td>
<td>3-60 pF semi-airspaced trimmer</td>
</tr>
<tr>
<td>TR1</td>
<td>2N706</td>
</tr>
<tr>
<td>TR2</td>
<td>BLY33</td>
</tr>
<tr>
<td>TR3</td>
<td>2N2905</td>
</tr>
<tr>
<td>TR4</td>
<td>BC109</td>
</tr>
<tr>
<td>FB</td>
<td>small ferrite bead</td>
</tr>
<tr>
<td>RFC</td>
<td>10 turns, 32 swg, on ferrite bead</td>
</tr>
<tr>
<td>L1</td>
<td>25 turns, 32 swg, on 3/16&quot; dia. former with core</td>
</tr>
<tr>
<td>L2</td>
<td>35 turns, 32 swg, on T37-6 core</td>
</tr>
<tr>
<td>L2a</td>
<td>3 turns on L2</td>
</tr>
<tr>
<td>L2b</td>
<td>4 turns on L2</td>
</tr>
<tr>
<td>L3</td>
<td>16 turns, 26 swg, on T37-6 core</td>
</tr>
<tr>
<td>L4</td>
<td>17 turns, 26 swg, on T37-6 core</td>
</tr>
<tr>
<td>L5</td>
<td>16 turns, 26 swg, on T37-6</td>
</tr>
<tr>
<td>D1, D2</td>
<td>see text</td>
</tr>
<tr>
<td>R9</td>
<td>10K</td>
</tr>
<tr>
<td>R10</td>
<td>1K</td>
</tr>
<tr>
<td>C15</td>
<td>0.1</td>
</tr>
<tr>
<td>C16</td>
<td>0.1</td>
</tr>
<tr>
<td>C12</td>
<td>4.7K</td>
</tr>
<tr>
<td>C13</td>
<td>13</td>
</tr>
<tr>
<td>VR1</td>
<td>4.7K</td>
</tr>
</tbody>
</table>

**Fig. 4**

C1, C2 = 0.01 μF

D1, D2 = see text

---

**Fig. 1** JLD Transmitter Circuit
Veroboard using easy-to-obtain parts with the hope that beginners would "get their feet wet" in construction. I had several letters from satisfied customers who had built the transmitter, some of whom asked for a matching receiver. In fact I did begin to think about a simple receiver to match the "Acme" but the project got lost in the sands of time and the solder smoke of other more pressing bits of construction. Now — here it is! Because the JLD Transceiver uses the basic circuit from the "Acme" and adds a receiver board.

The transmitter is a VXO design; that is a crystal controlled transmitter with a little frequency shifting applied to the crystal. This dispenses with the need for, and the complication of, a variable frequency oscillator. It is now possible to buy crystals for the 14 MHz amateur band in 10 kHz steps on the CW portion of the band (see suppliers' list) and this circuit will shift each of these enough to fill the gaps. So it could be possible, if the keen constructor wanted to buy a few of these crystals, to cover almost all the CW portion of the band with this transmitter.

TR1 is a crystal controlled oscillator with L1 and VC1 providing some variation of the frequency. The value of inductance in L1 and the capacitance swing of 3-60 pF of VC1 will easily give 10 kHz of frequency shift. More was possible with every crystal I tried in the circuit. Using a crystal on 14060, the International QRP Calling Frequency, I was able to get a frequency coverage from 14058 to 14072 kHz on the prototype. The output from the oscillator is tuned by L2 and VC2. This inductor has two link windings; one feeds the PA...
stage, the other gives a signal output for the receiver board. If the transmitter was being built for use on its own, the winding L2b would not be required.

The PA stage, TR2, is very simple but gave no problems in either this circuit or the original “Acme” transmitter. A whole variety of transistors can be used. The BLY33 gave me some 1.8 watts output from the transmitter, but other types such as 2N3553, 2N5859, 2N4427 and BSX61 should perform well in the circuit. Also usable, but with less power output, are 2N3866, 2N3053 and decent samples of the BFY51; it might be worth trying a BD131 if you have one. The transmitter is keyed in the PA stage via a DC switching transistor, TR3. Again TR3 could be a whole variety of transistors, any medium power PNP silicon switching transistor would do the job. C10, R5 and C11 provide a little shaping on the keyed line to give a more pleasing note.

The output load for the PA stage, TR2, is a radio frequency choke which is just a few turns wound onto a ferrite bead. From TR2 the output is coupled through a low pass filter for 14 MHz with a nominal 50 ohms output impedance. The low pass is from the design work of the doyen of low pass filters, W3NQN. The values are lifted directly from his data in the article on low pass filters in Short Wave Magazine, December 1983. These are the W3NQN “Standard Value Capacitor, Seven-Element Low Pass Filters.” Since I read that article on low pass filter design, I have used no other. This design uses the little T37-6 iron powder cores which can easily handle up to 10 watts in this circuit.

The final part of the transmitter circuit is a small sidetone audio oscillator; the circuit for this is around TR4. A sidetone oscillator is an important part of even the simplest station. My CW is bad enough when I can hear what I’m sending but its . . . when I cannot hear my own keying. This little circuit is a single transistor phase shift oscillator. It has a few capacitors and resistors in it, but it is a much better bet than the more common sidetone oscillators based upon a multivibrator circuit using perhaps a 555 timer IC. The sidetone from TR4 is better on the ears than the rasping of many simple sidetones.

**Construction**

The whole transmitter with the low pass filter and sidetone are built on one small printed circuit board. The board measures only 4¾” x 1” (or 119 x 26mm if you want “Blue Peter” measurement) and this would represent a very compact and convenient transmitter if built alone. The layout for the top and copper sides of the PCB are shown in Fig. 2. The frequency shifting components are mounted on a little front panel made from printed circuit board which is butt-soldered onto the oscillator end of the main board. The board is etched with minimum etch techniques; as much copper as possible is left on the board to form an earth mat around the circuitry. The transmitter could be built on Veroboard (for those who like it) or on Perfboard.

The oscillator is built first so that it can be tested before further work proceeds. The construction of this stage is very straightforward but extra detail has been provided in Fig. 1 for the inductor, L2, and in Fig. 3 for the frequency shifting components VC1 and L1. Both VC1 and VC2 are semi-airspaced 3–60 pF trimmers. A trimmer has been used for VC1 because of the expense of airspaced variable capacitors; if such a capacitor had to be bought at market prices for the transmitter it could cost as much as all the other items added together. VC1 is a trimmer with a ¼” shaft attached to the screw adjuster. The trimmer is soldered onto the small front panel, as shown in Fig. 3, and a piece of ¼” shafting is provided to give access to a knob control. The prototype used an offcut of plastic shafting cut from a potentiometer. These usually come with very long shafts and most constructors should have offcuts from previously used potentiometers. This shaft is counterbored with a drill into one end to provide a push fit onto the screw adjuster of the trimmer. The shaft is secured with Araldite adhesive, and when left to set this should provide a sturdy, but cheap, variable capacitor. L1 is wound on a ½” diameter core; I mounted my L1 onto the front panel with a blob of Blutack stationery putty.

The method of winding L2 is illustrated in Fig. 1. The main tuned winding should be put on first. When winding coils onto toroidal formers, each time the wire passes through the hole counts as one turn. These turns should be closewound (side-by-side) on the former which will almost fill the whole core. The two link windings are added on the end of the tuned
winding that goes to the collector of TR1. These windings may be made at the same time by laying the two sets of wires side-by-side. Both of the link windings (L2b and L2c) have their grounded ends at the TR1 end of the main winding.

When the transmitter has been built as far as L2, the oscillator can be tested. The testing requires three items of equipment: a receiver on the crystal frequency, a diode RF probe and a multimeter; a suitable RF probe is shown in Fig. 4. I must have put this circuit into Short Wave Magazine a dozen times, but if the reader has not built one, do so — it is a vital piece of station test equipment. The probe can be built on a piece of Veroboard or on an offcut of printed circuit board. The two diodes, D1 and D2, can be almost any diode, germinated diodes are ideal but if silicon diodes are the only ones available use them. The only important thing to remember with such a probe is to use a screened lead between the probe circuitry and the meter. When the circuit has been checked over, attach the probe tip to the link winding L2c and apply 12 volts to the oscillator stage; the multimeter is set on a low voltage range. VC2 is then adjusted for a peak reading on the meter. The signal can be monitored on a station receiver set to the crystal frequency.

Before the PA stage is built it is best to make up the DC switching stage around TR3. This is very simple, just add C10, R5, C11 and TR3 to the board. Check the wiring and apply 12 volts to the emitter of TR3. Set the multimeter on a range that will read 12 volts and attach the meter probes to ground and the collector of TR3. Shorting the top of C11 to ground should give a reading of 12 volts on the meter.

The PA stage, TR2, is added next. The input has a small ferrite bead through which the leg of the base of TR2 passes. This acts as a small RF choke to reduce the chance of high frequency parasitic oscillations in the PA stage. The collector load is an RF choke which is 10 turns of 32 s.w.g. wire wound onto a ferrite bead. These turns should fit onto the bead and, as with the toroidal core, each time the wire passes through the hole counts as one turn. C4 decouples the RF from the supply line and C5 couples the signal to the low pass filter.

The transistor can be tested as far as C5 before the low pass filter is added. It is important that the PA stage is always run into a load. If the output is left high, the transistor won’t like it. Transistor PA stages can be prone to suicide but there should be no problems with this circuit. (But remember that one of the lesser axioms of Murphy’s Law is, “A transistor protected by a fuse will blow protecting the fuse.”) The load at this stage should be a non-inductive 50-ohm resistor capable of handling at least 2 watts. Two 100-ohm, one watt, resistors in parallel would be fine. Connect the diode probe to the output point of TR2, set the meter on a low voltage scale and key the circuit through TR3. At this stage VC2 can be peaked again for maximum output.

The low pass filter is added next. The inductors, L3, L4 and L5 are wound onto T37-6 cores in much the same way as L2. The gauge of wire and number of turns is such that, if close wound, the windings will occupy about three-quarters of the core. It is important to have a gap on the core between the start and the finish of the windings because if they are too close together, capacitance is introduced. The capacitors, C6, C7, C8 and C9 ought to be silver mica types, although polystyrene types will serve at this power level; avoid using the small dipped mica capacitors because even at this low power level they will probably heat and alter capacitance. When the low pass filter is completed the transmitter output can be checked using the diode probe. Once again a dummy load is essential for this test. Somewhat more RF output should be present than appeared at C5. Good things, these low pass filters! The box used for the whole transceiver is compact and relies upon the use of small dipped mica capacitors for C12 to C15. A link wire takes the 12 volt keyed supply from TR3 to power the sidetone transistor, TR4. Test the oscillator before this link is added. The easiest test is to attach a pair of high impedance headphones, or a crystal earpiece, to the output and put 12 volts on the top end of R9. A tone should be heard in the phones. VR1 is a basic gain control for the sidetone and may be set high for the test and adjusted when in use.

**Using the Transmitter**

The board makes a neat little transmitter in its own right. The output is taken via screened lead to a socket or a change-over switching circuit. If using the transmitter with an existing receiver, a two-pole, change-over, switch will provide manual control for transceive operation. Arrange one pole of the change-over switch to switch the aerial input between the transmitter and a receiver, and the other pole to apply the 12 volts to the transmitter in the “transmit” switch position. The transmitter output is low so receiver muting is not vital nor worth the complication involved. For safety, it might be a good idea to wire a couple of silicon diodes back-to-back (opposing polarities) across the switch position to the receiver. This will ensure that no more than a fraction of a volt of RF can enter the receiver front end. Then on transmit simply turn down the receiver audio gain control. The transmission could probably be monitored on the receiver but this is likely to be a bit “thumpy” so the sidetone oscillator is a better way to listen to the keying.

This little transmitter should be capable of decent results on the 20m. band. If only one crystal is to be bought the natural choice might be 14060 kHz which is the International QRP Calling Frequency, although perhaps more stations would be found on 14030 kHz. Operating crystal controlled is often not as restrictive as it may appear. Just park the receiver in the middle of the frequency range of the VXO and pick off stations as they appear. It is surprising how many stations “pass by” when monitoring one frequency range. Odd CQ calls might be worthwhile, especially a “CQ QRP” on 14060 kHz, but in general better results are achieved on QRP by calling stations already present on the frequency.

The next part of this article will describe the receiver section that makes this little transmitter board into the “J.L.D.” Transceiver.

**Sources:**

Fundamental crystals on 14030, 14040, 14050 and 14060 kHz in HC25U mountings, are available from P. R. Golledge Electronics, Merriott, Somerset, for £4.00 each including VAT and postage (£3.50 each to G-QRP Club members).

The toroid cores can be obtained from SMC (TMP), Unit 27, Pinfold Workshops, Pinfold Lane, Buckley, Clwyd CH7 3PL, tel. 0244-549563. Note that these are iron powder, not ferrite. Most surplus cores are ferrite.

The box used for the whole transceiver is the “A25 Aluminium Box” from Minford Engineering, Sun Street, Ffestiniog, Gwynedd LL41 4NE (tel. 076676-2572), for £1.05 plus 75p postage and packing.
COMMUNICATION and DX NEWS

E. P. Essery, G3KFE

ONE has to admit to a degree of innocent amusement at the way electronic equipment can lead one up the garden path, when the 'reasons why' are eventually discovered. Your scribe's home-brew SWR indicator has been playing up, although the indications of the transmitter into the dummy load were normal. When another SWR meter was borrowed to cross check, things were far from normal. Why? Because it went open-circuit internally while I was carrying it home! As for the original one, it might have been more reliable had I inspected my soldering a little more closely!

The Bands

Our hopeful predictions a few months back of an upturn don't seem to have been too well-founded, although some good spells have been noted in the few days prior to starting to write this piece. However, we may as well accept the fact that we are well down near the bottom of the cycle; those who recall the last minimum, and at least one of its predecessors, may have noted that the conditions at the last minimum were rather like today's. But they might also have noted that the previous minimum in the sixties seemed much worse. . . that, according to the RG5B News Bulletin of March 31st, was due to the fact that the 1976 minimum was the highest for 250 years. The forecast date for the minimum this time is February 1987, according to the same source. Patience is the watchword!

Coming & Going

The problem with writing a monthly piece is so often that an interesting activity has been advised, come, and gone, between issues.

That Tonga operation; A35EA cleaned up some, and A35CQ is following up — the former, ZL1AMO and the latter WA6NVR.

The GB4DIS/MM activity didn't do much on S. Georgia, with just 10 QSOs — but GW4BLE reports receiving a QSL postmarked South Georgia for his contact. There won't be another S. Georgia stop by the Discovery, which was last reported on her way to South America.

By the time you get this the promised Navassa expedition should have come and gone — they had to return due to a damaged propeller first time. It should be a six-days job, and QSL's will be handled by computer.

The F00 Clipperon expedition was unable to land on XF4, Revilla Gigedo, on the outward journey. It is hoped to go there on the return journey if the weather doesn't render it impossible. Talking of the Clipperon expedition, the last Clipperon effort was back in '78, when band conditions were if anything better than now, yet many in Europe didn't make a contact. Why didn't they put it off by, say, four years when band conditions might give the Europeans a chance?

Still with the Moans and Groans Dept., a well set-up Bouvet expedition wouldn't come amiss, although one has a sneaking feeling that the best organisation in the world could very easily be wrecked on this one.

If you hear VR6IM on from Pitcairn, this is a special call for use by any island amateur when discussing medical matters, and only to be activated on permission from the island Medical Officer and the Island Magistrate.

The business of the ZC4 callsigns and DXCC now. We understand that ARRL have been told quite clearly that all the ZC4 stations were operated within the Sovereign Base areas, and so were all O.K. for DXCC. However, at the time of writing, what we don't know is how DXAC have reacted.

One now for the Top Band wallahs. We understand that the Kenyans now have a full authority for Top Band operation in the band 1830-1859 kHz; activity is apparent already.

Ten Metres

This band has always been notable for an ability to produce a 'turn-up for the book' — R. Williams of Deddington was listening to the high end of the band on his AR88LF; things were nice and quiet when a heterodyne appeared and turned out to be a W0 calling CQ on AM; using a Viking transmitter and Hammarlund receiver. He got a G station back on SSB, using a KW-2000 rig and they had a 45-minute contact. What a pity SWL Williams didn't specify a date, frequency and full callsigns, as this contact was quite out of the ordinary, and one would like to verify it; it must have been a very localised path and, one would have thought, probably some VHF-type propagation mode combined with a limited distance HF hop.

G4HZW (Knutsford) loves listening to a dead band, just to prove it's dead! Seriously, Tony noted just two openings, one on March 17 and the other on 24th, both being into Europe only; even the CQ WW contest didn't throw up any signs of life. Meantime, Tony listens to the rest of the spectrum on his SRX-30D, and plays with his Spectrum when he feels like doing some log-sorting. Complicated!

G4VFG (Ivybridge) keeps an eye on the band and reckons the 1100-1400 period is best. During the month Z21ANB and Z51CTB were noted weakly, and Z23JO was heard on CW but not raised, at a time when no beacons whatever were audible. SM60WX, SM0HITO, SM6LR, DF4PU, all on SSB, and SM6LLR, Y39TF, Y26JD, Y23RJ, Y39UO, and SM7CFR were worked on the key.

The same openings noted by our previous contributors are mentioned by GW4BLE, who mentions a raft of assorted Europeans worked, and implies the mode was Sporadic-E.

Fifteen

What a pity so many of the 'regulars' were wiped out of the reckoning for this column by that postal argument, which must have deterred most folk from even bothering to write.

G6QQ (Hoveton) says his recent silence was because he and his XYL have been off to see the junior op in ZL; however, David returned on March 19 and set to work on the air. On 21 MHz the score since then seems to be: on CW, K4KQ, 3D6BU, ZS6ANL, WB4RDH, K1BR, W3FM, W4QDP, KE5HO, LU1EVG, W9RG, UL7BX, N4FMQ, W1CCN, LU4EQD, TG9HUX, WD4RAF, SZ4MX; on SSB, J28EB, PY5VV, N2BA/P/VP2M, 4X6IF, and ZZ5EG.

G3BDQ (Hastings) has put up a better version of the aerial he calls his 'grounded steeple' — the mast went up in a snowstorm! which has turned out to be a DX bomb on all bands. One 35-minute session on the band around noon produced SSB contacts with 5B4ES, 4X6DK, CT0BI, ZS4WD, YB1CS, YC0DNK, YC0DPO, OD5BP, and EA8BFU.

Turning to the GW4BLE view of things in Newport, Steve worked all bands during the ARRL DX Phone contest, out
of which 21 MHz gave three states and four contacts, although it has to be admitted that the weather didn’t help as the wind strength kept the aerial tower down to no more than 45 feet at best.

G4VFG says he has put up a new forty-metre dipole, with the ends drooped down to fit the available space. The trend among the stations worked has been very firmly N-S in direction and daylight-only in time; SSB contacts were noted with 5N8HEM, ZP5MH, LU3CFI, 5V8WS, plus CW contacts with LU3FW and FM5DD.

Which sad lack of activity leads us naturally to:

**Twenty**

Because this is where the majority of the world’s DX traffic is carried on at times like these.

First, G2HKU (Sheppey), who mentions his regular SSB contact with ZL13FV, plus CW contacts with ZD8RN, 5T5RY, PZ1DT, FMSWQ, K1HZ, KC70G, W7GWD, CT0BI (Berlenga Is), KF4YM/TN who was actually in Tennessee, VE7XM, W6ISQ, and 6Y5FS. Ted also notes that the Woodpecker has been much more active of late, often at S9-plus.

G6QQ next; David was forced on to this band by the lack of activity on 21 MHz. On CW there was UL7TM, KL7FLY/O, K44EF, and KA2JMM, while the SSB got to VE2UN, UA0SKO, WD8DFD, K1W7, K1AFT, W5HBO, K8T3L, WB0ASH, VE3KHT, W4CY, KL7VZ, K2GUL, and KC2QJ. However, during the WPX SSB contest things picked up a trifle, and these were worked: RL5YL, N5RM, AK1A, KG1E, AI2C/P/4, UL8AWE, NP4CC, WL7E, K1KJT, K3ZJ, N8II, KY2P, N2AA, AI8S, JR7CDI, K2VV, K9JD, KM9L, K1AR, KW8N, N2AU, UZ9AWS, EM0CWN, RA9JM, NE8T, AD2Y, KS3F, E000AK, NJ8G, KAIYQ and K1VUT.

Now to G3BDO who mentions his CW contacts with FM7WD, KH6LJ, 457GW, UH8BBP, 9V1TL, CM7GC, HC1YU and SV0DZ/9, while SSB reports were exchanged with lots of stations, the highlights being VK2ZS, VP2EC, N2BA/VP2M, VP2BMA, UL8AWE, RL8PYL, EM0CWN, TF3CW, AP2ZA, YB4FW, YB5AQD, VK9X9, CG5RA, C23CXV, J40DX and SW2XK — both the latter two were in Greece.

G4W4LE made some 2155 contacts for his single-band entry in the SSB WPX contest. Conditions by and large weren’t too bad on the bands albeit the VK/ZL long-path opening didn’t amount to much. The weather was the biggest problem, enforcing the requirement for the aerial to be cranked down below 35 feet, not to mention the rain static which rose at time to S9-plus and put a stop to the W pile-up for minutes on end. The ARRL DX Phone contest yielded some 1269 contacts and 53 multipliers net (after duplicates extracted) in quite useless conditions. Summing it up, in the WPX affair the cream included AH8A, KH6, KL7, 3X4EX, H10A, VP2EC, TR1G, KDP7, NH4, 5W1EJ, VS6DO, N2BA/VP2M, and VK9XB on Christmas Island. In the ARRL shindig there was nothing considered worth mentioning — apart from a longest list of what wasn’t to be heard!

**New Bands**

The second issue of G4UZNL’s “WARC News”, dated April, has come to hand, covering the various goings-on on these newer allocations; it is noted that all three bands are now released to Swedish amateurs, 18 and 24 MHz to the East Germans, and 18 MHz to New Zealand. The general feeling as far as 18 MHz is concerned is that there isn’t any lack of propagation, so much as a lack of activity — and that is something which could fairly simply be rectified if only people would get on and operate! One suspects the two prime problems are that so many operators have forgotten their CW on the one hand and don’t have transmitters for the band or the know-how to build them on the other — which is a bit sad.

The opening of the band to the SMs was an interesting event, with a big swing of activity, but, sad to say, the U.S.A. is still embroiled in arguments over the opening of 18 and 24 MHz.

G4VFG says 10 MHz is the only one he bothers with at present, nowadays using the 7 MHz dipole plus ATU; previously the aerial was the ten-metre vertical and his CW made it to OZ1YC, KD2KL and 5N8HEM, ZP5MH, LU3CFI, 5V8WS, in time; SSB contacts were noted with KL7LFY/0, K4EF, and KA2JMM, while this band by the lack of activity on 21 MHz gives three states and two continent but different country, count score zero QSO points. In the same country only valid for multiplier and multi, to choice. Contacts with own op, CW, and you can enter single-band single op, multi-band single-op and multi-multi, to choice. Contacts with own country only valid for multiplier and score zero QSO points. In the same continent but different country, count two points, another continent four points; except that South Americans are worth eight points. Multiplier is the sum of DXCC countries worked plus South American prefixes worked on each band. Call QSA for each band to be sent, no later than August 31, to WWSA Contest Committee, PO Box 18003, 20772 Rio de Janeiro RJ, Brazil, South America. And may the best man win!
Top Band

In the absence of the G4AKY letter this month — he is off on a sneaky spring holiday operating Top Band mobile — we will lead with the report from D. A. Whitaker (Harrogate) who finally made his 100th heard on Top Band Phone. March 9 was the magic date when the 100 countries were completed: the way of it was quite spectacular too. On March 7, Walt, DJ6QT was heard from 5V8WS at 2304z. Next came that Desecheo DX-pedition, NR5M/KP5 on March 9 at 0613, and finally XE1HHA at 0629 for country number 100; the last mentioned was in contact with W01FH and WA0ZHH, both of whom were S9 to David. Since then, on April 1 in fact, VK9XG has been heard, crashing through the time base noise from three very local colour TV sets, which says a lot for his signal strength.

Top Band for G3BDQ, since he left the band alone last month (!) included K1ZM, AA1K, W2LFG, NF2L, W2AJS, WA1ASR, K3UA, K300, KG4W, AA4FF, K80QL, W4DR, N8II, VO1HP, VE1AGF, VE3ICR, RL7GDR, UAO0B (Krasnoyarsk, where they are building a new OTH radar), and 9H1GP.

G2HKU says he’s not been very active this month, but he did work his CW out to OY6FRA, W2ZZ/CT3, WA3EUL, N4UB, EU2P, J5CTE, and LAT7SI, while the SSB was used for SP5INQ, IO3MAU, and of course the regular PA0PN contact.

Forty Now

G3ZPF notes that since he made his 100 countries on Eighty the urge to rise early has abated somewhat, so now he doesn’t roll out until 0600! Since the pole grew by four feet, as already mentioned, doesn’t roll out until 0600! Since the pole early has abated somewhat, so now he
trembles

Turning to the list from G3BDQ, John stuck to his trusty Morse key, and managed two-way with PT7JMA, PY1MAG, KP2J, ZS6QU, UL71BZ, U180AE, VK2APK, VK3MR, VK7BC, VO1AW, VO1EW, VO1HP, 5X4MX, OX3LK, and three gems in the form of 8Q7CK, 8Q7RD and 8Q7ZL.

Just three contacts rate a mention by G2HKU, namely OY7ML, KB1DA, and W3NZ.

Eighty

First some notes from G2NJ (Peterborough) who notes the TOPS CW net on Sunday evening March 3 was graced by YU2WJ of Zagreb, who is the holder of some 130 awards. The TOPS net times are 1400-1600 BST and Wednesdays, 3508 kHz, net control GW6AQ; Sunday evening 2030 BST, 3534 kHz, net control G4GBG. G2NJ’s activity last month was largely QRP with the HW-8. Another QRP merchant worked G3HIS with two watts. G3HIS, having sat on the G-QRP Club spot (3560 kHz) for a time, noted that all his contacts had been with QRP club members; G3HIS is member number 3001. A far cry from the early days of the club when we were thinking of 100 members! On a totally different tack, Nick mentions that G3KPO has been to see him and collected a Minimitter transmitter which he wants to restore for the Wireless Museum on the Isle of Wight. He needs data on this, and also on the Cossor 1035 double-beam oscilloscope.

G2HKU made just two contacts on the band — W2BA and YV1AD.

As for G3BDQ, John offers from his CW log UA9CCP, EU0G, UA9XBY, EA8EX, W2ZZ/CT3, K4YF, VO1FE, VK3NC, JA2EPW, JA4KGR, JA5MHD, JASCZE, JA6CTK and JA6CXX, while the SSB mode was put into service for contacts with A92EB and 9H1EB.

Finally, David Whitaker logged NR5M/KP5, in a morning session, plus ZS5MY, VK6LK, VK9XG, AP2ZA, J28E1, S5TRY, 8Q7LK, FM5WD, KP4AM, KP4DRT, 9M2RT, ZD7CW, J88BK/9Y4, and J39BS during the evening period 2100-2359z.

Ending

That’s the lot for now — doubtless several delayed letters will surface in full accordance with Sodde’s Law — but meantime the grass trembles at the thought of yours truly taking his mower for a walk. Deadline for next time is for your letters to arrive by Thursday, May 9, addressed as always to your scribe, “CDXN”, THE SHORT WAVE MAGAZINE, 34 High Street, Welwyn, Herts AL6 9EQ. Have fun!

A colour leaflet is available from Black Star Ltd. with technical specifications of a new range of British made passive probes and BNC cable assemblies. The probes feature a compact body style, bandwidth up to 300 MHz and detachable earth lead. The BNC cable assemblies are available in lengths up to 2 metres and are terminated with BNC plugs, 4mm. plugs or crocodile clips. Black Star’s address is 4 Shepherson Road, St. Ives, Huntingdon, Cambs. PE17 4WJ (tel: 0480-62440).
What’s in a Call Sign?

STAN CRABTREE, G3OXC

To the radio amateur his or her call sign must necessarily be special. If he is disinclined to travel or work abroad it could well be the single label he will carry for the rest of his 'active' life.

A 'phone man' can choose his phonetics. He can use either the recommended phonetic alphabet in Appendix 16 of the 1976 Geneva Radio Regulations or some other selection which he might find more convenient (or amusing). I always feel the basic function of communication should be achieved as painlessly as possible. I therefore can never understand why certain amateurs use words like 'Guatemala' when the one syllable 'Golf' will serve the purpose adequately. The present recommended phonetic alphabet followed the rather English version 'Able Baker Charlie'. It was chosen with care having mind to the pronunciation of the main European languages. It seems strange therefore to hear the expression 'Honolulu Zanzibar Santiago' often being spelt out letter by letter in the middle of QRM when 'Hotel Zulu Sierra' would probably have been immediately recognised and understood. The call sign issued to a CW enthusiast is much more significant as there is only one immediately recognised and understood. The call sign issued to the radio amateur his or her call sign must necessarily be special. If he is disinclined to travel or work abroad it could well be the single label he will carry for the rest of his 'active' life.

My first amateur call was VQ4GQ. This was allocated by the Post and Telegraphs Administration in Nairobi and was simply the next on the list. The days when applicants could choose their own initials had ended — at least in East Africa. An exception was when I made a brief trip to Zanzibar when I requested, and got, VQ1SC. The satisfaction of obtaining this number as an identification. This procedure continued when telephony became the main means of contact but in latter years this has been superseded by the use of the airline and flight-number as an identification.

Civil aircraft are issued with individual call letters — five in number. Until the mid-fifties, radio operators were often carried on international and certain national flights. When using Morse, the full call sign would be keyed on the first contact and the station is operating on. The initial letter (and occasionally the first two letters or characters) invariably indicates the country where the transmitter is sited. In Great Britain, 'G' is used although 'M' is also included in the allocation. Marconi’s experimental station at Poldhu in Cornwall carried the call MPD and the civil aviation HF transmitter at Birdlip was MVB. Radio beacons operating in the bands 375 kHz to 410 kHz also use call signs commencing with 'M'.

Stations on land including coast stations use a basic three-character call sign. On HF, these may well be followed by a figure or group of figures indicating a specific transmitter or frequency the station is operating on. The prefix letter and the number as an identification. The call sign issued to a CW enthusiast is much more significant as there is only one immediately recognised and understood. The call sign issued to the radio amateur his or her call sign must necessarily be special. If he is disinclined to travel or work abroad it could well be the single label he will carry for the rest of his 'active' life.

A 'phone man' can choose his phonetics. He can use either the recommended phonetic alphabet in Appendix 16 of the 1976 Geneva Radio Regulations or some other selection which he might find more convenient (or amusing). I always feel the basic function of communication should be achieved as painlessly as possible. I therefore can never understand why certain amateurs use words like 'Guatemala' when the one syllable 'Golf' will serve the purpose adequately. The present recommended phonetic alphabet followed the rather English version 'Able Baker Charlie'. It was chosen with care having mind to the pronunciation of the main European languages. It seems strange therefore to hear the expression 'Honolulu Zanzibar Santiago' often being spelt out letter by letter in the middle of QRM when 'Hotel Zulu Sierra' would probably have been immediately recognised and understood. The call sign issued to a CW enthusiast is much more significant as there is only one immediately recognised and understood. The call sign issued to the radio amateur his or her call sign must necessarily be special. If he is disinclined to travel or work abroad it could well be the single label he will carry for the rest of his 'active' life.
an exotic ring to a VQ call. It summoned up the vision of a sun-bronzed expatriate complete with pith helmet and knee length khaki shorts grandly giving out QSO’s from his shack (literally) on the edge of the jungle. A few will remember WAVQA — Worked All VQ Areas Award. Now I believe we are left with only VQ9. The even rarer VR calls conjured up to me a picture of some dedicated British ham in the shade of a palm tree on a sandy beach. Perhaps even a grass skirted, dusky maiden was helping out on the hand generator?

Being raised on what I like to think of as ‘normal’ call signs, the introduction of, say, T31 or J28 seemed positively sacrilegious. Were these calls picked by the natives in the euphoria of independence, deliberately at random just to confuse people. In reality of course all prefixes fall within allocations that have been decided by international agreement. In the Berne Lists, as they used to be called, VQ and VR were found to be ‘Colonies and Protectorates of the United Kingdom’. Upon the granting of independence it was officially not possible to retain these prefixes.

In Libya I obtained the call 5A2TG in the early sixties. I was not particularly overjoyed with this as it held little charisma in the Morse code. I later learnt that ‘by arrangement’ and for a ‘consideration’ the call letters of amateur licences might be chosen by the user as long as the Province of ‘T’ for Tripolitania and ‘C’ for Cyrenaica were observed. How the late Bing Crosby 5A3BC wangled his we never asked! I selected a little used letter and it appears nowadays if you move State you can take the numeral of the prefix with you!

In Italy I have been WW12G, Worlds Walkabout but never seen anything like MI12. The even rarer VR calls conjured up to me a picture of some dedicated British ham in the shade of a palm tree on a sandy beach. Perhaps even a grass skirted, dusky maiden was helping out on the hand generator?

For DX-peditions and rare countries it is undoubtedly an advantage to have a short call sign as the QSO rate per hour can be doubled by an expert on the mic. or key. A past-master of this was Gus Browning W4BDP who, in the late fifties, seemed occasionally to come on the air with the country prefix and no suffix. Even on his visit to Kenya he somehow managed VQ4A. King Hussein of Jordan was obviously in a favourable position to select his own JY1. Compare the elongated WB6EWH/VQ9 on Diego Garcia to what must be the ultimate in short calls — MIC — Antonio Ceccoli in San Marino.

Call signs in general (and amateur issues in particular) have moved to an almost cypher like content in the last few years. In the early fifties Tunisia 3V8, Libya 5A and Israel 4X4 were about the only countries where call signs started with a number; now it’s commonplace. Obviously there is a need for this when an allocation runs out or a ‘new’ country appears after gaining independence.

The U.S.A. went on a joy ride to celebrate the Bicentennial Year of 1976 but unfortunately never completely regained its former sanity. There was some reason to the original call letters starting with AA and AC — a direct conversion to W and N. But since then anything goes. A few are still using ‘A’ as the initial letter and it appears nowadays if you move State you can take the numeral of the prefix with you!

One prerequisite that makes sense is that any call sign should clearly indicate the country of the station if not the actual area or district. A few months ago I spent a long time hooking out a watery signal from just above the noise level on 14 kHz. KB6ZL. It could have been Baker or even Phoenix Island. Not so. Just Concord, suburb of good old San Francisco!

---

**“Practically Yours”**

*with GLEN ROSS, G8MWR*

---

**Cables and Plugs**

This month we are going to have a look at the use of coaxial cables and plugs. This is an area in which there seems to be a great deal of misconception and a certain amount of myth.

The usual argument seems to be that you should always use the best quality of feeder that you can afford so as to minimise the amount of losses in the system and so get the maximum possible amount of performance. Whilst this is very true you must also take into account the extra cost involved and find out just how much extra performance you are buying for your money. In many cases this will not be much!

**Average Installation**

In most installations it would be fair to assume that the feeder run to the aerial system would be about 16 metres or 50 feet. We will use this as the basis for our investigation; if your layout differs substantially from this length you need only multiply or divide the figures given by the ratio of your length to ours, and the figures will then be adjusted to suit your feeder run.

The types of feeder most commonly used are the UR43 and UR67 types, these being the “thin” and “thick” types normally found at the rallies. The Pope H100 cable has also been used but unless you are on 1296 MHz or higher, or have a feeder run exceeding 200 feet on the lower bands, this really is an overkill. The exception to this statement would be if you are interested in moonbounce where every tenth of a decibel counts.

**Comparison**

<table>
<thead>
<tr>
<th>Frequency</th>
<th>UR43</th>
<th>UR67</th>
<th>+ ‘S’ points</th>
</tr>
</thead>
<tbody>
<tr>
<td>28 MHz</td>
<td>1.25</td>
<td>0.50</td>
<td>.25</td>
</tr>
<tr>
<td>50 MHz</td>
<td>1.50</td>
<td>0.62</td>
<td>.31</td>
</tr>
<tr>
<td>70 MHz</td>
<td>1.75</td>
<td>0.75</td>
<td>.33</td>
</tr>
<tr>
<td>144 MHz</td>
<td>2.75</td>
<td>1.25</td>
<td>.50</td>
</tr>
<tr>
<td>432 MHz</td>
<td>10.00</td>
<td>5.00</td>
<td>1.66</td>
</tr>
</tbody>
</table>

The cost of the cable run, taken from advertisements in a recent issue of the *Magazine*, would be £4.80 using UR43 and £12.80 using UR67 cable. The improvement obtainable on two metres using UR67 is only one half “S” point and it has been
achieved at a cost of £8. This hardly seems like a good investment. In this discussion we have taken one “S” point to be a change of 3 dB which is the normally accepted standard. At 70 cm. the picture improves somewhat and a gain of nearly two points can be obtained for the same additional outlay. At 28 MHz (or even, dare we say it, CB) the improvement would be only one-quarter “S” point!

It is therefore obvious from the above that unless you have very long cable runs the improvement to be gained is usually, for most operators, negligible and a lot of consideration should be put into the extra cost involved. One last point, if you have changed your cable to a superior type and found a dramatic increase in signal levels, it indicates that there was something drastically wrong with the original set-up rather than a vastly improved cable.

**Plugs and Sockets**

This is another area where some blowing away of the mists may be useful. The number of plugs and sockets that have been used are legion, starting with a favourite of our American friends — the phono plugs, as used in hi-fi installations. This makes a very cheap and convenient connector at low power levels and, on the HF bands at least, is fairly satisfactory. A good use for them is for interconnecting leads between the various circuit boards in a piece of equipment.

A unit that was widely used at one time was the standard “Belling Lee” TV connector. The remarks on phono plugs apply also to this type. It is cheap and finds favour amongst the QRP fraternity.

Probably the most widely used plug is the PL259 type which is found on the back of nearly all Japanese equipment. This is a robust plug and, by using various adaptors, will accommodate a wide range of cable sizes. It is *not* a constant impedance type and if you use several of them to interconnect the rig, SWR meter etc., then you may find strange things happening to your SWR readings. They are perfectly usable on 144 MHz but are barely acceptable on 432 and they should not be considered for use on 1296 MHz or above.

**Better Types**

Probably the best plug to use on your own equipment is the BNC type. These are available at reasonable cost at the retail outlets but it should be kept in mind that, in most cases, the plug is made to accept only one diameter of cable. Make sure that the plug will accept the cable which you intend to use. These plugs are of the constant impedance type and are usable up to 10 GHz, although the losses start to get a bit high at those frequencies.

An improvement on the BNC type is the “N” plug. This is in all essentials the same as the BNC in electrical characteristics but has the great advantages of being completely waterproof and accepting the larger cable diameters. BNCs to take UR67 are available, but try finding them!

**Odd Ones**

One sometimes comes across “C” plugs. These are similar to the N type but have a threaded skirt similar to the PL259. Odd lengths of cable with the plugs attached are not uncommon but getting hold of the sockets is a different story. In the smaller types probably the most common is the “SMA” and similar types. These can be found with bayonet fitting similar to the BNC or push-on fitting like the “Belling Lee” TV plugs. Both these types are excellent and can be used well into the Gigahertz regions, although care should be taken not to exceed the power ratings.

**Installation**

The great thing to watch when installing any feeder system is to ensure that it is fully waterproof. Any water getting in at the top of the cable will slowly work its way down the length of cable until the cable becomes useless. The first signs of this happening are usually indicated by the SWR meter readings starting to rise. There is no way out of this situation except to scrap the cable and start again. A liberal coating of waterproofing goo should be applied where the cable enters the aerial connecting box and the array should always be mounted with the cable going up into the box so as to stop water creeping in. Any bends in the cable run should be made using the largest radius that is convenient, this applies especially to the H100 type of cable which has a solid, rather than woven, outer. A tight bend in this will usually cause cracks to appear and this results in a change of impedance as well as providing a point for moisture to get in. This type of cable should never be run round a rotator, it should be connected to a length of UR67 to provide a flexible section. Always leave a good length of cable to get round the rotator so that damage is not caused by wrapping it tightly round the mast.

All cable gradually deteriorates over the years and it should be inspected regularly for damage and ageing. This can become obvious quite quickly in a salty environment or in an industrialised area where factory stacks are discharging heavy-loads into the air. If you find it convenient to bury the cable on its way to the aerial then you should choose the highest quality cable you can get hold of, irrespective of size, because it is really going to have a hard time down there. It may even be cheaper and more satisfactory to lay the cable in some plastic piping for protection.

**Ribbon Cable**

There can be advantages in using ribbon cable rather than coax. The losses involved with this type of cable are lower than with the same length of coax, especially on the HF bands. The cable is of the balanced type and so is ideal for direct connection to most types of aerials, obviating the need for a balun which is usually required when coax feed is used. In theory, because it is balanced, it should not radiate and so TVI is kept to a minimum. In practice these desirable attributes are not always realised. It is available in 50 and 300-ohm versions and may be flat or tubular in construction. Its great disadvantage is that when the cable is wet its characteristic impedance can change dramatically. To partially overcome this problem a version is now available which has windows cut into the supporting web. This does help but it is best to avoid the use of this type of cable if at all possible as the water problem tends to counteract any advantages which may be obtained from its use.

**Summary**

Always look at the advantages to be gained before investing in a much more expensive cable. Having decided on the cable to be used buy the best quality obtainable to ensure a long working life. Take care during installation to avoid tight bends and make sure that the hole installation is waterproof. Always use suitable connectors for the frequency in use.

---

Subscription rate to *Short Wave Magazine* is £12.00 for a year of twelve issues, post paid.
CLUBS ROUNDUP

By "Club Secretary"

It is with great regret that we commence this month's feature by announcing the death, on March 13, of the Hon. Sec. of the Abergavenny and Nevill Hall club, David F. Jones, GW3SSY, at the age of 45. Dave was first licensed in 1964 as G3SSY, and was a member of RSGB, RAIBC, G-QRP Club, ISWL, ARRL and Sutton & Cheam Radio Society. GW3SSY was also running instruction classes for the RAE and consistently achieved a high level of passes. He was a keen constructor and could be relied on to help anyone with a problem. On the air, GW3SSY operated all bands on Phone.

Our condolences to his wife Sue, his children and his family.

The Mail

Here we must first mention Abergavenny and Nevill Hall; the club continues to foregather on Thursdays at 7.30 p.m. at Pen-y-Fal Hospital, Abergavenny, in the room above Male Ward 2, where they also have regular Morse classes. For further details of the activities we must refer you to the Hon. Sec. — see the Panel for the new details.

Acton, Brentford & Chiswick are to be found in Chiswick Town Hall, on May 21, for a talk on a modified all-band ATU, to be given by G4GD. The venue is in Chiswick High Road.

The Antrim crowd had their AGM in March and made a decision to reduce their meetings to quarterly, as they were finding attendances low on the monthly basis. To help things along a little a reduction in subscription by 50% has been implemented, and they will have GB2AAD operational in June at the Antrim Festival. Anyone interested, please contact the new Hon. Sec. — his address is in the Panel.

Still in GI, we have the Banger club running an annual dinner-dance during the month; the regular meetings nowadays are taken on the first Friday of each month at the Royal Hotel in Bangor.

Every Thursday evening, the Barry College of Further Education crowd gets together at the annex at Weycock Cross, Barry. We don’t have the details of what’s on, but we notice that they normally seem to have at least one formal session with a talk or video or whatever, in each month.

The first Monday in every month is set aside for the activities of the Basingstoke club; the HQ is at the Forest Kings Community Centre, Sycamore Way, Winklebury, Basingstoke, and the subject for May 6 is "Questions and Answers to your Technical Problems."

The third Tuesday in each month seems to be the routine at Biggin Hill but, alas, our programme is out of date so we must refer you to the Hon. Sec. — see Panel. The venue, we assume is still St. Mark's Church Hall, Biggin Hill, Kent.

We turn now to Bishops Stortford; the routine here is to foregather at the British Legion club in Windhill on the third Monday of each month for the main meeting; there is also an informal get-together on the first Thursday at the "Nag’s Head" on the A120 Dunmow Road leading out of the town.

Next, BARTG: this group nowadays takes in the interests of those who play with RTTY, mechanical or electronic, AMTOR, and Packet Radio. In their letter they note that because of the upsurge in interest there is now a register of possible speakers. Hon. Secs. in need of a talk on these subjects should therefore get in touch with Ian Wade, G3NRW, 7 Daubeny Close, Harlington, Dunstable, Beds. Please enclose an s.a.e. for reply.

As 1985 is the 25th anniversary year of the Blackwood club they are running an award, details of which have been noticed elsewhere. For the details on the club itself, contact the Hon. Sec. — see Panel for his details.

We must head now for Bridgend, they also have the first and third Friday, and use the YMCA in Bridgend as the venue and a 7.30 p.m. start. More details from the Hon. Sec. — see Panel. However, we can say that all members are part of the Blackwood organisation and its subsidiaries.

The Bury programme, having earlier discussed how to blow up your rig, now (May 14) addresses the question of how to build a power supply. In fact the gang has a weekly meeting every Tuesday at Rosses Community Centre, Cecil Street, Bury, with the second Tuesday as the 'main' one. We notice on May 21 they have an extra — a video quiz between Bury and the Warrington club.

When we say Cheltenham we mean Stanton Room in Charlton Kings Library, Cheltenham; on May 3 they have a natter evening, and on May 17 they will hear about the Bermuda Contest and operating from VP9AD in the 1984 CQ WW SSB contest, by G4CNY.

Deadlines for "Clubs" for the next three months —

June issue—April 26th
July issue—May 31st
August issue—June 28th
September issue—July 26th

Please be sure to note these dates!

Now to Cheshunt which means the Church Room, Church Lane, Wormley, every Wednesday evening. May 1 sees a talk by G3VPK on RSGB, and there is a natter session on 8th. May 15 is down for a talk by Allan Ball, G6AXO, on radio paging, and on May 22 they are out portable on Bass Hill Common, Broxbourne. Finally, on May 29, G3WFM will give his 'primer' to contest operation.

The first Tuesday is the committee meeting for Chester; then May 14 is a video "The Secret Listeners", plus another about W00RE, the next amateur in space. On May 21, Peter Denton will talk to the members about NARSA and what it does, while G2JT has the floor on May 28 for his talk on coaxial cables. Venue is the Chester Rugby Club, Hare Lane, Vicars Cross, Chester.

At Chichester one must first locate Fernleigh Centre, at 40 North Street, on the first Tuesday and the third Thursday; then you must find the correct room. It is the Long Room on May 7 for a demonstration of ATV on 23cm. by members active on that band. On May 16 it is an informal in the Green Room.

Colchester has a billet in Colchester Institute, Sheepeen Road, where on May 2 there is a bit of Rally planning and a bit of the same sort for NFD. May 16 is down for a "Quick Look at the U.S.A." by G4PAY.

South-west now, to Cornish where on May 2 they will all head for Treleigh Church Hall, Treleigh, on the old Cornish
by-pass; after the business there will be a talk by G3VWK on tuning a transmitter.

Lots of things at Crawley which just has to be the most active place.

Names and Addresses of Club Secretaries in this issue:

ABERGAVENNY: J. B. Davies, G4AXQH. 109 Croesonen Parc, Abergavenny, Gwent NP7 1PP. (0873 4655)
ACTON, BRENTFORD & CHISWICK: W. G. Dyer, G3GEH, 18 Gurnersbury Avenue, Acton, London W4 9LJ. (011 3778)
ANTRIM: B. Sheepwash, G4KLS, 20a Donore Crescent, Antrim, BT41 1JH.
ANGERS: B. Mackay, G4IOG, 11 Delme Park, Angers, Blois 49240 AURA: D. B. Le B. B. Sherwood, G3OLZ, 20a Donore Crescent, Antrim, BT41 1JH.
BANGOR: S. Mackay, G4IOG, 11 Delme Park, Bangor, BT20 4UA.
BARRY: (Coll. of F/Ed.): Mrs. M. Beynon, GW4GSH, Bungalow No. 1, Rhyd-y-Car, Barry, Gwent, NP2 YTW. (0455 224587)
BERKSHIRE: A. M. McCreadie, GI4YVP, 204 Donore Crescent, Antrim, BT41 1JB.
ACTON, BRENTFORD & CHISWICK: W. G. Dyer, G3GEH, 18 Gurnersbury Avenue, Acton, London W4 9LJ. (011 3778)
ANTRIM: B. Sheepwash, G4KLS, 20a Donore Crescent, Antrim, BT41 1JH.
ANGERS: B. Mackay, G4IOG, 11 Delme Park, Angers, Blois 49240 AURA: D. B. Le B. B. Sherwood, G3OLZ, 20a Donore Crescent, Antrim, BT41 1JH.
BANGOR: S. Mackay, G4IOG, 11 Delme Park, Bangor, BT20 4UA.
BARRY: (Coll. of F/Ed.): Mrs. M. Beynon, GW4GSH, Bungalow No. 1, Rhyd-y-Car, Barry, Gwent, NP2 YTW. (0455 224587)
BERKSHIRE: A. M. McCreadie, GI4YVP, 204 Donore Crescent, Antrim, BT41 1JB.

The Short Wave Magazine May, 1985
know they have something organised for every meeting, so head for the junction of Beulah Hill and Church Road, Upper Norwood, where you will find, opposite the IBA mast, All Saints Parish Rooms. The start is at 8 p.m.

For all the details of the **Dartford Health D/F club**, their hunts, their meetings at the "Horse and Groom" in Wilmington, and all the rest, we must refer you to the Hon. Sec. — see Panel.

All the meetings of **Derby** are in their Hq on the top floor at 119 Green Lane, every Wednesday evening. Details on what they are up to from the Hon. Sec. — see Panel.

At **Devizes** they have the first Friday in each month for a formal event, the third Friday for some sort of social affair with other clubs, and the other Fridays are normally chat sessions. All are held, from 7.30 p.m., at Devizes Football Social Club. More details from the Hon. Sec. — see Panel for the details.

May 13 is down for **G3LBS** to talk about waves and resonance, at the Scout Hq, Union Lane, **Droitwich**. They, in fact, foregather on the second and fourth Monday, at this Hq, handily situated next to the railway station.

On to **Edgware** where May 9 is informal, with May 23 for the Constructors Contest and a spot of pre-Field Day business, and on May 30 they have their 1985 SKE (Straight Key the Constructors Contest and a spot of pre-Field Day business, and on May 30 they have their 1985 SKE (Straight Key evening on 3.5 MHz — a very popular event throughout U.K., this one). Venue, as ever, 145 Orange Hill Road, Burnt Oak, Edgware, second and fourth Thursdays. May 13 is the date for the **Exeter** annual 'used equipment sale — look for them at the Community Centre, St. Davids Hill, Exeter, 7.30 p.m. onwards.

On May 8 at **Farnborough** G8VR will talk about HF contest operating, and on May 22 it is HF NFD preview time. Start at 7.30 p.m. at the Railway Enthusiasts Club, Access Road, off Hawley Lane, Farnborough, Hants.

To get to the **Fylde** club Hq you have to first find the Kite Club, at Blackpool Airport; on May 7 they entertain the RSGB RR, and on May 21 there is an equipment sale.

At **Glossop** the last Thursday of each month is the night for the G3LBS crowd, at the "Nags Head", Charlestown Road, Glossop. The other details can be obtained from the Hon. Sec. — see Panel.

We doubt if the **G-QRP Club** needs much introduction; it is the one for those who are interested in low power amateur radio operating, or indeed home-brew stations. All the details from the Hon. Sec. — see Panel.

Turning to **Grafton** we find them at "The Five Bells" in East End Road, East Finchley, on the second and fourth Friday of the month; always with some sort of talk or event laid on.

**Greater Peterborough** has its base at Southfields Junior School, Stanground, Peterborough; at 7.30 p.m. on May 23 they will be preparing for Field Day, and we understand there are some visits under way too.

The latest programme from **Grimsby** shows them on May 2 at Treasure Island (with Long John Silver?) while on May 9 they have a D/F Hunt. May 16 is a natter night, and on 23rd there is another D/F Hunt. Finally, on May 30 they have a visitor speaking to talk about aerials. One snap — we don’t have the Hq address! Get it from the Hon. Sec. — see Panel.

**Harlow** has its place in Mark Hall Barn, First Avenue, on Tuesday evenings. For details on the programme, either contact the Hon. Sec. or just pay a visit.

If you are looking for the **Harrow** club you must find Harrow Arts Centre, High Road, Harrow Weald; this is opposite The Alma pub which in its turn is next to the bus garage. They are in session every Friday evening, and there is always something going on; either in the Roxeth or the Belmont Rooms.

**Hastings** has an extra-fat newsletter this month, thanks to the recent visit of RSGB’s President, Joan Heathershaw, plus the fact that it is the 100th issue. Their main meeting is on the third Wednesday of each month at West Hill Community Centre; thus May 15 is a talk on loudspeakers by the KEF people. All other meetings seem to be at Ashdown Farm Community Centre, on Fridays, and Raynet are there too on the last Monday.

**Harlow** has its place in Mark Hall Barn, First Avenue, on Tuesday evenings. For details on the programme, either contact the Hon. Sec. or just pay a visit.

At **Hereford**, May 3 is the Constructional Contest and May 17 the informal. Both are, as usual, at the County Control, Civil Defence Hq, Gaol Street, Hereford.

The latest **Ipswich** newsletter shows them still at the "Rose & Crown", at the junction of the A45 Norwich Road and Bramford Road. On May 8 they have a D/F Hunt, and on May 22 they are doing the final touches before the Rally, the East Suffolk Wireless Revival, which is on May 26 at The Hollies. On May 29 they have a surplus sale, and this one is at Barrack Corner Church Hall, Portman Road, opposite the telephone exchange.

Over the water now to Eire, and IRTS. This is the place to ask if there is anything you need to know about amateur radio, clubs or licensing in EI-land. Details from the Hon. Sec. — see Panel.

The activities on May 14 and 28 at **Kidderminster** are ‘still to be finalised’ at the time they wrote, but all is no doubt settled by now. Find them at Aggborough Community Centre, Hoo Road, Kidderminster, on Tuesday evenings.

**Leicester Repeater Group**, which is one of the most active in the country, sent us the printed handout they give all new members, and it seems to be a very useful bit of work for any repeater user. Details on the group from the Hon. Sec. — see Panel.

Pressing on with the pile, we come next to **Lincoln**, and their Hq at the City Engineers Club, Central Depot, Waterside South, Lincoln. Looking at the May details we see they have CW/RAE/natter on May 1, 15 and 29. May 8 is an activity night, and the Annual General Meeting is on May 22.

**Loughborough** sent us a print-out which shows them to be based on the Top Floor, Brush Social Club, 18 Fennel Street.
On Tuesdays the Constructors' Group gets together, and on Fridays they have the general meetings. May 3 is a committee meeting, and on 10th they have an RTTY evening. May 17 is a social session with darts and ale, and on 24th there is a Top Band D/F contest. May 31 is down for a video tape, details not given.

It’s quite a while since we last heard from Maidenhead, but they are still gathering in the Red Cross Hall, The Crescent, Maidenhead, on the first Thursday and third Tuesday of each month.

The Maxwelltown club has its Hq at the "Tam o’Shanter Inn”, Queensberry Street, Dumfries. On May 1 they have a joint meeting at this venue with Dumfries and Three Dales clubs, to entertain the RSGRB RR. More details on this from the Hon. Sec. — see Panel.

Back south of Watford again now, to Medway where we must refer you to the Hon. Sec. for full details of the club and what they are doing.

The Midland crowd are well-blessed with their Hq at 294A Broad Street, Birmingham; May 21 is down for a talk on “Aerials for Small Gardens,” by G3BA. We know the club is open on other evenings, but for those we must refer you to the Hon. Sec. — see Panel — for the latest gen.

At Mid-Ulster, May 19 is the date for the Parkanaur Rally, at Parkanaur, Co. Tyrone. Contact the Hon. Sec. for details of the club and the Rally.

It is May 14 and 28 for the Mid-Warwickshire club; the former date was still 'open' at the time of the letter, and the May 28 date is down for a natter evening. Venue is 61 Emscote Road, Warwick.

Moved!

That's what happened to North Wakefield; they now have a booking in the "White Horse", which is in Thorpe Lane, off Bradford Road, East Ardsley, West Yorkshire, where the room is separate from the bars and there is room for aerials and other such things. May 2 they have a rig on the air, and on May 9 there is a chat night. May 16 they are out for a visit to and other such things. May 2 they have a rig on the air, and on May 31 they have a rig on the air, and on May 29 they have a natter evening. Venue is 61 Emscote Road, Warwick.

The Plymouth club renews acquaintance this time; they are now at the Plymouth Albion Rugby Club, on alternate Mondays. Programme details from the Hon. Sec. — see Panel.

RAIBC caters for the invalid and blind radio amateur or listener; it follows that they also have members in the 'Supporter' and 'Representative' categories — the club also of course needs donations, both of equipment and money. The objective is to get every full member listening, and then to get them through RAE and Morse, and operational; 'meetings' are by way of lots of nets on various frequencies. Details from the Hon. Sec. at the address in the Panel.

Next we have RAOTA; this one is for the old-timers, and by the time you get to reading this, they will have had a General Meeting (at NEC in fact) and things will be back in action. Details from the Hon. Sec. — see Panel.

The Reigate meeting on May 21 features the Sussex Repeater Roadshow. The venue is, as ever, the Constitutional and Conservative Centre, Warwick Road, Redhill, Surrey.

St. Helens club is in session every Thursday evening at the Conservative Rooms, Boundary Road; details of what's on we don’t have — for that, please contact the Hon. Sec.

We come next to SARUG which stands for Sinclair Amateur Radio User Group — which nicely defines its interest in using Sinclair computers in the radio context. All the details from the Hon. Sec. — see Panel.

Every other Wednesday evening the Sefton group gets together at their Hq at the Liverpool Prison Officers Club, Hornby Place, Walton, Liverpool, which is a couple of minutes from Rice Lane railway station. Thus, in May the dates are 1st, 15th, and 29th. Further details from the Hon. Sec.

Skelmersdale now has its place at Beacon Park Golf Club, where they are to be found every Thursday evening. The routine is to alternate talks and chat sessions.

Now South Bristol who are in session every Wednesday evening at Whitchurch Folk House, East Dundry Road, Whitchurch, Bristol, Avon BS14 0LN. May 1 is a talk on slow-scan TV, and on 8th there is a 14 MHz activity night. May 15 is a QSL card rally, and on 22nd they have a 70 centimetre CW night, while on May 29 there is a bring-and-buy night. Find them in Room 3 or 4.

While the main Southdown meetings is still on the first Monday of the month at the Chaseley Home, Southcliff, Eastbourne, they also have a clubroom at Wealden District Council Offices, Vicarage Fields, Hailsham, every Tuesday and Friday evening. The May main meeting will be devoted to AMTOR.

South East Kent YMCA is the one for those in the Dover area. May 1 is a natter night and committee meeting, and on 8th they have a talk on white-stick operating. May 15 is down for causes and cures of TVI, and on 22nd G3LCX talks about “More of Anything” — we wonder if that includes a ghost story or two? Finally, on 29th, there is the club project.

May 9 for Southgate is down for a talk by G3UDO, on “Windloading and Safety of Towers.” St. Thomas' Church Hall, Prince George's Avenue, Oakwood, near Oakwood Tube Station, is the venue.

Now to South Manchester and Sale Moor Community Centre, Norris Road, Sale. On May 3 there is a talk by the winner of the Home Construction Trophy and on May 10 G3PFR talks about microwaves. May 17 is "Preparation for a Contest" and May 24 the AGM. Finally, on May 31 G0AUO and G6EAO combine for a 10 GHz home-brew session.

The Stourbridge newsletter which reached us on March 29 covered the first three months of the year, so we don't have any programme details. However, we know that they are booked in on the first and third Monday at the Robin Woods Centre, School Street, off Enville Street, Stourbridge.

Next we visit Stroud which is the new name for the old South Cotswold club. May 1, 15, and 29 are the dates, and the venue Nelson School, Stratford Lodge, Stroud. At the time of their letter they were still putting the new programme together.

It is May 13 and May 20 for the two meetings of the Surrey club, at TS Terra Nova, 34 The Waldrons, South Croydon, where they are in the Mess Deck on the first floor. The first meeting is the Construction Contest and the second the informal.

Sutton & Cheam is to be found at the Downs Tennis Club, Holland Avenue, Cheam; May 6 is a natter night, and on 17th they have their AGM.

Swindon members go to Oakfield School, Marlowe Avenue, Swindon, at 7.30 p.m. every Thursday evening — more details from the Hon. Sec.

May 6 is bank holiday and so the Thornton Cleveleys group will not be in session. May 13 is down for a talk on receiver and transmitter alignment by G4EZM, and on May 20 they plan for NFD. May 27 is the informal and will largely be devoted to NFD also. They meet at the 1st Norbreck Scout Hq, Carr Road, Bispham, Blackpool.

Now we head to Liphook, and the Three Counties club; May 1 is a talk on “Horizontal FM,” and on 15th there is a junk sale. May 29 is the home computer night, and all are held at the Railway Hotel, in Liphook.

The first Monday of the month at the Queen Hotel, Todmorden is the date and place for meeting the locals. On May 6 they have a demonstration station on HF, put on by G4WYT.

Now to Torbay, nicely settled in to their new Hq at ECC Social Club, Ringslade Road, Highweek, Newton Abbot, every Friday evening with the formal event on the last
Saturday. This club also passes on the advance warning of their Mobile Rally, at the STC Social Club, Old Brixham Road, Paignton, on August 25.

Change of Date

Unfortunately for Trowbridge they outgrew their room; they were able to book a larger at the same venue, luckily, but had to change their night. Hence, they now foregather at Southwick Village Hall on the fourth Tuesday of every month. Verulam has an interesting one booked for May 28, at the R.A.F.A. Hq in St. Albans, when they will hear G3EUR giving a talk about clandestine radio and SOE. We can’t imagine anyone better able to discuss this topic.

Now to Wakefield, and therefore Ossett Community Centre, Prospect Road, Ossett; May 14 sees a talk on Morse operating by G4KLN and on May 28 they have a junk sale.

Next Welland Valley, and here we have to refer you to the Hon. Sec. — see Panel. Hq is at Welland Park Community College, Market Harborough.

The second and fourth Friday in the month are preferred by West Kent, and taken at the club Hq at the Adult Annex in Quarry Road, Tunbridge Wells.

The Westmorland group has its AGM on May 14, at the "Strickland Arms"; Sizergh, near Kendal; details on other club meetings from the Hon. Sec. — see Panel.

The Wolverhampton club scribe tells us they are now making an impact locally, and meeting at Wolverhampton Electricity Sports and Social Club; May 7 is missed, but on May 12 they have a VHF D/F Hunt. May 14 is a business meeting, and on May 21 they have a committee meeting with members allowed to ‘sit in’ while May 28 is also scrubbed as it clashes with the spring bank holiday.

May 20 is an informal for Worcester which means the "Old Pheasant" in New Street; this is the only May meeting noted but on June 3 they will be at the Oddfellows Club also in New Street, on June 3.

Another New Hq!

Every Thursday nowadays the Work shop group heads for the Unicorn Hotel in Bridge Street; May 2 is down for a video of the VU7 DX-pedition, and on 16th G8AQN talks about microwaves. May 30 is set aside for G4RUD to give a talk on home-brew VHF linear amplifiers.

On to Worthing where they get together every Wednesday evening at the Parish Hall, South Street, Lancing. There are various events on the programme but usually at too short notice to be noted in our column.

The weekly meetings at Yeovil are at the Recreation Centre, Chilton Grove, Yeovil; May 9 is a talk on oscillators by G3MYM, and on 16th there is a video talk on electromagnetic waves. May 23 is set apart for demodulators by G3MYM, and on May 30 they have a natter night.

Apart from the weekly meetings on Fridays, the York lot are having the first station demonstration of their year when they put GB3YCS on for the Cub Scouts at Snowball Plantation. The regular meetings already mentioned are at the United Services Club, 61 Micklelegate, Yo:k.

All we know about the May meeting of the 308 group is that it will be at the Coach House, Church Hill Road, Surbiton, and will be a talk. The date we guess to be the last Tuesday . . . perhaps you’d better contact the Hon. Sec. — see Panel.

Finis

All for now; the deadlines for the next few months are in the ‘box’ and please note these are for the arrival of your letters, addressed as always to your “Club Secretary”, SHORT WAVE MAGAZINE, 34 High Street, WELWYN, Herts AL6 9EQ.

‘Bye for now!

---

More Mobile Rallies, 1985

May 5, Swansea A.R.S. Rally, Patti Pavillion, Swansea (adjoining St. Helens County Cricket Ground on the A4067 Swansea-Mumbles road), 10.30 to 5 p.m., trade stands, bring-and-buy, bookstall, CW test, repeater groups, catering and bar, talk-in on S22 and GB3WG (RB6) using GB2SWR. Further details from Roger Williams, GW4HSH, QTHR (tel: 0792-404422). May 11, Glasgow Amateur Radio Exhibition, Cardonald College, Glasgow, 11 a.m. to 5 p.m., trade stands, special interest stands, bring-and-buy, lectures. More details from Ian McGarvie, G4MJD, QTHR (tel: 050581-2708). May 26, East Suffolk Wireless Revival, Civil Service Sportsground, Straight Road, Bucklesham, Ipswich, Suffolk, all the usual attractions, family entertainments, catering. Further information from Jack Tootill, G4HFF, QTHR (tel: 0473-44047). June 9, Elvaston Castle Rally, Elvaston Castle Country Park (5 miles south-east of Derby on the B5010), doors open 10 a.m., free admission, car park charge 45p, 90 trade stands, bring-and-buy, flea market, many family attractions, full catering, talk-in on 144 and 432 MHz by GB3ECR. Further details from John Robson, G4PZY, 0332-767994, or Ian Cage, G4CTZ, 0332-799452. July 7, Nottingham Amateur Radio and Electronics Fair, Victoria Leisure Centre, Gedling Street, Nottingham, trade stands, catering and bar, ample parking. August 25, B.A.R.T.G. Rally, Sandown Park, Esher, Surrey. Full details from Peter Nicol, G8VXY, QTHR (tel: 021-453 2676). September 1, Cambridge Rally, Kelsey Kerridge Sports Hall, Gonville Place, Cambridge, trade stands, family attractions, catering and licensed bar. More details later. September 8, Lincoln Hamfest, Exhibition Centre, Lincolnshire Showground (4 miles north of Lincoln on the A15), 10.30 to 5.30 p.m., trade stands, CW tests, many family attractions, refreshments and bar, ample parking, talk-in by Raynet on 144 MHz (S22) and 432 MHz (SU8). Further details from Mrs. P. Rose, G4STO, QTHR. September 21, Scottish Amateur Radio Convention, Dundee College of Education, Gardyne Road, Dundee. More information later. Cancellation: the Abercavenny Rally on July 28 will not now take place.

Special Event Stations

17-20 May, Stevenage Amateur Radio Contest Group will be operating GB2POT from Moorfurlong Mines, Derbys., 70 feet below the surface (though not the aerials!) on HF and VHF in a sponsored event combining two hobbies, amateur radio and potholing. Proceeds will be divided between RAIBC, 1st Castleton Scout Group, and the Derbyshire Cave Rescue Service; operators will be G1FWS, G6UWX, G4SPV and G4FKA, and special QSL cards will be available. Full details from Frank Swaine, G1FWS, 52 Rowland Road, Stevenage, or Ian Whiting, G6UWX, 36 Brunel Road, Stevenage, Herts.

20-30 July, "Orkney Viking Venture" is the name given to a series of camps for Ranger Guides to be held in Orkney, as part of the celebrations to mark the 75th Anniversary of the founding of the Girl Guides. Using the call GB2OVV, the station will be operational on HF (SSTV) and 2-metres (SSB or FM). More details from John Robson, G4PZY, 0332-767994, or Ian Cage, G4CTZ, 0332-799452. September 21, Scottish Amateur Radio Convention, Dundee College of Education, Gardyne Road, Dundee. More information later. Cancellation: the Abercavenny Rally on July 28 will not now take place.

---

April issue of “S.W.M.”

We apologise to readers for the late delivery, both to subscribers and newsagents, of last month’s issue, caused by a combination of the current ‘flu bug’ hitting our printers and the postal dispute.
S.E.M. UNION MILLS, ISLE OF MAN
Tel: MAROWN (0624) 851277

NEW RANGE
SENSE 2M LINEAR POWER/PRE-AMPLIFIERS
Now feature either POWER AMP alone or PRE-AMP alone or both POWER AND PRE-AMP for STRAIGHT THRU when OFF. Plus a gain control over the PRE-AMP from 0.5 to 20dB. N.F. around 1dB with a neutralised strip line DUAL GATE MOSFET (18981).

Ultra LINEAR for all modes and R. or P.T.T. switched. 13.8V nominal supply. 50239 sockets.

Five Models:
1. 3/36, 12 times power gain. E.g. 3W in 3W out. £70.00.
2. 10 times gain. 1W in 10W out. £99.00.
3. 10/50, 10W in 50W out. £96.00.
4. 10/100, 100W in 100W out. £135.00.
5. 1/100 W in 100W out. £148.00.

All Ex stock.

POWER SUPPLIES for our linear's 12V/3Amp. 6 Amp £34.00.

SENTEL AUTO 2 METRE or 4 METRE PRE-AMPLIFIER
RF switched, same spec as in our linear's, see above, 400W P.E.P. power rating. Use on any mode. 12V 29mA. £29.50 Ex stock.
P.A. Same specification as the Auto including 240V P.S.U. £33.00 Ex stock.

SENTEL 2 METRE PRE-AMPLIFIER
No R.F. switching. £15.00 Ex stock.

S.E.M. AUDIO MULTIFILTER (A very good filter at a very good price).
The most versatile filter available. Gives "available tuning", "variable selectivity" and one or two notchts. Switched Hi-pass, Lo-pass, peak or notch. Selectivity from 2.5kHz to 20kHz. Tunable from 2.5kHz to 25kHz. For instance another notch available in any of the four switch positions which covers 10kHz to 100kHz. 12V supply. Sizes: 6" x 2 1/2" x 2" £34.50 Ex stock. P.C.B. to fit in any A.T.U. £29.50 Ex stock.

S.E.M. IMABIC KEYER. No better fully auto keyer anywhere. Uses Curtis chips. R.F. proof. Sidetone etc. £38. £1 first class twin paddle key £17.50 Ex stock.

BRAID BREAKER/HI PASS FILTER. Put in T.V. ant. lead to cure TVI. £6.50 Ex stock.

RF NOISE BRIDGE Adjustable 0,000 ohms, 3" x 1 1/2" x 2" only. 50239s, 1.7-100MHz. 3" x 1 1/2" x 2" £34.50 Ex stock. P.C.B. to fit in any A.T.U. £29.50 Ex stock.

S.E.M. 2 WAY ANTENNA SWITCH 1Kw £90. The most versatile filter available. Gives "passband" tuning, "variable selectivity" and one or two notches. Switched Hi-pass, Lo-pass, peak or notch. Selectivity from 2.5kHz to 20kHz. Tunable from 2.5kHz to 25kHz. For instance another notch available in any of the four switch positions which covers 10kHz to 100kHz. 12V supply. Sizes: 6" x 2 1/2" x 2" £34.50 Ex stock. P.C.B. to fit in any A.T.U. £29.50 Ex stock.

Universal Morse Memory - our Unique digital storage device which can be used with any type of key, including HAND keys. Totally variable message time from 10 secs to 2 minutes at any input/output speed. Ideal for Contests, CD Calling etc. Special 115V AC version £89.95. With a punched (plain finish) aluminium Case/Handset & Digital Display for £169.95. Case and Kit £169.95 Ex stock.

SENTEL AUTO H.F. WIDEBAND PRE-AMPLIFIER 2-40MHz. 15dB gain. Straight through when OFF. 5-12V, 2" x 1 1/2" x 3" £90.00 through power. £39.50 Ex stock.

SENTEL STANDARD H.F. PRE-AMPLIFIER. No R.F. switching. £12.60 Ex stock.

12 MONTHS COMPLETE GUARANTEE INCLUDING ALL TRANSISTORS.
Prices include VAT and delivery. C.W.O. or phone your credit card number for same day service.

P.M. ELECTRONIC SERVICES
2 ALEXANDER DRIVE, HESWALL, Wirral. MERESEYSIDE L61 6XT
Telephone: 051 342 4443 Telex: 627371

THE QUARTZ CRYSTAL SPECIALIST
AMATEUR RADIO CRYSTALS FROM STOCK
4m, 2m, 7cm and transverter/converter
MICROPROCESSOR from MARKER CRYSTALS stock CRYSTALS
DOUBLE BALANCED MIXERS M8 and M18 PIN compatible with MD108 and SBL1 but with superior spec available from stock.
WE CAN SUPPLY CRYSTALS TO MOST COMMERCIAL AND PROFESSIONAL SPECIFICATION INCLUDING COLD WELD SPECS.
CRYSTAL SOCKETS for HC6/u, HC13/u and HC25/µ

MADE TO ORDER SERVICE
OVER FREQUENCY RANGE 6KHz to 250MHz with express service if required
For full details of the above services, please send s.a.e.

HOME CONSTRUCTORS - why not join the ranks of satisfied customers building our products? We supply kits with copious instructions, all parts and a special deal on HF Projects which really work!

MICRON - 6 BAND HF CW GRP TRANSCIEVER. Our latest kit for the GRP enthusiast covering 80,40,30,20,15 and 10 metres CW. 6 - 10W out fully filtered and variable. Sensitive Rx with AGC, 5 Meter, R.F. Attenuator, switchable filtering etc. Screened, solder masked, pcb's and detailed instructions. Complete case/digital display/internal ATU/2SWR metering, etc. Please state final version you wish (1 of 3). £199.50 for 2SWR kit (state bands) or £145.00 for 3SWR kit (state bands). £165.00 for full kit (state bands) or £145.00 for Band basic kit. Case and Hardware £46.20. Display Kit £38.90 and ATU at £37.00. All the above for £241.00. Optional Preamp £15.00.

DSBIQ - over 1000 sold since its introduction. A GRP Rx/Tx (VFO controlled) for 80 or 160m, 2W output with a very sensitive Rx. Complete pcb kit for either band £39.96, or with a punched (plain finish) aluminium Case/Hardcase & Digital Display for £85. Kit and Case £102.00.

ALPHA - our 50W full specification SSB Tranceiver for either 20 or 160m, 90dB + Dynamic Range all on a single pcb. Complete with custom case/hardware/digital display and Mobile Mounting Bracket for £79.95. Variable RF output down to 4W, Sidetone and lots of other features. Optional CW filtering available.

UNIVERSAL MORSE MEMORY - our Unique digital storage device which can be used with any type of key, including HAND keys. Totally variable message time from 10 secs to 2 minutes at any input/output speed. Ideal for Contests, CD Calling etc. Special 115V AC version £89.95, with a punched (plain finish) aluminium Case/Hardcase & Digital Display for £169.95. Case and Kit £169.95 Ex stock.

PARAMETRIC EQUALISER - tired of poor microphone response? Or is your voice lacking punch? The you need this - The professional method suitable for SSB or FM A.M. Not like Standard Audio processors, this has variable frequency LOW and HIGH band controls, 12dB BOOST/CUT controls, and Variable SHELVLING. VOGAD controlled Hi -Lo controls. Not like Standard Audio processors, this has variable frequency LOW and HIGH band controls. £53.45 as a KIT or £72.45 READY BUILT. Kit & Built versions both come with low profile Custom Case. Needs + 12v supply.

SPSPEECH PROCESSOR - popular AF Processor with VOGAD and lots of filtering for low distortion and suitable for many modes. Use the SLS960, Pcb Kit ONLY £14.65.

All prices include VAT and Post. Delivery 7 - 28 days or quicker if possible. EXPORT a pleasure - Europe use UK prices. Rest of World UK + 5%. Full catalogue 50p in stamps please. ACCESS/USA - use our 24 hr Answering service on 07918 6149. MAIL ORDER ONLY or via our Agents, Photo Acoustics. Order your WPO Kit now!

WPO COMMUNICATIONS

PO BOX 20 FARNHAM AVENUE, HASSECKS, WEST SUSSEX BN6 8NS
All 9 hf Bands from a 2m multimode!

Transverters once had a reputation for being a second best approach to getting on to any band. With careful system design this need not be so. People have favourably compared the receive performance of the TVHF 230c when coupled to a modern vhf transceiver to that of prestige hf transverters costing well into four figures! Even with a budget 2m rig, the performance will be better in most respects than that of any hf transceiver available second-hand at the same price! On transmit, the signal generated is very clean, and the 10W pep output is enough to work the world with a decent antenna. Of course, if you want to be a really big signal, then this transverters just right for driving a variety of power amplifiers! If you have a vhf amplifier, then an hf becomes a very simple thing to build - a pair of 4CX350's will burn as big a hole in 20m as 144VHF+!!

Chris Bartram G4DGu
Dept. S.W., Bradworthy, Holsworthy, Devon EX22 7TU (0409 24) 543
SPECTRUM COMMUNICATIONS
MANUFACTURERS OF RADIO EQUIPMENT AND KITS

CB TO 10METRE CONVERSIONS. Most legal FM rigs can be converted to 10Metre FM, and vice versa, to 2m, 1.2m, 440MHz and VHF. Send your rig details and we will send you a quotation. Call for details.

MULTI MODE CB CONVERSIONS. Most legal FM rigs can be converted to 10Metre FM. Details on request.

TRANSMIT AMPLIFIERS. Details on request.

TRANCEIVE CONVERTERS. Details on request.

PLUGS AND CABLES
1. H1C0 50ohm Low Loss COAX 2p per m. 50% less 10%.
2. POPES RG213/U 50ohm PVC 20p per m. 10%.
3. POPES RG58/U 25p per m. 10%.
4. 50 ohm 30 watt Carbon Dummmy Load fitted. £15.
5. POPES RG58/U 6/979 with NC PVC 22p per m. £3. 10%.
6. Mini Coax. RG174/U 50ohm Zip per m. £1. 10%.
7. UR70 75ohm Coax 22p per m. £3.
8. UR57 10.5mm low loss 75 ohm COAX 60p per m (5p/6p).
9. 75ohm Twin Feeder 16p per m. £3. 10%.
10. BOFA GMP6 Slotted 330 ohm Feeder 20p per m. £3. 10%.
11. Strong PVC covered Aerial Wire 6p per m. 25p.
12. Mini Coax. RG174/U 50ohm Zip per m. £1. 10%.
13. ROTATOR CABLE 6 core and 8 core 35p per m. £3. 10%.
14. POPES RG58/U 6/979 with NC PVC 22p per m. £3. 10%.
15. 50ohm 30 watt Carbon Dummmy Load fitted. £15.
16. POPES RG58/U 6/979 with NC PVC 22p per m. £3. 10%.
17. UR70 75ohm Coax 22p per m. £3.
18. UR57 10.5mm low loss 75 ohm COAX 60p per m (5p/6p).
19. 75ohm Twin Feeder 16p per m. £3. 10%.
20. BOFA GMP6 Slotted 330 ohm Feeder 20p per m. £3. 10%.

TRANSMIT AMPLIFIERS. Details on request.

TRANCEIVE CONVERTERS. Details on request.

PLUGS AND CABLES
1. H1C0 50ohm Low Loss COAX 2p per m. 50% less 10%.
2. POPES RG213/U 50ohm PVC 20p per m. 10%.
3. POPES RG58/U 25p per m. 10%.
4. 50 ohm 30 watt Carbon Dummmy Load fitted. £15.
5. POPES RG58/U 6/979 with NC PVC 22p per m. £3. 10%.
6. Mini Coax. RG174/U 50ohm Zip per m. £1. 10%.
7. UR70 75ohm Coax 22p per m. £3.
8. UR57 10.5mm low loss 75 ohm COAX 60p per m (5p/6p).
9. 75ohm Twin Feeder 16p per m. £3. 10%.
10. BOFA GMP6 Slotted 330 ohm Feeder 20p per m. £3. 10%.
11. Strong PVC covered Aerial Wire 6p per m. 25p.
12. Mini Coax. RG174/U 50ohm Zip per m. £1. 10%.
13. ROTATOR CABLE 6 core and 8 core 35p per m. £3. 10%.
14. POPES RG58/U 6/979 with NC PVC 22p per m. £3. 10%.
15. 50ohm 30 watt Carbon Dummmy Load fitted. £15.
16. POPES RG58/U 6/979 with NC PVC 22p per m. £3. 10%.
17. UR70 75ohm Coax 22p per m. £3.
18. UR57 10.5mm low loss 75 ohm COAX 60p per m (5p/6p).
19. 75ohm Twin Feeder 16p per m. £3. 10%.
20. BOFA GMP6 Slotted 330 ohm Feeder 20p per m. £3. 10%.

TRANSMIT AMPLIFIERS. Details on request.

TRANCEIVE CONVERTERS. Details on request.

PLUGS AND CABLES
1. H1C0 50ohm Low Loss COAX 2p per m. 50% less 10%.
2. POPES RG213/U 50ohm PVC 20p per m. 10%.
3. POPES RG58/U 25p per m. 10%.
4. 50 ohm 30 watt Carbon Dummmy Load fitted. £15.
5. POPES RG58/U 6/979 with NC PVC 22p per m. £3. 10%.
6. Mini Coax. RG174/U 50ohm Zip per m. £1. 10%.
7. UR70 75ohm Coax 22p per m. £3.
8. UR57 10.5mm low loss 75 ohm COAX 60p per m (5p/6p).
9. 75ohm Twin Feeder 16p per m. £3. 10%.
10. BOFA GMP6 Slotted 330 ohm Feeder 20p per m. £3. 10%.
11. Strong PVC covered Aerial Wire 6p per m. 25p.
12. Mini Coax. RG174/U 50ohm Zip per m. £1. 10%.
13. ROTATOR CABLE 6 core and 8 core 35p per m. £3. 10%.
14. POPES RG58/U 6/979 with NC PVC 22p per m. £3. 10%.
15. 50ohm 30 watt Carbon Dummmy Load fitted. £15.
16. POPES RG58/U 6/979 with NC PVC 22p per m. £3. 10%.
17. UR70 75ohm Coax 22p per m. £3.
18. UR57 10.5mm low loss 75 ohm COAX 60p per m (5p/6p).
19. 75ohm Twin Feeder 16p per m. £3. 10%.
20. BOFA GMP6 Slotted 330 ohm Feeder 20p per m. £3. 10%.

TRANSMIT AMPLIFIERS. Details on request.

TRANCEIVE CONVERTERS. Details on request.

PLUGS AND CABLES
1. H1C0 50ohm Low Loss COAX 2p per m. 50% less 10%.
2. POPES RG213/U 50ohm PVC 20p per m. 10%.
3. POPES RG58/U 25p per m. 10%.
4. 50 ohm 30 watt Carbon Dummmy Load fitted. £15.
5. POPES RG58/U 6/979 with NC PVC 22p per m. £3. 10%.
6. Mini Coax. RG174/U 50ohm Zip per m. £1. 10%.
7. UR70 75ohm Coax 22p per m. £3.
8. UR57 10.5mm low loss 75 ohm COAX 60p per m (5p/6p).
9. 75ohm Twin Feeder 16p per m. £3. 10%.
10. BOFA GMP6 Slotted 330 ohm Feeder 20p per m. £3. 10%.
11. Strong PVC covered Aerial Wire 6p per m. 25p.
12. Mini Coax. RG174/U 50ohm Zip per m. £1. 10%.
13. ROTATOR CABLE 6 core and 8 core 35p per m. £3. 10%.
14. POPES RG58/U 6/979 with NC PVC 22p per m. £3. 10%.
15. 50ohm 30 watt Carbon Dummmy Load fitted. £15.
16. POPES RG58/U 6/979 with NC PVC 22p per m. £3. 10%.
17. UR70 75ohm Coax 22p per m. £3.
18. UR57 10.5mm low loss 75 ohm COAX 60p per m (5p/6p).
19. 75ohm Twin Feeder 16p per m. £3. 10%.
20. BOFA GMP6 Slotted 330 ohm Feeder 20p per m. £3. 10%.
Copy must be received by May 16th to be sure of inclusion in the June issue, published on May 31st.

READERS

For Sale: Sony ICF-2001 receiver, AM/CW/SSB, with power pack, £85. —Ring Mike, Medway 571537.

Selling: Genuine AR88DS metre. R-444 receivers, tuning units 36 MHz to 12 GHz. HRO, BC-348, SP-600. 200 manuals.—Ring Bob, 0942-55948.

Sale: Complete RTTY station: Creed 444, full silencing cover, ST5 terminal unit, Creed workshop manual, tape punch reader, paper and tapes, fully working and ready to use, £80. Or exchange for Rx or W-H-Y? Sharp VF-610 portable SW Rx, digital, 10 bands, £50. BT “Sceptre” telephone, 10 memories, clock, etc., £35.—Ring 0733-231639.

Wanted: Ex-Army No. 19 Set with variometer, must be in good working order. Details and price including carriage, please. —Box No. 5810, Short Wave Magazine, 34 High Street, Welwyn, Herts. AL6 9EQ.

Selling: Racal RA-17L communications receiver, mint condition, £150. Also Racal technical manuals for RA-17, RA-17L and MA-168A dual-diversity switching unit, £15 each.—Ring Rich, 07048-77188 (Merseyside).

For Sale: Heathkit co-ax switch, 4-way plus earth, £10. DRAE 12-amp PSU, £40.—Ring Williams, 0376-23604 after 6 p.m.

Sale: Trio R-2000 general coverage receiver, 150 kHz to 30 MHz, with memory, scan, timer, etc., manual, as new, £300.—Ring Hastings 813639.


Wanted: Trio TS-530S/SP or TS-830S, cash waiting. For sale: KW-2000B and PSU, unused since KW ‘as new’ overhaul. Datag D70. All open to offers.—Ring 01-504 4830.

KW TEN-TEC

"CORSAIR"

A TOP OF THE RANGE WINNER

200 watts SSB/CW continuous rating
10- 160m (including 3 new bands)

Price: £922 incl. VAT & Delivery (UK)
Another winner from KW TEN-TEC
the "ARGOSY II"
100 watts SSB/CW Mobile
Portable or Home station

Price £516 incl VAT & Delivery (UK)
Prices subject to fluctuation, check with KW first.
Available shortly, the new KTT CENTURY-22
HF CW only transceiver
WRITE OR PHONE FOR DETAILS.
PURCHASE BY H.P., ACCESS OR VISA.

KW TEN-TEC LTD.
Vanguard Works, Jenkins Dale, Chatham, Kent, ME4 5RT
Tel: 0634 815173

CALL BOOKS

RADIO AMATEUR CALL BOOKS (1986)
Foreign ("DX") Listings ................................................ £17.95
U.S. Listings ............................................................. £18.50
U.K. Callbook, 1985 Edn. (RSGB) .................................. available shortly

MAPS

"SHORT WAVE MAGAZINE" DX ZONE MAP
(GREAT CIRCLE) in colour. Latest 10th edition ................... £4.35

AMATEUR RADIO MAP OF WORLD
Mercator Projection — Much DX Information — in colour. Latest 7th edition ........ £1.10

AMATEUR RADIO MAP OF THE U.S.A. AND NORTH AMERICA
State Boundaries and Prefixes, size 24” x 30” , paper. Latest 7th edition ....... 95p

AMATEUR'S WORLD ATLAS
In booklet form, Mercator projection, for desk use. Gives Zones and Prefixes. Latest 12th edition ......... £2.20

LOG BOOKS

Amateur Radio Logbook .............................................. £2.70
Receiving Station Log ................................................ £2.75
Mobile Logbook ...................................................... £1.20

(The above prices include postage and packing)

Available from:
Publications Dept.
Short Wave Magazine
34 High Street, Welwyn, Herts. AL6 9EQ
Tel: Welwyn (043871) 5206/7
(Couter Service, 9.30-5.00 Mon. to Fri.)
(Giro A/c No. 547 6151)

KW TEN-TEC LTD.
books Er U.K. p.p. £7.50. (Overseas, sufficient for 750 grms.).

guaranteed. Complete course comprising 2 x 12" + 1 x 7" multi-speed records +

MORSE RHYTHM automatic AN. Any. It's as easy as learning a tune. 18 w.p.m. in 4 weeks

three scientific ANy prepared special records with which you cannot fail to learn the

(Most students take about three weeks). That's why after 3) YEARS we still use

If you start RIGHT you will be reading amateur and commercial Morse within a month.

MORSE

Proprietor: Maurice C Hately, M Sc, MIEE, Chartered Electrical Engineer. (GM3IAT).

HATEG ANTENNA TECHNOLOGY — GM3IAT
1 Kenfield Place, ABERDEEN AB1 7OW, Scotland
DIPOLE OF DELIGHT
MONOBAND VERSIONS These are probably the most efficient antenna feed systems ever devised. As evidence of this fact we quote in our data sheet the Galactic noise voltage received on a winter night (when the Layer of the ionosphere clears away to let one hear the stars). In addition monoband capacitor dipoles have a bandwidth several times that of the traditional "cut-and-covs" half wave dipole. Due to the presence of the capacitive reactance at the centre, and the excellent match and balance it gives, the principal contribution to damping of the standing wave is RADIATION RESISTANCE. Source resistance is only one hundredth of the radiation resistance instead of being equal to it as in the old form of dipole.

AN EXPERIENCED USER'S COMMENT:— Trevor Morgan GW40X8 using a TS 130S (10-watt PEP) feeding a 14MHz monobander (DDM14) at 30 feet wrote: "The first contact I ever made with V/CXM in New York who gave me a site report. A bit further up the band I found W4GXT in N. Carolina who was intrigued by the experiment and gave me a solid 9 1/2 and commented on the signal quality despite the meter reading. During the GR3 I had the opportunity of comparing received signals with my vertical (MV/9HH and 9R1V), and was pleasantly surprised to find the DDM14 showing 25 points over the vertical and 1 point over the GR1V."

DDM14 is priced at £15.50 inc VAT and First Class Post. Usually ex-stock. Same price DX.

FURTHER DETAILS send SAE for our Data Sheet, Price List and stock list of other versions.

Available from the distributors below:

ROADSIDE SURVEYORS.
305 Downham Road, London SW7 3PQ

Telephone: 071-229 1590

ALL
VALVES
& TRANSISTORS

Activity World

CoMoR ELECTRONICS LTD.

170 GOLDFHAWK ROAD
LONDON W12

Tel: 01-749 3934

Call or phone for a
most courteous quotation

I PAY THE BEST PRICES
AND OFFER THE BEST DEALS

COLOMOR ELECTRONICS LTD.

170 GOLDFHAWK ROAD
LONDON W12

MORSE MADE BY THE RHYTHM METHOD!

"STRAINS, BUT TRUE!" No expensive equipment required onto a turntable.

If you start RIGHT you will be reading amateur and commercial Morse within a month.

(Most students take about three weeks). That's why after 30 YEARS we still use these scientifically prepared special records with which you cannot fail to learn the MORSE RHYTHM automatically, it's as easy as learning a tune. 18 w.p.m. in 4 weeks guaranteed. Complete course comprising 2 x 12" + 1 x 7" multi-speed records +

books Er U.K. p.p. £7.50. (Overseas, sufficient for 750 grms.).

guaranteed. Complete course comprising 2 x 12" + 1 x 7" multi-speed records +

MORSE RHYTHM automatic AN. Any. It's as easy as learning a tune. 18 w.p.m. in 4 weeks

three scientific ANy prepared special records with which you cannot fail to learn the

(Most students take about three weeks). That's why after 3) YEARS we still use

If you start RIGHT you will be reading amateur and commercial Morse within a month.

MORSE

Proprietor: Maurice C Hately, M Sc, MIEE, Chartered Electrical Engineer. (GM3IAT).

HATEG ANTENNA TECHNOLOGY — GM3IAT
1 Kenfield Place, ABERDEEN AB1 7OW, Scotland
DIPOLE OF DELIGHT
MONOBAND VERSIONS These are probably the most efficient antenna feed systems ever devised. As evidence of this fact we quote in our data sheet the Galactic noise voltage received on a winter night (when the Layer of the ionosphere clears away to let one hear the stars). In addition monoband capacitor dipoles have a bandwidth several times that of the traditional "cut-and-covs" half wave dipole. Due to the presence of the capacitive reactance at the centre, and the excellent match and balance it gives, the principal contribution to damping of the standing wave is RADIATION RESISTANCE. Source resistance is only one hundredth of the radiation resistance instead of being equal to it as in the old form of dipole.

AN EXPERIENCED USER'S COMMENT:— Trevor Morgan GW40X8 using a TS 130S (10-watt PEP) feeding a 14MHz monobander (DDM14) at 30 feet wrote: "The first contact I ever made with V/CXM in New York who gave me a site report. A bit further up the band I found W4GXT in N. Carolina who was intrigued by the experiment and gave me a solid 9 1/2 and commented on the signal quality despite the meter reading. During the GR3 I had the opportunity of comparing received signals with my vertical (MV/9HH and 9R1V), and was pleasantly surprised to find the DDM14 showing 25 points over the vertical and 1 point over the GR1V."

DDM14 is priced at £15.50 inc VAT and First Class Post. Usually ex-stock. Same price DX.

FURTHER DETAILS send SAE for our Data Sheet, Price List and stock list of other versions.

Available from the distributors below:

ROADSIDE SURVEYORS.
305 Downham Road, London SW7 3PQ

Telephone: 071-229 1590
Course for City & Guilds, Radio Amateur's Examination. Pass this important examination and obtain your licence, with an RRC Home Study Course. For details of this and other courses (GCE, Career and professional examination, etc.) write or phone: THE RAPID RESULTS COLLEGE, Dept. JV7, Tuition House, London SW19 4DS. Tel: 01-947 7272 (9 a.m. to 5 p.m.) or use our 24 hour Recordacall Service, 01-946 1102 quoting Dept. JV7.

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

Amidon toroidal cores, ferrite rings and beads. Send s.a.e. for 8LT.

Station logs, 10 for £18. — Currie Cards, Blackhill, Consett DH8 6JT. Personalised QSLs, 1000 for £15. D.I.Y. QSL/SWL cards printed at competitive prices, send s.a.e. for details. — Delta Cards, 62 Newark Lane, Ripley, Woking, Surrey.

D.I.Y. QSL/SWL cards (state which), 100 mixed designs/colours, £2.50 c.w.o. Personalised QSLs, 1000 for £15. Station logs, 10 for £18. — Currie Cards, Blackhill, Consett DH8 6LT.

Amidon toroidal cores, ferrite rings and beads. Send s.a.e. for data and prices. Business hours: 10-5 p.m. Tues.-Fri.; 10-4 p.m. Sat.—SMC (TMP Electronics), Unit 27, Pinfold Workshops, Pinfold Lane, Buckley, Clwyd CH7 3PL.

QSL/SWL cards printed at competitive prices, send s.a.e. for details. — Delta Cards, 62 Newark Lane, Ripley, Woking, Surrey.

**SERVICE TECHNICIANS REQUIRED**

Due to further expansion within our Service Department as a result of the introduction of cellular radio we require two additional Service Engineers to work on PMR and cellular equipment. Experience is considered more important than formal qualifications. Consideration may be given to keen radio amateurs without PMR experience.

London Car Telephones, Croydon. 01-680 4444

**AMATEUR ELECTRONICS UK**

R.A.S. (Nottingham)
Radio Amateur Supplies
Tel: 0602 280267

Visit your Local Emporium
Large Selection of New/Used Equipment on Show

AGENTs FOR:

- F.K.K.
- AZDEN
- ICOM
- YAESU
- FORTOP ATV

ACCESSORIES:

- Weiz Range
- Adoria Mics
- Barcon Mast Supports
- PSUs and Wave Meters
- BNR5 PSUs and Linear Racers

AERIAL: Tonna, Halbar, New Diamond Range of Mobile Whips

PLUS OWN

- "Special" G.R.P. GW5/5-Band beams. JUST GIVE US A RING
- Monday: CLOSED. — Tuesday - Saturday: 10.00am to 5.00pm

3 Farndon Green, Wollaton Park, Nottingham
Off Ring Rd. between A52 (Derby Rd.) & A600 (Keeleston Road)

**BETTER SHORT WAVE RECEPTION**

by William I. Orr W6SAI and Stuart D. Cowan W2LX

Latest 5th Edition

In the latest edition of this excellent work for all those who own (or intend to own) a radio receiver, these two well-known and respected writers have produced chapters covering: the radio spectrum and what you can actually hear world-wide; the tuning of a shortwave receiver; the business of buying a receiver, both new and secondhand; a description of the SW Rx in non-technical terms, together with receiver adjustment and alignment; DX-ing above 30 MHz; a description of the VHF receiver; building and adjusting efficient aerials; reception techniques.

Thoroughly readable and "digestible", this book is without doubt a very valuable addition to the bookshelf of any SWL.

160 pages
£6.20 inc. post.

Order from:

Publications Dept.
Short Wave Magazine Ltd.
34 High Street, Welwyn, Herts. AL6 9EQ
SIMPLE, LOW-COST WIRE ANTENNAS
by William Orr, W6SA1

Latest Edition

This excellent and thoroughly recommended handbook is the publication on the practical approach to building aerials. After starting with aerial fundamentals there are discussions and descriptions of ground-plane, end-fed, DX dipole, vertical and wire beam antennas, plus coverage on a universal HF antenna system and working DX with an "invisible aerial"; the SWR meter and coaxial cable also have chapters to themselves.

The whole book is presented in an authoritative, immensely clear, readable and enjoyable manner with the emphasis on the practical throughout — to the extent that even the chap who can hardly strip a piece of co-ax need not feel at all left out! Just as practical for the SWL, too!

192 pages £6.20 inc. post.

Order from:
Publications Dept.
Short Wave Magazine Ltd.
34 High Street, Welwyn, Herts. AL6 9EQ

THE SATELLITE EXPERIMENTER’S HANDBOOK

Recently published by the ARRL, this superb handbook provides all you need to know to communicate through, or pick up the signals from, orbiting satellites — whether your interest is in amateur-radio, weather or TV-broadcast satellites. Chapter headings include: — Preliminaries, Early Days, Past/Present/Future, Getting Started, Tracking Basics, Ground Station Antennas, Receiving and Transmitting, Satellite Orbits, and more; plus Tables and Charts.

Whether you are a beginner or an expert, if your interest is satellites, and particularly Amateur Radio "birds", this book is indispensable and unreservedly recommended.

208 pages £9.70 inc. p/p

Order from:
Publications Dept.
SHORT WAVE MAGAZINE LTD.
34 HIGH STREET, WELWYN,
HERTS. AL6 9EQ

PRACTICAL HANDBOOK OF VALVE RADIO REPAIR
by Chas. E. Miller

One of the latest titles in the "Newnes Technical Book" series, this book contains historical and technical information, together with a comprehensive and detailed description of fault-finding and repair techniques, on a wide range of vintage broadcast bands receivers from the 1920's to the 1950's. The basic information is of great value in the restoration of valved amateur bands receivers, too. Published in hardback.

221 pages £17.15 p/p

Order from:
Publications Dept.
Short Wave Magazine Ltd.,
34 High Street, Welwyn, Herts. AL6 9 EQ.

AMATEUR RADIO
by Gordon Stokes and Peter Bubb

The Lutterworth Press are the publishers of this book, which is intended for those wishing to study for the R.A.E. and comprises nineteen chapters, plus Introduction and Index, covering the basic, technical material the would-be candidate needs to obtain a "pass". Copiously illustrated with simple diagrams and excellent plates. Published in hardback.

192 pages £9.60 inc. p/p

Order from:
Publications Dept.
SHORT WAVE MAGAZINE LTD.
34 HIGH STREET, WELWYN,
HERTS. AL6 9EQ

Please mention "SHORT WAVE MAGAZINE" when contacting Advertisers — it helps you, helps them and helps us.
1985 CALL BOOK
"U.S. LISTINGS"

In this issue . . .
★ 438,007 licensed U.S. Radio Amateurs
★ 27,610 new U.S. licenses included, issued since the 1984 edition
★ 96,703 changes in listings
★ Then & Now — call letter changes
★ QSL managers
★ ARRL Countries list
★ Zip Codes and Licence Class on all listings
★ Standard Time charts
★ Plus many other features

£18.50 inc. postage

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

1985 CALL BOOK
"DX LISTINGS"

(i.e. all amateur call-signs outside the U.S.A. and its Possessions)

In this issue . . .
★ 447,257 licensed Radio Amateurs
★ 46,010 new licences included, issued since the 1984 edition
★ 97,904 changes in listings
★ QSL managers
★ Radio amateur prefixes of the world
★ ARRL Countries list
★ Standard Time charts
★ Census of world Amateur Radio licenses
★ Plus much, much more!

£17.95 inc. postage

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

WORLD RADIO/TV HANDBOOK 1985

Now in stock!

The World's only complete reference guide to International Radio & Television Broadcasting Stations. It includes: Frequencies, time schedules, announcements, personnel, slogans, interval signals and much more besides of value to the listener. Lists all International short-wave stations, including frequencies, for each country; foreign broadcasts, long and medium wave stations (AM broadcast Band), TV stations and domestic programmes. Long recognised as the established authority by broadcasters and listeners. It is the only publication that enables you to identify BC stations quickly and easily. Enables you to fill more pages in your log book on the SW BC bands and helps you add more BC-station QSL cards to your collection.

£19.15 inc. p/p

from
SHORT WAVE MAGAZINE
34 High Street, Welwyn, Herts. AL6 9EQ

THE ARRL
1985 HANDBOOK for the Radio Amateur
62nd Edition

★ 1024 pages
★ 376 pages more than last year's edition
★ Over 1700 circuit diagrams and illustrations
★ 40 chapters
★ 17 more chapters than last year's edition

soft cover, £15.50 inc. p/p
hard cover, £21.50 inc. p/p

Publications Dept.
SHORT WAVE MAGAZINE LTD
34 HIGH STREET, WELWYN,
HERTS. AL6 9 EQ
Technical Books and Manuals

(ENGLISH AND AMERICAN)

AERIAL INFORMATION
Antenna Handbook (Orr and Cowan) ........................................... £7.75
Beam Antenna Handbook ................................................................. £6.60
Cubical Quad Antennae: 3rd Edition ........................................... £6.60
Simple Low Cost Wire Antennas, by Orr .................................. £6.20
Aerial Projects (Penfold) .............................................................. £2.30
73 Dipole and Long-Wire Antennas (E. M. Noll) ......................... £6.95
Antenna Book (ARRL) latest 14th Edition ................................. £8.00
The (ARRL) Antenna Anthology .................................................. £4.60
Two-metre Antenna Handbook, F. C. Judd G2BCX ................... £6.35
HF Antennas for All Locations (RSGB) ..................................... £6.65
25 Simple Shortwave Broadcast Band Aerials (E. M. Noll) ....... £2.25
25 Simple Amateur Band Aerials (E. M. Noll) ............................. £2.25
25 Simple Indoor and Window Aerials ......................................... £2.05
Long Distance Television Reception (TV-DX) for the Enthusiast (revised edition) .............................................................. £2.25
An Introduction to Radio DXing .................................................... £2.30
Radio Amateurs DX Guide (14th Edition) .................................. £2.46
Power Supply Projects (Penfold) .................................................. £2.05

HANDBOOKS AND MANUALS
Radio Communication Handbook, Vols. 1 and 2 combined (paperback), RSGB ................................................................. £11.75
Teleprinter Handbook, New 2nd Ed. (RSGB) ............................... £12.70
TVI Manual (2nd Edn.) (RSGB) ..................................................... £2.20
The ARRL 1985 Handbook for the Radio Amateur, soft cover ........ £15.50
Learning to Work with Integrated Circuits (ARRL) .................... £1.70
Weather Satellite Handbook ......................................................... £8.70
The Satellite Experimenters' Handbook (ARRL) ......................... £5.75
Test Equipment for the Radio Amateur (RSGB) ......................... £5.35
Oscilloscopes — How to Use Them, How They Work (Newnes) ...... £5.40
Practical Handbook of Valve Radio Repair (Newnes) ................... £17.15
Radio Propagation Handbook, by W4LGF (Tab) .......................... O/S

BOOKS FOR THE BEGINNER
Amateur Radio (Lutterworth Press) ........................................... £9.60
Solid State Short Wave Receivers for Beginners (R. A. Penfold) .... £2.25
Beginners Guide to Radio (9th Edition) .................................... £5.10
Beginners Guide to Electronics, 4th Edition ............................... £4.45
Beginners Guide to Amateur Radio (Newnes) ............................. £5.45
Beginners Guide to Integrated Circuits, 2nd edn ........................ £5.00
Morse Code for the Radio Amateur (RSGB) ............................... £1.50
Unidex Radio (ARRL) ................................................................. £5.45
Radio Amateur's Examination Manual, latest 10th edition (RSGB) .... £3.60
How to Pass the Radio Amateurs' Examination (RSGB) new title .... £3.30

GENERAL
Weekend Projects for the Radio Amateur (ARRL) ....................... £3.05
Projects in Amateur Radio and Short Wave Listening (Newnes) .... £4.20
How to Build your own Solid State Oscilloscope (Rayer) ............ £2.25
How to Design and Make Your Own PCB's ............................... £2.25
How to Build Advanced Short Wave Receivers .......................... £2.25
Better Short Wave Reception, 5th Ed .......................................... £6.20
FM & Repeaters for the Radio Amateur (ARRL) ......................... £4.35
Easibinder (to hold 12 copies of "Short Wave Magazine" together) ... O/S
The World's Radio Broadcasting Stations and European FM/TV (Newnes) ................................................................. £7.60
Guide to Broadcasting Stations (18th Edition) ......................... £5.00
Radio Stations Guide ................................................................. O/S

USEFUL REFERENCE BOOKS
Solid State Design for the Radio Amateur (ARRL) ....................... £7.60
Foundations of Wireless and Electronics, 10th Edition (Scroggie) .... £10.05
Amateur Radio Techniques, 7th Ed. (RSGB) ............................... O/S
U. K. Call Book 1985 (RSGB) .................................................... available shortly
Hints and Kinks (ARRL) .............................................................. £4.30
Electronics Data Book (ARRL) ................................................... £3.15
Radio Frequency Interference (ARRL) ...................................... £2.40
Amateur Radio Awards, (RSGB) ................................................ £3.40
Electronics Pocket Book, 4th Edition (Newnes) .......................... £6.20

VALVE AND TRANSISTOR MANUALS
Towers' International Transistor Selector, latest 1985 Edition (Up-Date No. 3) ...... £14.50
Semiconductor Data Book, 11th Edition (Newnes) ...................... £8.05
International Transistor Equivalents Guide ............................... £3.40
International Diode Equivalents Guide ...................................... £2.60

VHF PUBLICATIONS
VHF Handbook, Wm. L. Orr W6SAI new 3rd Edition ................... £9.75
VHF/UHF Manual (RSGB) 4th Edition ....................................... £10.60
The UHF-Compendium, Parts 1 and 2 ...................................... O/S

Available from
SHORT WAVE MAGAZINE
Publications Dept.
34 High Street, Welwyn, Herts. AL6 9EQ — Welwyn (043871) 5206/7
(Counter Service: 9.30 — 5.00 Mon. to Fri.)

(ehicles despatched by return of post
O/P (Out of print) THE ABOVE PRICES INCLUDE POSTAGE AND PACKING
O/S (Out of stock) Many of these titles are American in origin (Terms C.W.O.)
Prices are subject to alteration without notice.


May 1985