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We are proud to introduce the VHF/UHF communications receiver we have all been waiting for. A glance at the brief specification will tell you why the new AR2001 receiver is going to take the listener by storm.

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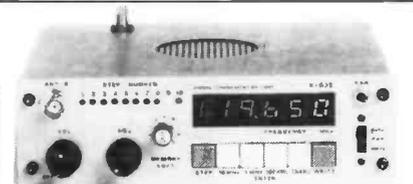
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**THE R532
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 £185.00 inc. VAT**

SPECIFICATION.
 Frequency range: 110 to 136MHz, i.e. all NAV/COM channels.
 Number of channels: 1040 (25KHz steps).
 Sensitivity: Better than 0.75 microvolts 10dB/SN.
 Memory channels: 100 (10 banks of 10). Memories can be scanned automatically or selected manually.
 Power required: 12V dc negative earth 300mA typical. (Display can be switched off to reduce consumption when operating portable). Size: 160 x 45 x 130mm.
 Weight: approx. 1Kg. (including memory backup batteries).

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(GB3SWM)

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AUTHOR'S MSS

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

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Isn't it time you switched to Icom?

New! IC-3200E



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/R/F 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.

IC-290D/290E



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

* AT THE LAST COUNT



DO, DO, DO, DO IS CAN'T BE WRONG

IC-505, 50MHz A New Dimension for the U.K.



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.

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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 Barclaycard and Access facility and a 24 hour answering service.

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Listed here are authorised dealers who can demonstrate ICOM equipment all year round. This list covers most areas of the U.K., but if you have difficulty finding a dealer near you, contact Thanet Electronics and we will be able to help you.

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- 2M – 100W, £79.00.
- MR – 150W, £139.00.
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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, handie 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 3/4". It weighs 2 lbs. and is housed in a high impact silver beige case. Power requirements are 12-13.8 volts D.C. at 400 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

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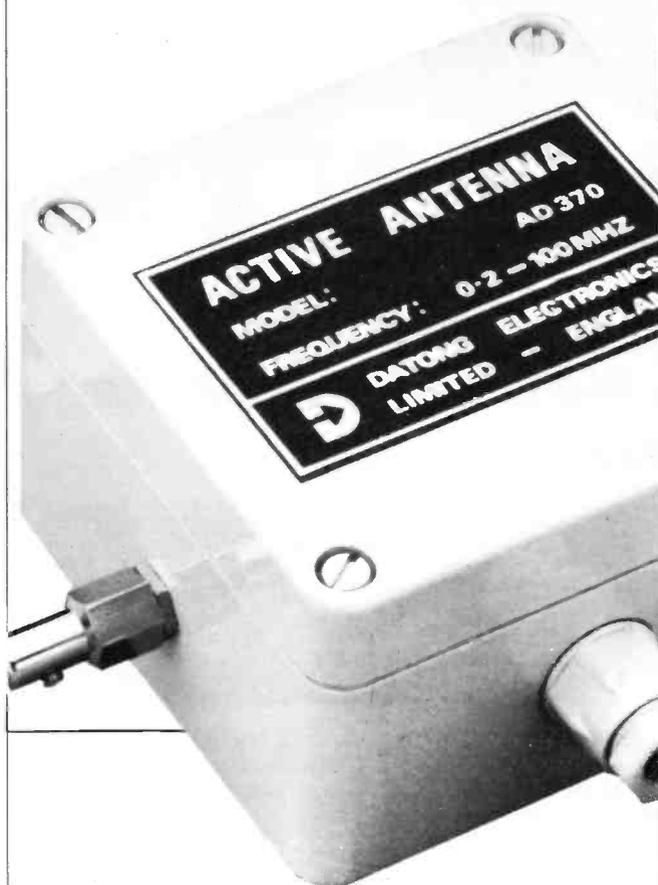
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Active Antennas



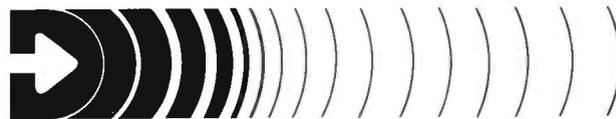
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ELECTRONICS



THE POCOMTOR AFR-2000 CW-RTTY ALL MODE DECODER allows the simple and easy decoding of CW — RTTY — ARQ — FEC & ASCII (including 200 baud press services), FEC Collective & Selective modes.

We believe the ARF-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 ARF-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 ARF-2000. Go Portable/mobile/Maritime Mobile.

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

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 100 Memory Channels
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*SSB up to 460 MHz



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



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0.15 – 30 MHz (118 – 174 MHz)*
 AM/W, AM/N, SSB, SW/W, CW/N
 NBFM Standard (WBFM Option)
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*Optional Unit

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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 HOWES 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 QRP CW TRANSMITTER FOR 80 METRES.

The CTX80 is 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 QRP 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, IRT (clarifier) 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 the CVF for other bands will be available later in the year.
 CVF80 kit £9.30. Assembled PCB module £14.90.

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 by G3RJV and over the last few months since our CTX80 transmitter has been available, more and more experienced amateurs have been building these receivers as part of a simple low cost QRP set-up. It took careful design to produce a simple receiver that would work this well. Compare the DcRx with that expensive black box that sits in your shack. Not quite as good of course, but I bet you can still hear most of the stations you can receive on the other radio.
 The DcRx is available for 20, 30, 80 or 160 Metres. It requires a 12 to 14V DC supply and will produce up to a watt of audio into a speaker or 'phones. Modes: SSB and CW. A case and two tuning capacitors are the only major parts to add to finish your receiver. We have suitable capacitors for all but the 160M version at £1.50 each.
 DcRx Kit £14.80. Assembled PCB £19.90. PLEASE STATE WHICH BAND YOU REQUIRE.

139 HIGHVIEW
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CM2 QUALITY DESK/MOBILE MICROPHONE.

The CM2 is a good quality microphone kit that consists of an electret condenser microphone capsule and a small electronics module that incorporates a Plessey "VOGAD" chip to give automatic control of modulation levels. The unit produces a nice clear audio signal for your transmitter, no matter whether you talk loudly or quietly, near or further away from the mic., the modulation level is maintained correctly for you. Ideal for a desk microphone or for use in the car as a "hands free" unit. The CM2 can be remotely keyed by a foot or gear-stick switch if required. The unit will work on an 8 to 14V DC supply, drawing only about 30mA from a 9V battery, and then only in transmit mode. The electronics turn off automatically when switching back to receive, no separate on/off switch is required. The CM2 builds into a clean sounding microphone that you will be proud to use on the air. It is always nice to receive complimentary audio reports, especially when you can have the satisfaction of saying "I built it myself".
 CM2 Kit £10.25. Assembled PCB module + mic. capsule £13.75.

PA2/15 15W output with 1.5W drive 2M linear amplifier. Suitable SSB or FM.

PA2/15 Kit £18.90. Assembled PCB module £23.90.

PA2/30 8dB gain, up to 30W output 2M linear. Designed for use with IC202, FT290, etc., to give a "clean" signal with good margin against overdriving. Read about it in G3R00's article in the April issue of Shortwave Magazine.

PA2/30 Kit £22.90. Assembled PCB module £27.90.

CO1 TX/RX CHANGE-OVER UNIT.

A PTT or RF switched change-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.

CO1 Kit £9.80. Assembled PCB module £13.80.

XM1 mk2. Our super crystal calibrator with EIGHT marker output frequencies (2.5kHz to 10MHz), onboard voltage regulator and ident facility. 8 to 24V DC operation. Markers usable from LF to UHF. An accurate, stable signal source is a must for any shack, as well as helping you meet licence requirements!

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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.

73 from Dave, G4KQH, 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 *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 *Auroral* 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 *Barenco*, 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 call sign, 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, G3IMV.

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, 144.500-144.845 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

"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

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 RFI problem." If the location of the offending telephone is known, a call to the fault repair service on 151 could produce a quick result.

Awards Notes

The 144 MHz QTH Squares Century Club has three more members. Certificate no. 47 was issued to the first lady operator, Mrs. Ela Martyr, G6HKM, on March 14 for 100 squares confirmed. Her QTH is Great Waltham in Essex (AL13g) 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 Sellars, 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 GM5CJF 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, OE6IWG, 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 Ela Martyr, G6HKM, and endorsed "All Dutch Stations." She also has a 432 MHz VHFCC claim being processed. Mike Gawne-Sheridan, G4WGS, from Greater Sharnley in Cheshire, is member no. 374. He was first licensed as G6KGO in mid-1981 and his 100 stations were worked with a *Yaesu* FT-480R at 10w with a 16-ele. *Tonna Yagi*. His present station is an *Icom* IC-251E with *muTek* 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 call signs to spell out Sandwell Blanc Mesnil. Full details from Mr. W. E. Ansell, 117 Oxhill Road, Handsworth, Birmingham B21 8HB. Presumably a list of club members will be supplied.

Beaconry

Reg Woolley, GW8VHI, writes that EA1TA says the EA1VHF beacon in VD59e on 144.867 MHz is off the air due

Station	QTH LOCATOR SQUARES TABLE		Total
	23cm.	70cm.	
G31MV	—	100	471
G3POI	—	—	429
G3JICD	41	116	238
G4NQC	61	90	211
G3JXN	72	110	172
G3PBV	41	106	189
EA3LL	3	32	300
G3UVR	35	92	202
G3XDY	59	109	159
G41JE	—	—	326
GW4TTU	25	73	215
GW4LXO	29	69	213
G3COJ	42	97	170
G8KBO	22	96	188
G4MCU	22	82	200
GJ8KNV	18	79	201
G3BW	9	38	250
G8TFI	51	109	126
G4DCV	—	64	219
G8GXP	—	—	280
G4ERG	—	16	261
G4KUX	—	36	240
G8VR	2	24	246
GW3NYY	—	48	219
G8PNN	50	83	126
G4TIF	—	90	167
GJ8SBT	26	47	182
G8ULU	35	90	125
G4DHF	—	—	245
G8XVJ	—	73	169
G4DEZ	—	—	242
G6DER	27	72	142
G4RKG	16	62	158
G4OAE	—	46	190
G8ATK	23	82	129
G8HHI	22	77	135
G8FUO	39	105	88
G4BWG	—	68	160
G4FRE	42	112	68
GW4EAI	—	—	218
G3FPK	—	—	207
GM4CXP	—	27	175
G6MGL	20	54	128
GM4IPK	—	—	201
G4MAW	43	105	52
G6HKM	—	68	127
GW8UCQ	1	70	120
G4STO	29	48	113
G4HMF	2	35	152
G4HFO	—	69	118
G8FMK	36	70	80
G4MUT	—	74	112
G6ECM	—	—	185
G8WPL	9	70	105
G1EZF	9	49	133
G6HKS	—	11	169
G3BDQ	—	—	177
G8LFB	—	—	177
G8TGM	—	—	175
G4ZTR	35	57	82
G6DZH	—	61	111
G6JNS	1	48	117
G4NRG	5	40	119
G4MEJ	—	—	160
G4FRX	—	66	92
G4TJX	—	59	97
GD2HDZ	13	50	91
G4MJC	—	12	140
GM8YPI	—	43	109
G4ROA	25	61	65
GW3CBY	10	35	105
G6DDK	3	15	131
G4SFY	—	—	149
G4IGO	—	—	148
G8ZDS	—	31	104
G4DOL	—	—	131
GM8MJV	3	26	101
G8ROU	1	43	86
G4YUZ	—	—	125
GW8VHI	—	41	83
G6XLL	—	32	91
G4GHA	—	6	112
G4CQM	—	49	67
G4RSN	2	23	88
G6HCY	—	—	109
G8VVF	—	—	108
G4XEK	—	—	105
G6AJE	—	21	82
G8RWG	—	—	103
G6YLO	13	22	59
G6NWF	—	—	86
GM8BDX	13	29	41
G8XTJ	—	—	83
G6YIN	—	11	71
G4UYL	—	—	81
G6XVV	1	30	46
G6CSY	15	25	34
G4LZD	—	—	71
G6XSU	—	50	19
G1INK	—	29	31
G4WHZ	—	8	49
GW6OFI	—	—	48
G6SIS	—	—	30
G2DHY	—	3	25

Starting date January 1, 1975. No satellite or repeater QSOs.

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 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 2-30, 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 broadcast stations 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 seems to be an 8-ele. *Yagi* 4m. above the deck. Because of obstructions, there are blind spots about 30° wide, fore and aft. QQ square should be within tropo. range of western Ireland and the western area of Scotland, so it is hoped some EI/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. GM8TSI reckons YQ has not been heard on 13cm. yet. They will be on at least twelve hours before the contest on 432.215 and 1,296.295 MHz, the respective calls being GM8TSI/P and GM8MJV/P. 23cm. and 13cm. skeds can be arranged on 70cm. and the 13cm. station will be GM8MNG/P. GM8TSI 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 a 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

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

contacted 15 Europeans, three 4X4s, 2 Ws and 5 JAs. "The cream" was 7P8CM, VS6XMT and 8Q7AV. P29JS got away.

In the March VHF/B, 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. 250mw 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 JL. 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 9½ 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 *GB2RS*, 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. GM4YXI 3,831/365 was second and G4KUX 3,096/335 came third. In the Multi-op. part, G4NXO won 4,422/452, with G4ANT 4,417/363 second and GW60SM 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 call signs. Radial ring scoring on 432 MHz and one point per kilometre on all other bands. On May

ANNUAL VHF/UHF TABLE

January to December 1985

Station	FOUR METRES		TWO METRES		70 CENTIMETRES		23 CENTIMETRES		TOTAL Points
	Counties	Countries	Counties	Countries	Counties	Countries	Counties	Countries	
G4TIF	10	1	53	8	34	5	—	—	111
G4YCD	—	—	71	12	14	2	—	—	99
G6ZPN	—	—	43	7	36	4	—	—	90
G6XLL	—	—	57	9	18	3	—	—	87
G6MGL	—	—	38	9	22	2	11	3	85
G1KDF	—	—	69	10	4	2	—	—	85
G4SEU	31	2	33	5	9	1	—	—	81
G4WXX	—	—	64	11	—	—	—	—	75
G3FPK	—	—	61	11	—	—	—	—	72
G6XVV	—	—	32	7	28	4	—	—	71
G4ARI	16	1	47	7	—	—	—	—	71
G6HKM	—	—	30	8	25	4	—	—	67
G4MUT	11	1	28	5	16	3	—	—	64
G1EZF	—	—	37	13	9	2	—	—	61
GM4CXP	5	2	34	10	6	2	—	—	59
G4VXE	—	—	29	3	22	2	—	—	56
G6XSU	—	—	23	8	14	3	—	—	48
G8XTJ	—	—	41	7	—	—	—	—	48
G6AJE	—	—	19	3	23	1	—	—	46
G8VVF	—	—	37	5	—	—	—	—	42
G4WHZ	—	—	30	5	4	1	—	—	40
G4EZA	—	—	35	5	—	—	—	—	40
GW6OFI	—	—	33	6	—	—	—	—	39
GW6VZW	—	—	34	5	—	—	—	—	39
G1INK	—	—	11	6	17	4	—	—	38
G2DHV	5	1	22	4	2	1	—	—	35
G4YIR	—	—	25	4	—	—	—	—	29
GW4HBK	24	2	—	—	—	—	—	—	26
GW4VXV	—	—	23	2	—	—	—	—	25
G4WND	20	2	—	—	—	—	—	—	22
G4CMZ	13	2	—	—	—	—	—	—	15
G1LAS	—	—	12	1	—	—	—	—	13
G6CSY	—	—	5	1	5	1	—	—	12
G6SIS	—	—	4	2	—	—	—	—	6
GW4TTU	—	—	—	—	—	—	2	3	5

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

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 being a Single-op. and Multi-op. event. Usual radial ring scoring but with a multiplier of the total squares worked including your own, the squares being of the I091 variety.

Four Metres

First a warm welcome to another, new lady contributor Mini Page, G4UKM, from High Wycombe, Bucks. She admits to being a CW fanatic so enters the Annual Ladder. Although not licensed till Aug. 1983, Mini passed her morse test a year earlier and has been urged to write by Sue Frost, G4WGY. Her husband is Roy, G4YAN, and one son Mark is G6REZ. Their other son Tony is trying for the *R.A.E.* She says, "We do not fight over the rigs to see who is going to operate; I just get there first!"

In the March 10 leg of the *Cumulatives*, Martyn Jones, G4TIF added G4LNV, G3WHK, G4CIZ and G3ENY for new 1985 counties on SSB. John Jennings, G4VOZ, (Leics.) remarks that G4ISM is now on regularly from Northants. once rather rare, it seems. John managed ten stations on Mar. 10 but was only on for 30 mins. but remarks, "Still a deathly silence from Yorkshire and the northeast."

Dave Lewis, GW4HBK, (Gwent) reports contest activity as quite high but very few stations worked otherwise. He

lists G4CG, G4FRO, G3YZU, G3YJX, G4MKF and G3OIC to bring his annual table score to 24 counties. On 6m. in March he worked 21 different stations but GM3WCS was called without success at 0741 on the 18th. G3PBV mentions that E-layer propagation has been noted a little on 6m.

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-ele. *MET* antenna. His QTH is 550ft. *a.s.l.* Mark Brincat, G1LAS, from Gravesend, Kent is another first time contributor who has also been reading the *Magazine* 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-ele. *Tonna Yagi* 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 squares, that is good enough for the tables.

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 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 KB2RQ 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 Mini obviously means business. Martin Lowe, G4YCD, (Bristol) caught the short *Ar* on Mar. 5 between 1830 and 1845 and worked GM3JII. On the 8th and 9th, conditions were slightly up and FC1JLQ/P in AK was worked. June Charles, G4YIR, (Essex) lists her best DX as G14VIP/P on Mar. 2 in the contest, while on the 12th she contacted GW8ELR (Dyfed). Best CW DX was DLOUD on the 8th.

Up to Mar. 19, Mike Johnson, G6AJE, (Leics.) had only managed 11 days on the air this year but then was a bit more active on his return from University. He wonders why some stations in Greater London still say they are in Middlesex, Surrey, Kent or Essex. Probably because we adhere to our postal counties, OM, for the *Post Office* does not seem too bothered. Perhaps when the *G.L.C.* and other Metropolitan authorities are abolished, we might return to the original system. May be there is widespread support for bringing back Rutland, Merioneth, Angus, etc., and for putting Hull back into Yorkshire. More counties to work for the tables.

Philip Ruder, G6MGL, (London) contacted GM4CXM (XP) for a new square on Mar. 8 for no. 128 on the band. G6ZPN had his first CW QSO at midnight on Apr. 1 with G4VXE, from his Dudley QTH. When he wrote on Mar. 28, Neil Clarke, G8VFF, (W. Yorks.) was still awaiting his letter of variation so he could try his fist on the air.

Reg Woolley, GW8VHI, (W. Glam.) was out portable in the Mar. 2/3 contest. The weather was terrible with driving rain getting into the gear, so the group abandoned the site. They reckon the new Maidenhead locator codes were, “. . . right pain . . .” a comment echoed by others; a case of Maidenhead unloved, it would seem. At home, Reg has a new

amplifier which can run” 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 G1INK is QRV on the band with a *Trio* TS-780 running 50w to a 17-ele. *MET* antenna at 50ft. G1KDF has been on 70cm. since Mar. 28 using a *Yaesu* FT-790R, 50w *BNOS* 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

Station	ANNUAL CW LADDER				Points
	4m.	2m.	70cm.	μ Wave	
G4WHZ	—	164	4	—	168
G4SFY	—	168	—	—	168
G4UKM	6	121	14	—	141
G4ARI	7	118	—	—	125
G3GHY	—	109	11	—	120
G4VXE	—	108	4	—	112
G4WGY	—	73	—	—	73
G4EZA	—	69	—	—	69
G4YIR	—	59	—	—	59
GW4VXX	—	57	—	—	57
GM4CXP	3	38	1	—	42
G2DHV	5	31	1	—	37
GW4TTU	—	—	27	3	30
G4ZTR	—	29	—	—	29
GW4HBK	17	—	—	—	17
G4CMZ	6	—	—	—	6

No. of different stations worked since Jan. 1.

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 QRV most nights and is looking for contacts. So far GW8ELR (Dyfed) and G1HGJ (Tyne & Wear) seem his best DX.

G6AJE uses an *Icom* IC-490E with a 3SK124 masthead preamp. from *LMW Electronics*, the antenna being a 48-ele. *Multibeam*. Mike mentioned the *RSGB's* new *Monday Night Award* in which you have to work 26 each Class A and B stations with callsigns ending in all letters of the alphabet in the period 1800-2400 clock time. A clever idea to promote activity. However, the *VHF Committee* seems to have overlooked that Monday night is CW activity night on 2m.

G6MGL has been having quite a few local QSOs from East London, plus ones with G6ICR in Liverpool, G6YXT and G4VPM in Devon and G1ENX in W. Midlands. Philip is *QTHR* and always keen to make skeds.

Twenty-three Centimetres

G3PBV noted lift conditions on the evening of Mar. 9 when the Emley Moor and GB3BPO beacons were very strong down in Devon, but activity low. G6MGL has worked a number of stations but did not give dates. They include G4CBW (Staffs.), and G6CMV (Hereford & Worcs.).

Calling Frequencies

The 2m. SSB calling frequency, 144.3 MHz, has become an absolute farce now there are so many new stations on the band. Especially at weekends and in the evenings, it is counterproductive for distant stations to call “CQ” thereon since they are usually obliterated by several others also calling. If contact is established, there follows the drama of establishing the QSO on some other frequency. It is time this outmoded idea be dropped, both on SSB and on CW.

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 seem to use the clarifier as a fine tuning device. Consequently anyone listening to the QSO finds the two, or more, stations on different frequencies.

The phenomenon arises when an operating frequency is chosen, say 144.330 MHz. Each will dial it up on their VFO but it is unlikely that both transceivers will be exactly in step. One will then use the RIT to render the speech reasonably natural but the two transmitting 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:

$$RA = Q / (Ho \times 2\pi FC)$$

$$RB = 2Q / (2\pi FC)$$

$$RC = Q / ((2Q - Ho) \times 2\pi FC)$$

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:

$$RA = 994 \text{ K (use 1M)}$$

$$RB = 1.99 \text{ M (use 1.8 M)}$$

$$RC = 20.3 \text{ K (see text)}$$

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.

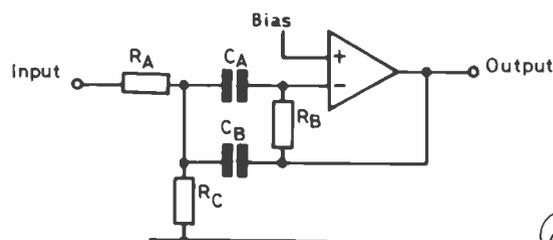
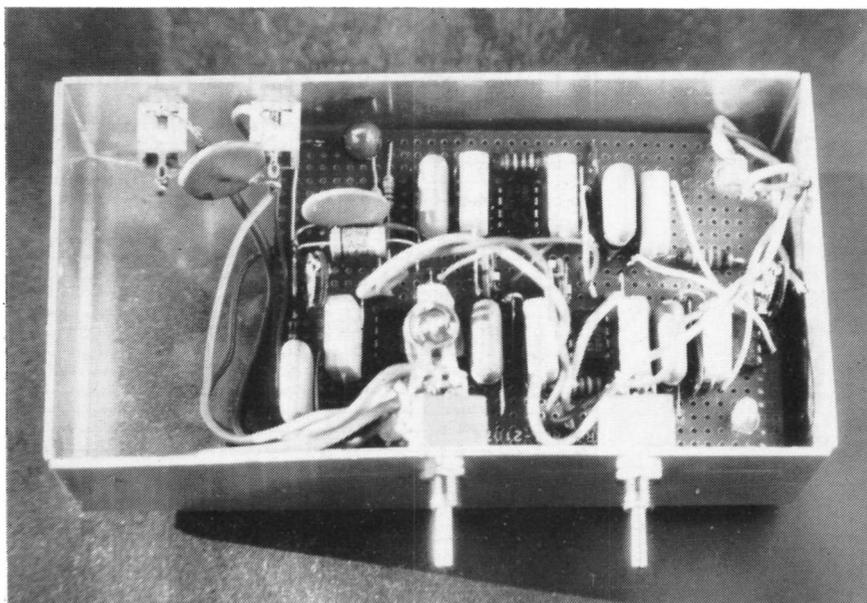


Fig.1 BASIC BANDPASS FILTER "BUILDING BLOCK"

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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!

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



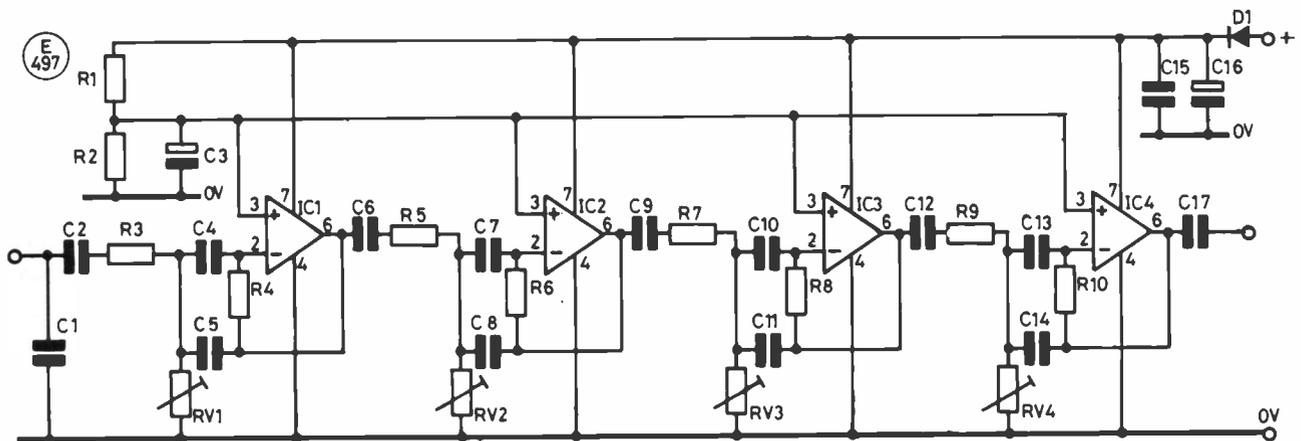


Fig. 2 CIRCUIT DIAGRAM

The filter in use with the author's FT-221R. The two switches are 'filter on/off' and the by-pass switch.



A = +Ve in
 B = Output
 C = 0V

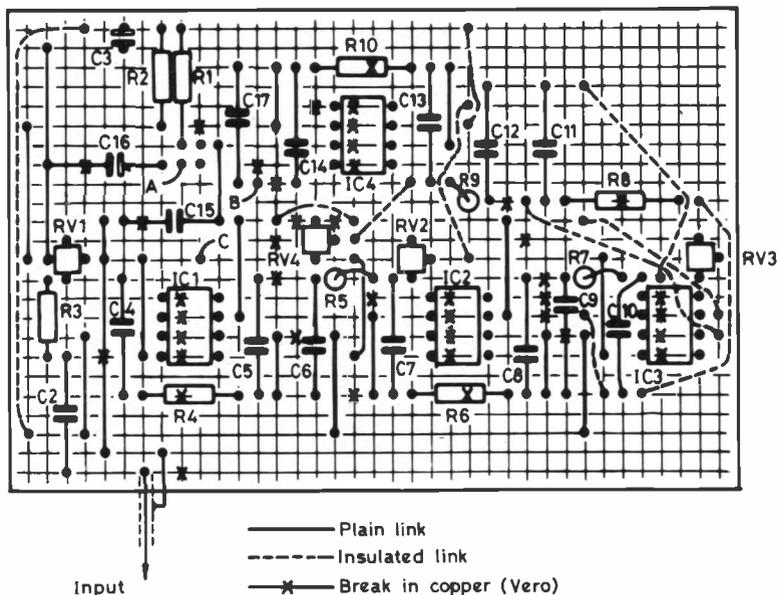


Fig. 3 COMPONENT LAYOUT

**Table of Values
Fig. 2**

R1, R2 = 150 K	C3 = 10 μ F, 16V tantalum
R3, R5, R7, R9 = 1 M	C4, C5, C7, C8, C10, C11,
R4, R6, R8, R10 = 1M8	C13, C14 = 0.001 μ F poly.
RV1 to RV4 = 50 K skeleton preset lin.	C16 = 22 μ F, 16V electrolytic
C1, C15 = 0.001 μ F disc ceramic	D1 = 1N4149
C2, C6, C9, C12 = 0.22 μ F	IC1 to IC4 = LF356 op. amp (see text)

Referring 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 D1 prevents possible disaster 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 un-coppered perforated board. The board is enclosed in a small 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

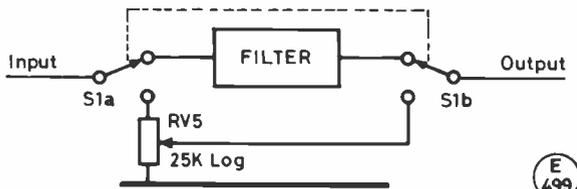


Fig. 4

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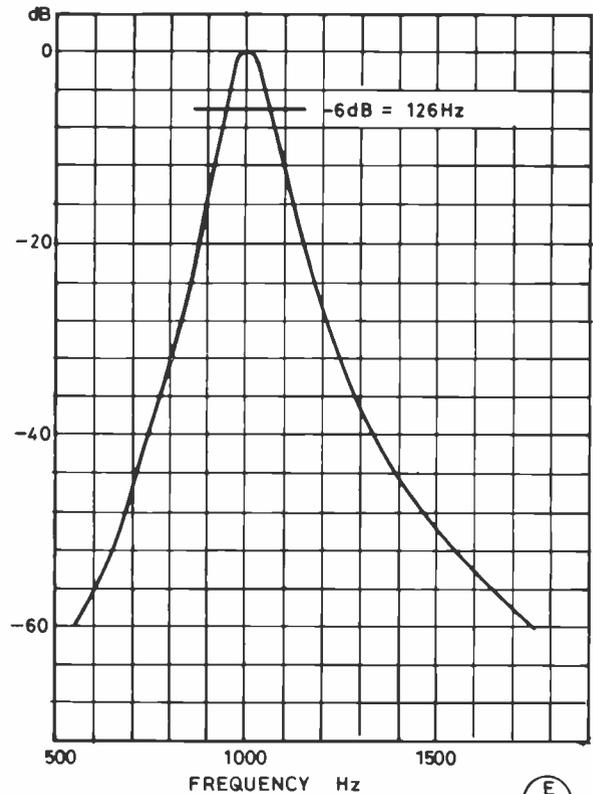


Fig. 5 RESPONSE CURVE

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 22.5lb at 80mph and the maximum survival velocity is 120mph. 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: $50 \times 1.1 \times 0.875 = 48.125$ metres/sec.

Moving to the second article, the conversion chart shows that to be about 110mph, 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 110mph from the information available. Looking again at the windspeed conversion chart it can be seen that 80mph coincides with a pressure of about 16.5lb/ft², and since the proposed aerial has a windload of 22.5lb, 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 110mph relates to a dynamic pressure of 31.5lb/ft², 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 33ft self supporting mast to carry an HF array which has a windload of 32lb at 80mph. He has already determined that the design windspeed for his QTH is 36m/s (80mph), 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 guesstimate to determine a bending moment, and to then check that the guesstimated 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 guesstimate. 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 193.7mm dia. tube, with 6.3mm wall thickness. With a design windspeed of 36m/s the conversion chart in the second article gives the dynamic pressure to be 800N/m², so using the formula for the force on a circular section,

$$F = C_f \times A_e \times q \text{ where } C_f = 1.2$$

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

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

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

$$M = \frac{w \cdot L^2}{2},$$

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

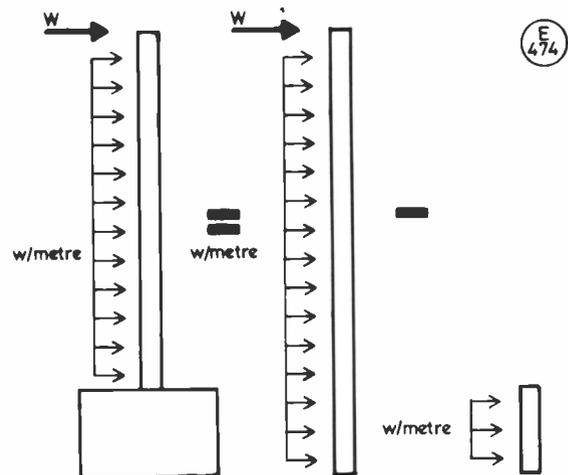


Fig. 1

When designing the base, the overturning moment about the bottom of the base must be found. This contrasts with the mast design where the bending moment at the top surface of the base is used. Using the method of superposition an allowance is made for the absence of wind force on the side of the base.

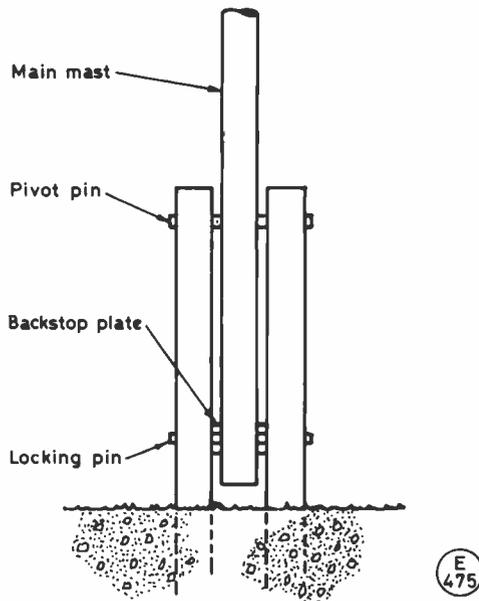


Fig. 2

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.

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

$$\frac{1}{r_y} = \frac{10000}{66.3} = 150.8,$$

$$\frac{D}{T} = \frac{193.7}{6.3} = 30.7,$$

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.

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 × 10 = 1395Nm, 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:—

$$Z = 168\text{cm}^3 \text{ or } 168000\text{mm}^3$$

$$r_y = 6.63\text{cm} \text{ or } 66.3\text{mm}$$

$$D/T = 193.7/6.3 = 30.7$$

Using the formula $M = f.Z$, and rearranging for 'f' gives:

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

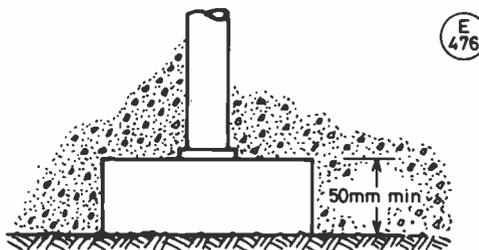


Fig.3

A minimum of 50mm. is needed below the bottom of the mast, so that groundwater cannot corrode it. A concrete spacer can be made, but the concrete in the base must be well compacted around it to prevent the ingress of groundwater. If a brick has to be used, it must be an engineering brick (a blue brick) as commons and facing bricks are both porous, and will deteriorate if permanently saturated.

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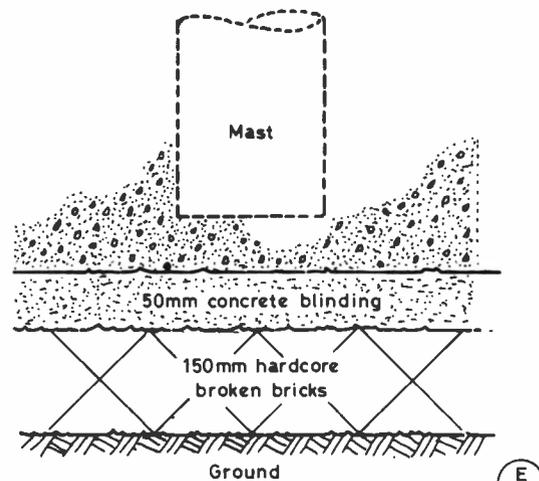


Fig.4

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.

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$$\text{B.M. from aerial} = 139.5 \times 11 = 1534.5\text{Nm}$$

$$\text{B.M. from wind on mast walls} = \frac{144 \times 11^2}{2} - \frac{144 \times 1^2}{2}$$

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 × 1.75 × 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

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

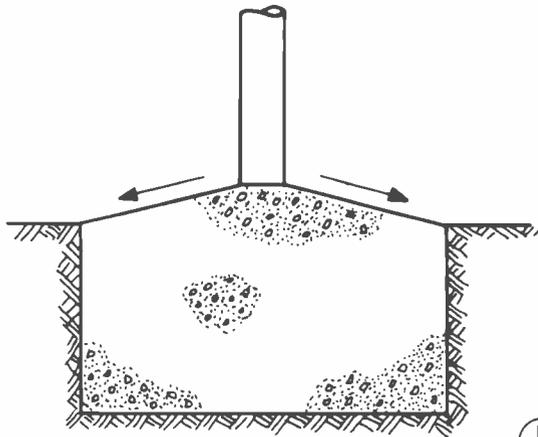


Fig. 5

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

$$Z = \frac{b^3}{6\sqrt{2}}, \text{ which in this case is } \frac{1.75^3}{6\sqrt{2}} = 0.632\text{m}^3.$$

The pressures under the base can now be found from:

$$p_{\text{max}} = \frac{W}{A} + \frac{W.e}{Z} \text{ and } p_{\text{min}} = \frac{W}{A} - \frac{W.e}{Z},$$

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_{max} is well below the SGBP of 80kN/m² 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

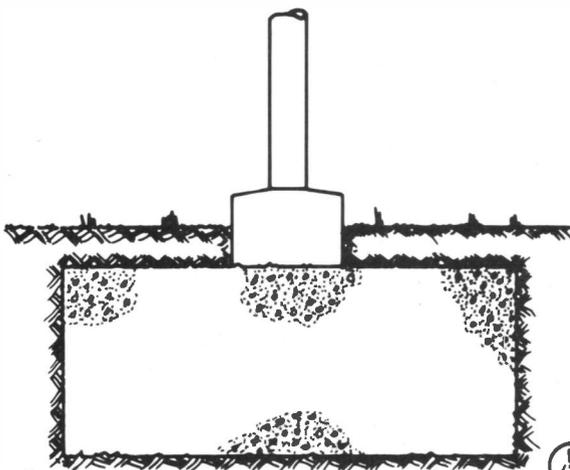


Fig. 6

With large bases it can look unsightly having the top face exposed. The top face of the base can be kept below ground, and a small area around the mast brought above ground. This must be formed while the base is still wet, to prevent a crack forming at the top of the main base area, allowing groundwater to penetrate and corrode the mast.

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_{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

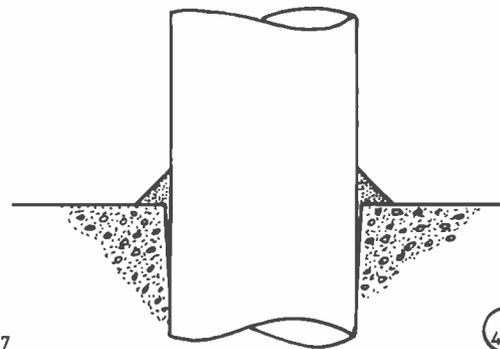


Fig. 7

The concrete will shrink very slightly as it dries, and a crack may open up around the base of the mast. A mastic sealant will prevent rainwater that runs down the face of the mast from collecting in the crack.

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.

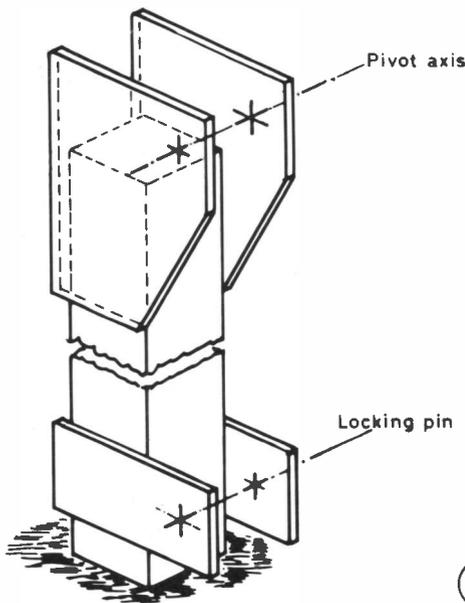
Bottom Protection

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



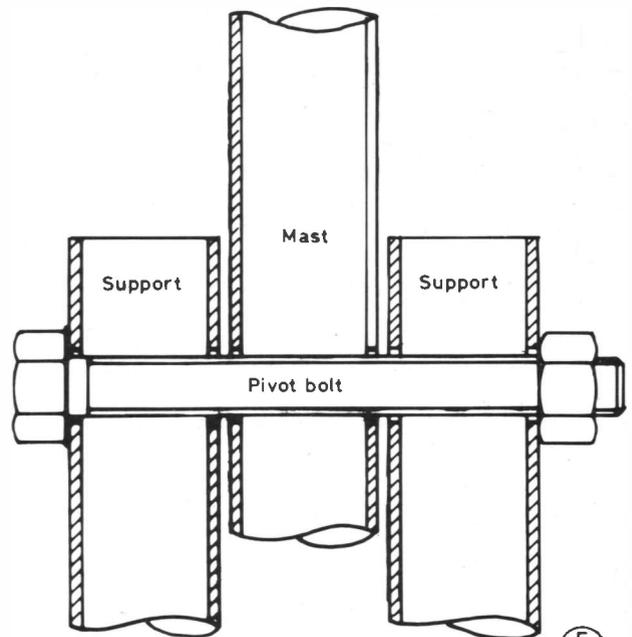
For those with the necessary skills, a square hollow section can have plates welded to it to form a single pole base. Not a project to be undertaken without prior experience as the welds will be taking the full moments from the mast.

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

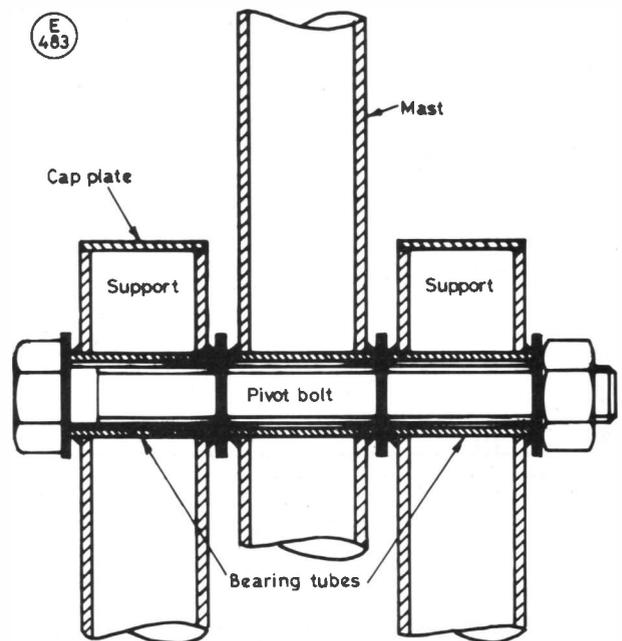
Although tubular sections have been assumed up until now, there is nothing to prevent the use of a rectangular support detail,



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 shortcomings, but doubtless has been used by some readers. The first snag is that the tops of the cast-in



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.

Telescopic 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 anyone capable of fabricating one, it has only been outlined in general here.

An alternative to telescoping is to use a counterweight in the section below the pivot, to balance the weights of the pole and the aerial above the pivot. If the thought of a concrete block fixed to the mast seems a bit Heath Robinson-ish, then the following method adopted by G3SIO may be of interest. In his 'man-sized' tiltover mast he drilled a hole just below the pivot, and filled the bottom of the mast tube with molten lead. This is, apparently, not as tricky as it sounds, and has the advantage of neatness once finished.

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

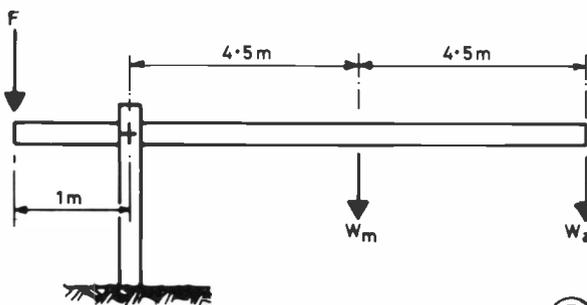


Fig. 11

With tall masts and large arrays, the effort required to get the mast vertical can be excessive. A force of $4\frac{1}{2}$ times the mast weight plus 9 times the aerial weight will need to be exerted on the above set-up. Either the mast needs telescoping before lowering, or a counterweight will be required.

Tube Dia. (o.d.)	Wall Thickness	Area	Z	r_y	Mass
mm.	mm.	cm ²	cm ³	cm.	kg/m.
76.1	3.2	7.33	12.8	2.58	5.75
	4.0	9.06	15.5	2.55	7.11
	5.0	11.20	18.6	2.52	8.77
88.9	3.2	8.62	17.8	3.03	6.76
	4.0	10.7	21.7	3.00	8.38
	5.0	13.2	26.2	2.97	10.30
114.3	3.6	12.5	33.6	3.92	9.83
	5.0	17.2	45.0	3.87	13.5
	6.3	21.4	54.7	3.82	16.8
139.7	5.0	21.2	68.8	4.77	16.6
	6.3	26.4	84.3	4.72	20.7
	8.0	33.1	103	4.66	26.0
168.3	10.0	40.7	123	4.60	32.0
	5.0	25.7	102	5.78	20.1
	6.3	32.1	125	5.73	25.2
193.7	8.0	40.3	154	5.67	31.6
	10.0	49.7	186	5.61	39.0
	5.4	31.9	146	6.66	25.1
219.1	6.3	37.1	168	6.63	29.1
	8.0	46.7	208	6.57	36.6
	10.0	57.7	252	6.50	45.3
219.1	12.5	71.2	303	6.42	55.9
	16.0	89.3	367	6.31	70.1
	6.3	42.1	218	7.53	33.1
219.1	8.0	53.1	270	7.47	41.6
	10.0	65.7	328	7.40	51.6

Fig. 12. Section properties for some commonly available tubular steel sections.

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 whilst coastal QTHs will require resistance primarily to salt spray, QTHs in industrial areas will require resistance to chemical attack. 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!



SHORT WAVE LISTENER FEATURE

By Justin Cooper

ATHING 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 aerials, 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 H5Q, 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 are 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

SWL	PREFIXES	SWL	PREFIXES
C. Burrells (Stevenage)	465	I. Thompson (Rye)	302
S. Wilson (St. Andrews)	450	D. Pye (London W2)	219
J. Singleton (Withernsea)	332	M. Probert (Basingstoke)	205

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 G3LWY and the RAIBC organisation; at the time of writing he had had his receiver just 47 days and had discovered the joys of the first-hop DX on Twenty, although as yet Peter hasn't been able to make head or tail of the noises on Eighty — which goes for a lot of us! Peter was BRS 22997 back in the fifties, when he had an HQ-170 receiver to a Mosley trap dipole. Now he would welcome letters from other SWLs — the address is: P. Singleton, 8 Appleby Road, Blackpool, Lancs FY2 0SN.

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 less than forty) 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 finished since he moved to Withernsea, but we would have thought that at the time of an opening into Europe it would be very interesting indeed.

Now to *G. Carmichael (Lincoln)* who also encloses a list for his XYL, Mrs. T. Carmichael. Gordon says he found the improvement in band conditions in February to be very noticeable. A 'puzzle corner' offering was VE0NED/MM heard one evening on Eighty from the Caribbean. No problem: according to the C/B, it is the call of *HMCS Fraser*.

Turning to *J. J. Sales (Lancaster)* who is puzzled by the wording of Rule 10. This was, and is, an attempt to stop the 'specialists' from creating a new category, and in practice the average amateur's prefixes may be picked up on any mode. If you fancy going after 200 prefixes all heard on AM or all on FM, so be it — but the list will simply appear in the Phone section. By the same token, anyone claiming an all-SSB list with no AM or FM will also go in the Phone listings with no indication, and this latter situation is nowadays the most usual case.

M. Ribton (Gillingham) has a long letter and list this time; first the saga of a notch filter that by the sound of it couldn't have ever worked, which is a bit discouraging for one's first attempt at home-brew. Then there was the matter of the verbal punch-up on Eighty between DJ4AX and EI8H on March 15. The comic bit of all this was that DJ4AX, who reckoned to 'sit on top of' anyone who caused him any QRM, was clearly not getting out very well, as EI8H, working split-frequency, was working a sheaf of W/VE through it. What a pity that so many of the Europeans won't observe the voluntary band-plan for the benefit of all — heaven forbid that these antics should result in compulsory band-planning. After all, a total of 20 kHz is all that is set aside for DX when CW and Phone are added.

The father of young *P. Baker (Cwmbran)* is the scribe and log-enterer for the station, and in his spare time he can operate as GW6VZW. That is where the boot pinches somewhat, as Dad isn't getting out at all well in the quadrant between say north and west of his station; Steve therefore asks if SWLs who may hear him on, will they please let him have a report which will be QSL'ed if it originates in the desired area.

When you are near the top it gets harder to find the prefixes, says *Mrs. R. Smith (Nuneaton)*, though she still manages to find some good stuff — for instance YIIBGD appears in the current list.

Pressing on, we come to *J. Goodrick (I.o.W.)* who says he is going to be QRT for a while with domestic QRM which sounds a little like either the garden or the paint-pots, or moving!

D. Pye (London W2) has a list of queries, most of which are just interpretation of the HPX Rules. However, we think the

HPX LADDER

(All-Time Post War)

SWL	PREFIXES		
PHONE ONLY			
B. Hughes (Harvington)	2934	J. Routledge (Hartlepool)	909
Mrs. R. Smith (Nuneaton)	2459	P. Lincoln (Aldershot)	886
E. W. Robinson (Felixstowe)	2374	J. Heath (St. Ives, Cambs.)	750
E. M. Gauci (Sliema, Malta)	2003	B. Patchett (Sheffield 9)	750
H. M. Graham (Chesham)	1781	R. Wooden (Staines)	728
Mrs. T. Parry (Blackpool)	1649	A. J. Chapman (Newark)	554
G. W. Raven (London)	1547	N. Fox (Wakefield)	552
M. Rodgers (Harwood)	1507	Mrs. T. Carmichael (Lincoln)	502
N. E. Jennings (Rye)	1355		
N. Askew (Coventry)	1349	CW ONLY	
S. Baker (Cwmbran)	1339	J. Goodrick (I.o.W.)	1763
N. Henbrey (Northiam)	1327	A. F. Roberts (Kidderminster)	1344
R. Fox (Northampton)	1305	R. Fox (Northampton)	463
D. Shapiro (Prestwich)	1272		
P. A. Cardwell (Sheffield 8)	1238	RTTY ONLY	
P. Oliver (Paisley)	1264	N. E. Jennings (Rye)	606
G. A. Carmichael (Lincoln)	1043	P. Lincoln (Aldershot)	472
G. Shipton (Rye)	970	J. Routledge (Hartlepool)	324
M. Ribton (Gillingham)	931	N. Henbrey (Northiam)	293

Minimum score for an entry is 500 for Phone, 200 for CW or RTTY. Listings to be in accordance with HPX Rules, see p. 19, March issue.

two digits used in the East German calls are both part of the prefix and therefore count. As for 9H4R, he is an active station and in fact on Gozo which is an 'off-shore' bit of Malta. Thus the 'mainland' Malta stations sport a 9H1 while the 9H4s are all on Gozo. On a different tack, Don was a bit upset when having just heard a VU station, another, more powerful station opened up on top with a CQ DX call. Admittedly this is a real nuisance, but one has to bear in mind that the chap calling CQ may in fact have been in a skip null and just not hearing the VU station at all. The other problems are always with us — the gabblers and the mumblers! Here again, if the chap you are working is at 59 and you know him to be reading you 100% anyway, once you have got it clear that each side has the other's call OK, it is natural to reduce the emphasis on call-signs, forgetting altogether about the poor SWL! Just listen to what happens if one end doesn't get the call right, though, and you'll hear a marvellous lot of phonetics! Really, there are two conflicting requirements. Imagine two stations working each other, both 59, and both using phonetics to spell their name, and then just imagine the name to be Nebuchadnezzar . . .

We have a first list to hand from *Luciano Marquardt (Hereford)* who runs a DX-302 receiver and a vertical aerial. Luciano, being cautious, sent in his first collection of just eighty prefixes towards his 200 — all present and correct and awaiting the next list to bring up to the starter score.

A starting score of 205 is claimed by *M. Probert (Basingstoke)* and again all are in order. Matthew wasn't too sure of the rules when he wrote — he just missed the bus last time — and so he will doubtless have had a good read of them in the meantime.

P. Oliver (Paisley) is into curling as a sport, and is helping the local Boys Brigade with their 'Communicators' badge, as well as listening. Pete would be interested in hearing if any others are helping the BB on this badge, and corresponding with them — 64 Moorhouse Avenue, Paisley, Strathclyde will reach him. On the HPX front, the ARRL Phone Contest was a profitable activity, which isn't surprising really — what is surprising is the number of rarer DX stations who only appear at contest times.

List number 3 from *S. Wilson (St. Andrews)* takes him up to 450; he has nothing else to add by way of a letter this time.

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 honey 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 (Felixstowe)*; 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 chack' 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. AL6 9EQ. Till then, good hunting!



Bernard Atkinson operating G6EBH/MM in the wheelhouse of his diesel vessel *Prospect*. The transceiver is a Yaesu FT-290R with muTek front end. A Daiwa 30w amplifier is used with an HB9CV antenna for SSB and a 1/4-wave vertical for FM/repeaters. The boat is 22ft. long and 8' -6" beam with a 12 1/2 h.p. main engine and a 7 1/2 h.p. auxiliary. Listen for G6EBH/MM on summer weekends and sometimes on Wednesday afternoons from AO square on 2m.

photo: G6EBH

“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." transmitter board.

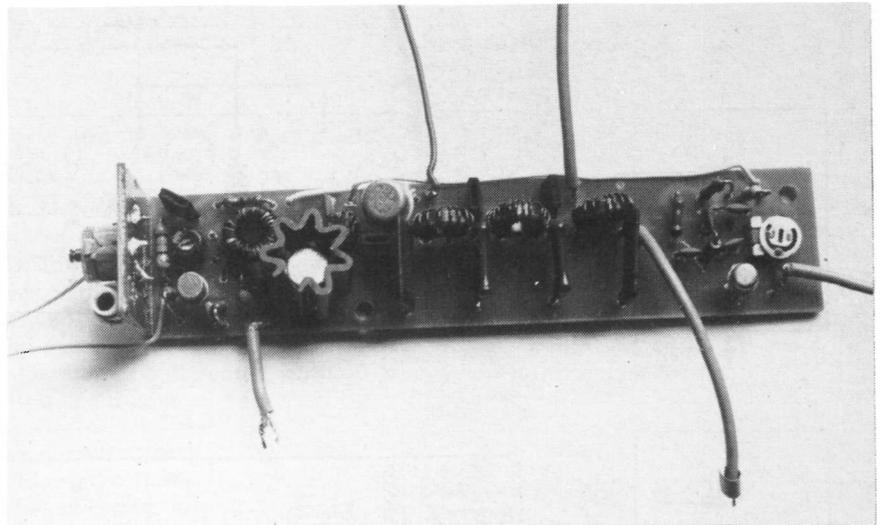


Table of Values

Fig. 1

- R1, R9 = 10K
- R2, R8 = 4K7
- R3, R4 = 220R
- R5 = 1K
- R6, R7 = 18K
- VR1 = 4K7 preset
- C1, C10, C11 = 0.1 μ F
- C2, C4, C12 to C16 = 0.01 μ F
- C3 = 0.001 μ F
- C5 = 0.1 μ F ceramic plate
- C6, C9 = 180 pF silver mica (see text)
- C7, C8 = 390 pF silver mica (see text)
- VC1, VC2 = 3-60 pF semi-airspaced trimmer
- TR1 = 2N706
- TR2 = BLY33 (see text)
- TR3 = 2N2905
- TR4 = BC109
- FB = small ferrite bead
- RFC = 10 turns, 32 swg, on ferrite bead
- L1 = 25 turns, 32 swg, on $\frac{3}{16}$ " dia. former with core
- L2 = 35 turns, 32 swg, on T37-6 core
- L2a = 3 turns on L2
- L2b = 4 turns on L2
- L3 = 16 turns, 26 swg, on T37-6 core
- L4 = 17 turns, 26 swg, on T37-6 core
- L5 = 16 turns, 26 swg, on T37-6

Note:

All capacitors are miniature dipped mica types, except for C5 to C9.

Fig. 4

C1, C2 = 0.01 μ F

D1, D2 = see text

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

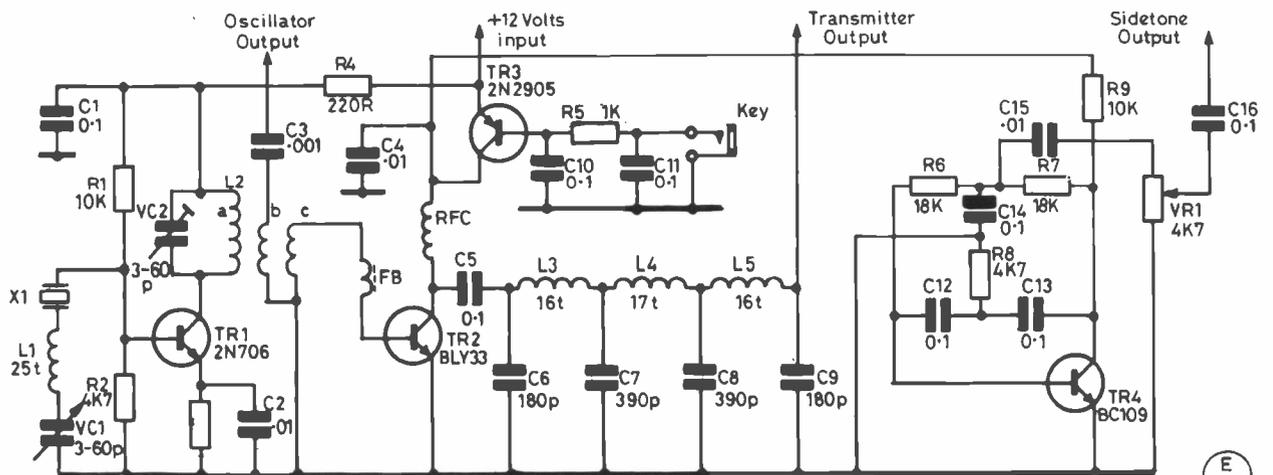


Fig.1 JLD TRANSMITTER CIRCUIT

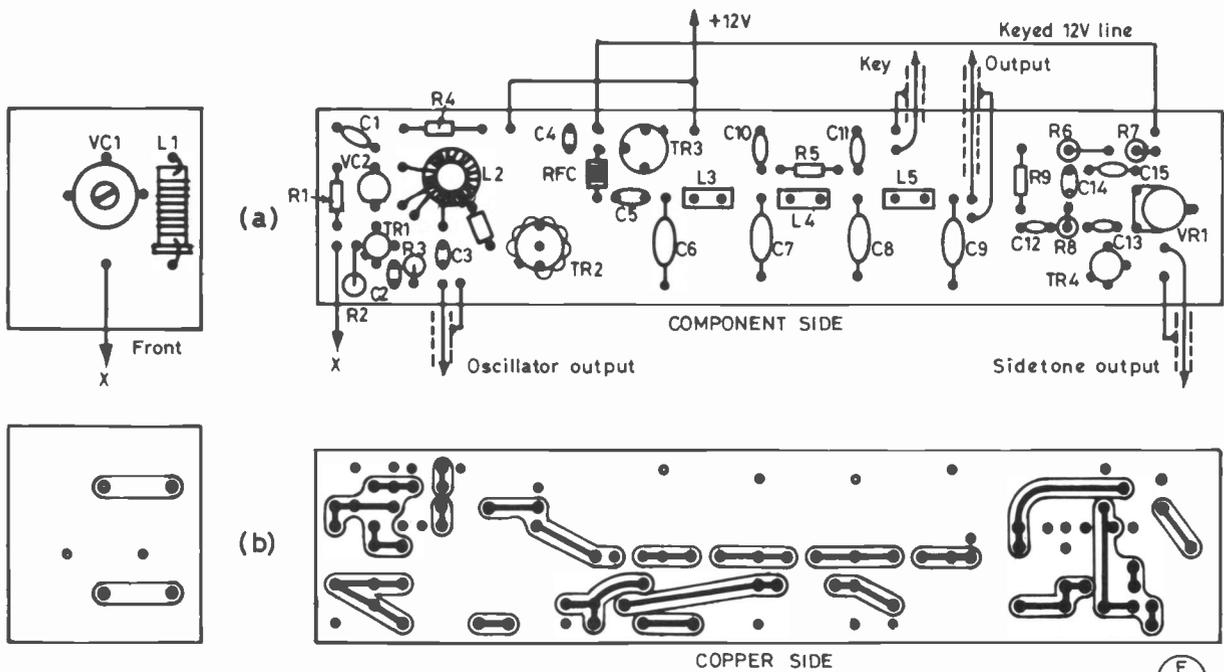


Fig. 2 JLD TRANSMITTER P.C.B LAYOUT

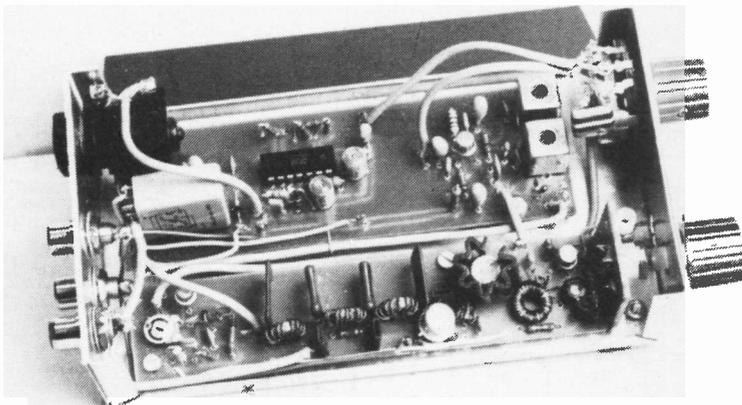
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Veroboard using easy-to-obtain parts with the hope that beginners would "get their feet wet" in construction. I had several letters from satisfied customers who had built the transmitter, some of whom asked for a matching receiver. In fact I did begin 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



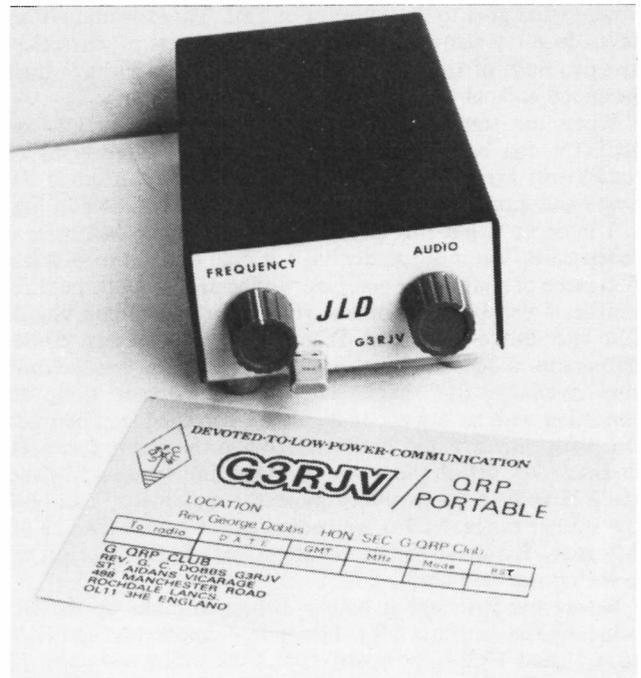
Inside view, from the top, of the "J.L.D." Transceiver.

DESIGNER: G3RJV
 QRP PORTABLE
 COMMUNICATION

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 "J.L.D." Transceiver.

photos: Jo-Anna

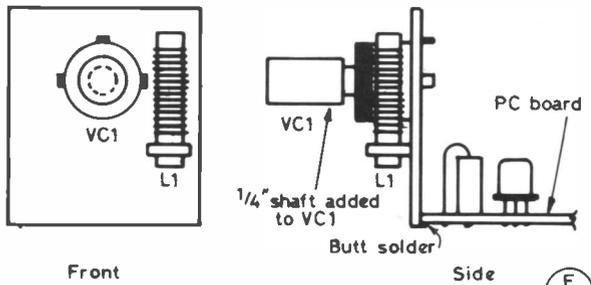


Fig. 3 VC1/L1 DETAIL (Actual size)

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 multi-vibrator 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 4 3/4" 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 straight forward 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 1/4" shaft attached to the screw adjuster. The trimmer is soldered onto the small front panel, as shown in Fig. 3, and a piece of 1/4" 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 3/16" 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

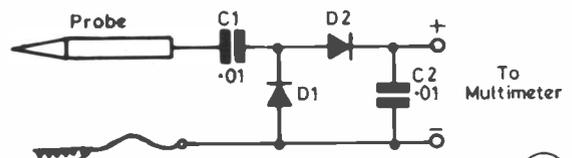


Fig. 4 RF PROBE

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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, germanium 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 transmitter 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 sidetone oscillator completes the board. The layout for this stage 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. The purists would no doubt arrange to wire the sidetone output into the receiver audio stages but this is a lot of fuss. The easiest way to connect the sidetone output is to a high impedance transducer, a crystal earpiece, a crystal microphone element or a high impedance dynamic microphone element, and lay it where it can be heard.

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. Gollidge 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, Buckely, 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 *Miniford 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 RSGB 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, ZLIAMO 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 FO0 Clipperton 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 Clipperton expedition, the last Clipperton 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 ZS1CTB were noted weakly, and Z23JO was heard on CW but not raised, at a time when no beacons whatever were audible. SM0OWX, SM0HTO, SM6LRR, DF4PU, all on SSB, and SM6LRR, 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 arrears. On 21 MHz the score since then seems to be: on CW, K4KQ, 3D6BU, ZS6ANL, WB4RDH, K1BR, W3FM, W4QDP, KESH0, LU1EVG, W9RG, UL7BX, N4FMQ, W1CCN, LU4EQD, TG9HXQ, WD4RAF, 5Z4MX; 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 ZL3FV, plus CW contacts with ZD8RN, 5T5RY, PZ1DT, FM5WO, K1HZ, KC7OG, 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, KL7LFY/0, K4EF, and KA2JMM, while the SSB got to VE2UN, UA0SKO, WD8DFO, K1WT, K1AFT, W5HBO, K8TLU, WB0ASH, VE3KHT, W4CYJ, KL7VZ, K2GUL, and KC2QJ. However, during the WPX SSB contest things picked up a trifle, and these were worked: RL8YL, NR5M, AK1A, KG1E, AI2C/P/4, UL8AWE, NP4CC, WL7E, K1KJT, K3ZJ, N8II, KY2P, N2AA, A18S, JR7CDI, K2VV, KJ9D, KM9L, K1AR, KW8N, N2AU, UZ9AWS, EM0CWN, RA9JM, NE8T, AD2Y, KS3F, EO0AAK, NJ8G, KA1YQ and K1VUT.

Now to G3BDQ who mentions his CW contacts with FM7WD, KH6IJ, 4S7GW, UH8BBP, 9V1TL, CM7GC, HC1VU and SV0DZ/9, while SSB reports were exchanged with lots of stations, the highlights being VK2ZS, VP2EC, N2BA/VP2M, VP2MBA, UL8AWE, RL8PYL, EM0CWN, TF3CW, AP2ZA, YB4FW, YB5AQD, VK9XB, CG5RA, CZ3CX, J40DX and SW2XK — both the latter two were in Greece.

GW4BLE 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, HI0A, VP2EC, TR1G, KD7P, NH4, 5W1EJ, VS6DO, N2BA/VP2M, and VK9XB on Christmas Island. In the ARRL shindig there was nothing considered worth mentioning — apart from a longish list of what *wasn't* to be heard!

New Bands

The second issue of G4UZN'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 EA3CTI.

In the letter from G3ZPF (Kingswinford) it is said that David's mast has grown by another four feet — we wonder what sort of fertiliser can do that trick? Now the 100 are up on Eighty and the activity is now 'getting the cards in' a comb through the log has found another couple of countries which were overlooked — these computers! As far as 10 MHz is concerned the next activity is to build a CW rig for the band once the household maintenance period (or summer, to us!) is out of the way.

G2HKU doesn't seem to have been over-keen on 10 MHz this time — his CW reached out only to OE6PN.

Snippets

A somewhat irate letter from G3KPO is on the subject of the standard of operation of the many GB stations to be heard on the bands at weekends. One such — callsign quoted — was complaining bitterly about 'Morse code interference' when in fact he was receiving a CW call. G3KPO feels

therefore that the correct answer is to only permit operation of GB stations on CW. This column would suggest that this is possibly the right answer, since CW always seems to generate more interest among the punters; however, as a compromise, the GB-call license could stipulate supervision by an operator who is currently able to receive Morse to an adequate standard.

Still with operating standards, SWL Williams had some sharp comments on the foul language and bad behaviour among some short-tempered and technically dim operators on Eighty, alleging they had QRM-ed each other. Heaven help us — if only the authorities would determine the licenses of a few of these stains on the bands, then we might see some improvement.

"CDXN" deadlines for the next three months:

June issue—May 9th
 July issue—June 6th
 August issue—July 4th
Be sure to note these dates

On a different note, we have the results of the 1984, and Rules for the 1985, South America CW Contest. There were no G entries, though EI3DP did put in a 21 MHz score involving some 106 contacts to win the band award. K1ZM pulled a cheeky one with four contacts and a multiplier of two to score eight and win the Top Band DX section — the South American winner on this band was PY1BVY who worked ten stations for a multiplier of eight. The 1985 contest is as usual on the second weekend in June, 1500z Saturday to 1500z Sunday. All 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 CQ SA Test, exchange the usual RST plus serial number starting at 001. Separate log 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 100 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, W2AYS, WA1ASR, K3UA, K300, KG4W, AA4FF, K8OQL, W4DR, N8II, VO1HP, VE1AGF, VE3ICR, RL7GDR, UA00BL (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, I5CTE, and LA7SI, 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, David decided some pruning needed doing; he hadn't the heart to shorten the pole so contented himself by turning the eighty-metre dipole into one for 7 MHz. Activity so far has been mainly at weekend afternoon times, but since the skip is too long for inter-G QSO's the 'ZPF grey-matter has been stirred up by working strings of German stations on CW in German. So far the main feeling about the change is of the relative *sanity* of the forty-metre band! No DX has been worked, but David understands the band has been 'ace' at grey-line times to VK and ZL.

G4VFG says that 7 MHz operation is certainly a test for the receiver — he should try Eighty! Lots of CW has been worked, but the only QSOs outside the 'small fry' category were with W6XJ and KB2KI.

March's collection for D. Whitaker included EM0CWN, FG5DL/FS, VK7SA, P29PL, J37AH, VK0GC, DJ4ZB/CP5 all in the morning period, plus 9M2CO, J28EB and YC5NDU in the evenings.

Turning to the list from G3BDQ, John stuck to his trusty Morse key, and managed two-way with PT7JMA, PY1MAG, KP2J, ZS6QU, UL71BZ, UI80AE, 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.

Last mention on this band is for GW4BLE, who found 5V8WS for a new one, HK3DPY, V130T, VK7GF, and ZL2WM, all on SSB. Steve thinks it a pity how much DX gets tied into the ZL2AAG net, and wishes the DX would be a bit more adventurous and do their own thing. We agree.

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 on Sundays 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 was 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 mem-

bers! 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.

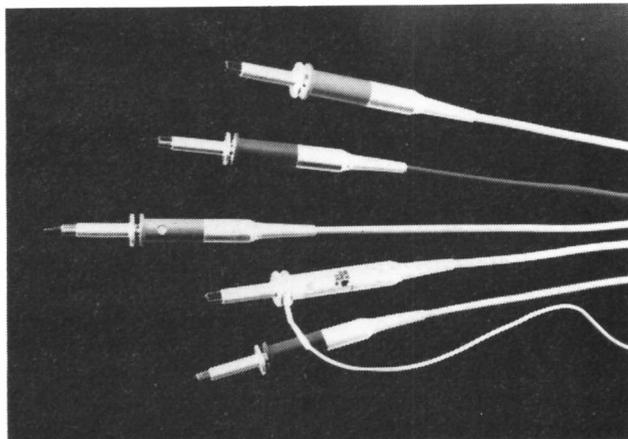
G2HKU made just two contacts on the band — W2BA and YV1AD.

As for G3BDQ, John offers from his CW log UA9CCP, EU0G, UA9XBV, 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, J28EI, 5T5RY, 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", 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 Stephenson Road, St. Ives, Huntingdon, Cambs. PE17 4WJ (tel: 0480-62440).

What's in a Call Sign?

STAN CRABTREE, G30XC

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 combination of Morse characters for the letters allocated. Assuming you expect your code to be copied there can be no deviation from this basic rhythm.

I first started operating at sea where all ships use four characters. Looking back I often think that the Issuing Officer responsible for ship call signs during and after the war years must have been a CW man. Without exception the four-letter call signs of British merchant ships seemed to have that certain rhythm when spelt out in the Morse code. Take GTPZ, GYSF, GNZC and GKR V for a start. Even non-marine types generally get to know GBSS and GBTT the respective calls of the *Queen Elizabeth* and *Queen Mary*. And how about GTTM for the last of the vessels to bear the famous name *Mauretania*? There was no 'H', 'I' or 'U' in calls when 'G' was the prefix. All the characters seemed easy to send. In fact the only vowels used

seemed to be the *Edinburgh Castle* and *Pretoria Castle* — GOHN and GOAE but even these seemed to have style when spelt out in Morse. Virtually all the calls in this period were a CW man's delight — GMGQ, GSVR, GNTV. Even the slightly more involved GYPX and GPLV had a certain charisma about them.

Use of vowels crept in when the initial letter 'M' was allocated to British Registered *Fort* and *Liberty* boats. The issuer must have had his tongue in cheek with MAIN, MADE and MOAT, all allocated during the latter years of the war. How regal the Ellerman liner *Apapa* sounded with MACE. During the mid-fifties some order was unfortunately introduced. Newly built and registered ships seemed to start with GH, with the remaining two letters made up apparently in strict alphabetical sequence. All the glamour had gone out of the game!

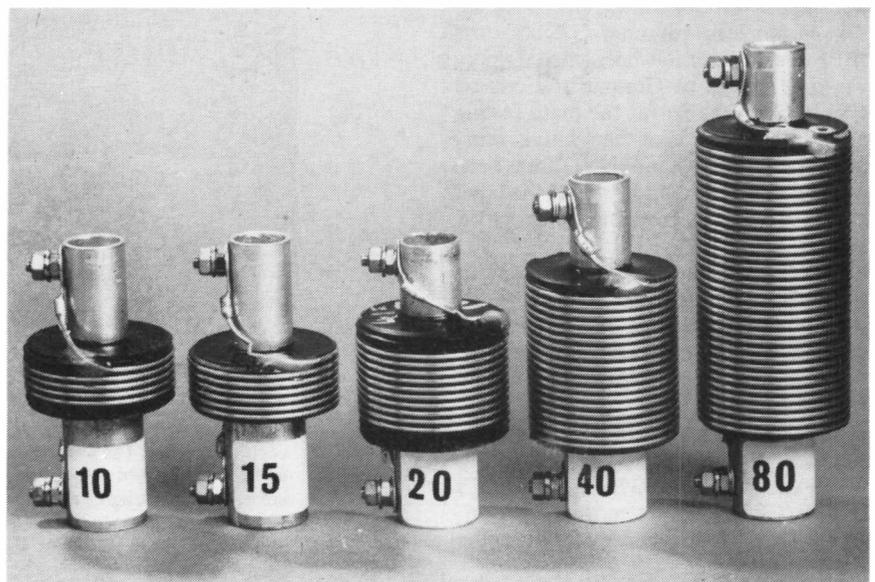
Stations on land including coast stations use a basic three-character call sign. On HF, these may well be followed by a figure or group of figures indicating a specific transmitter or frequency the station is operating on. The initial letter (and occasionally the first two letters or characters) invariably 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'.

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 in a new Zone or Area, e.g. GALHL. Thereafter three letters only would be sent — GHL. 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.

My first amateur call was VQ4GQ. This was allocated by the Posts 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 call was somewhat tainted by the number of QSL cards received addressed to VQ1VR! The Empire type call sign prefixes VQ, VR and VS have now nearly all been replaced as the particular country gained independence. A pity I think. There was always

New from G2DYM, makers of the well known anti-TVI trap dipoles, is a full range of aerial traps for 10, 15, 20, 40 and 80 metres. The traps are available in pairs for trap dipoles or singly for trap uni-poles, and cost £9 each for 10, 15 and 20m. traps, £10 each for 40m. traps, and £12.50 each for 80m. traps; post/packing is £1 for one trap, £1.50 for two. Special frequencies can be made to order. Full details from G2DYM, Uplowman, Tiverton, Devon EX16 7PH.

photo: G4HFO



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 could 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 number and came up with 5A4TC which proved a boon to WPX hunters at the time. Moving on to Cyprus I maintained the sequence with 5B4TC!

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 W4BPD 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 — M1C — 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

Frequency	Loss in dB per 50 ft. run		
	UR43	UR67	+ 'S' points
28 MHz	1.25	0.50	.25
50 MHz	1.50	0.62	.31
70 MHz	1.75	0.75	.33
144 MHz	2.75	1.25	.50
432 MHz	10.00	5.00	1.66

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 rallies 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 heaven-knows-what 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 co-ax. The losses involved with this type of cable are lower than with the same length of co-ax, especially on the HF bands. The cable is of the balanced type and so is ideal for direct connection to most types of aeriels, obviating the need for a balun which is usually required when co-ax 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.

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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. He will be sadly missed by those who knew him.

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 **Bangor** 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 Rings 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 **Border**, based on the Tweed View Hotel in Berwick-on-Tweed on the first and third Friday of each month. In May we notice May 3 is a talk on aials, with a demonstration.

At **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.

For details on the **British Rail** club we must refer you to the Hon. Sec. — see Panel. However, we can say that all members are part of the British Rail 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 Mosses 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 WOORE, 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, Sheepen 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

Names and Addresses of Club Secretaries reporting in this issue:

- ABERGAUENNY: J. B. Davies, GW4XQH, 109 Croesonen Parc, Avergawenny, Gwent NP7 6PF. (0873 4655)
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- BARRY: (Coll. of F/Ed.): Mrs. M. Beynon, GW4GSH, Bungalow No. 1, Racial-Decca Station, Llancarfan, Barry, S. Glamorgan. CF6 9AE.
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- BRITISH RAIL: G. Simms, G4GNQ, 85 Surrey Street, Glossop, Derbys. SK13 9AJ.
- BURY: B. Tyldesley, G4TBT, 4 Colne Road, Burnley, Lancs. (Burnley 24254)
- CAMBRIDGE (Rep. Gp.): C. Lorek, G4HCL, 11 Bevills Close, Doddington, March, Cambs. PE15 0TT (0354 740672)
- CHELTENHAM: Mrs. G. Harmsworth, G6COH, 42 Leckhampton Road, Cheltenham, Glos. (Cheltenham 25162)
- CHESHUNT: R. Frisby, G4OAA, 2 Westfield Road, Hoddesdon, Herts. EN11 8QX.
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- CORNISH: N. Pascoe, G4USB, Bosuathick Farm, Constantine, Falmouth, Cornwall. (Falmouth 40367)
- CRAWLEY: D. L. Hill, G4IQM, 14 The Garrones, Worth, Crawley, W. Sussex RH10 4YT. (Crawley 882641)
- CRYSTAL PALACE: G. M. C. Stone, G3FZL, 11 Liphook Crescent, London SE23 3BN. (01-699 6940)
- DARTFORD HEATH D/F: A. R. Burchmore, G4BWV, 49 School Lane, Horton Kirby, Dartford, Kent DA4 9DQ.
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- DEVIZES: P. Greed, G3MQD, 18 Nursteed Park, Devizes, Wilts. SN10 3AN.
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- HARROW: D. Atkins, G8XBZ, 25 Maxwell Close, Rickmansworth, Herts. (0923 779942)
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- MEDWAY: A. Faram, 6 Regent Road, Gillingham, Kent.
- MIDLAND: N. Gutteridge, G8BHE, 68 Max Road, Quinton, Birmingham B32 1LB. (021-422 9787)
- MID-ULSTER: D. Campbell, G14NKD, 109 Drumgor Park, Craigavon, Co. Armagh, N. Ireland BT65 4AH. (0762 42620)
- MID-WARWICKSHIRE: Mrs. C. Fennis, G4TIL, 37 Stowe Drive, Southam, Warks. CV33 0NZ. (092681 4765)
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- THORNTON CLEVELEYS: Mrs. E. Milne, G4WIC, 426 Queens Promenade, Norbreck, Thornton Cleveleys, Blackpool, FY5 1QT..
- THREE COUNTIES: R. S. Hodgson, G3TBT, Brackendene, Hollywater Road, Passfield, Bordon, Hants. (042877 368)
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- TORBAY: B. Wall, G1EUA, 48 Pennyacre Road, Teignmouth, Devon TQ14 8LB. (Teignmouth 78554)
- TROWBRIDGE: G. Callaghan, G4SPE, 16 St. Mary's Gardens, Hilperton, Trowbridge, Wilts. (0224 4532)
- VERULAM: H. Claytonsmit, G4JKS, 115 Marshalswick Lane, St. Albans, Herts. (St. Albans 59318)
- WAKEFIELD: W. Parkin, G8PBE, 14 Cleveland Grove, Lupset Park, Wakefield WF2 8LD. (Wakefield 378827)
- WELLAND VALLEY: A. Faint, G4TZY, 33 Fairway, Market Harborough, Leics. LE16 9QL. (0858 62827)
- WEST KENT: Mrs. J. Green, G4UPI, 13 Culverden Down, Tunbridge Wells, Kent TN4 9SB (Tunbridge Wells 28275)
- WESTMORLAND: G. Chapman, G1IIE, 61 Rusland Park, Kendal, Cumbria LA9 6AJ. (0539 28491)
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- WORCESTER: D. W. Batchelor, G4RBD, 14 Oakleigh Heath, Hallow, Worcester. (Worcester 641733)
- WORKSOP: C. Gee, G4ZUN, 100 Plantation Hill, Kilton, Worksop, Notts. (0909 486614)
- WORTHING: R. Jones, G4SWH, PO Box 599 Worthing, W. Sussex, BN14 7TT. (Worthing 208752)
- YEOVIL: E. H. Godfrey, G3GC, Dorset Reach, 60 Chilton Grove, Yeovil, Somerset BA21 4AW. (0935 75533)
- YORK: K. R. Cass, G3WVO, 4 Heworth Village, York. 308: D. Davis, G6YQD, 13 Maple Road, Surbiton, Surrey KT6 4AA.

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 successful club in a new town. May 10 is the Annual Dinner at Goffs Park Hotel — tickets from G3YVR. May 19 is down for

a Top Band D/F Hunt — details from the Hon. Sec. at the address in the Panel; and on May 22 they have a junk sale at Trinity Church Hall, Ifield, starting sharp at 1900.

The activity on May 18 for **Crystal Palace** was yet to be finalised when the note from them was posted. However, we

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 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 **Fyde** 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.

The last Thursday of each month is the night for the **Glossop** 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 visiting speaker to talk about aerials. One snag — 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



Television weatherman and keen VHF radio amateur **Jim Bacon, G3YLA**, with **Hilary Claytonsmith, G4JKS**, secretary of **Verulam A.R.C.**, at a recent club meeting when Jim gave the annual **G3PAO Memorial Lecture**. His talk concerned the formation and behaviour of high pressure weather systems and their effects on VHF propagation — and included one or two light-hearted stories of a met. man's typical day.
photo: G3PZF

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.

Havering club is coy about its Hq address but we know it is at Fairkytes Arts Centre, Billet Lane, Hornchurch, every Wednesday evening. We notice May starts with a talk by Rowley Shears, **G8KW** about "KW Past and Present." He should certainly know!

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 RSGB 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 the Royal Observer Corps, May 23 is a social evening, and on 30th they have the formal meeting.

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 **ROTA**; 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 G3LCK 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 G0AOU 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 Clevellys** 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 **Workshop** 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 Micklegate, York.

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 Pavilion, 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, GM4JDU, 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, G4IFF, 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 *Abergavenny* 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, 56 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 (SSB) and 2-metres (SSB or FM). More details from GM6WPA or GM3IBU, QTHR.

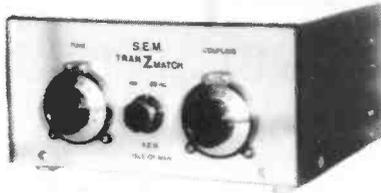
27-31 July, three radio clubs (Gloucester A.R.S., Cheltenham A.R.A. and Smith Industries R.A.) will jointly handle the arrangements for **GB2CV** for the "2CV GB" motoring club on the occasion of the 6th Citroen World Meeting at Cheltenham Race Course, Prestbury Park, Glos. Conditions permitting, all HF, 2m. and 70cm. bands will be activated, and it is hoped to include RTTY, SSTV and ATV operations; special QSL cards will be issued. Further information from Roger Hawkins, G8UJG, on 024267-2175.

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.

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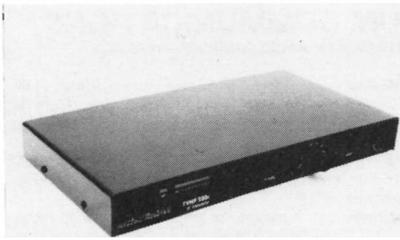
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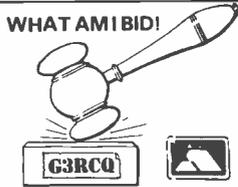
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