

# practical Wireless

## DXPERTISE WITH DEVEREUX

Mike G3SED Shares His Camel Trophy  
Radio Adventures

## THE PW DAVENTRY

Build a 7MHz Receiver - Part 2

## PW QRP CONTEST RESULTS

How Did You Fare This Year?

## ANTENNA WORKSHOP

And All The Regular Favourites

LEICESTER  
SHOW  
Bumper Issue

## TEX'S TREAT

Trying The Yaesu FT-10R

## A 'SMART' LOOK

At The Yaesu FT-8500  
Mobile



**NEW**  
Dual Band HT

# Dual Band Handheld FT-51R

Only one Dial/Volume knob required for easier use.

## The First Dual Band HT with WINDOWS!

Three dual receive configurations VHF/VHF, UHF/UHF, or VHF/UHF with main band frequency on right or left side. Flexible programming allows transmit on main or sub band.

An 8 character alpha-numeric user help menu scrolls operation instructions in the bottom of the large, backlit display.

MH-29A2B LCD Display Mic with Remote Functions. (Optional)

The new FT-51R Dual Band HT is state-of-the-art, and easy to use!

So easy, you won't need an operating manual. Its exclusive, scrolling instruction menu located in the large, backlit display "window", guides you through total operation while simultaneously viewing the main display window.

You'll like some of the other new, exclusive features, too. Like Spectrascope™. This unique feature displays real time, continuous scanning of activity on adjacent frequencies in VFO mode or 8 of your favourite

"I can see two frequencies and alpha-numeric all at the same time."

"Scrolling instructions tell me what to do next!"



See the FT-51R with "windows" at your Yaesu dealer today!

"I use the Spectrascope to find new contacts faster."

"Yaesu did it again!"

Digital battery voltage readout displays condition of battery in use. Scan skip function allows individual memory channel lock-out during scanning mode.

Spectrascope™ displays active adjacent frequencies in real time with relative signal strength.

FT-51R  
2 1/4" W x 4 1/4" H x 1 1/4" D  
(2 Watt version shown.)

### Specifications

- Frequency Coverage
    - VHF RX: 110-180 MHz
    - TX: 144-146 MHz
    - UHF RX: 420-470 MHz
    - TX: 430-440 MHz
  - Spectrascope™ Display
  - Scrolling User Help Menu
  - Alpha-Numeric 8 Character Display
  - Up/Down Volume/Squelch Controls & Display
  - Selectable Sub-Band TX Mute
  - Automatic Tone Search (ATS)
  - Digital Battery Voltage Display
  - AM Aircraft Receive
  - Scanning Light System (SLS)
  - 120 Memory Channels (80 w/Alpha-Numeric)
  - Large Backlit Keypad & Display
  - Automatic Repeater Shift (ARS)
  - Multiple Scanning Modes
  - 3 Selectable Scan Stop Modes with Scan Skip
  - User selectable lock function w/15 combinations
  - Automatic Power Off (APO)
  - TX/RX Battery Savers Built-in
  - Handy Cloning Feature
  - 5 Selectable Power Output Levels
  - Message system with CW ID
  - Selectable RX Smart Mute™
  - Cross-Band & One-Way Repeat Functions
  - DTMF Paging/Coded Squelch Built-in
- Accessories**  
Consult your local dealer.

**YAESU**  
Performance without compromise.™

# practical Wireless

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# CONTENTS

## November

**9 EDITOR'S KEYLINES**  
Rob G3XFD outlines his thoughts on the style of  
reviews carried in *PW*.

**9 COMPETITION CORNER**  
Why not try your hand at our Wordsearch  
competition this month - you could win a  
subscription.

**10 RECEIVING YOU**  
Readers have the chance to air their views.

**12 NEWS '95**  
New products, information and views to keep  
you up-to-date.

**16 SUBS CLUB**  
This month you could save over £80 on an Allnco  
DJ-S1EZA and this offer is open to non-  
subscribers as well.

**16 RADIO DIARY**  
Why not visit one of the many radio rallies - our  
list will help you decide.

**17 A COMPREHENSIVE  
COLLECTION**  
Rob Mannion G3XFD takes a look at series of  
valve books.

**17 ERRORS & UPDATES**  
Some amendments to the 'Key Project' originally  
published in the June issue.

**18 NOVICE NATTER**  
Elaine Richards G4LFM shares some more of the  
'natterings' she's received this month.

**20 CLUB SPOTLIGHT**  
Is your club 'spotlighted' this month?

**25 REVIEW - THE YAESU FT-8500  
DUAL-BAND TRANSCEIVER**  
Leighton Smart GW0LBI likes a challenge, so we  
asked him to try out a mobile rig where all the  
controls are on the microphone!



**30 DXPERTISE WITH DEVEREUX**  
Mike Devereux G3SED shares his experiences of  
being on the other end of a DX pile-up.

**33 THE HIGH FLYER**  
Victor Goom G4AMW describes a simple DX  
antenna.

**35 CHASING THAT DX**  
Chris Page G4BUE says it's not difficult to break  
the 100 countries barrier when DXing.

**40 THE ST BRANDON  
DXPEDITION**  
Paul Fry G0FUS and Jacky Mandary 3B8CF unravel  
the background behind a 3B7 DXpedition.

**42 THE LEICESTER AMATEUR  
RADIO & COMPUTER SHOW  
FLOOR PLAN**  
Come and meet the *PW* and *SWM* teams at the  
Leicester Show on October 20 & 21st.

**46 REVIEW - THE YAESU FT-10R  
HAND-HELD TRANSCEIVER**  
Tex Swann G1TEX is given the chance to review  
the latest hand-held from the Yaesu stables.

**50 ANTENNA WORKSHOP**  
John Heys G3BDQ talks about the fact and fiction  
surrounding tuned feeders.

**52 PRACTICAL WIRELESS 1995  
144MHZ QRP CONTEST  
RESULTS**  
Neil Taylor G4HLX presents the results of *PW*'s  
own 'fun' contest.

**56 THE PW DAVENTRY 7MHZ  
RECEIVER PART 2**  
Dave Howes G4KQH describes the constructional  
and assembly stages of the receiver.

**62 BOOK BONANZA**  
The *PW* Book Service Department offers you the  
chance to buy two popular publications at very  
special prices.

**63 EQUIPMENT SPECIFICATIONS**  
Ian Poole G3YWX begins to unravel and explain  
the mysteries behind transmitter specifications.

**64 HF FAR & WIDE**  
Leighton Smart GW0LBI's report shows there's  
been a lot of activity on the h.f. bands recently.

**68 VALVE & VINTAGE**  
Ben Nock G4BXD helps out in the 'wireless shop'  
looking after the valued, vintage and military  
equipment.

**70 VHF REPORT**  
David Butler G4ASR takes a look at long  
distance communications on the v.h.f.  
bands.

**72 BITS & BYTES**  
Mike Richards G4WNC has details of more  
Internet sites to look out for as well as all  
the latest news.

**73 BROADCAST ROUND-UP**  
Peter Shore rounds-up the latest broadcast  
band news.

**74 PACKET PANORAMA**  
Roger Cooke G3LDI has some disturbing  
news for packet users.

**75 BARGAIN BASEMENT**

**79 BOOK SERVICE**  
Place a book order for over £20 this month and  
you receive a free copy of 25 Simple Shotwave  
Broadcast Band Aerials.

**83 ENDNOTES**  
News of what's coming in your favourite amateur  
radio magazine next month.

84 ADVERTISERS INDEX

# SMC, ARE & REG WARD

*37 years and still Number 1*

## THIS MONTHS SPECIALS

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Yaesu's flagship HF Transceiver

only  
**£2899**



save  
**£1100**

(not to be confused with the FT-1000MP Economy Model)

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(both supplied C/W cell case antenna & hand strap)

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TS-850SAT	list £1959	our price <b>£1699</b>
TS-450S	list £1499	our price <b>£1299</b>
TS-450SAT	list £1649	our price <b>£1439</b>
TS-50S	list £1059	our price <b>£929</b>



#### YAESU

FT-1000	list £3999	our price <b>£3399</b>
FT-1000MP	list £2849	our price <b>£2549</b>
FT-990	list £2399	our price <b>£2039</b>
FT-990/DC	list £2099	our price <b>£1779</b>
FT-900	list £1399	our price <b>£1189</b>
FT-900AT	list £1599	our price <b>£1359</b>
FT-840	list £959	our price <b>£819</b>

#### ICOM

IC-775DSP	list £3699	our price <b>£3239</b>
IC-736	list £1969	our price <b>£1719</b>
IC-738	list £1649	our price <b>£1439</b>
IC-729	list £1325	our price <b>£1175</b>
IC-706	list £1195	our price <b>£PHONE</b>
IC-707	list £889	our price <b>£775</b>
IC-706	list £1195	our price <b>£1075</b>



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#### ICOM

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IC-275H	list £1495	our price <b>£1395</b>
IC-281H	list £449	our price <b>£399</b>
IC-2000H	list £369	our price <b>£329</b>
IC-2340H	list £689	our price <b>£599</b>

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TM-255E	list £949	our price <b>£829</b>
TM-455E	list £1059	our price <b>£925</b>
TM-733E	list £739	our price <b>£645</b>
TM-251E	list £419	our price <b>£359</b>
TM-702E	list £579	our price <b>£519</b>

#### YAESU

FT-736R	list £1999	our price <b>£1699</b>
FT-8500	list £749	our price <b>£659</b>
FT-5200	list £729	our price <b>£619</b>
FT-5100	list £679	our price <b>£579</b>
FT-2500M	list £399	our price <b>£339</b>
FT-2200	list £419	our price <b>£355</b>



### VHF/UHF HANDI'S & PORTABLES

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FT-41R	list £369	our price <b>£315</b>
FT-51R	list £529	our price <b>£449</b>
FT-416G	list £369	our price <b>£249</b>
FT-290R2	list £599	our price <b>£509</b>
FT-690R2	list £649	our price <b>£549</b>
FT-790R2	list £749	our price <b>£625</b>

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TH-22E	list £254	our price <b>£219</b>
TH-42E	list £289	our price <b>£249</b>
TH-28E	list £319	our price <b>£279</b>
TH-48E	list £369	our price <b>£319</b>

#### STANDARD

C188	sale offer price	<b>£169</b>
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On some items supplies are limited at our offer prices

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Single channel **ONLY £79**



**SMC-545LIN/B**

2 channel **ONLY £89**



**SMC-1045L2(B)**

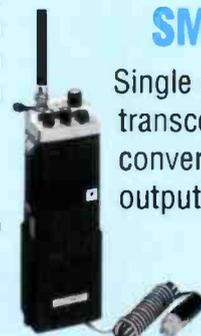
All sets supplied W/O mics. Mics are normally priced at £29. However, these are available for £10 if purchased with the transceiver. All sets supplied with conversion details XTAL specs. Matching base station power supply console only £29 (only when purchased with the transceivers).

### SMC-307L1

Single channel xtal transceiver suitable for conversion to 4m 3watt output

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WX4N	2M/70CM Base Colinear	£129.00
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CLP5130-3	Log periodic, 90-220MHz, 12 element, LE 1.6m B 1.7m	£169 C
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HK804	Brass high deluxe telegraph key w/o base plate	£82.50 B
MK702	Single lever paddle 1.0Kg	£34.00 B
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MK706	Squeeze key 0.7Kg	£34.00 B



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GSQ38G	Lowes clamp G-600	£25.00
MC /2	Lowes clamp create	£49.95
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Rotators carr D. Accessories carr B

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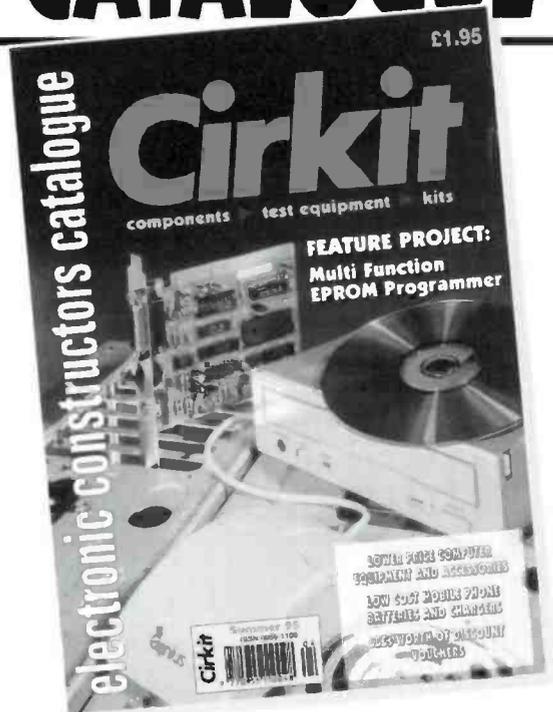
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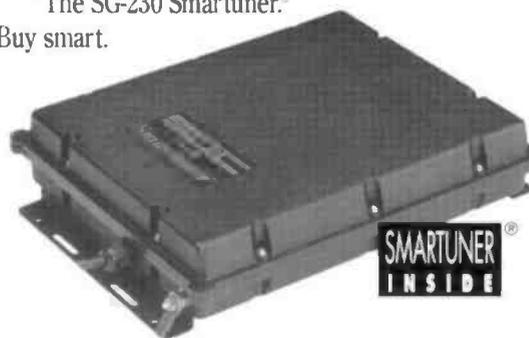
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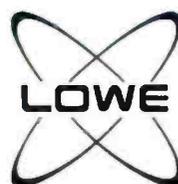
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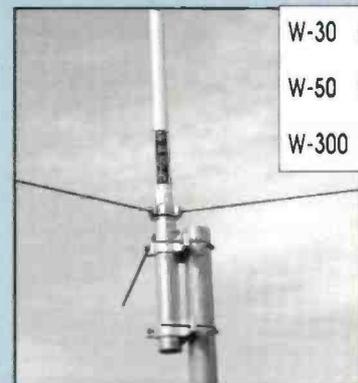
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# EDITOR'S Keylines

In his 'RY' letter, basically speaking, Russell Ware G7PRD takes *PW* to task in the way we (and other magazines) undertake equipment reviews. And, although I cannot think of a way to (fairly) implement Russell's idea, I think his suggestions (see 'Receiving You' under 'Comparative Reviews') are interesting.

To 'set the scene', I'd better outline my thoughts on the style of reviews in *PW*. Firstly, in practice, equipment reviews can only be the **opinion** of the reviewer. The opinions formed are backed up by the information (mostly in the form of specifications) provided by the manufacturer. These can either reinforce the reviewer's own measurements or can be used unchallenged and marked 'Manufacturer's Specifications'. (Incidentally, wherever possible we check the specifications, but due to the very short time equipment is available for review, this may not be possible).

## Comparative Reviews

If 'comparative reviews' are to be done...surely it must be a comparison to a 'standard receiver or transmitter'? And, I think that a transceiver review which only compares specifications (boring and un-helpful) or the reviewer's experiences on another transceiver, can only be helpful if the **reader is familiar** with the comparison equipment.

The nearest I get to comparing one transceiver against another, is by doing so with equipment

from the same manufacturer because they tend to use the same techniques and methods.

In my opinion, comparing equipment 'from the same stable' provides a fair comparison and provides a 'standard' of sorts. However, at the 'top end' of the market nowadays standards are becoming so high that comparison (specifications wise) are starting to become meaningless. So, it's back to opinions again!

I've often been challenged on our review policy during club visits. Fortunately, although readers may doubt the way we carry out reviews, they do not doubt our integrity. Reviewers (including myself) **never** have pressure applied 'to do a good review' and in all honesty I can firmly state that I've **never** been approached in an underhand or dishonest way even though our reviewer's comments and opinions have been disputed by suppliers/dealers.

Manufacturers (and their dealers) often disagree with what we say, but to be fair...they never say 'you must not print that!'. However, to be fair in return, I've provided the 'reply panel' facility which some manufacturers/dealers use occasionally in our reviews. Occasionally, someone suggests we

adopt the review approach used in the motoring press. However, in my mind that technique is flawed (when applied to radio equipment reviews) for the following reasons: **A**, many more drivers can (and have) tried 'basic' cars and can easily compare them by driving. They can also get reasonable access to many other vehicles for 'test drives' and can often have them on trial for a day or so. **B**, it's easier (in my opinion!) to evaluate a car! You quickly find out if it 'feels right' for you, corners well, is quiet or noisy or economical (or otherwise).

## An Opinion

Having stated my reasons for not using the 'comparison approach', it's still obvious that when it comes to making a decision, we have to rely on an opinion, whether it be our own or that of a magazine review author. But if you feel we **should** provide a comparison, please write to me and suggest a 'standard' comparison transceiver (or separates) we could use in reviews. I'll be very interested to see readers' suggestions!

Finally, we really do our utmost to be critical and honest in our reviews, but would appreciate any suggestions or ideas to improve them. In this case we need **your opinions!**

I'm pleased to say I'm visiting the Stockport Club in November, to provide a special talk. I wonder if the 'questions & answer' session afterwards will focus on *PW* reviews?

*Rob Mannion G3XFD*

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 O Y D U C N E C O T B I H D P X  
 N R F I D I N T N R D Z W T D D  
 A Q E K O P Q A O M K Z U F M Y  
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## STAR LETTER

### Aerials & Antennas

Dear Sir

The first thing I learnt on John Beaumont G3NGD's RAE course was that radio enthusiasts use aerials. It is the insect world that use antennas. I have often wondered why it is only Waters & Stanton who sell aerials in *PW*. Then, in September's issue, I found the answer in the article 'Wooding's World' (nice chap Mike Wooding. I had the pleasure of sharing a few pints with him at the BATC Convention last year!).

It appears that it is all the fault of the Editor. I hold up my hands in disbelief! Was it not the Editor in 'Keylines' of that same issue that was complaining of the misuse of the bands "by 'pirates' and child-like legitimate operators". In 'Keylines' of November last year, the complaint was of the national press's misuse of the terms 'radio amateur' and 'radio ham'.

In his last paragraph, he says, and I quote, "We hope that our fellow journalists in the media will take notice and in the future at least attempt to provide accurate reports and avoid misleading their readers, viewers or listeners". After glancing at one of my copies of *PW* my wife has given me a book on Coleoptera and a subscription to *Scorpion Breeding For Fun*.

Seriously, it's a case of using words that journalists think will attract attention rather than using the correct one, for example, sophisticated, who first misused that one. In my dictionary it means 'all that is false' and don't tell me that aerial is an old fashioned term, because the title of the magazine has not yet been changed to 'User Friendly Radio'. I will still buy *PW* and of course enjoy its contents. After translation that is!

**John R. Ranson G7NND**  
Cheshire

**Editor's defence: I plead guilty John...with mitigating circumstances! 'Antenna and antennas' are the style adopted on *PW* and *SWM* long before I joined and (apart from the historical articles in the magazine) we avoid the term 'aerial'. It's down to choice and that's what *PW* chose! Dick Ganderton G8VFH rushed off to get the dictionary and points out (correctly) that insects use *Antennae* (they always have two unless they've had an accident!) whereas *PW* uses 'Antenna and Antennas'. However, if anyone does meet an insect suitably equipped and on an amateur band...well try a QSO!**

### Candler Morse & Safety

Dear Sir

In July, I had an unfortunate accident when my Achilles tendon snapped and I have had my foot in plaster ever since. As I have a lot of spare time and being fairly immobile, I decided that it was now or never for passing the Morse test.

Since being licensed, I have made many attempts at the code. I remember and have used the records produced by G3HSC which you mentioned in your article in *PW* in the June Morse special issue. The Candler System is not dead either!

Although I do not have a machine as you described, I am working from a set of five written lessons written by Walter H. Candler! I use these in conjunction with my old Acorn Electron computer and a BBC basic Morse programme (on tape).

I am progressing and am very grateful to Charles G0VAE who locally has QSOs four nights a week with Roger G7UDR transmitting a wide variety of Morse practices which I have listened to. At the weekends, Frank G3FIJ takes over (two Elmer Nominees?). I am hoping to take the test in October.

On a different note, Elaine Richards wrote about safety in the March issue of *PW*. This cannot be understated and her article brought back sad memories of the father of a boy I was at school with, who died when solder went into his eyes and caused a blood clot with complications. Thanks for an interesting and varied magazine.

**John Sones G8JBK**  
Colchester

**Editor's comment: Best of luck with your leg and Morse test (in that order John). And perhaps a timely reminder that readers are welcome to nominate potential 'Elmers' by writing direct to Elaine Richards (details in 'Novice Natter').**

### Pirate Cards & Software

Dear Sir

Ref: 'Amateur Radio Image' (*PW* September) Whilst I respect Andy Emmerson's views expressed in his letter on the subject of 'pirate' cards and software on sale at recent rallies, we have to be careful in other respects also. Are we to take it that the RSGB and all other rally organisers will ban the sale of blank video and audio tapes on the grounds

they can be used illegally to tape record copyrighted music?

Similarly, should all scanning type equipments be completely removed from sale as they can be used to receive information that can be subsequently used in illegal activities, or even perhaps against the interests of national security?

Should Andy and myself

not be allowed to purchase h.f. transmitters if we hold only a v.h.f. licence? Should Class A licence holders not be allowed to buy h.f. transmitters with general coverage type transmit stages because it would be illegal to use them on those non-amateur frequencies?

And to come back to Andy's point about theft, should all BBSs be

immediately shut down because we now have the ability to download files of shareware that we might not register, but continue to use, as much a form of theft as any?

**MeI Evans GM6JAG**  
Edinburgh

**Editor's reply: Your comments please readers!**

## Brilliant Morse

Dear Sir

Over the years I have read, with interest, the words of those for and those against the Morse code. I do not wish to spark off any more arguments on the subject, but I felt to write this letter because of one of the most common reasons that those against the code give for its abolition, i.e. it's out-of-date and no longer has a place in the field of communication!

Imagine how surprised I was, whilst watching the recent BBC1 TV series about the life aboard HMS *Brilliant*, to see two of the world's most sophisticated warships communicating with each other not by Data-link or Satellite, not even by good old s.s.b., but by the 'old fashioned', 'out-

dated' Morse lamp!

It seems that even today in the 'high-tech', super sophisticated, digitally encoded world of ours that the only way to ensure complete secrecy when communicating between two ships at close range in secure waters by Morse code. Food for thought?

**Chris Carrington  
GO1YZ  
Derby**

**Editor: I was also fascinated to hear all those Morse 'idents' from navigational beacons in the weapons control room on the HMS *Brilliant* series. Chris, Morse lives eh? (But I still couldn't read the lamp Morse, even when I slowed the video down. It's definitely an acquired skill!).**

## Scanners

Dear Sir

First of all I would like to thank you for producing such a great publication. I have been a reader of *PW* for about 17 months and a licensed radio amateur for about 12 months. The reason I write is in response to Mr Adam Page's (Radio Amateurs in the Press). Is it really illegal to use a radio scanner as Adam calls it? I find it very difficult to believe that when I use my MVT-7100 to listen to the h.f. bands and on 50, 70, 144 and 430MHz that I am in fact doing anything 'dodgy'.

I also find it totally unbelievable that everybody who has purchased a general coverage receiver, bought one just to listen to the police. I am sick to death with people with this kind of attitude, and even more so when I get stopped by the police, who take one look at my Icom IC-2340 and ask 'is that a scanner sir?' followed by a half hour examination of my car.

I really do think that people like Mr Page should think before saying things like 'nobody uses them (scanners) legally'.

Regarding his point about multi-modes CBs, would Adam prefer a radio amateur to convert one of these units for legal 28MHz or even transverting purposes? Or perhaps someone who has not learnt about EMC and other important topics included in the RAE, to be used on 25 to 28+MHz which most multi-mode CBs are capable of doing?

**M. Langford G7TDP  
West Midlands**

## Penny Pinching

Dear Sir

Have I missed something? Did the antenna guru's guru, Dr. John Kraus of Ohio State University change his callsign? The antenna named after him, using his callsign is the W8JK not the 'W8KJ' as in 'Pascoe's Penny Pinchers' (see *PW* August '95 p. 42). Otherwise, Dick Pascoe's article was a great job. 'Penny pinching' is something I had to learn as a youthful antenna builder....and still keep up the habit.

Thanks for carrying my two antenna books in your mailorder operation (*Joe Carr's Receiving Antenna Handbook* and *Practical Antenna Handbook* - 2nd Edition). Both are scheduled for new

editions in 12-18 months and will have a software diskette included.

I've included preliminary version of the software is my Antlers for Windows 2.00. A diskette is enclosed. I hope you find it interesting!

**Joe Carr K4IPV  
USA**

**Editor's reply: Sorry we got it wrong Joe! It's good to see that *PW* is read by antenna (or should that be 'aerial?') enthusiasts on the other side of the Atlantic. We hope to review your new book and software soon.**

## Pirates & The Media

Dear Sir

The comments in the September issue of *PW* about pirates and the media who call anyone who uses radio equipment in a 'newsworthy' manner a 'radio ham', made interesting and timely reading. In my opinion, it is high time that the full weight of the law be applied to all who illegally use transmitting and receiving equipment.

The Wireless Telegraphy Act specifies that one may listen only to transmissions from 'authorised broadcasting stations and licensed radio amateurs'. This therefore excludes eavesdropping on cordless and portable telephones, police,

ambulance and fire services, ships, aircraft, etc.

Yet scanners are easily bought and used nefariously, other receivers specifically refer to 'airband'. As for transmitters, licensed amateurs are restricted in the r.f. power they may emit, yet one sees advertisements for linear amplifiers rated in kilowatts. Since these are on sale, presumably they are sold and used.

Why, oh why is it illegal to listen to non-authorised transmissions and to transmit with too-high power, is it permitted for shops to stock and sell, and for the buyers to own such equipment? It is

illegal for an ordinary citizen to own a gun without a licence and it is illegal for a shop to sell that gun to someone without a licence (or the ammunition for that matter), so why not have similar legislation as regards radio equipment?

It is useless having laws if they are not enforced. In days of yore amateur radio stations in Britain were frequently inspected by a Post Office official who arrived, without notice, to check that all was as it should be. Not so now, it seems, as my station was last inspected on July 6 1971!

**Walter Farrar G3ESP  
Pontefract**

## Comparative Equipment Reviews

Dear Sir

Having read *Practical Wireless* for some time, I feel compelled to write regarding what I feel is a major omission from the contents. Perhaps you may choose to include this letter in 'Receiving You' to discover if any other amateurs share my view?

We live in a society where most magazines dealing with technologically based hobbies, for example photography, hi-fi, computers, video, etc., make comparative tests of the available equipment. This type of report seems to be totally absent from

the amateur radio press.

Given the current flurry of new radios, particularly mobiles, which are offering all kinds of new features and much greater design variety, it would assist anyone considering such a substantial financial outlay if there were articles which directly compared their merits and failings.

I'm sure an article comparing, say the Kenwood TS-50, Yaesu FT-900, Icom 706 and Alinco DX70 would make very interesting reading! Most prospective buyers of a new radio equipment must currently be basing their decisions on

hearsay, salesman's patter, glossiness of brochures, etc. Why not step in and provide this valuable service for your readers?

**Russell Ware G7PRD  
Stockport**

**Editor: I think your suggestion is interesting, but would be very difficult to implement Russell! But rather than take up valuable space in 'Receiving You' I'm going to use my own allocation in 'Keylines' to reply. Please join me there after you've read the other letters of course!**

# NEWS '95

Send in your news, photographs and product information to Donna Vincent G7TZB at the editorial offices in Broadstone.

## Callbook Software

The **G0LOV/G4LUE Amateur Radio Software** company of Barnsley have recently updated their UK callbook on disk to version 3, using data from the Radiocommunications Agency up to August 1 1995.

The G0LOV/G4LUE callbook includes details of 62000 UK amateurs and Novices, WAB information, European repeaters, beacons, mailboxes and nodes. A copy of version 3 of the G0LOV/G4LUE callbook will cost you **£12.50 plus £1.50 P&P** for new users or **£9.95** inclusive of P&P for registered users.

For more information contact **Ernie Bailey** on (0836) 748958 or **Nigel Horne** on (01226) 247753. E-mail: [njh@smsltd.demon.co.uk](mailto:njh@smsltd.demon.co.uk)

## Young Amateur Of The Year

The Young Amateur of the Year Award for 1995 has been awarded to 16 year old **Leroy Kirby GW0ULC** from Cardigan, Dyfed.

Leroy was presented with his award together with the first prize of £300 by Roger Louth, the Radiocommunications Agency's Director of Mobile Services at the Radio Society of Great Britain's HF Convention on September 10 1995.

In addition to the first prize, Leroy also received a certificate signed by Ian Lang, the President of the Board of Trade. He was also invited on a conducted tour of the

Radiocommunication Agency's Monitoring centre at Baldock in Hertfordshire.

Leroy is an active member of his local amateur radio emergency service and has done much to promote radio through the Scout movement and more recently through the Air Training Corps. He also been involved in running a number of Special Event stations, including two which have been linked to the Jamboree on the Air.

Leroy's main area of interest is in packet radio. He has helped to set-up a new local Bulletin Board System as well as acting as the remote systems manager for a while.

The runners-up prize for Young Amateur of the Year was awarded to 15

year old **Charles Banner G7UBA** from Birmingham. Charles was also presented with his prize of £50 and an invitation to visit the Radiocommunication Agency's Monitoring centre at Baldock.

Charles is a GB2RS newsreader and has been involved in setting-up a number of Special Event stations. He is also currently helping to run a Novice licence training course and is assistant secretary of his school's amateur radio society.

The staff of *Practical Wireless* would like to extend their congratulations to Leroy and Charles and wish them all the best as ambassadors for amateur radio.

## Morse At Martin's

**Martin Lynch** and his 'Mob' will, for the fourth time, be holding their annual Open Day. The event takes place on November 18 at their showroom at **140-142 Northfield Avenue, Ealing, London W13 9SB** and is being co-sponsored by Kenwood UK and the full range of Kenwood products will be on display, including the new DSP TS-870S.

For the first time at his Open Day, Martin will be offering visitors the chance to pay for and take a 12w.p.m. Morse Test on Demand thus enabling them to gain their Class A Licence. (Two passport sized photos required for identity). Also on offer throughout the day will be the chance to

buy radio equipment and accessories at very special prices, together with a wide spread of **free** food and drink for all visitors to enjoy.

Martin will be throwing open the doors to his showroom at 9.30am on November 18 and won't be closing them again until 6pm, giving you plenty of time to browse, pick-up a bargain, enjoy the food and perhaps take and pass your Morse!

So, if you're looking for a day-out why not do as Martin says and "Remember, Remember the 18th of November"? Go along to the Martin Lynch showroom and see what bargains you can find.

For more information contact Martin Lynch on **Tel: 0181-566 1120** or **FAX: 0181-566 1207**.

## Electronics And Beyond

**Maplin Electronics** have recently launched their new 1996 catalogue entitled *Electronics And Beyond*. This full colour guide to the Maplin range of electronic products contains 1200 pages featuring over 3500 new products.

Maplin have completely revised the catalogue's layout so that it now includes a selection of fascinating facts sprinkled throughout its pages. Also included are 'life-style' products ranging from caravanning to navigation to an extensive range of computer products.

*Electronics And Beyond* features new products in every section and a new section entitled 'Education and Science' includes lasers, meteorological equipment, weather station, motors, gears, switches and gadgets. The catalogue also includes £50 of money saving vouchers with every copy.

Copies of Maplin's *Electronics And Beyond* are available for **£2.95** from Maplin stores, as well as many newsagents or by mail order for **£3.45** from **Maplin Electronics, PO Box 3, Rayleigh, Essex SS6 8LR. Tel: (01702) 554161**.



President of the RSGB Clive Trotman GW4YKL (centre) pictured with (L-R) Charles Banner G7UBA and Leroy Kirby GW0ULC at the Young Amateur of the Year presentation at the RSGB's HF Convention.



## Tonna Visit

Back in July Waters & Stanton Electronics had a visit from **Frank Tonna F5SE** son of the founder (**F9FT**) of Tonna Electronique, the well known antenna manufacturer. Waters & Stanton, who have made a success of promoting the Tonna brand in the UK, are Tonna's largest customer and report that the range is well received in the amateur world because of its high quality and competitive pricing.

If you'd like details of the full Tonna range of products available you should contact Waters & Stanton on **(01702) 206835**.

(L-R) Jeff Stanton G6XYU, Frank Tonna F5SE and Peter Waters G30JV outside Waters & Stanton's head office on a very warm afternoon in July (note the shorts).



## Open Forum

An Open Forum meeting will take place on October 28 at 2pm at Highland Region Council Local Authority Emergency Operations Centre, off MacIntosh Road, Inverness. The meeting will be open to anyone with an interest in Amateur radio and will be attended by Clive Trotman GW4YKL President of the RSGB, Peter Kirby G0TWW General Manager of the RSGB together with members of the RSGB Council.

Full details and directions are available from **Elaine Shread GM7TZT, RSGB Liaison Officer, 15 Hardie Court, Aberchirder, Huntly, Aberdeenshire AB54 5TG. Tel: (01466) 780739.**

## Competiton Winners

### August 1994 Cushcraft Competition

**Winner:** Rev. T. J. Walker G0TWE, Lincoln.  
**Runners-up:** Manuel Laranjeira Veiga CT1AVR, Portugal; P. D. Bonson, Berkshire; B. W. Le Gry G3GOT; G. G. Millican, Northumberland; A. E. Collis, Devon.

### September 1994 Spot The Difference

**Winner:** J. G. Van Gelder PA3ANF, Netherlands.  
**Runner-up:** I. M. Thomson, Fife.

### October 1994 Wordsearch

**Winner:** R. Makepeace, Essex.

**Runner-up:** D. Bancroft G3SAF, St. Albans.

### November 1994 Spot The Difference

**Winner:** V. G. Saundercock G7PHJ, Cornwall.  
**Runner-up:** T. Blewitt, Worcester.

### December 1994 Wordsearch

**Winner:** John F. Piggott, Mid Glamorgan.  
**Runner-up:** M. Williams, Lincolnshire.

### January 1995 Spot The Difference

**Winner:** Brian A Goddard, Glos.

**Runner-up:** Chris Turner G7SJE, Kent.

### February 1995 Wordsearch

**Winner:** P. Miseldine G7SQS, Peterborough.  
**Runner-up:** J. Jones, Wiltshire.

### March 1995 Spot The Difference

**Winner:** K. McIntosh, Dunbar.  
**Runner-up:** G. G. Millican, Northumberland.

### May 1995 Wordsearch

**Winner:** Ron Thayne, Cleveland.  
**Runner-up:** T. Ibbitson, Wakefield.

## Rutland Arrays

On September 1 this year Rutland Arrays was bought out by **G & P Engineering** of Virginia USA. The G & P Company specialise in design and engineering and have over 20 years working in the r.f. and satellite communications field.

Rutland Arrays was started and built-up by Thomas Rutland K3IPW in 1988 and the company became well respected for their designs, quality and service. Unfortunately K3IPW became a silent key earlier this year.

William Gamble of G & P

Engineering states that he will "continue Tom's work and give my assurance to the amateur community that the quality and service will remain". Even though G & P Engineering now owns Rutland Arrays the name will stay on the complete product line and the manufacturer of 50MHz, u.h.f. and v.h.f. antennas will continue.

To find out more about the range of Rutland Arrays you should contact **G & P Engineering, 109 Finch Court, Stephens City, VA, USA 22655-2461. Tel: 1-540 869 4530 or FAX: 1-540 869 5116.**

## New 'M' Calls

As from April 1 1996 anyone applying for a full Amateur Radio Licence will receive a new 'M' callsign. This has been bought about because the 'G' series is rapidly running out of suitable combinations.

Existing 'G' callsign holders will be unaffected by the introduction of the 'M' series and will not be able to change to an 'M' call. Even where a licence has lapsed the holder of the 'G' callsign will still be able to apply for its re-issue.

Reservations for the new 'M' callsigns will be accepted from October 2 1995 while reservations for 'G' callsigns will continue to be accepted until March 31 1996. Reservations for callsigns should be made in writing to **Subscription Services Ltd. (SSL), PO Box 884, Bristol BS99 5LF.**

Enquiries regarding the new 'M' callsign series should be made to **Radiocommunication Agency's Amateur Radio Unit on 0171-215 2171.**

## Scandinavian Teleprinters Group

The **Scandinavian Amateur Radio Teleprinter Group (SARTG)** has appointed **Ingemar 'Smudge' Lundegard G3GJW** as the SARTG contact for the UK. Smudge is QTHR and can be contacted by 'phone or FAX on (01474) 853366 - preferably between 8 & 10pm.

## Southern Scanning & Shortwave Shop

**Southern Scanning & Shortwave (SS&S)** who held their official launch in January of this year have informed the 'Newsdesk' of the official opening of their new shop. **The Shortwave Shop, 18 Fairmile Road, Christchurch, Dorset BH23 2LL** will be opened on November 1 1995 at 2pm by **Rob Mannion G3XFD**. The telephone number for the shop will be **(01202) 490099**.

The Shortwave Shop will be open from 10.30am - 6pm Tuesdays to Saturdays, a late night will be held on Wednesdays when the shop will be open

from 2 - 8pm.

In the last year Southern Scanning & Shortwave have added Yaesu and Icom to their Kenwood dealership and can now supply most leading makes of new and used equipment available to the Amateur, s.w.l. and scanner enthusiast including air and marine band equipment. They also intend to extend their range to include a selection of starter kits and construction projects for the beginner as well as a range of components.

Another new venture for SS & S will be the addition of the Southern CB Centre which will be based at The Shortwave Shop and will offer a range of new and used CB equipment currently available in the UK.

# HAYDON COMMUNICATIONS

## H.F. TRANSCEIVERS & RECEIVERS

### KENWOOD



TS-870S	New HF DSP.....	<b>LOWEST IN UK</b>
TS-450SAT	Special offer.....	£1099
TS-450	Special offer.....	£949
TS-50S	<del>£1059</del> .....	£Phone
R-5000	Comm receiver <del>£1059</del> .....	£869

### YAESU



FT-1000 MP (DC)	New HF (EDSP).....	<b>LOWEST IN UK</b>
FT-1000 MP (AC)	New HF (EDSP).....	<b>LOWEST IN UK</b>
FT-990 DC	+ 2 free filters.....	£1599
FT-840	<del>£949</del> .....	£719
FRG-100	Comm rec <del>£599</del> .....	£449.95

### ICOM

IC-706	<del>£1199</del> + free PSU.....	£1099
IC-738	<del>£1049</del> .....	£1349
IC-775 DSP	<del>£3099</del> .....	£3099

### ALINCO

DX-70 + free 30 amp PSU	£1099.....	£999
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## HF ACCESSORIES



**VC-300M**  
300w ATU  
**£89.95**

VC-300 DLP 300W ATU with dummy load  
**£129.95**

### STAR BUY P-2512

An Incredible power supply!  
25-30 amp cont. variable volts (3-15).  
Dual meters (VS and amps).  
Over voltage protected.



**BIRTHDAY SPECIAL £79.95**

## TIMEWAVE AUDIO FILTERS

TIMEWAVE DSP-59 PLUS	<del>£209.00</del> .....	£275.00
TIMEWAVE DSP-9 PLUS	<del>£229.00</del> .....	£225.00
DATONG FL-3	<del>£149.95</del> .....	£139.95
MFJ-784B	<del>£249.95</del> .....	£229.95

## RECEIVERS

DRAKE R-8A	New <del>£1295</del> .....	£1195
AOR 3030	<del>£699</del> .....	£639
NRD-535	<del>£1699</del> 1 ONLY.....	£1299

## VHF/UHF HANDHELD TRANSCEIVERS



### KENWOOD TH-79E

2m/70cms +  
Ext Rx ~~£479~~..... **£379**

TH-28E	2m + Ext Rx <del>£329</del> .....	£269
TH-22E	2m <del>£255</del> .....	£215
TH-42E	70cms <del>£289</del> .....	£245

### YAESU

FT-51R	2m 70cms <del>£529</del> .....	£395.95
FT-11R	2m <del>£329</del> .....	£239.95
FT-23R	2m Special offer <del>£299</del> .....	£199.95

### ICOM

IC-Z1	2m 70cms det. front <del>£529</del> .....	£399.95
IC-T21	2m + wideband Rx <del>£329</del> .....	£229.95

### ALINCO

DJ-G5	2m 70cms <del>£479</del> .....	£419.00
DJ-180	2m <del>£229</del> .....	£199.99
DJ-480	70cms <del>£289</del> .....	£239.00

## ACCESSORIES

### SPEAKER MICS (P&P £1.00)

MS-107	Fits Alinco/Yaesu/Icom.....	£14.99
MS-107 'K'	Fits Kenwood.....	£14.99
CT-221	Eartalker-Al/Ya/Ic.....	£24.99
CT-221 'K'	Eartalker-Kenwood.....	£24.99

### HANDHELD AMP (P&P £2.00)

NB-30W	2m-1½ input/op up to 30W.....	£44.95
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### SPEAKERS ETC (P&P £1.00)

TSA-6201	Deluxe spkr + vol Contl.....	£14.99
EP-300	Deluxe "over ear" ear piece.....	£9.95

### MOUNTS (P&P £2.00)



### MA-339 Mobile holder

Suitable for h/helds.....	£9.95
Q5-200 Air vent h/held holder.....	£9.99
Q5-300 Desk top + plug & socket holder.....	£19.99

### HANDHELD ANTENNAS (P&P £1.00)



**DB-770 'H'** 2m/70cm. Tx  
(3.4/5.5dB) BNC Telescopic (wideband Rx)

~~£24.95~~ **£19.95** **SPECIAL OFFER**

**T-2602** 2m/70cm/23cm. Tx (wideband Rx) (2/3/5.5dB gain). Flexible antenna (14" long BNC). Superb. **£22.95**

## VHF/UHF MOBILES

### KENWOOD TM-733

2m/70 + ext Rx <del>£730</del> .....	<b>£599</b>	<b>SAVE £150</b>
TM-251E	2m + ext Rx <del>£419</del> .....	
TM-451E	70cm + ext <del>£459</del> .....	
TM-255E	2m multimode.....	<b>LOWEST IN UK</b>
TM-455E	70cms multimode.....	
TS-790	2m/70 base.....	

### YAESU

FT-8500M	New 2/70 <del>£749</del> .....	£639
FT-290RIII	3m multi <del>£599</del> .....	£449
FT-2500	2m 50W <del>£399</del> .....	£319

### ICOM

IC-200H	New 2m <del>£389</del> .....	£329
IC-820H	2/70 base <del>£1795</del> .....	£1499

### ALINCO DR-130

**SPECIAL PURCHASE!**  
2m FM mobile 50W  
~~£389~~

**£289.95**

DR-150	2m + ext Rx (9600Pk) <del>£399</del> .....	£339
DR-430	70cms (35W) <del>£279</del> .....	£349
DR-M06	6m (10W) <del>£359</del> .....	£299
DR-610	2m/70cms <del>£729</del> .....	£629

### SWR METERS (P&P £4.00)

**RS-402**  
125-525MHz (200)  
FWD/REV/AVE/PEP

PWR + full SWR indication and meter illumination. ~~£69.95~~

**£59.95**

SX-200	Diamond 1.8-200MHz <del>£85</del> .....	£74.95
SX-400	Diamond 140-525MHz <del>£109</del> .....	£84.95

### TSA-6601

144-44MHz (60W) pocket  
PWR/SWR meter

**£34.95** (P&P £1.00)

TSA-6602 VHF/UHF ant matcher **£34.95** (P&P £1.00)

## AEA PRODUCTS

PK-232 MBX	<del>£229</del> .....	£269
PK-12	<del>£189</del> .....	£109

## COAX SWITCHES (P&P £2.00)

CX-401	4 way (SO-239).....	£39.95
CX-401 'N'	4 way (N TYPE).....	£49.95
CX-201	2 way (SO-239).....	£16.95
CX-201 'N'	2 way (N-type).....	£21.95

NB: ALL PRICES INCLUDE VAT

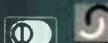
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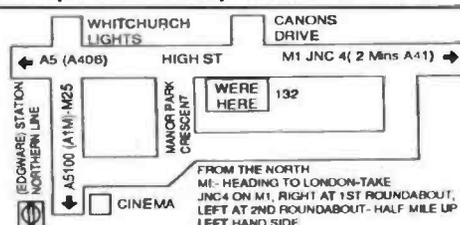
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We have a VHS Video demo tape showing the Opto-Scout being used to its full potential. This video is available on **FREE LOAN**, all we require is £10 deposit (refundable) + £2 P&P and we'll send you a copy. You return the tape when you've watched it and we'll refund your £10. (Provided the tape is returned undamaged). Alternatively - order a Scout from us and we'll deduct the £10 and you can have the video on us. NB:- it is an **offence** to copy this tape for any reason.

**OPTO SCOUT - 3.1**  
Latest mini frequency finder from Optoelectronics. It will capture & memorise up to 400 frequencies that can be recalled directly into the AR-8000. Supplied with Ant, Nicads & Charger.  
RRP **£399**

**NEW OPTO CUB**  
ICD pocket freq finder.  
• 8 sel. gate times  
• digital filter • capture/hold fac'y.  
Supplied with Nicads/Charger/Ant & belt clip. RRP **£139**

**OPT-3300**  
A miniature H/held counter. Covers 1MHz-2.8GHz. Supplied with Ant, Nicads & Charger. RRP **£189**.  
**SPECIAL OFFER £109.95**

**DB-32 NEW**  
The ultimate wideband Tx 2m/70cm Rx 30-1200MHz Antenna BNC fitting 1 1/2" long - it works superbly.  
**£29.95**

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AR-2700	<del>£299</del>	£259.95
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Optional voice recorder for 2700		£39.95
Soft case for 8000/2700		£17.95
CU-823 Comp I/Face		£99.95
SW-8000 S/ware for 8000		£49.95
AR-3000A	<del>£899</del>	£899.95
AR-3000A plus	<del>£1099</del>	£999.95
AR-SOU5000	<del>£799</del>	£719.95
ABF-125 Airband filter		£28.50
<b>SPECIAL OFFER AR-3000A display model 1 only</b>	<del>£999</del>	<b>£849.95</b>

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Scout Reaction Tune**  
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Connect the Scout to the AR-8000/2700 and the scanner will tune to any signal received on the scout. For further advise **CALL US**.

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Includes modification to AR-8000 + connection lead. **THE COMPLETE PACKAGE**

**OTHER HANDHELD SCANNERS**

MVT-7100	<del>£419</del>	SPECIAL OFFER	£335
MVT-7000	<del>£349</del>	SPECIAL OFFER	£259
VT-225	<del>£299</del>	SPECIAL OFFER	£229
PRO-44	<del>£179</del>	SPECIAL OFFER	£119.95
R-1 ICOM	<del>£499</del>	SPECIAL OFFER	£379.95
<b>BASE SCANNERS</b>			
PR-2036	New <del>£349</del>	SPECIAL OFFER	£249
PR-2035	<del>£349</del>	SPECIAL OFFER	£279
MS-1000	<del>£299</del>	SPECIAL OFFER	£229
R-7100	<del>£1499</del>	SPECIAL OFFER	£1199
MVT-8000	<del>£419</del>	SPECIAL OFFER	£335

**EX-DEMO/SECONDHAND EQUIPMENT**

FT-990DC	As new	£1429.00	FT-51R	2m h/has new	£199.95	FT-290R11 + FL-2025	as new	£499.95	MVT-7100	Ex demo	£299.95
FRG-100	As new	£429.99	TH-78E	As new	£349.95	as new	£499.95	VT-225	As new	£219.95	
FT-ONE	As new	£749.99	TH-79E	As new	£369.95	TM-451E	As new	£329.99	R-5000	As new	£799.95
IC-735	As new	£749.99	2SRE	2m + scanner	£299.95	PCS-7000	2m (50W)	£199.99	R-1	As new	£29.95
FT-747GXII	As new	£549.99	TH-27	2m as new	£199.99	MCL-1100	Easy reader & monitor	£289.99	AIR-7	As new	£179.99
TS-850SAT	Ex demo	£1549.99	FT-23R	2m VGC	£169.99	TM-733	2m/70	£549.99	AR-2000	VGC	£199.99
FT-840	Ex demo	£649.99	TH-215	2m as new	£199.99	DR-130	2m (50W)	£219.99	MVT-7000	VGC	£229.99
TS-120S	100W HF	£349.99	DJ-180	As new	£169.99	TM-255	2m all mode as new	£759.99	AR-8000	As new	£359.99
<b>+ LOADS MORE</b>			<b>+ LOADS MORE</b>			<b>+ LOADS MORE</b>			Most scanners supplied with Nicads/Charger		
(all handhelds include Nicads/charger)											

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TSB-3315	GF	144/70, 8.5/11dB (5.4m)	£129.95
TSB-3301	GF	144/70, 6.5/9dB (3m)	£64.95
TSB-3302	GF	144/70, 4.5/7.2dB (1.7m)	£49.95
TSB-3303	GF	144/70, 3/6dB (1.1m)	£34.95
TSB-3002	AL	144MHz, 6.5dB (2.8m)	£34.95
TSB-3001	AL	144MHz, 3.4dB (1.4m)	£29.95
V-2000	GF	6m/2m/70cm, 2.1/6.2/8.4dB (2.5m)	£119.95

**Bring your voucher to Leic's show & save even more money!**

**HIGH QUALITY MOBILE ANTENNAS** P&P £4.50

DB-7900	144/70 cms, (5/7.6dB) 1.5m	£49.99
DB-770M	144/70 cms, (3/5.5dB) 1m	£22.95
DB-1304	144/70 cms, (2.15/3.8dB) .41cms	£19.95
DB-EL2E	144MHz, 1/4ths, 4.5dB (1.8m)	£29.95
DB-285	144MHz, 1/4ths, 3.4dB (1.3m)	£13.95

**ACCESSORIES** P&P £1.00 on the following

TSA-6001N Duplexer (+Coax) 2/70	£24.95
TSA-6003 Duplexer (Sockets) 2/70	£19.95

**ACCESSORIES** P&P £2.50 on the following

MT-1301	H/Duty Mag Mnt + Coax	Top Quality	£24.95
MT-3302	H/Duty Hatch/Trunk Mnt	Top Quality	£24.95

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inc. VAT & P & P



Alinco are well known for offering competitively priced equipment, and just look at what's on offer: 144MHz f.m. transmission and reception.

Just look what you get in the DJ-S1EZA package: Maximum 5W output (at 13.8V), 40 memory channels, digital signal display and memory functions (can receive a 'two digit' message and display it at a later time at the operator's convenience, triple stage selective power setting (High, Medium, low), Pager and Code Squelch.

Other features include: DTMF Keypad, Tone-encoder, Tone Burst (for repeater working), half duplex working, six channel steps (5, 10, 12.5, 15, 20 and 25kHz), dial control reverse function, Beeper on/off, autolight off, DTMF manual output, reverse function, auto-dialler, DTMF signal monitor.

Normally the DJ-S1EZA would cost you **£289** plus P&P but *PW* Subscriber Club Members can get theirs for the special price of  
**£199.95 including VAT & P&P.**

Non-subscribers can also take advantage of this offer and get their DJ-S1EZA for **£215 including VAT & P&P** and they'll receive a year's subscription to *PW* absolutely **FREE!!**

The DJ-S1EZA special offer price includes NiCad battery pack, battery charger and keypad.

**All P&P prices apply to UK, overseas readers please contact the *PW* Post Sales Department for postage prices.**

Offer open until November 10 1995 (UK), November 24 1995 (overseas).

To take advantage of this offer just fill in the details on the Order Form on **page 78** of this issue. Alternatively call **Michael** on our **Credit Card Hotline** on **(01202) 659930** and quote **SCPW11** to place your order.

Non-Subscribers  
£215  
inc. VAT & P & P  
+ FREE  
subscription!!



**October 15:** The North Monaghan Hobby Radio & Computer Exhibition will be held at Cupids Nightclub and Restaurant, Smithborough, County Monaghan. Proceedings start at 11.30am and continue until 5.30pm. All the usual retailers will be in attendance along with a large display of computer equipment and a Bring & Buy. Refreshments will be available all day in the adjoining restaurant along with full facilities for QSLing via the brewery! Admission is £2 and half price for all under fourteen. Talk-in will be on S22 from 10.30am. Facilities will be provided for disabled access. **Stephen Hand G17UIM (08) (013657) 51479** evenings or **Ken O'Reilly G17UIP (08) (013657) 38955** daytime.

**\*October 20/21:** Leicester ARS is being held at the Granby Halls, Leicester. Doors open at 10am each day (9.30am for disabled visitors). All the usual facilities. **Frank G4PDZ (01533) 871086.**

**\*November 4-5:** The Eighth North Wales Radio & Electronics Show is being held at the Aberconwy Conference & The Bew Theatre, Llandudno. The show opens at 10am, both days. **B. Mee GW7EXH (01745) 591704.**

**November 12:** The 5th Great Northern Hamfest (formerly the Barnsley Amateur Radio Rally) will take place at the Metrodome leisure complex in Barnsley Town Centre. Doors open at 11am. The venue is all on one level, (2 halls this year) with excellent disabled facilities. The event will feature all the usual trade stands covering amateur radio, computers (hardware and software), electronics, components and kits, clubs, repeater groups, Novice and specialist interest groups plus a large Bring & Buy. This year there will be Morse tests on demand from 12noon to 3pm (candidates must bring the appropriate documentation). A variety of refreshments are also available. For further details contact **Ernie Bailey G4LUE (01226) 716339** (home) or **(0836) 748398** (mobile).

**November 12:** Martlesham Radio Society will be hosting another Microwave Round Table event at BT Laboratories, near Ipswich, Suffolk. The event will commence at 10am and will include round table sessions testing facilities (including 24GHz Noise Figure measurements) and a Bring & Buy. This year the event is

## RADIO Diary

expecting participants from several European countries including DB6NT and DC0DA who will augment the lecture programme with a microwave update. For BT Labs security requirements, all access is by advance booking only. MRS Secretary on **(01473) 644285** or for tickets, send an s.a.s.e to **Roy Smith G0RRG, Lykkebo, The Street, Burstall, Ipswich, Suffolk IP8 3DN.**

**November 12:** The 7th Midland Amateur Radio Society, Birmingham, Radio & Computer Rally is being held at the Stockland Green Leisure Centre, Slade Road, Erdington, Birmingham. Doors open 10am to 4pm. Admission is £1, children free. There will be a free Christmas draw, trade stands, local clubs, special interest exhibits, refreshments and a large, free car park. **Peter Haylor G6DRN (0121-443 1189).**

**November 19:** The Bishop Auckland Radio Amateurs' Club will be holding its annual radio rally at the Newton Aycliffe Leisure Centre. Doors open at 10.30am for disabled visitors and 11am for everyone else. Further info. from **Mike Shield (01388) 766264.**

**\*November 26:** The Bridgend & District Amateur Radio Club will be holding its 9th Amateur Radio & Computer Rally at the Bridgend Recreation Centre in Bridgend. The rally will have all the usual amateur radio and computer dealers, a Bring & Buy, RSGB Morse test on demand (two passport size photos must be produced). Doors open at

11am, 10.30am for disabled visitors. Admission is £1. Further details from **Maurice GW0JZN (01656) 864579** or **Don GW3RVG (01656) 860434.**

**December 3:** The SDX Cluster Support Group will be holding a Radio, Electronics & Computer Rally in the Maryhill Community Centre, which is located just along from junction 17 of the M8 motorway and is located on major public transport routes. Doors open at 10.30am for disabled visitors and 11am to 4.15pm for everyone else. Entrance fee is £2 for disabled, UB40 holders and £2.50 for all other visitors (children under 14 accompanied by a parent free of charge). There will be many traders, club stands, lectures and demonstrations. Further information can be obtained from **John Dundas GM0OPS, Rally Organiser, (0141-638 7670).**

**\*December 3:** The Verulam Amateur Radio Club are holding their rally at the Watford Leisure Centre, which is located less than five minutes drive from the Junction of the M1 and M25 motorways. Trading will be from 10am to 4pm. **(01923) 222284.**

**December 3:** The Thames Valley Electronics Rally is being held at Kempton Park, Race Course, Sunbury-on-Thames, Middlesex. Doors open 10.30am to 4.30pm (10am free entry to the Bring & Buy stand). Major manufacturers and retailers, accessory supplies, antenna supplies, Bring & Buy stall, computers and component retailers and specialist groups. Admission for adults £1.50, OAPs £1 and children under 14yrs free. **(01494) 450504.**

If you're travelling a long distance to a rally, it could be worth phoning the contact number to check all is well, before setting off.

The Editorial staff of *PW* cannot be held responsible for information on Rallies, as this is supplied by the organisers and is published in good faith as a service to readers.

If you have any queries about a particular event, please contact the organisers direct.

Editor

# A Comprehensive Collection - The Radio Valve Guides 1 to 5

Rob Mannion G3XFD looks at a series of valve books which have recently been added to the PW Book Service list.

The PW Editorial team are forever being asked 'Where can I buy a radio valve guide book' by readers. The enquiries come in by letter, telephone and during our various rallies and shows.

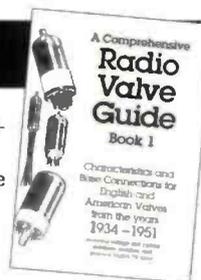
Well, I'm pleased to report another success for 'valve and vintage' enthusiasts by bringing you the news that we're now carrying the newly republished series of books entitled *A Comprehensive Radio Valve Guide* (1, 2, 3, 4, and 5) and the additional book (which compliments the series) *Handbook of Radio, TV, Industrial Transmitting Tube & Valve Equivalents*.

Originally published by Bernard Babani between 1951 and 1963, the clearly printed facsimiles editions (smaller than the originals) are now being produced by **Geoff Arnold G3GSR** of G. C. Arnold Partners. The books are packed with all the information the valve user requires and contain all the valve base pin-outs very close to the technical information. They all come very highly commended by me as they are extremely useful and very reasonably priced. My personal advice to valve enthusiasts is that they buy the complete set as they will prove to be extremely useful and versatile.

G3XFD

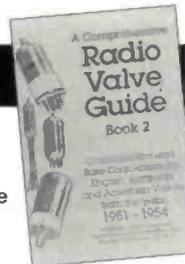
## Radio Valve Guide Book 1

The first book in the A5-sized series covers the characteristics and base connections for British and American valves from the years 1934 to 1951. It also contains information on voltage and current stabilisers, rectifiers and post-Second World War British TV tubes and a guide on how to use the whole series. **55 pages. £2.95.**



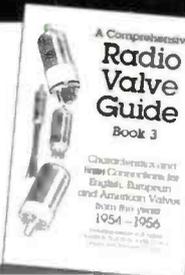
## Radio Valve Guide Book 2

The second book covers British, European and American valves from the years 1951-1954. **42 pages. £2.95.**



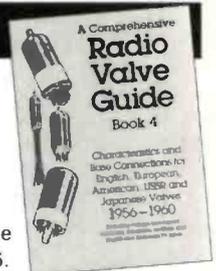
## Radio Valve Guide Book 3

The third in the series covers British, European and American valves from the years 1954 to 1956. **40 pages. £2.95.**



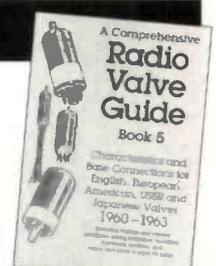
## Radio Valve Guide Book 4

The 4th book in the series covers British, European, American, USSR and Japanese valves from 1956 to 1960 (with Russian valve index). **46 pages. £2.95.**



## Radio Valve Guide Book 5

The 5th book in the series covers British, European, American, USSR and Japanese valves from 1960 to 1963. **44 pages. £2.95.**



## Handbook of Radio, TV, Industrial & Transmitting Tube & Valve Equivalents

This book complements the whole series and as the name suggests, provides much information on equivalent valve types. Of particular interest to the collector and historian, the book also has a comprehensive Government (CV) to commercial equivalent guide. There are also guides to civilian equivalents for American Armed Forces types, and British Royal Air Force and Royal Navy valves. **60 pages. £2.95.**

# Errors & Updates

## The Key Project, pages 33-37 June 1995

There were a couple of unfortunate mistakes that crept into the electronic keyer project. On the circuit diagram drawing, **Fig. 1** on page 33, the captions for the two switches were swapped over.

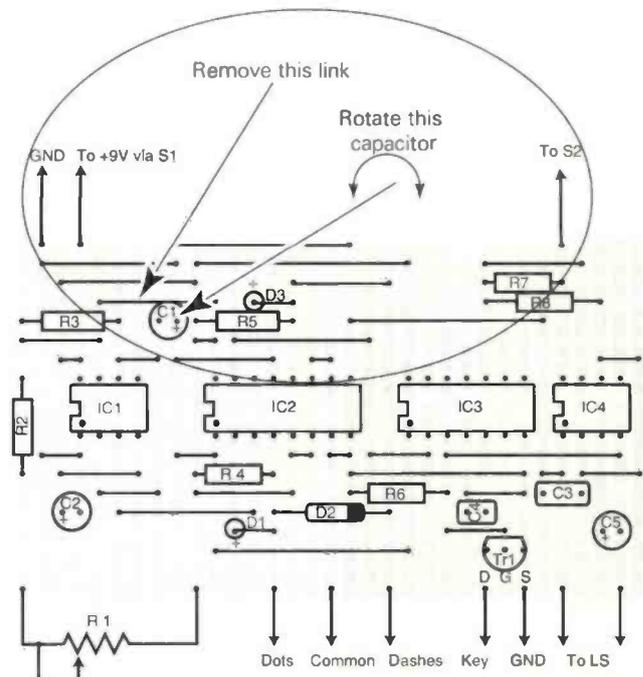
Please change S1 to S2 and S2 to S1, this corrects the problem connected with the overlay drawing **Fig. 8**. Also on the circuit diagram, the socket on the right-hand side near C4 should be labelled 'SK1'. On the overlay diagram **Fig. 8** the arrowed line marked 'Key' should be marked as 'To SK1 inner'.

Again, on the overlay drawing **Fig. 8**, please swap the orientation of capacitor C1 so that the '+' sign is on the left-hand side of it (and not the right as at present). Also on the subject of capacitors. The polarised capacitor (low right-hand side) shown as C5 is actually called Copt on the circuit diagram.

A slightly more serious problem is the addition of a wire link that shorts out the timing resistors R1 and 2. Remove the link shown in the part overlay diagram here.

Some readers may have been undecided as to which way up (or down) the two diodes D1 and 3 (both shown mounted vertically) are fitted. Both diodes D1 and D3 are to be mounted, as shown, but with their cathodes (banded end) down.

*My apologies for these mistakes Ed.*



# NOVICE *Natter*

## DX Report News

**Bob Nadolny WB2YQH** has sent me some extracts from the *59(9) DX Report* which I mentioned in the September issue. 'The Study Hall' is a section within the *59(9) DX Report* aimed at the newcomer to DXing or contesting.

Bob has kindly said that I could reprint the extracts in this column. So, this month I've chosen a couple of interesting subjects.

Where do I find the DX in this pile-up? When tuning across the band and you hear the thunder of the pile-up calling a station, and you don't hear the DX station, does that mean you have no propagation?

Not at all! Most DX stations will work 'split frequency' to allow their signal to be on a clear frequency.

Try listening a few kHz above and below the pile-up for a station giving callsigns and reports. That is probably the DX station.

Now listen a bit longer for their callsign, so you know who you are calling. Then join the pile-up and hope you make it through.

Remember to set your rig to split frequency v.f.o. Good luck and see you in the pile-ups!

Making the contact may be easier than getting the QSL card someone once said. There are all kinds of variables that affect getting the valued piece of paper from the DX station. Providing the correct return postage is one of the main keys to receiving the card.

There are three types of return postage, the American Dollar (often referred to as the 'Green Stamp'), the International Reply Coupon (IRC) and the country's postage. There are benefits and disadvantages in some cases.

One disadvantage for instance, is that in countries such as India and Pakistan it is illegal to possess the 'Green Stamp'. The IRCs are

## For Radio Beginners of all Ages.

*Elaine Richards G4LFM, PO Box 1863,  
Ringwood, Hants BH24 3XD.*

*Elaine Richards G4LFM shares some more of the 'Natterings' she's received from 'novices' this month.*

theoretically good in any country belonging to the International Postage Union. However, some countries refuse to accept IRCs. South Africa and Lesotho are two examples.

In other countries where there are small post offices, only allow small amounts of IRCs to be exchanged at one time. The foreign postage stamps available from vendors provide you with the correct amount of postage, making it easy for the DX station to insert your card in the envelope and mail it.

Many thanks to Bob and *59(9) DX Report* for this information.

### Like Father Like Son

I've been passed a letter from **Steve Appleyard G3PND**. He passed his RAE back in 1961 when he was just 16 years old.



**Will G7VGF (ex 2E1DJB) in the shack he shares with G3PND.**

Steve even designed and built his first transmitter and had many QSOs using it along with a BC348 receiver. By 1964 he had become a Radio Officer in the Merchant Navy and his interest in amateur radio lapsed.

The transmitter Steve built was subsequently given to a young amateur in Steve's home town of Grimsby. Following his Merchant Navy career, he studied further and joined the Marconi Company on the Design of Marine Communication and navigation systems.

Two years ago his 15 year old son, Will developed an interest in amateur radio (unprompted by Steve). Will got his Novice licence **2E1DJB** and rekindled his dad's own interest.

So on December 4 1993 Steve had his first QSO for almost 30 years! Mind you, he didn't build his transmitter this time, he bought a second-hand Yaesu!

Between Steve and Will they have also bought 144 and 430MHz rigs, so Will's bedroom/shack resembles Steve's of 32 years earlier!

The circle has been fully completed now, since Will has passed the RAE and received his callsign **G7VGF** at the age of 17.

I wonder how many others have a story like this? My dad has had the callsign **G1DAD** for a while and it's probably his fault I got interested in radio!

### Licence Revisions

There have been a couple of changes to the amateur radio licences that you should be aware of. They affect all types of licence.

The first of these changes is that the Radiocommunications Agency will now publish the names of those whose licences have been revoked. A licence can be revoked when the Agency feels the holder either has or will not keep to the terms of the licence.

The second change is that if you want your details withheld from the callbook then no matter you publishes the callbook, whether on disk on paper, this will happen. The Agency won't release your details to anyone wishing to publish a list. Previously, the Agency released your callsign and the first part of your postcode, now only the callsign will be released.

It's a sad fact that more and more radio amateurs feel unhappy with their details appearing in publications. The trouble is that many have a lot of money tied up in their hobby and don't necessarily want others to know where the station is.

Then there are others who don't appreciate people calling on them unexpectedly just because they are licensed. I've been told a story about a couple of amateurs who plan their holiday route depending on the addresses of other licensed amateurs, so they can have coffee stops and meals!

It is only a story, but.... I just thought I'd put a case for those of us who have come out of the callbook for one reason or another.

### Buying Old Radios

Have you ever thought about buying one of those old (and real) radios, you know the ones in wooden cases. Trouble is they hardly ever work and need a bit of work on them.

If you enjoy renovating things like this you can often see them at car boot sales and so are reasonable to come by. Then the fun starts, where to go to get the bits and the information to mend it.

The PW Editorial Office

## Low Power Operating (QRP)

Although Novice amateurs are in essence QRP operators, I think it's worth spending a little time explaining the virtues of QRP. Although it's seen by some as a lower form of amateur radio, QRP is in fact one of the areas where good results are directly related to operator skill rather than buying power!

When you're only starting with a watt or two of r.f., you have to be extremely careful to make sure every last milliwatt gets



radiated. Because of this, you will find that the best QRP operators go to great lengths to ensure that all parts of the station are optimised for maximum efficiency.

Whereas the amateur with 100W plus of r.f. may be able to tolerate a poor antenna, the QRP operator needs to select the most efficient antenna, given the space available. This almost inevitably involves much experimentation with home-made antenna systems.

The great thing about most home-built antennas is that they are very cheap - you just need a reel of wire and a few insulators. If you're not sure where to start, a look at the *FW Book Service* will reveal a wide range of books dealing with just about every type of wire antenna.

Of course, the antenna system cannot be considered in isolation and care also has to go into ensuring the feeder and, most importantly, the matching to the transmitter is also right. This often involves the use of antenna tuning units, though there is much debate on this point among QRP enthusiasts.

The low powers and predominant use of c.w. as a transmission mode for QRP also results in very simple transmitter designs - just right for home construction. If you have an interest in building your own equipment then QRP is the ideal place to start.

Much of the circuitry is very straightforward and the use of low powers minimises any safety problems. A particularly

good place to start is with one of the many kits that are available from *FW* advertisers.

I have a Lake DTR7 7MHz unit that has given me many hours a pleasure over the years. Keyed continuous wave (c.w.) using Morse is chosen as the prime operating mode both for simplicity of construction and because it's one of the more efficient modes in terms of converting all the transmit power into usable information.

So, in addition to becoming expert in using all the transmit power effectively, the good QRP operator also masters c.w. And is able to reliably extract signals from amongst the noise.

So how far can you work with such low powers? Well, given the right conditions you can work the world. However, you will find that you can reliably work into Europe on a regular basis with many other countries when conditions are right.

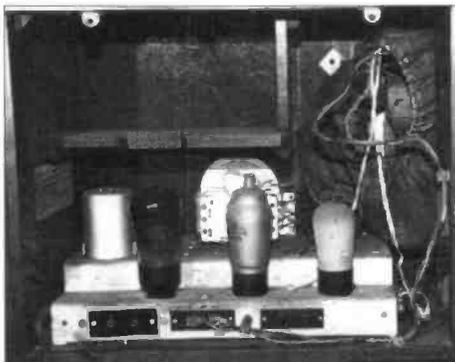
The skill comes in choosing the right band for the time of day so you can take advantage of any enhanced propagation conditions. So, yet another skill you will develop is to be able to interpret propagation data and select the optimum band and time of day for the country you want to work.

The skills that you develop as a QRP operator are not only fun in their own right, but the attention to detail it teaches is worth several S points no matter what power you end up using.

If you're interested in learning more about QRP, I would strongly recommend you join the G-QRP club run by the Rev. George Dobbs G3RJY. Full details can be obtained by sending a s.a.e. to Rev. George Dobbs G3RJY, St Aidans Vicarage, 49B Manchester Road, Rochdale, Lancs OL11 3HE.



Kits like the DTR7 and the QRP Sprint are ideal for QRP operators who enjoy home-brewing.



**Radios like this could make a good club restoration project for the winter.**

have given me a huge pile of catalogues from Savoy Hill Publications. There are lists of manuals, components, bakelite baseboards and all kinds of interesting bits and pieces. These lists are available free of charge from **Savoy Hill Publications, Seven Ash Cottage, Seven Ash, Easter Close Cross, Nr. Combe Martin, North Devon EX34 0PA.** How about making a radio

restoration your club project for the winter?

*That's all I've got room for this month so until next time cheerio, and don't forget to keep sending your letters to the address at the top of the column.*

*Elaine G4LFM*

## Flat Holm Island Expedition

Back on August 26 1995, a party of 12 amateurs (7 GWs and 5 DLs from Passau in Bavaria) went to Flat Holm Island in the Bristol Channel. The event was to commemorate nearly 100 years since Marconi made his first ever radio transmission across water.

The joint expedition was also the Barry Amateur Radio Society's celebration of 50 years of peace with Germany, so a group of the society's friends from the Passau Radio Club in Bavaria were asked to join in the expedition also.

The joint DXpedition was a great success and both club's had a great time working together. The call sign used was GB5FI. Nearly 4,000 QSOs were worked in three days, which was pretty good going as due to the bad weather, the club were unable to land on the island for 24 hours!

However, with great team effort, the club landed at 8pm on Saturday evening and all hands set about building the station in the middle of the Bristol Channel. A 2-element mini beam on h.f. was put up and on the lower bands there was a Butternut vertical for 3.5 & 7MHz using a massive copper ground mat that was laid down many years ago for a marine beacon, (the beacon has gone), but the ground mat remains!

The 'Top Band' antenna was a simple half-wave dipole, but the club used pure silver wire, which was bought at a mobile rally. The G trader never knew that the wire was silver, but the GWs knew, wonderful wire for antennas! But, you have to hire Securicor on field days!

# CLUB Spotlight

Send your information to the  
'Club Spotlight' newshound  
Zoë Shortland at the PW Offices.

The Manager GW0ANA set the team a target of DXCC in three days. Both club's managed this, 106 countries in three days and the cheers from the team were 5&9+40.



**Joint GW & DL Flat Holm Mayor's Civic Reception, South Glamorgan. Back row (L to R) Deputy Mayor Councillor A. Ernest, GW3WBU, GW0PUP, Clive Trotman GW4YKL RSGB President, Lady Mayor, Mayor Councillor C. Dunkley, XYL of GW0PUP, GW4LFV, XYL of GW0ANA. Front row (L to R) DL9RCF, DL9RDZ, GW0ANA, DL8RBL, DL8RBV.**

The Barry Amateur Radio Society like to do something new, radio wise, from this famous island every year. And this year, they made the first ever Pactor transmission from Flat Holm Island to the USA. So, in true spirit of Marconi, it was another successful experiment, particularly as a German invented Pactor!

The club thought it appropriate that Alois DL8RBL should be the first to transmit, followed by Glyn Jones GW0AN (Chairman of the BARS) to mark the occasion.

## Swindon's History

The Swindon & District Amateur Radio Club can trace its origins to before the Second World War, but the club as it is known today, was inaugurated in August 1955 i what was then the Connaught

Restaurant in Cromwell St. It has met at several other venues since, including The Cold Harbour Public House, Oakfield School and, most recently Rowborough Farm in South Marston.

Since November 1994, the club has taken up residence at the **Community Centre, Savernake Street in the Eastcott Hill area of Old Town**. The activities of the club have always been centred on amateur radio, supporting a broad range of members' interests, both in the field of construction and operating. The club has two active call signs G3FEC and G8SRC.

Membership to the SDARC is open to anyone interested in radio and allied subjects. New members, whatever their experience in amateur radio, are always welcome as are visitors who are considering the hobby. If you are uncertain about joining, you are welcome to come along as a visitor to see just what the SDARC programme offers.

Those considering preparing for the Radio Amateurs Examination (RAE), will always find experienced operators and skilled technicians to provide support and advice. Those working towards their Class A licence can count on experienced Morse operators, who are always willing to provide slow

**The Bridgend & District Amateur Radio Club** meet on the 1st and 3rd Wednesdays of the month at Club Brynmenyn, Brynmenyn, Nr., Bridgend. Further details on the club can be obtained from **Alun GW7KYT** on (01656) 721574 or **Maurice GW0JZN** on (01656) 864579.

The **Thornbury & District Amateur Radio Club** meet every Wednesday night at 7.30pm at the United Reform Church Hall, Rock St., Thornbury. Novice RAE, RAE & Morse classes are run according to demand. Further details from **Peter G4OST** (Secretary) on (01454) 612689.

speed Morse transmission for practice purposes.

The **Swindon & District Amateur Radio Club** meet at the above address where weekly Thursday meetings are held from 7 to 9pm. These well-supported evenings include a fortnightly programme of talks (beginning at 8pm) alternating with informal 'natter & operating' evenings. For more details, contact **Den G7PDV** on (01793) 822705

## Wednesdays At Wirral

The **Wirral & District Amateur Radio Club** meet every 2nd and 4th Wednesday of each month at the **Irby Cricket Club, Irby Mill Road, Irby, Wirral** at 8pm and every 1st and 3rd Wednesday at various locations. Everybody with an interest in amateur radio is welcome to attend any club event as a guest.

A few up and coming events are: October 18 - D&W at the Saughall Massie Hotel, 25th - ATV Night with Bob G4NCI and Andy G7HUD, November 1 - Ten Pin Bowling at Bromborough, 8th - Train driving by Brian G4ZQP.

Further information on any aspect of the club can be obtained by contacting **Bob Smith G4NCI** on 0151-606 8989.

## Brighton Back On Air

Following an extraordinary general meeting, the **Brighton & District Amateur Radio Society** now has a new committee. The committee aims to revitalise the Society.

Considerable interest has already been shown in getting the Society back on the air, both at Society meetings and at

Field Day events. A 144MHz station has recently been purchased by the Society and it is hoped that an h.f. station will follow.

Interest has also been shown in 'Foxhunting' and a simple receiver for this is under design in the hope that a hunt can be arranged for the autumn.

The Society meet at 7.45pm in the Steward's Rooms at Brighton Racecourse. These are usually on the first and third Wednesdays of the month, although these dates sometimes have to be changed to avoid clashing with race meetings.

Further information can be obtained from the new Secretary, **Paul Fellingham G7FJC** who can be contacted at **26 Fitch Drive, Lower Bevendean, Brighton, East Sussex BN2 4HX**.

## Combined Special Event Station

The opening of a permanent Special Event Station GB2BP at Bletchley Park on Sunday December 3 1995 will be run jointly by the Bletchley Park Museum Trust and the **Milton Keynes and District Amateur Radio Society**. The outgoing President of the RSGB, Clive Trotman GW4YKL, has kindly agreed to open the station and this event will be covered by Anglia Television for transmission on their Anglia Today programme and BBC East has also expressed an interest.

A couple of years ago the Milton Keynes & District Amateur Radio Society were approached by the Bletchley Park Trust to look after the radio affairs for the Museum. In return, the Society now enjoy free club premises at Bletchley Park.

At present, the Museum is only open on weekends as it is still in the initial stages, but it is hoped that it will expand in the near future and become an international attraction and enjoy the same status as other National Museums. As a result of this, the Society have successfully applied for the permanent Special Call GB2BP.

It is envisaged to run an up-to-date modern station utilising as many aspects of the hobby as possible in conjunction with a vintage station using Second World War equipment, much of

which is already on site. It is hoped to encourage the public with 'hands on' experience, thus promoting and encouraging people into the hobby.

The Milton Keynes & District Amateur Radio Society are actively seeking sponsorships from manufacturers and traders, and if you would like to ask further questions or you have any queries, do not hesitate to contact the club secretary **Verdun Webley GORKV, QTHR**.

## Attention All Club Secretaries

The *PW* Book Service Department has put together a special deal offering discounts on book orders received from radio clubs. If your club places an order for books from our comprehensive selection on titles that totals over £50 we will give you a **10% discount and free post and packing!**

To take advantage of this offer please use the order form towards the back of this issue, making sure that it is the club secretary who places the order and that the name of your club is stated.

So, don't delay, take your copy of *PW* along to your next club meeting and get your members to start making a list of those books they've been meaning to buy, but never quite got round to.



## National First

**Poole Radio Society, organisers of the first National Novice Contest, operating from Povington Hill in Dorset. (L to R) Geoff 2E1CSR, Colin G6MXL, Brian G4WCJ, John G4XGM and Peter G3BLN.**

## Changes For Stockport



**Stockport Radio Society** has recently changed its meeting place from the Dialstone Centre to **T.S. Hawkins, Stockport Sea Cadet Corps HQ, Pear Mill Industrial Estate, Stockport Road West, Lower Bredbury, Stockport**, where it will continue its programme of meetings on the second and fourth Wednesdays of the month, commencing at 7.30pm.

Formal and informal evenings of the **Norfolk Amateur Radio Club** are held at the Norman Centre, Bignold Road, off Drayton Road, between Asda and the Mile Cross Roundabout, Norwich. On November 1 there is a surplus equipment sale and on the 8th it's night on the air, construction QRP and Morse practice.

Further information from **Chris Howett G4ILR**.

## Non-Event Celebration

Celebrations to mark the 150th anniversary of the opening of the Scarborough to York railway line has been in the planning stage for many months, with a week-long carnival arranged, centred around the Railway

exceptionally hot British weather, Railtrack ruled that steam locomotives would not be allowed to operate due to the risk of sparks setting fire to the tinder dry countryside and therefore cancelled the entire event! (anyone want to



Station. Many famous steam locomotives were scheduled to carry passengers (and the town council) on commemorative runs between the two towns, and the **Scarborough Special Events Group** was organised to operate 'GB0SY' as part of the celebrations, with 1000 souvenir QSL cards printed, ready for distribution.

One week before the event, as a result of the

buy 1000 QSL cards?)

Fortunately, the Society managed to persuade the Council that the anniversary should still be commemorated and the outcome was 1000 satisfied customers on the air, and unexpected local press coverage as being the only Group who celebrated the non-event!

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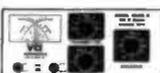
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### Kenwood

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### Icom

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### Sangean ATS803A

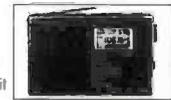
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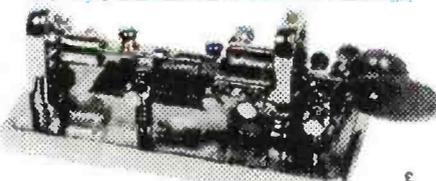
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SD-34	20/15/10m, 4 Trap, 24ft	142.95
SD-44	40/20/15/(10)m, 4 Trap, 47ft	147.95
SD-54	80/40/20/(15/10)m, 4 Trap, 97ft	161.95
SD-56	80/40/20/15/(10)m, 6 Trap, 82ft	219.95
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# The Yaesu FT-8500

Regular PW contributor Leighton Smart GWOLBI goes mobile with a friend to try out the newly introduced Yaesu FT-8500 dual-band v.h.f./u.h.f. mobile transceiver.



The FT-8500 dual - band mobile transceiver with accompanying 'Smart Controller'.

**W**hen I was asked to review this new transceiver from Yaesu, I must admit I viewed the task with a certain degree of trepidation! But I like a challenge!

The story was that it was one of the more unusual transceivers to emerge from the Yaesu stable in recent years. This is because apart from one control on the rig's front fascia, the transceiver's entire array of controls are on the microphone!

The fascia of the rig, which is detachable, is almost completely taken up by the very large display. Despite only having used transceivers with the controls in the 'normal' place where one would expect to find them...I decided to accept the challenge.

So, I determined to take a totally objective view of Yaesu's new dual-band v.h.f./u.h.f. mobile transceiver. After all, it would probably be the only time I'd get the opportunity to operate one, and it would give me my first chance at operating on the 430MHz band!

## Mobile In Mind

The FT-8500 transceiver is designed with the mobile operator in mind. And despite not being a car owner, I didn't want to try out the rig from my home QTH.

As my home is in the valleys of south east Wales, with its hills being great r.f. barriers at v.h.f. and u.h.f., I really wanted to 'do it justice' by operating it while mobile and then preferably from the top of a hill, in order to get reports from a greater distance than just down the road in the next village!

I enlisted the help of my friend **Dave Griffiths GW0JUI**. Dave was kind enough to immediately assist me with the task of reviewing this rig from within the comfort of his vehicle!

Furthermore, having no antenna for the 430MHz band, I made a quick 'phone call to **Sandpiper Communications** in Cwmbach. They very kindly loaned me a dual-band 'mag mount' antenna for the review.

The first thing that struck me upon opening the FT-8500's box was the microphone. In

actual fact, it's not called a 'microphone', but a 'Smart Controller' (This I think sums it up more accurately!).

## Smart Controller

The 'Smart Controller', which is illuminated, contains all the controls for this little rig. And the microphone is there! It's of the condenser type and is located under a very small grill.

Directly below is the direct entry keypad. There's also the **DTMF Paging** button, and the **CTSS Tone** button.

Turning the unit around, I was faced with an array of controls. These included separate **Volume** and **Squelch** controls for both 144 and 430MHz and the **Repeater Shift** button for transmit offset for repeater operation. Then there was the **VFO/Memory** and **Scan** buttons, plus the **CNTL** (Control) button enabling me to switch from one band to the other.

One feature that I considered quite a novelty, for myself at least, was the three axis 'joystick' type control. This allows frequency changing of both kHz and MHz and channel selection.

There's also a **Mute** button which allows you to mute the audio from both of the channels or bands in use and a **Home** button. This enables the operator to return to their original frequency during scanning.

The **SPA** button (to my surprise) turned on the 'Spectra Analyser'. This allows the operator to view activity above and below the selected frequency!

In reality, the **SPA** feature means that the operator, while listening to another station, could 'see' other stations working above or below the operating frequency. They can get a good idea of activity levels on the band without having to tune around!

On the right-hand side of the Smart Controller lies the p.t.t. switch, and below this is a small **Toneburst** switch for repeater operation. Directly below the toneburst switch I discovered the **MONI** button, which enables the operator to open the squelch to monitor

weaker stations.

There's also the **LOW** button, for switching in one of the three power levels. These are 5, 10, and 50W on 144MHz, and 5, 10, and 35W on 430MHz. Lastly, there's the **PWR** switch, which is below the **LOW** button and doubles as a normal **On/Off** switch and as a control for switching from main to sub channels.

## Small Unit

I must admit that I found the number of buttons and controls on such a small unit very off putting at first glance. I'm the type who prefers controls that I can get my fingers around!

However, upon further investigation, I discovered that using the MEK-2 Microphone Extension kit, I could connect a separate microphone to the rig in parallel with the Smart Controller. This would enable me to use a standard microphone, while mounting the Smart Controller on the dashboard, to be used only in controlling the transceiver, thereby making it more convenient to use while in a parked car.

Another accessory which came with the rig was a 'Separation Kit'. This kit enables the operator to install the rig itself in the boot of the car. With this, the fully detachable front fascia of the rig can be mounted on the car's dashboard, along with the Smart Controller, extension speaker and microphone if you wish.

Incidentally, the lead connecting the Smart Controller to the Yaesu FT-8500 is detachable from both the rig and the control unit. I found the connections at each end very small and somewhat fragile-looking, and I wondered if such connections would stand up to the 'rough and tumble' of mobile operation. Only time will tell.

## The Transceiver

Upon inspection of the 'transceiver section' of the FT-8500, it seemed that I had gone from one extreme to the other! The rig itself has

**OCTOBER ISSUE**

**A Simple 2 Valve VHF Radio -  
Part 2 of 2**

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SWM Staff Report**

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**How The Wartime 'Y' Stations  
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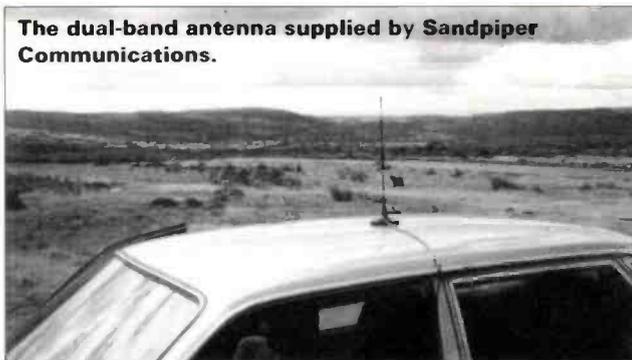
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The dual-band antenna supplied by Sandpiper Communications.



only one control, along with a transmit indicator and a 'Auto Dimmer Photo Sensor' (this reduces the l.c.d. 'backlighting' automatically, according to the amount of light present at the time of operation.

The single rotary control on the main transceiver is multi-purpose. These include the **On/Off** switch, and a **Tuning** control for the **VFO** and **Memory** channels.

The rig is very compact, it only measures just 140 x 40 x 180mm, including the rear mounted fan and front control knob. The casing has a attractive black sheen finish, with the orange-yellow l.c.d. display providing a pleasant contrast to the eye.

The FT-8500's speaker is mounted under the top cover. I always find this more suitable to the operator than mounted within the bottom casing, and this provides 2W of audio output.

Connections on the rear of the FT-8500 are an 'N' type antenna connector at the end of 24cm of coaxial cable, a 13.8V supply lead with connector for the d.c. supply, a DATA jack for Packet operation and Computer Control (with the optional FIF - 232C Interface Box), and two 3.5mm mini 'phone jacks which enable the operator to connect two separate external speakers for both v.h.f. and u.h.f. reception while in dual-band listening mode.

### The Handbook

I took some time to read through the handbook of the FT-8500, which was produced in both Spanish and English. The English section of the book is some 74 pages long, well written, taking the reader in stages from installation through to basic and advanced operation, and up to menu programming and custom settings.

It soon became apparent that this little transceiver contained a host of interesting features. Some of which, such as computer control, are more suited to base station operation rather than mobile operation, but nevertheless, I am sure that many amateurs will find them of interest.

The feature which most caught my attention was the 'Spectra Analyser' which I've already briefly mentioned. It's found within the lower section of the l.c.d. display.

As I've said...I was impressed! With the 'spectrum analyser' feature the operator is able to monitor activity above and below the main operating frequency. This can be either by a 'single sweep' or a 'continuous sweep'.

Pressing the SPA button for half a second

gives a single sweep for activity, while pressing for longer than half a second gives a continuous sweep. This enables the operator to constantly view activity within variable frequency limits within the bands.

The analyser appears on the l.c.d. display in the form of a bar graph with the main operating frequency at the centre.

This facility will also operate in the **MR** (Memory Recall) mode, thus allowing the operator to monitor activity on their chosen preset memory channels.

While using this set at home on receive the SPA facility came into its own! I found myself watching the activity above and below my receive frequency, then QSYing to any channel where I 'saw' activity on the Spectra Analyser.

### Memory Channels

There are 112 programmable memory channels on the FT-8500. These are made up of 100 normal memories subdivided into 10 memory banks, and six 'special purpose' memories for each band.

Each memory doesn't only hold the desired frequency. They can also store other details such as repeater shift, CTSS tones, and split memory operation, for use with crossband working for example.

Although the rig has a Dual Tone Multi Frequency (DTMF) encoder/decoder for selective calling and paging purposes, I was unable to use it. This is because I knew of no one locally with the same facility.

However, I can see the potential for DTMF particularly within multi operator households, where an amateur may wish to be in communication with another member of the family. Likewise, the facility could be used by DX operators, wishing to notify other local DXers of specific openings on other bands via a v.h.f. or u.h.f. or paging/selective calling network.

### On The Air

To get on the air Dave GW0JUZ and I installed the FT-8500 in his car immediately upon obtaining the dual-band vertical antenna from Chris at Sandpiper Communications.

I only operated the rig at the lower setting for the most part of our transmissions. This was possible because despite working mobile from within the deep Cynon valley I was able to access the 144MHz repeater GB3WW situated west of Swansea due to the 'window' at the northern end of the valley. Contact was maintained on this repeater until we were at a higher location, when I asked for audio reports and other comments from station we worked.

I received favourable comments on the audio from stations working through the repeater. These ranged from "crisp and clear" to "nice and loud, fully quietening".

The received audio on the FT-8500 was quite good. Although I did consider that the small speaker was not really adequate, particularly if there was a high level of engine noise within the car itself.

I found that I had to turn the transceiver's volume control up to very nearly full volume in order to get a comfortable level of audio in the car. But this is not really a problem, as I would imagine that most serious mobile operators would normally use an external speaker.

I must admit that I did not expect good transmitted audio reports, due to the diminutive size of the actual microphone in the 'Smart Controller'. It measures just 5mm across, and 2mm in height, and I assumed therefore that I would have to speak very loudly into this tiny aperture in order to be heard!

But that was not the case, and I was requested to 'back off a little' on the microphone, as I was being received far too loudly!

During our tests on 144MHz, I decided to switch on the Spectra Analyser. And as we were receiving GB3WW on 145.775MHz, I was able to 'see' activity on the GB3BC frequency of 145.750MHz.

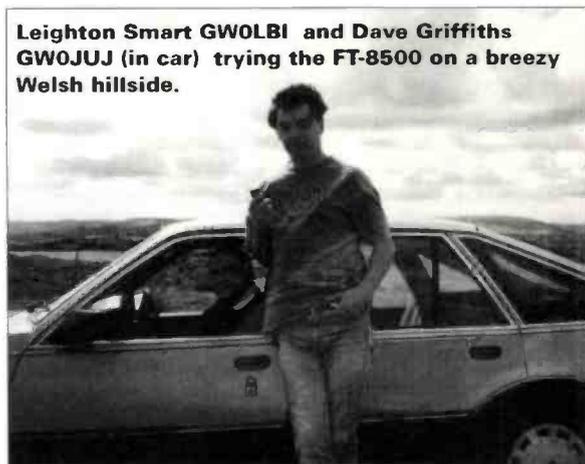
Later, Dave and I parked the car on Mynydd Gelligear, a spot near my home QTH on higher ground, where we tried 430MHz. After scanning the band, we found **Maurice GW1MWR/GW0JZN** (he has both 'A' and 'B' Class licences!) and **John GW0HKN** chatting away and joined them in QSO.

Dave did most of the transmitting on 430MHz, and again reports on signal and audio quality were requested from both stations. As on 144MHz, good reports were received from both stations, despite some 'white noise' which appeared on the band from somewhere.

### Abundance Of Facilities

I must admit to have taken a liking to the 'rig section' of the FT-8500 and the abundance of facilities incorporated. These, such as the Spectra Analyser, and Dual Band Receive,

Leighton Smart GW0LBI and Dave Griffiths GW0JUZ (in car) trying the FT-8500 on a breezy Welsh hillside.



along with the smart appearance and its compact size rather appeals to me.

In operation, the reports and comments received indicate that the signal and audio qualities are more than adequate, with the same going for the receiver. I didn't notice any spurious signals whilst receiving, and no overloading of the rigs 'front-end' was apparent, although to be fair the level of activity was low when I was operating.

However, I couldn't get used to the Smart Controller at all. I found it complicated to use, particularly when actually on the move. I found that the number of controls on the controller were far too numerous for my liking, especially as the controls were on both sides of the unit. This led to some confusion during actual mobile operation.

Perhaps using the MEK-2 Microphone Extension Kit, where the Smart Controller is used **only** as a control unit, and with a separate microphone attached, could be an improvement. But I must confess that I don't like the idea of having all the controls detached from the rig's main body.

Having said that, the Yaesu FT-8500 may be the answer to many mobile operators, especially those with limited room under the dashboard. But I fear that having so many controls on such a small unit may detract from the usefulness of the rig itself which has a wealth of excellent facilities and functions.

I'm grateful to **Sandpiper Communications of Unit 5, Cwmbach Industrial Estate, Aberdare, Mid Glamorgan CF44 0AE. Tel: (01685) 870425** for the loan of the antenna, and to **Dave Griffiths GW0JUI** for his valuable assistance and mobile facilities!

Finally, my thanks for the loan of the review transceiver, which is available for **£749**, go to **Yaesu UK Ltd., at Unit 2, Maple Grove Business Centre, Lawrence Road, Hounslow, Middlesex TW4 6DR.**

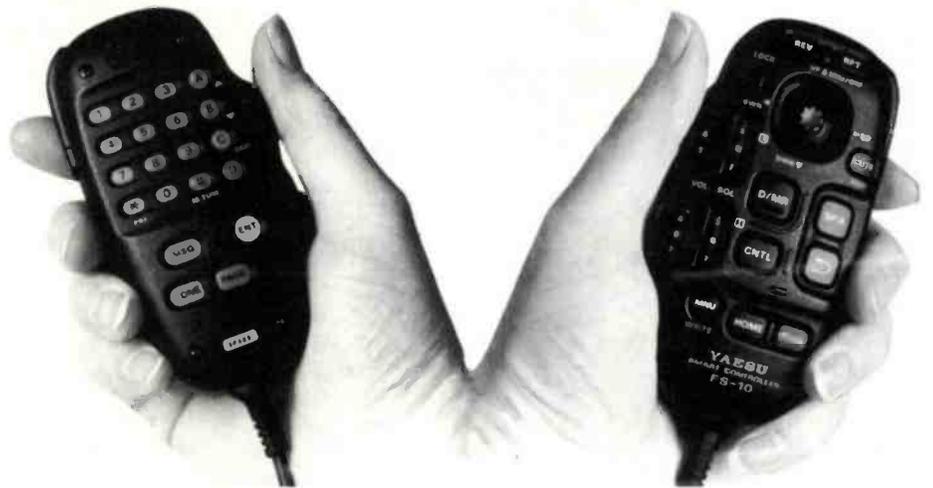
PW

**After seeing a copy of the Leighton Smart GW0LBI review, Barry Cooper G4RKO of Yaesu UK Ltd. sent us the following comments:**

Leighton Smart's review gives a good flavour of the many facilities of the FT-8500. If he had been able to keep the radio longer (yes, we do ask for them back!) I am sure he would have discovered a whole raft of secondary features that can be accessed using the joy-stick control on the Smart Controller. These include such things as Battery Voltage indicator, CTCSS encode/decode, Memory Alpha tagging, extensive messaging facilities and CWID.

Yaesu is very aware of the safety aspects of using a transceiver when mobile and the provisions within the *Highway Code*. To this end, we strongly recommend that the Smart Controller is **not used** as a mobile microphone and that the MEK-2 kit is installed with a headset or boom-microphone. for hands-free operation. The Smart Controller can then be positioned in its holder to avoid leaning across the car to change bands, etc.

**Barry Cooper G4RKO**



**Internal view of the FT-8500.**

**The 'Smart Controller' (incorporating microphone) used on the FT-8500. Thanks to the PW Art Department we can show you both sides of this formidable-looking unit!**

## Manufacturer's Specifications

### General

Frequency Range:

144 -146MHz & 430 -440MHz (plus non-amateur and airband coverage)

Channel Steps:

5, 10, 12.5, 15, 20, 25, & 50kHz

Frequency Stability:

±10 ppm from 20 to +60°C. (v.h.f.)

±5 ppm from -5 to +50°C. (u.h.f.)

Repeater Shift:

±600kHz & ±5MHz (Programmable)

Emission Type:

F3 (G3E) F2

Supply Voltage:

11.7 - 15.9V d.c.

Current Consumption:

Receive current

<1 A.

Transmit current (Max)

v.h.f. (High power) 11.5A, u.h.f. 9A v.h.f.

(Mid power) 6A, u.h.f. 5A v.h.f.

Low power) 4.5 A, u.h.f. 4 A

Operating Temp Range:

-20 to +60°C.

Case size:

(w.h.d.) 140 x 40 x 160 mm w/o knobs.

Weight:

(approx) 1.1 kg

### Transmitter

Output (High):

50W (v.h.f.), 35W (u.h.f.)

Mid:

10W (v.h.f.) 10W (u.h.f.)

Low

5W (v.h.f.) 5W (u.h.f.)

Modulation System:

Variable Reactance

Max. Deviation:

±5kHz

Spurious Emissions:

> 60 dB below carrier

Microphone Type:

2kΩ condenser

### Receiver

Circuit Type:

Double conversion superheterodyne

Intermediate frequencies:

1st 45.05MHz, 2nd 455kHz (v.h.f.)

1st 58.525MHz & 455kHz (u.h.f.)

(For 12 - dB SINAD) < 0.18µV (Main)

Sensitivity

< 0.25µV (Sub)

Selectivity:

(-6/-60dB) 12/24 kHz

Image Rejection:

Better than 70 dB

Squelch Sensitivity:

Better than 0.13µV

Audio output:

2W into 8Ω for 5% THD

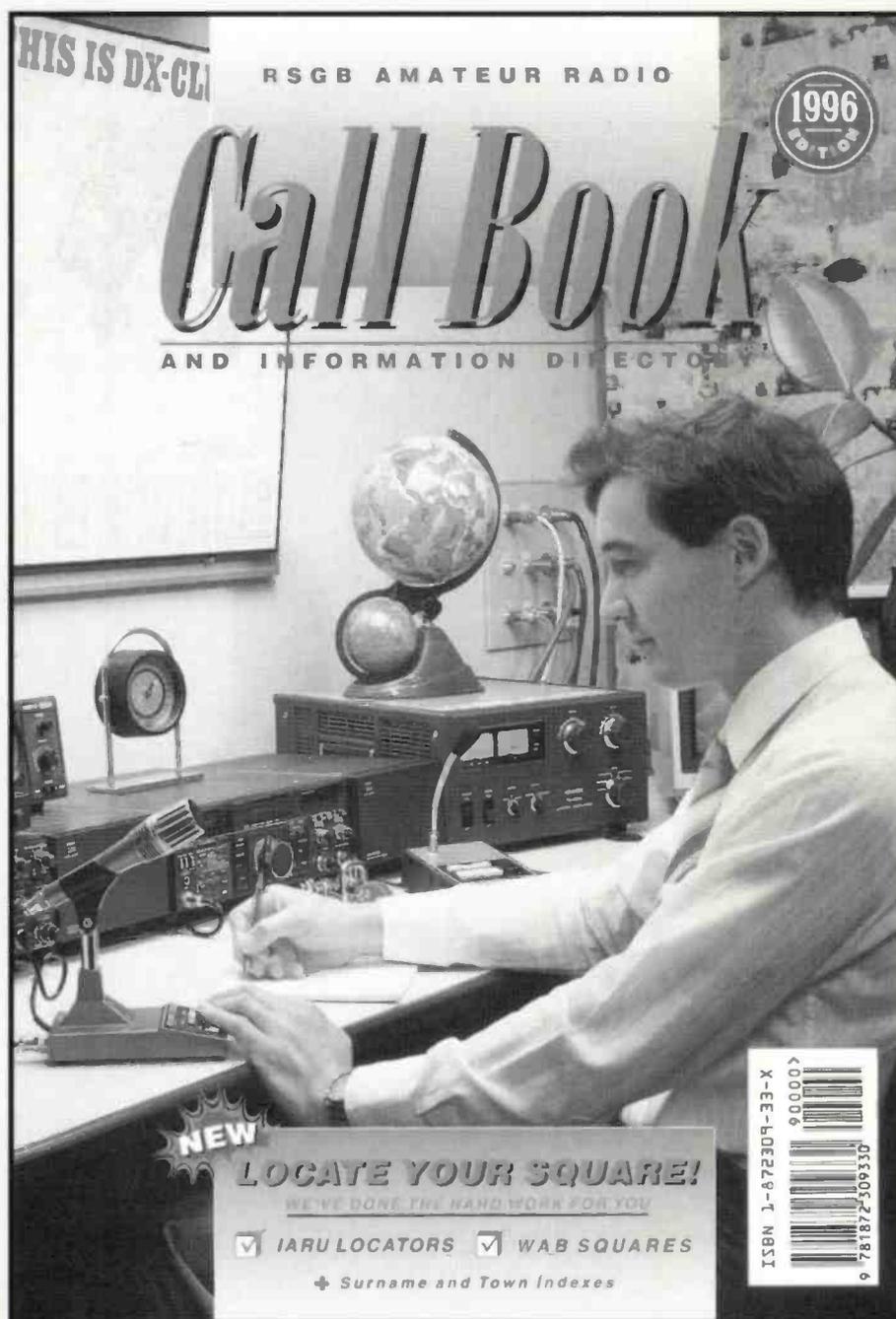
Audio output Impedance:

4 to 16Ω (8Ω internal speaker)

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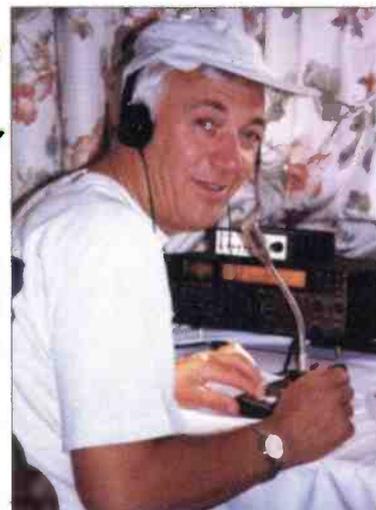
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**Radio Society of Great Britain, Lambda House,  
Cranborne Road, Potters Bar, Herts EN6 3JE**

# DXpertise With Devereux

*Mike Devereux G3SED asks have you ever wondered what it's like to be on the other end of a DX pile-up? After 30 years of operating in the UK, Mike found out what it's like and takes time off from his Nevada Communications business to share the experience!*



Mike Devereux G3SED....at the other end of the DX!

**M**y chance to find out what it's like at the other end of the DX came out of the blue one morning in a surprise telephone call from **Richard G4CVI**. "SMC have just landed the communications contract for Camel Trophy" he announced excitedly, "do you want to join the comms team"? Quite honestly I had never heard of Camel Trophy let alone why they would want comms equipment!

Richard went on to explain that Camel Trophy was a gruelling, four-wheel drive, off road adventure expedition held each year in remote parts of the world. He needed a team of five experienced people to install and operate commercial communications facilities including h.f. radio, Satcoms, Satnavs, v.h.f. and airband radio.

It was then Richard told me he felt there may even be an opportunity to mount an Amateur DXpedition. "Imagine" he added, "we can get paid...and play Amateur Radio". I thought it was a great idea and volunteered on the spot!

## Exciting And Tough

The call from G4CVI was almost five years ago now, and since that time we have travelled and operated in some of the most exciting and toughest terrain in the world. We've travelled to the Jungles of Sabah Malaysia, to the spectacular falls at Iguazu, Northern Argentina, in the remote Atacama Desert of northern Chile and experienced the searing heat of Belize Central America.

It's funny, but once you are on the DXpedition trail, opportunities seem to come your way. It was **Geoff GJ4ICD** who in 1994 invited me to be part of the UK Six Metre group's expedition to Amman, Jordan, where we activated JY for the first time on 50MHz. When the band was closed I would operate the h.f. bands with my special callsign JY8ED.

Don't be misled though....while these events are enjoyable to take part in, they require months of meticulous planning and more health jabs than I care to remember! It can be a dangerous business stuck in the middle of a tropical jungle with tarantulas, scorpions, fer de lance snakes and all sorts of other 'creepy crawlies' - yes, I got to see them all!

## The Team

For the Camel Trophy events the Amateur team comprises **Richard G4CVI**, **Paul G4CCZ**, **Andy**

**G4PIQ**, **Richard G8SVC** and myself **Mike G3SED**. We take around seven tons of equipment...including an 80ft trailer-mounted tower.

For h.f. operation we have two Yaesu FT-1000s an FT-900 with an Alpha 86 amplifier for good measure. Wire dipoles are used for 1.8/3.5MHz, and the main h.f. bands are catered for with a Create 714X monster beam. It has **three** elements for 7MHz and **five** elements for 14/21MHz!

A 3-element Cushcraft A3WS beam covers the WARC bands. For 50MHz we use a Yaesu FT-650 with a 6-element NBS yagi.

## Operation From Malaysia

My first DX operation was from Sabah Malaysia as G4SMC/9M6. It was early afternoon when I decided to take a quick listen on 7 and 3.8MHz for any local activity. But both bands were completely dead - apart from S9 static!

It's strange how operating from Europe you become accustomed to the strong commercial and amateur signals audible during the day. In Malaysia there were just a few weak heterodynes and nothing else. I quickly discovered that this was the norm in Tropical regions - even 14MHz was relatively quiet during the day.

Once the sun began to set however, it was a different matter! The 7MHz band sprang into life with VKs audible several hours before dusk. And 14MHz would open to Europe about an hour before sunset and remain open for about five hours.

I think it's a fantastic experience to hear British stations from the other side of the world for the first time and compare their signal strengths. The 'boys with the beams' were certainly very strong. Stations including **G3FPQ**, **GM3POI** and **G3PCG** were amongst the loudest I heard...but they had some close rivals from unexpected quarters!

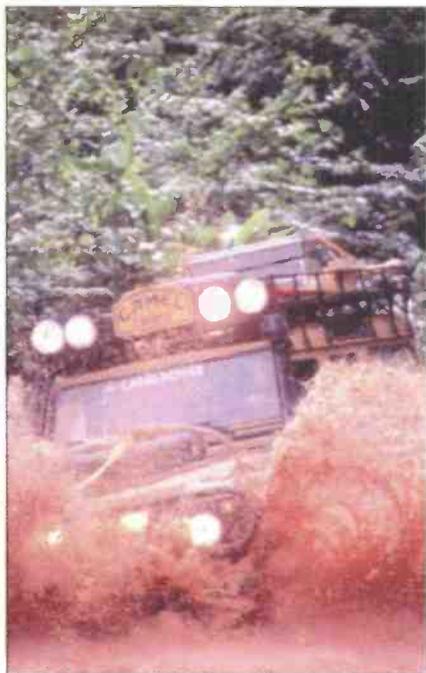
## Strong Signal

**Roger G3YRO** surprised me when he called during a massive 14MHz pile-up with a strong signal on his 82m long wire antenna. His signal was only one S-point below the strongest Gs with beams.

The Camel communications vehicle set up in the Atacama Desert in Northern Chile.

Photo by Lee Farrant.





A 'swimming' LandRover on the Camel Trophy 1992 in Guyana.

Photo by Lee Farrant.

Presumably his antenna had a major lobe in the direction of Sabah, Malaysia, my QTH at the time.

The G5RV must be the most popular antenna in the UK. This must be so, judging by the number of stations I have worked using them whilst on my travels! These antennas put out consistent signals on all bands - but always several S-points below the loudest stations.

I found that even in the largest pile-ups my friends and fellow countrymen stood out, although they may be the weakest of signals. I can only assume the brain recognises these familiar callsigns and gives them the equivalent of a 10dB boost!

Being confronted with an enormous pile-up for the first time is exhilarating. But controlling a wall of signals that may spread more than 15kHz across the band is another matter.

To overcome the problems I favoured working split frequency. This was so that I could be heard above

those people who insisted on calling continuously, regardless of who I was working.

### Infectious Calls

Pile-ups are infectious, and some people give calls just because they see others doing so. Then after working you they ask for your callsign!

I found many American operators insist on giving their name and QTH both spelt phonetically. This is fine for normal QSOs but it really slows things down for the others anxious to work a rare country for the first time.

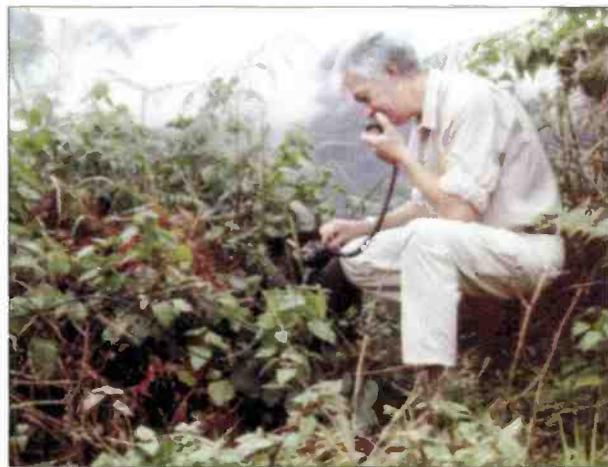
The Japanese are superb operators. Despite their huge numbers they would always stop calling and wait patiently if requested to do.

The really slick operators would 'tail-end' giving their callsign just once at the end of my previous QSO. If done properly this procedure can be very effective and significantly increase the rate of contacts. The golden rule is to always listen first and understand what's happening before calling.

The I.f. bands are tough from the exotic locations near to the equator, there's S9 plus static being present almost 24 hours a day. However, I've always had a special interest in 1.8 and 3.8MHz so, I was determined to make a special effort on these bands.

"I talked to the trees, but they wouldn't listen to me!" Mike G3SED operating a Yaesu FT-77 high in the jungle of Mount Kinabalu, Sabah, Malasia.

Photo by Richard Diamond.



### Northern Chile

When I arrived in Mejillones, northern Chile (CE1) I was delighted to find that Paul G4CCZ, and Nick G3KOX had been busy. They'd already erected an 'inverted vee' and sloping dipole for 3.8MHz at 30m high on our trailer

mounted tower, just a short distance from the sea.

I decided that the best time to work back to the UK was probably at my sunset. But when I got to the radio around 1600 local time and tuned around 3.795MHz to find just S9 static and no signals!

I listened around the top of the 3.5MHz band for the next hour without hearing a thing. Then just after 1700 I began to hear a weak signal in the noise - it was John G4PKP running a DX net. Slowly over the next 30 minutes or so his signal built to strength eight.

It was a particularly busy time for the Camel comms team, who were passing traffic to the convoy out in the Atacama desert. All I could do was to sit patiently and wait until they had finished before I could call in.

Time was ticking away and the opening was nearly over. I could not contain myself any longer. With my voice in a whisper, so as not to interfere with the others, I called John G4PKP.

To my surprise G4PKP came straight back with a strength eight report. But to my horror preceded to announce to the net that I must be a 'pirate' because he did not recognise my voice!

Just at that moment Richard G4CVI began to transmit on our commercial h.f. link rendering me helpless to respond to John's accusation. I sat there silently, in complete frustration for nearly 20 minutes until in a normal voice I was able to call John again, and convince him that I was genuine!

It was interesting to see that the sloping dipole showed some 6dB gain over the inverted Vee on the UK path at sunset. However, the 'sloper' did suffer from local noise pick-up.

'Top band' has proved to be the hardest band of all to work from these exotic locations. A combination of high static on 1.8MHz, locally generated noise and commercial interference have tested my ears to the limit.

### From Jordan

When I operated from Amman in Jordan as JY8ED, I tried to use a sloping 1.8MHz dipole that Nick G3KOX had installed on top of the Marriot Hotel a week before my arrival. Unfortunately though the antenna was picking-up tremendous local noise together with an S9 plus broadcast harmonic on 1.835MHz. The combination made DX working impossible at the bottom end of the band.

It's in difficult situations that the determined DXer learns to improvise. With the help of Paul G4CCZ I hastily constructed a 'magnetic' loop antenna for receiving using parts 'borrowed' from the Hotel.

We used an old chair, a length of low loss Satellite TV coaxial cable, some poles and 'Gaffa' tape. A hasty trip round the electronics shops in Amman yielded a 750pF broadcast variable for tuning...and we were in business!

Working quickly we assembled the loop on the hotel roof. Then tuned and rotated it until we could null out the broadcast harmonic and most of the noise.

Although still difficult, the loop helped. We managed to work more than 100 Gs and other Europeans on what had been an impossible band.

### Modest Equipment

Unlike the Camel Trophy DXpeditions, operating as JY8ED I had just modest equipment for the h.f. bands. The transceiver was an Icom IC-736 running 100W into a simple Windom 44m long wire

antenna mounted on the roof of the Marriot Hotel.

Since operating from many large international Hotels around the world, I've learnt that correct positioning of wire antennas for the l.f. bands is essential for good results. Most have flat roofs that are strewn with air conditioning equipment, lightning conductors, TV antennas, connecting cables and lift shafts.

The cluttered roofs tend to detune the antennas and cause noise or interference pick-up. The most effective solution (if possible) is to run sloping dipoles or Windoms from the top of the Hotel down into the grounds.

In Jordan the Windom antenna, although more than 60m above ground, had been installed just 4m above the roof by the previous v.h.f. team members. Its close proximity to the roof detuned the antenna and gave poor performance.

When I arrived I re-sited the Windom some 12m or so above the top of the Hotel roof with the help of a long pole. There were some anxious moments as I climbed on top of the Hotel lift shaft 70m above the ground to erect the antenna, but the results made it worthwhile! Paul G4CCZ and I worked more than 3,000 stations in over 200 countries during the few days we had for h.f. operation.

## Invaluable Tool

The lap-top computer is an invaluable tool for DXpeditions. It serves as a log book, a propagation predictor, antenna designer, c.w. keyer and more.

The 'Miniprop' HF propagation prediction program by W6EL has been used frequently while on DXpeditions to identify when bands will open. By entering the current Sunspot number or solar flux, the location and date, the program predicts openings with remarkable accuracy.

I remember in Belize while operating V31RD, Miniprop had predicted 14MHz would probably open to Europe for just one hour around 0430 local time and it was right. If I had not seen it on the computer I would have missed this unexpected opening!

Geoclock, is another useful programme. It shows the 'greyline' terminator in real time, on a map of the world (ideal for the l.f. bands). And for h.f. it's used to give beam headings to all parts of the world.

## New Friends

Travelling the world with amateur radio I've met and made many new friends from all walks of life. For example, in Jordan Paul G4CCZ and I were privileged to meet **His Royal Highness Prince Raad Ibn Zeid JY2RZ** who was keenly interested in our operation with the UK six metre group.

Another Jordanian amateur, **Mohammed Balbisi JY4MB**, Secretary of the Royal Jordanian Amateur Radio Society was very helpful. He spent a tremendous amount of his personal time to show us the sights of Jordan and ensure that we had everything we needed.

We have had fantastic co-operation from the Ministries responsible for licensing in the many countries we visited. With their permission it has been possible to provide and install 50MHz beacons in 9M6, V31, and JY.

The 1996 operation for Camel Trophy will be from Kalimantan Borneo with the HQ station

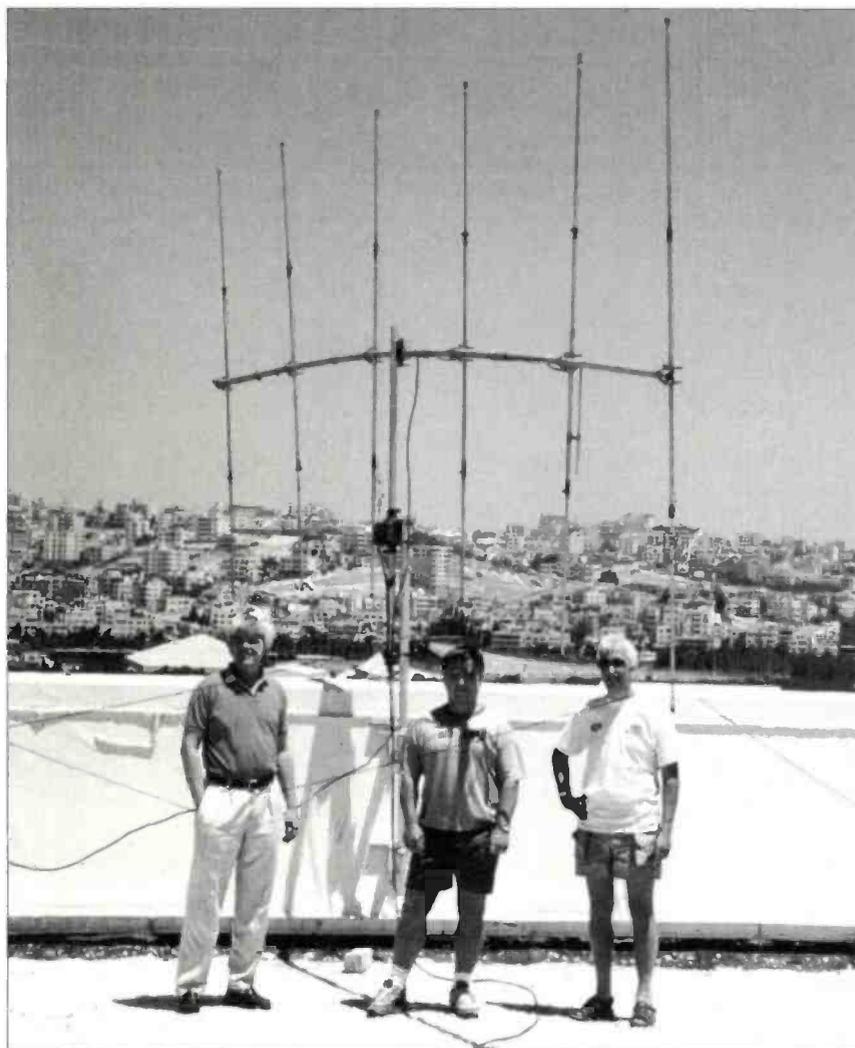


located at Pontianak on the West coast. Look out for us then and good DX!

PW

**Richard G4CVI enjoying and working a 50MHz 'pile-up' from Camel Headquarters in Sabah.**

**On the roof of the Marriot Hotel in Aman, Jordan. Pictured (left to right) Tom DL7AV, Paul G4CCZ, Mike G3SED. Note the 'take off' to the UK!**



# The High Flyer

Victor Goom G4AMW describes his 'High Flyer' shortened dipole antenna for the 18MHz band. The array uses an innovation which the author describes as an 'Indocap'.

The 'High Flyer' is a featherlight antenna that can be easily erected high in the air. And mounted at 12m and above I know from experience it will really perform.

An innovation (which I've called an 'Indocap') appears in my design. And I can prove practically that it works, I can also prove theoretically that it doesn't!

Working the world with a very small antenna is now possible. With the prototype antenna mounted at 12m I've worked stations from New Zealand to California.

The drawings, Figs. 1 to 3 illustrate the project stage-by-stage. The four stand-offs can be taken from the pattern on the drawings. They should be cut and drilled, then secured with self tapping screws to the 660mm support, made from white Nylon material as shown.

For the two elements take a length of 8mm aluminium tubing (or 10mm if available), cut two lengths 825mm and two lengths 72mm. Drill 3mm holes about 12mm from the end of each of the longer lengths. These will take the 50Ω input at the centre of the antenna.

Next, using the two shorter lengths of tube, make two cuts (to form a cross) approximately 25mm on each tube. This will be pressed in to grip the tuning rods.

The two tuning rods are made from 330mm lengths of 4mm aluminium rod. These should now be inserted into the shorter sections of tubing. (File off any protective coating first!).

## The Coils

For the coils you should first cut two 200mm lengths off the white plastic 15mm diameter tube. Then start winding the enamelled wire in a clockwise direction 25mm from the end of the tube then tape

down, leaving a short end of wire.

When you have 60 turns on the former, again tape down. Then strip the wire and solder to the end of the screen of the miniature coaxial cable (note: the centre of the coaxial cable is not connected to anything).

Then, wind on in the same direction 12 turns of the miniature coaxial cable. And again tape down, then solder a short length of stripped wire to the screen at this end of the miniature coaxial for connecting up.

Now take the prepared two pairs of coils on the flexible plastic tube and push the aluminium tube section into each end. The next steps in construction require the use of a small vice and drill.

At the coaxial cable end of the coil former there should be about 70mm free. Push the larger diameter tube in this end as far as the free distance (as per diagram). Then drill a 2mm hole 12mm from the end of the white plastic tube.

Next, place two washers on a 15mm long self-tapping screw and screw it into the hole. The stripped wire at the end of the coaxial cable can now be fixed to this point.

The tuning rods can be pushed into the empty end of the coil section and once again secured using 12mm self tapping screws. Repeat this procedure with the other coil element. The antenna can then be assembled with reference to the drawing, and the tuning rods adjusted to tune it on frequency.

## Simple Secret

The simple and elementary secret of the 'High Flyer' antenna has taken me years to

figure out. I've always thought that there must be a way to reduce the size of h.f. antennas. In this regard, mobile antenna and magnetic loops seem to work better than their size would indicate.

With vehicles, on one hand there's the enormous capacitance of the car and on the other, a very large high voltage capacitor. And if you look at the dipole with very little capacitance you would say that the current really had no place to go. But if a way could be found to put some capacitance at the

## Shopping List

### Material Required

(All from major DIY outlets)

8mm (or 10mm) aluminium tube	3m
4mm aluminium rod	1m
15mm white plastic tube	1m
25 x 18mm white plastic bar	1m
10mm flexible clear plastic tube	1m
12mm kitchen chopping board	one
50Ω miniature coaxial cable	1m
Copper wire	50gms
bobbin of 0.71mm (22s.w.g.)	
enamelled copper wire (Maplins)	
Heat shrink sleeving	1m

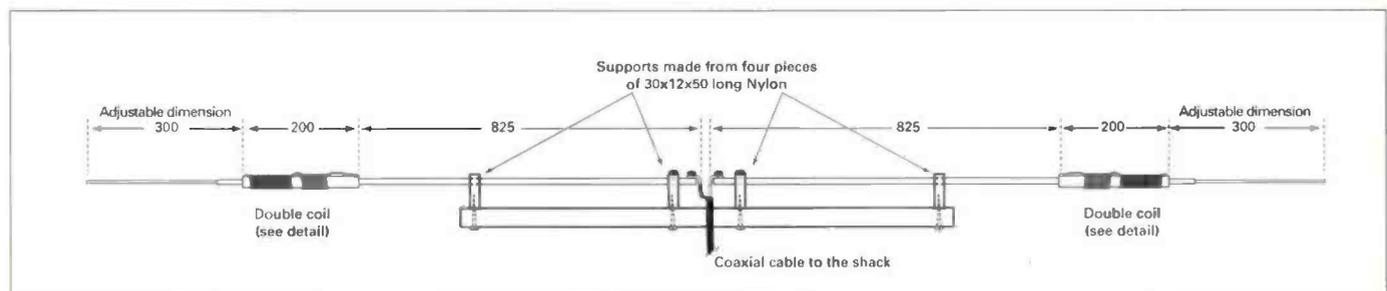
ends of the dipole, a high Q, high current, but very short antenna could be made.

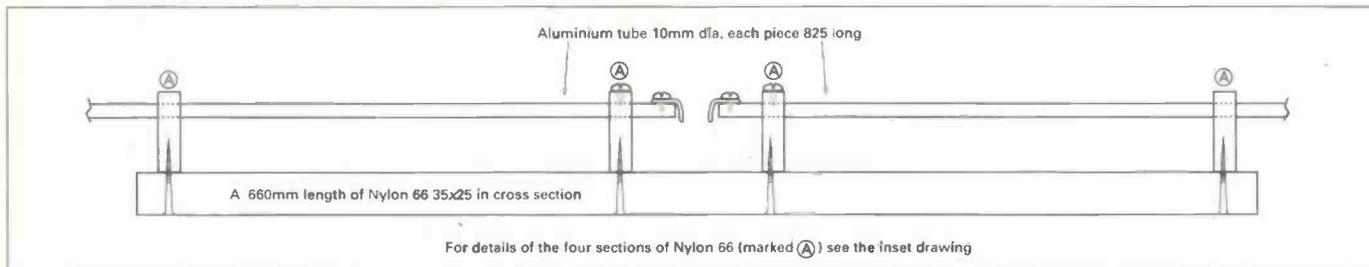
So, this was my problem, or to put it more accurately, to 'empty' one side of a capacitor while the other was being 'filled'. A number of ideas were tried with wires running through the elements, but no way could I phase them to stop them cancelling out to some degree.

Then I remembered a basic fact. Current going one way round a coil induced current in an adjacent coil to go the other way. So, here was the simple answer!

Put two windings in the current sections at each end of the antenna feeding either side of the capacitors, then when one plate was going positive, the other side would

Fig. 1: Overall diagram of the 'High Flyer' shortened dipole for 18 and 21MHz built by G4AMW.





**Fig. 2a: Close-up diagram illustrating construction methods used by G4AMW.**

have the current induced out of it by the other winding.

Initially this did not work because of the inherent capacity of the coils was too large. I reduced this high capacitance by using wire with a thick plastic sleeve.

Then, to my considerable satisfaction, I found that with the aid of two variable capacitors, it was possible to tune the antenna over 3MHz and indeed proved the theory did work.

### Other Antennas

I then made a number of other antennas using this principle and adjusting the amount and position of the capacity and noting that the inherent capacity of tightly coupled coils did the same job. This seemed to give a 'coiled spring effect', as the current moved one way it builds up opposite potential in the adjacent coil giving a reciprocal 'slingshot effect'.

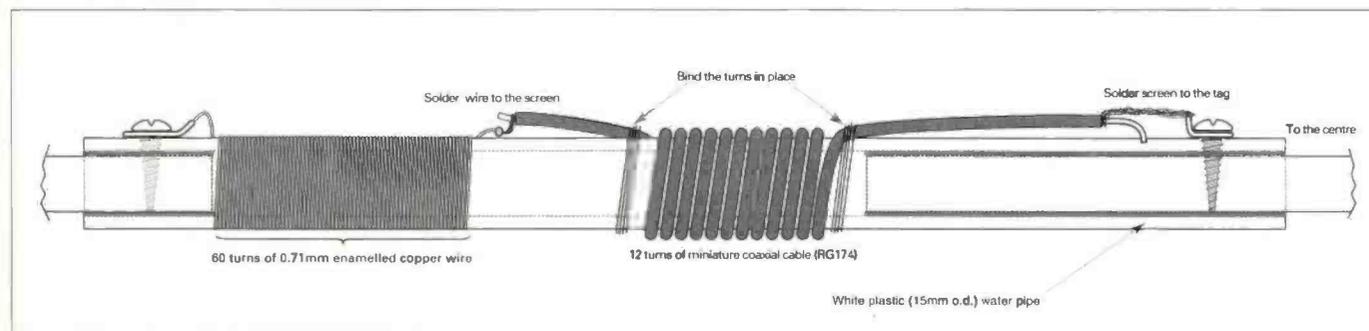
The 'High Flyer' uses a short length of miniature coaxial cable to do duty as the inductive capacitor ('Indocap'). This is placed in the 'current' section of the antenna.

In my opinion the 'Indocap' introduces a whole new ball game into the design of shorter antennas. I have worked into VK using a 3.660m long antenna. And I've worked virtually world-wide with the 'High Flyer' on 18MHz and the longer version on 7MHz.

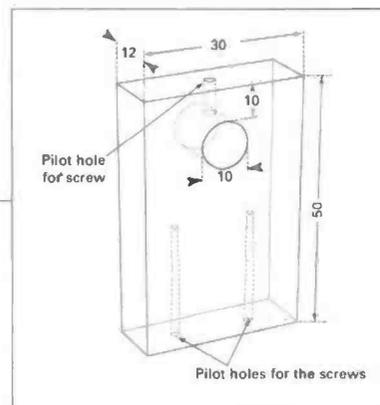
Please understand that this is an **experimental antenna**. And although it has now been up a few months, I don't know what wind pressure it will stand. Enjoy your DX and I hope you too have good 'High Flying' days!

PW

**Fig. 3: Detailed diagram showing coil details and also illustrating the author's 'Indocap' coaxial cable innovation (see text for G4AMW's statements on the 'Indocap').**



**Fig. 2b: Shows a detailed view of the element mounting block (see text).**



**We asked Clive Hardy G4SLU to confirm the theories and design of the 'High Flyer' by building a version for the 21MHz band. Here's what he thinks:**

Although Vic G4AMW has designed his antenna for 18MHz I thought it would be an interesting exercise to build one for 21MHz. I scaled every physical dimension down by 14%, making the outer element 200mm and the tuning stubs 240mm long (they slide into the outer element). The actual lengths of the elements and the insulated section are slightly different from the above to allow for mechanical connection. For the inner parts of the dipole I used 12.7mm\* aluminium tubing and a dipole centre obtained from a local antenna manufacturer. The 15mm plastic tubing was from B&Q, as was the 10mm tubing used for the tuning stubs.

(\*The suppliers describe it as 1/2 inch tubing, and sell it by the inch! - Europe? Never 'eard of it mate!)

Softened in boiling water, the plastic tubing can be fairly easily forced over the aluminium tube. The tuning stubs are held firmly with a hose clip. I cut four slots about 15mm long in the end of the outer elements, two of which I filed to about 3 mm wide, which allowed the ends to deform and the jubilee clips to do their jobs. I cut part of the plastic tubing away with a craft knife so that the self tapping screws hold the wire of the coils directly to the aluminium elements.

**Tuning Positioning:** I had initially 'guesstimated' the position of the tuning stubs. This gave a v.s.w.r. of about 10:1. Now, should I shorten or lengthen the antenna? Here I must drift off of the main subject for a few moments and mention the MFJ-259 HF/VHF SWR Analyser, borrowed from G1TEX (and very reluctantly returned!).

With the help of that piece of the MFJ antenna analyser unit I tuned the antenna to the middle of the 21MHz band in a few minutes. The MFJ-259 is a delight to use. It makes tuning antennas so simple, and it saved me a lot of time. Anyone who experiments with antennas really should think seriously about getting an antenna analyser.

But, back to the antenna. Eventually I ended up with an overall length for the antenna at 21MHz of about 2.4m overall.

I also found that my 21MHz version would also tune to 18MHz. The overall length at 18MHz is about 2.720m. I found that the 2:1 v.s.w.r. bandwidth was a little over 200kHz.

**Performance testing:** This was carried out on both 18 and 21MHz which proved that the antenna worked. Comparisons were made with wire antennas at different locations, but as the conditions were far from even similar for each antenna, the results cannot be given any credence. However, I worked all over Europe on 21MHz and Richard GORSN (he's got 18MHz equipment) also managed a QSO down into Central Africa.

My knowledge of antenna radiation theory is insufficient for me to make any comment on the 'whys and wherefores' of the design. But I have tried a couple of changes which I suspect that most people reading this far down the article have already considered.

The modifications I tried were, joining the inner and outer of the coaxial cable. This produced no change in the resonant frequency of the antenna.

Joining the outer of the coaxial cable to the inner and the inner only to the 22s.w.g. coil increased the resonant frequency of the antenna by about 750kHz. Make of that what you will. **G4SLU**

# Chasing That DX! Breaking The 100 Barrier

*Chris Page G4BUE reminds us that DX-chasing has been around since amateur radio started. Then he sets out to encourage everyone...saying that you too can become a DXer!*



**Chris Page, G4BUE, at his operating position. The main rig is a Ten-Tec Omni VI behind the keyboard used for computer logging with Shacklog. Below the computer screen is the DX Edge and to right is a Ten-Tec Argonaut 535 QRP transceiver. Next to that is a Yaesu FT-840, back-up and /P rig, and on the extreme right is a Yaesu FT-726R for 50 and 144MHz. An Ameritron AL-1200 amplifier is on the right of the shelf above and the other boxes are filters, antenna switches, packet radio t.n.c., rotator control, keyers, etc. The lap-top computer on the right of the desk is permanently logged into the GB7DXS node of the UK DX PacketCluster system.**

**T**he term DX means different things to different people. But it's generally agreed that whatever it is, it is more difficult to work. This article is intended to get you started and help you work it easier.

In 1945 the American Radio Relay League (ARRL) started the DXCC programme. The basic certificate is awarded for confirmed QSOs with 100 countries on the DXCC Countries List (including 'deleted' countries), and certificates are available for different modes and bands.

Endorsements are issued for subsequent countries and when you are within ten of the total 'current' countries (326), you go on the 'Honor Roll' and in the annual listings in QST, the journal of the ARRL.

For many amateurs DXing is working their first 100 countries, then their second 100, breaking the 300 barrier, making the 'Honor Roll' and finally 'working them all' or becoming 'Top of the Honor Roll'.

## Why Chase DX?

Enthusiastic DXers are sometimes asked why they chase DX. When asked, my answer is the same as the climber who's asked why he wants to climb a mountain - 'because it's there'!

Some amateurs say they cannot become DXers because they don't have mega-power or mega-bucks. But their answers are excuses, not reasons, because you don't need either! Amateurs have worked 300 countries with QRP (5W or less), and others with 100W and simple wire antennas.

Far more important than power and money is the ability to listen, with antennas and knowledge of propagation coming second and third. Only antennas need cost money, so nobody who wants to...has an excuse not to become a DXer!

Working your first 100 countries is reasonably easy if you simply vary your operating times and bands to take advantage of openings to different parts of the world. After this it gets more difficult and you then need to become a good listener.

## Listen And Listen

Established DXers are often asked to give three pieces of advice to the newcomer and they reply 'listen, listen and listen again'!

You must listen to the station you want to work before you call! This may be stating the obvious but you need to make sure you can hear the DX station if they answer you.

You'll look silly if they call you and you don't respond because you haven't heard properly. Or even worse, you do respond but the station called someone else!

You must listen to instructions given by the DX station, such as asking for calls from a certain continent, country or call area only. The DX stations often have only brief openings to some parts of the world and want to use them to give amateurs in those areas a chance of working them.

The technique can seem frustrating. But on other occasions it's satisfying when a Pacific DX station asks a JA pile-up to QRX while they listen for Europe.

Often, DX stations often work by numbers, e.g. asking for calls only with a particular number in the callsign, and then moving on to the next number. Murphy's Law usually dictates you come across the DX station just after they've moved on to the number above yours!

My advice is that you listen to how many QSOs the DX station makes before moving to the next number. Then you can estimate when they will be back on your number.

Some DX stations may work 'split', in other words listening on a different frequency to their transmit frequency. You must also work split by listening to the DX station on one v.f.o. and using the other, or RIT, for your transmit frequency.

There are then two techniques. One is to find a reasonably clear frequency where the DX station is listening, stay on it and call each time the DX station says 'QRZ'. This is known

as 'calling blind' and is generally best when the DX station is jumping from one listening frequency to another, after announcing something like 'QSX 14200-14210'.

## Tail Ending

The other technique is 'tail-ending'. I prefer this method, especially when the DX station says something like 'QSX 14200 up' or just 'up' on c.w.

You should listen to find the station working the DX station. This can be very difficult amongst the QRM of the pile-up especially if the skip is wrong.

After the QSO, you should call on the same frequency as the other station and if you're lucky the DX station will answer you. If they call another station then you must quickly find that station's transmit frequency.

If the frequency is the same as the one you called on then the other station probably has a stronger signal than yours, and you should call again after the QSO.

Sometimes, the next station will be slightly higher or lower in frequency than the one before. This indicates the DX station is slowly moving higher or lower after each QSO, in which case you move your transmit v.f.o. slightly higher or lower before you call.

Tail-ending keeps transmissions (and therefore QRM) to a minimum. Several DXers treat it as an additional sport to see how few calls they make to work the DX station.

The ultimate is to call just once. Although it may have taken them some time (often upwards of an hour) to pick the frequency on which to call, with the rest of the time spent tuning and listening

## Split Frequency

Often, DX stations work 'split' to keep their transmit frequency clear so we can hear them better. We also hear stations calling on the frequency, sometimes accidentally using the wrong v.f.o., but more often it's because they are not listening!

In addition to advertising their poor operating by not listening, they 'wake up' the 'policeman'! Policeman are those operators who spend their time saying 'Split' on s.s.b. and 'Up' on c.w. on the DX station's transmit frequency each time someone transmits there.

The 'policemen' usually cause far more QRM than the offending station. This is because someone else (who cannot hear the original station) accuses the policeman of causing QRM.

Then someone else accuses that station of causing QRM and so we go on. Meanwhile, the DX station continues trying to work the pile-up oblivious to the commotion on his transmit frequency and wondering why their transmissions are not being heard, often resulting in the DX station going QRT.

The best advice is to **never transmit** on the DX station's transmit frequency (even if another station starts transmitting there). They usually quickly realise that something is wrong and QSY, either because they are not answered and/or they cannot hear the stations being worked by the DX station.

## Self Discipline

Everything I've mentioned about listening so far can be achieved by learning and self discipline. But a good receiver with some form of filtering, especially on c.w., can further enhance your listening ability.

The debate on the best receiver is as diverse as the debate on the best car, best football team, etc. Everyone has a different opinion.

The newcomer should consider all the receivers within his or her price range. They should also listen to the opinions of those with similar operating styles and preferences. Finally, the newcomer should choose the receiver they feel is best for their use.

My main receiver is a Ten-Tec Omni VI, which I believe is the best for c.w. DXing on the l.f. bands. Working c.w. is my particular interest, but I would not choose the Omni VI if I used s.s.b. most of the time.

## QRP Techniques

Keen QRP DXers are aware of the techniques used by their QRO colleagues, and they have a few extra of their own. When you give away

several S-points by using only 5W, you must find ways of making them up if you are to compete in the pile-ups.

If you are new to DXing and have a QRP DXer living close to you or at your local club make friends! They can help you a great deal because they can give you a lot of advice on technique.

For example, I found when unsuccessfully calling contest DX stations with QRP, that if I moved the v.f.o. 100Hz or so, I often got through. If still unsuccessful I moved 100Hz in the opposite direction.

The slight change in frequency makes the difference. It's the difference between being in the clear and heard, and being buried by the

on the h.f. band that the maximum usable frequency (m.u.f.) is rising or falling through. This is more so when the m.u.f. is falling, and are able to work DX stations easier than and you can a little later or earlier.

## Efficient Antenna

However good an operator's listening ability and receiver is, an efficient antenna helps even further. Note that I said efficient as opposed to big!

Not everyone can put up beams but **everyone** can put up an efficient antenna. No DXer or QRP'er must ever be content with an antenna that just 'works'.

Your antenna has to work to its maximum efficiency. This is true whether it's a TH7 at 20m or, and perhaps more so, a half-size G5RV strung at 7m between the house and a garden tree.

An efficient antenna also improves your transmitted signal. This fact is something well known to QRPers who cannot afford to waste any of their precious r.f.!

If a choice has to be made between purchasing an amplifier or a better antenna, then choose the antenna. The amplifier only improves transmitted signals.

An efficient antenna requires sound design and construction. It also needs good quality low-loss coaxial cable (or open-wire feeder) and connectors, an efficient and well constructed a.t.u. (if used) and perfect matching and adjustment.

I've spent hours adjusting antennas to get them working to their maximum efficiency. Amateurs with more antenna knowledge than me might say this desire for perfection is unnecessary as the difference, if any, it makes is so minimal that it doesn't matter.

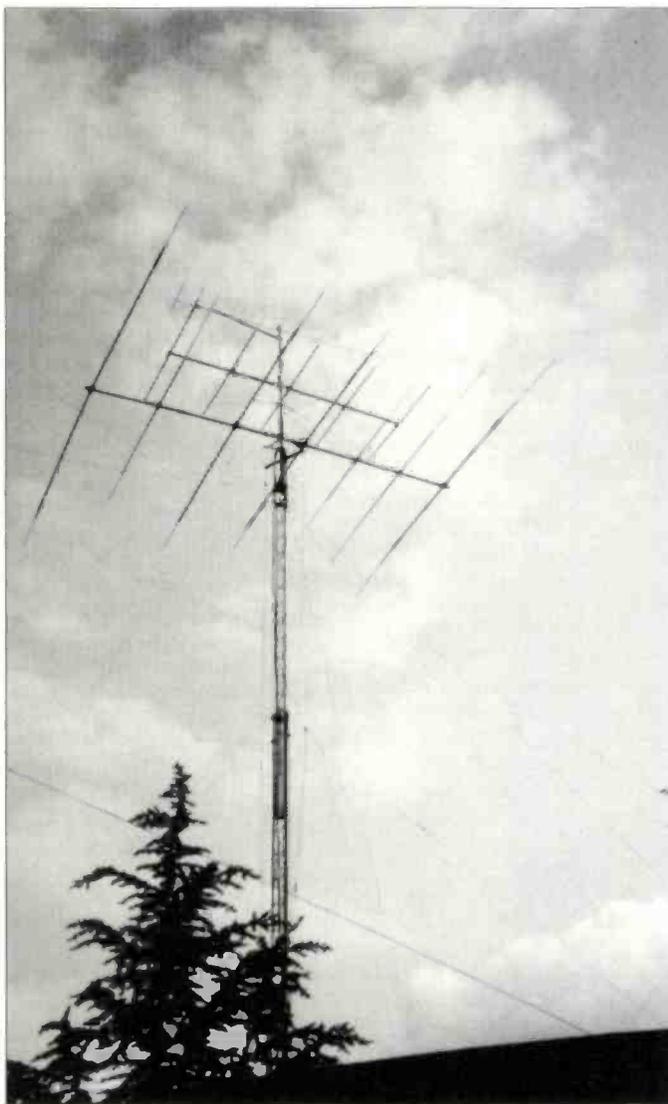
The experts may be right, but I have found another advantage in trying for perfection in that I am convinced it does make a difference...in my confidence! And I believe confidence enables people to achieve more things than anything else.

'Playing' with antennas has contributed to the confidence I now have to go into pile-ups using QRP in the belief I will get through.

Once their antenna is working to its maximum efficiency, most QRP DXers remove all unnecessary accessories from the line between the transmitter and the antenna. Don't forget that every antenna switch, s.w.r. bridge, etc., has some attenuation.

## Knowledge Helps

Knowledge of propagation helps identify the bands, days and times of day when it is easier to work DX. And to this end I keep a daily record of the WWV solar flux and 'A' and 'K' figures.



**Outside the single tower (a guyed Strumech P60) supports a Hy-Gain TH7 yagi for 14, 21 and 28MHz at approximately 18m. There's also a home brew 5-element yagi for 50MHz above and a Vårgadå 9-element yagi for 144MHz on top. A delta loop for 18MHz and an inverted vee for 24MHz hang from the tower. In the back garden is a four-square vertical array for 7MHz (which also loads on 10MHz), and there are also two top loaded phased verticals for 3.5MHz and an inverted L at approximately 14m high for 1.8MHz.**

QRM generated by the contest.

I've also found that you appear to obtain some enhancement in signal strength by being



**The garden of the QTH at Hastings used on weekdays for two years by G4BUE. The 'postage stamp' sized back garden was just big enough to put up a Butternut HF6V vertical antenna, (3.5, 7, 10, 14, 21 and 28MHz) which with 100W from a TS-440 enabled Chris to keep up his DXing.**

Murphy's Rule No.1: If you send your callsign three times making only one mistake, and the other station only copies your call once, it will be the one in which you made the mistake!

Because you may be a weaker station, don't send very slow c.w., thinking it makes up for it. Listen to a DX or contest station working a pile-up. They'll be working to a rhythm and if you call them at a slower speed then you'll break their rhythm.

In addition to making it more difficult for the DX station to copy you, you'll slow down their rate and won't be popular, something to remember if you want their QSL card later!

Accuracy on s.s.b. is also important. Use clear phonetics that cannot be confused with other words or letters. Remember that phonetics which sound clear to English speaking amateurs may not be so clear to those whose natural language is other than English.

### DX PacketCluster

The DX PacketCluster has taken some of the skill away from DXing. Not only can you now find out what DX stations are active, but receive messages on a computer screen giving their exact frequency at the time they are operating.

However, you still need to listen and use an efficient antenna if you want to be sure of working them. Well that's it, my summary of advice. All you've got to do is get on the band and hunt that DX. Enjoy yourself and I wish you the best of luck and good DX! PW

By identifying the flux highs and lows in the 27 day cycle, I can forecast when the next high will occur and the likelihood of improved conditions. Rising K indexes usually mean good north/south paths on the l.f. bands and similarly these can be forecast.

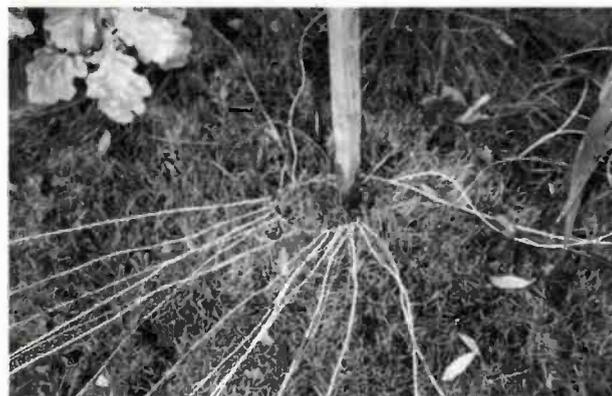
The figures can be obtained by listening to WWV on 10 or 15MHz at 18 minutes past each hour. They're also available from the DX PacketCluster.

'Grey-line DXing' on the l.f. bands is well known and documented as is the contest advice to generally work the highest h.f. band open. And to help, 'The DX Edge' is a cheap (£12) simple device that enables you to identify the grey line and see what parts of the world are in daylight and darkness.

### Contests

Contests increase DX activity. This is so because individuals and groups travel to 'rare'

**Every antenna should be as efficient as possible. And verticals need lots of radials, even if they have to be bent all round the garden to get them in! This is why the Butternut at Hastings worked so well.**



countries for major contests like the CQ WW and WPX Contests, and on the Sunday often run out of stations to work.

So, Sundays are the time for QRPers and DXers with simple antennas to work them. Their ears are tuned to detect the weakest signal as they want every QSO. They're also generally good QSLers and they want you to work them in the next contest!

### The DXpeditions

The DXpeditions can be the only way of working some countries. They are usually QRV for several days and unless you are one of the 'big guns', it's best to wait for the pile-ups to reduce a little.

You can find what DXpeditions are on by reading the DX columns of the monthly magazines, or subscribing to a weekly DX bulletins like the *DX News Sheet* published by the RSGB.

*Although Chris doesn't want to 'blow his own trumpet' here..I'm going to do it for him by mentioning the fact he Edits the DX News Sheet and does a good job too! Editor.*

### Accuracy Essential

Accuracy is absolutely essential in DX operating. If your signal is several S-points down from others because you are using QRP or simple wire antennas, you cannot afford to make mistakes. On c.w. this not only means sending accurate code, but well spaced code.

Every QRPer knows



**The ARRL 'Honor Roll' awarded to Chris Page G4BUE. This trophy is mounted on a polished wooden plaque and plays tribute to G4BUE's efforts and success in DXing.**

### Contact Addresses

Further information on the 'Honor Roll', etc., from **The DXCC Desk, ARRL HQ, 225 Main Street, Newington, CT 06111, USA.**

Further details on the RSGB's *DX News Sheet* and the 'The DX Edge' device are available from **the Sales & Marketing Dept., RSGB, Lambda House, Cranborne Road, Potters Bar, Herts EN63JE.**

# SATURDAY 18<sup>TH</sup> NOV

## MARTIN LYNCH'S OPEN DAY

Last year nearly a thousand people poured through the door and grabbed tens of thousands of pounds worth of equipment at virtually trade price.

### ICOM IC-2350H

Seems the boys at ICOM JAPAN must be working flat out with all the recent flurry of new models! If you are



**Only £649.00,**  
or £69 deposit and  
12 payments of £48.33

impressed with the IC-775DSP and the IC-706, check out this NEW DUAL BANDER.

Not just another dual band mobile, but ICOM's engineers have paid particular attention to the ever increasing problem with cross-modulation -

rendering a lot of current dual banders useless in today's RF laden atmosphere. No, they haven't hi-jacked all the paging transmitters up and down the country, (wouldn't be a bad idea though), instead they've used their RF knowledge to introduce a very clever RF attenuator linked to the squelch control. If the squelch is rotated past the 12 o'clock position, the RF attenuator is advanced until more than 10dB is introduced at full rotation. It works too!

TX out: 50W 144-35W 432. Coverage: 118-174-400-470  
Simultaneous RX both bands Full Crossband duplex Built in duplexer 110 channel memory.

### NEW FT-290RDX

We are now able to offer the new FT-290RDX, with a muTek optimised filter supplied & fitted FREE OF CHARGE, a saving of £79!! The improvement to the receive performance is incredible. Better still, it's available on FREE FINANCE!



Deposit £95,  
12 payments of  
£42.00.  
Total: £599.00  
FREE FINANCE  
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**Heil Proset-5** Professional Quality Boom Headset, dual padded earphones, flexible mic boom, includes HC-5 "Full range" insert for superb speech quality. Requires AD-1 cable ADAPTOR for KENWOOD/ICOM. £119.95 incl. VAT

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**Heil HC-4** Replacement microphone insert for existing fist or base microphones. With 10DB peak at 2KHZ and the low end rolled off sharply at 500HZ (12DB per octave), the HC-4 is the ultimate DX mic insert. £28.95 incl. VAT

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**Heil AD-1/KV** Adapter leads to interface the proset Headset/boom microphones to 8 pin Yaesu, Icom or Kenwood transceivers. £11.95 EACH

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Bulk purchase of your favourite "midi" sized HF transceiver has enabled us to offer them on a spectacular money saving offer. The TS-450SAT is despite it's size, a full feature 100W all mode HF transceiver, including a built in AUTO ATU, IF Shift and much more. The list price is £1649.00 but we are offering 10 pieces at only £1195 including FREE DELIVERY, saving a massive £450.00!!

Furthermore, it is available on FREE FINANCE at £196.00 deposit and 12 payments of £83.25

**SAVE A MASSIVE £450.00**

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Kenwood UK are 'Co-Hosting' this year's event and the team from Watford will be on hand all day Saturday. Top personnel from Yaesu, Icom and Alinco will also be in attendance, including the Short Wave and PW crew with their excellent range of books. Make sure you visit the best one day event of 1995 - MARTIN LYNCH will actually forking out with Kenwood UK for all the FREE food and drink available all day.

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# A DAY TO REMEMBER

## PAY ATTENTION! READ THIS...

### BARGAIN or BANGER?

You know the scene. Been down to the local store and seen a rig the sales guy says you can't live without. All you can think about is that really clean, (well, it was a bit dirty and marked but HE said it'll clean up OK - ONCE YOU GET IT HOME), YOU'VE got to have it. How many owners has it had? "Search me" says the really nice salesman. (Have you noticed how nice people are when they want your money)? Has it been serviced? "Yeh, the bloke who owned it did, I think". Has it got all the bits? "Yeh, somewhere".

### YOU GET THE PICTURE. BUYING A RADIO OR A CAR, WE'VE ALL BEEN THERE.

You can't hold on any longer, you ring up and spew your credit card out like a machine gun. Can I have it tomorrow? What about yesterday replies the salesman! 4 weeks later it turns up. In the light that "really clean" radio looks like its been left in a shed for 10 years. (Funny that, in the dimly lit shop it looked quite good). The handbook is all torn and pages are missing. The lead is damaged because the bozzo who packed it "threw" the radio on top of the plug before it was dispatched. The accessories are noticed because of their absence.

### STILL SOUNDS FAMILIAR? IT GETS WORSE.

Just when you think it couldn't get any bleaker, you tell yourself the book isn't really that important. The lead you can borrow off the only other radio in the shack, (you didn't want to use both anyway), the dirt and grime ground into the cabinet that Dormestos TRIPLE STRENGTH won't shift and the paint missing doesn't really affect the value. (OH YOU DON'T THINK SO?!!), and who needs ALL the case screws, anyway? You finally pluck up the courage to plug it in. It doesn't work. Then your nightmare really begins.

### I WON'T GO ON. MOST OF YOU ARE ALREADY FIDGETING ABOUT IN YOUR CHAIR. I DON'T BLAME YOU EITHER.

Buying MAIL ORDER, especially if its used, can be real trouble. Retailers in any market place "pop up" and will try and sell you their "BARGAIN". Only when you fork out, get it delivered and the above happens the "RISK" of buying from a less "REPUTABLE" outfit becomes a reality. Yes, you have legal rights. You are usually protected by the credit card company for a start. You are protected by the Trading Standards. But do you really want the hassle? It all takes time and worry. Time that you could have spent ENJOYING your hard earned cash playing with your NEW TOY from a respected dealer.

Whilst other retailers went bust or sold out because of their lack of effort in the CUSTOMER CARE DEPARTMENT, or just plain gave it all away permanently, (a little profit does pay for the engineers, Quality Control, Salesmen who actually know what they're talking about). MARTIN LYNCH continues to make his customers No. 1.

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## ICOM IC-775DSP

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# The St Brandon DXpedition

To be born lucky enough to live and work on the paradise island of Mauritius is one thing, but to have St Brandon included in your work schedule is something else! Jacky (Seewoosanker) Mandary 3B8CF and Paul Fry GØFUS unravel the background behind a 3B7 DXpedition.....

The St Brandon group of islands, (Cargados-Carajos Archipelago) are located north east of Mauritius, at a distance of approximately 400 kilometres at 16-17° south and 59-60° east, in DX zone 39. The whole group occupies an area of 900 square miles and consists of many islands and islets ranging in size from less than a quarter of a mile square up to four miles square.

In 1810, the Isle de France, which had been under French rule, was taken and occupied by the British and subsequently renamed Mauritius. St Brandon is actually a collection of islands from within a larger group known as the 'Lesser Dependencies of Mauritius'. These islands are administered from Mauritius and a link is kept between them by ship.

## The Dependencies

Since 1921 the dependencies have remained the same, Chagos Archipelago, Agalega & St Brandon. All these islands lie south of the Equator, north of the Tropic of Capricorn, in total having a land mass of 47 square miles. The Chagos Archipelago consists of six groups of islands, the largest of which is Diego Garcia.

Agelaga consists of a north island and a south island. The St Brandon group consists of varying sized islands, insomuch that during certain times of the year, some may be totally submerged, especially in the cyclonic season.

Principal Islands identifiable on a journey through the group are Frigate Island (the most southerly), Pearl Island (the most westerly), Albatross Island (the most northerly and the most inaccessible, the largest and the most fertile), Turtle Island, Lavocaire Island (former HQ of the group in the eighteenth century), Raphael Island (the current HQ), Shark and Cocos Islands, North Island, Siren Island, Poulailleur and Puits-a-Eau Islands.

## Extreme Damage

The whole group of islands have, over the years, suffered extreme damage during the cyclone season, especially in 1947. This when an island called Avocaire, which had a small population of fisherman, was totally submerged.

The main industry of the group is fishing and the most profitable grounds lie in the Grand Carreaux. Navigationally, the island group is treacherous and many lives have been lost in the past, with ships disappearing without trace, others floundering on the coral reefs.

The French, when in occupation of Mauritius, set-up their great naval blockade against the British. They harassed the trade routes so much around the islands, that the final sea battle to take Mauritius is one of the most memorable in British and French history. The fact that the British Navy suffered tremendous losses in the process of taking the island proved the urgency of the matter, as the Fleet was practically annihilated during the battle.

## Raphael Island

The 3B7 DXpedition was conducted wholly from Raphael Island, the focal point of the group. It houses a meteorological station, shop, hospital, administrative office and small residence, a fishery processing plant and not forgetting the Overseas Telecommunication Services Satellite Installation for telephone, FAX and telex systems.

This brief description of Raphael Island may not appear unduly spectacular. That's until the dimensions of the island are revealed as being only two hundred and fifty by one

hundred and fifty metres in size. A good drive with a golfclub should clear the island and land in the sea! All radio amateur activity takes place on Raphael, as it is the capital of the group, with all the essential amenities at hand, including the diesel generators supplying power to the island.

## Hectic Life

Jacky (Seewoosanker) Mandary 3B8CF lives in the house he built himself, in a quiet cul-de-sac off the main Vacoas Road, near Victoria Hospital at Quatre Bornes on Mauritius Island. The huge Candos hill lies so near to his QTH that it is possible to pick out Jacky's house from the summit.

Jacky lives a fairly hectic life, compared to many Mauritians, who by far prefer to sit back in the shade and gossip the time away. When not working, Jacky's idea of relaxation is to work harder! He is currently busy adding a first floor extension to his house, increasing the space available, possibly to house the deluge of QSL mail for the 3B7 DXpedition!

On this paradise island, Jacky lives with his wife Shakil, two sons, Kevin and Ashwin and daughter Varisha. Besides his keen enthusiasm for amateur radio, he adores spending time with his delightful family, playing the classical guitar and reading.

continued on page 45

Jacky (Seewoosanker) Mandary 3B8CF.



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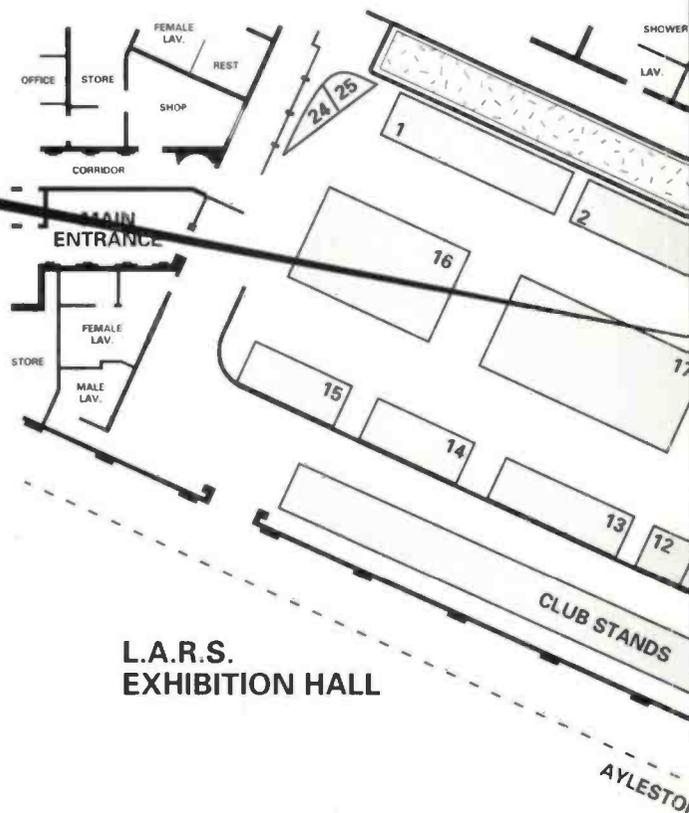
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17	Mutek
18/19	JMG Electronics
20	Officeland
21	J.A.B. Electronics
22	Eastern Communications

22a	ORP Components	45
23	H. Morgan Smith	46
24	Satellite Surplus	47
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26	Barenco	49
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28/29	R. J. Holderness	50
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31	Capital Products	52
32	Electrocomp	53
32a	Wilson Valves	53a
33	Mainline Electronics	54
34	Dataphone	54a
35	Nevada	55
36	L & S Components	56
37	A1 Electronics	57
38	J & P Electronics	58
39	Len Cooke	59/60
40	M & B Radio	61
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5	Linear Amp UK
6	Haydon Communications
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9	Venus Electronics
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13	Trio-Kenwood
14	Alan Hooker
15	Videoquip
16	Lowe Electronics
17	Yaesu
18	Tennamast
19	Field Electrics
20	R.A. Kent
21	Mailtech
22	
23	Rich Electronics
24	R & D Electronics
25	U B M



L.A.R.S. EXHIBITION HALL

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# ER 1995

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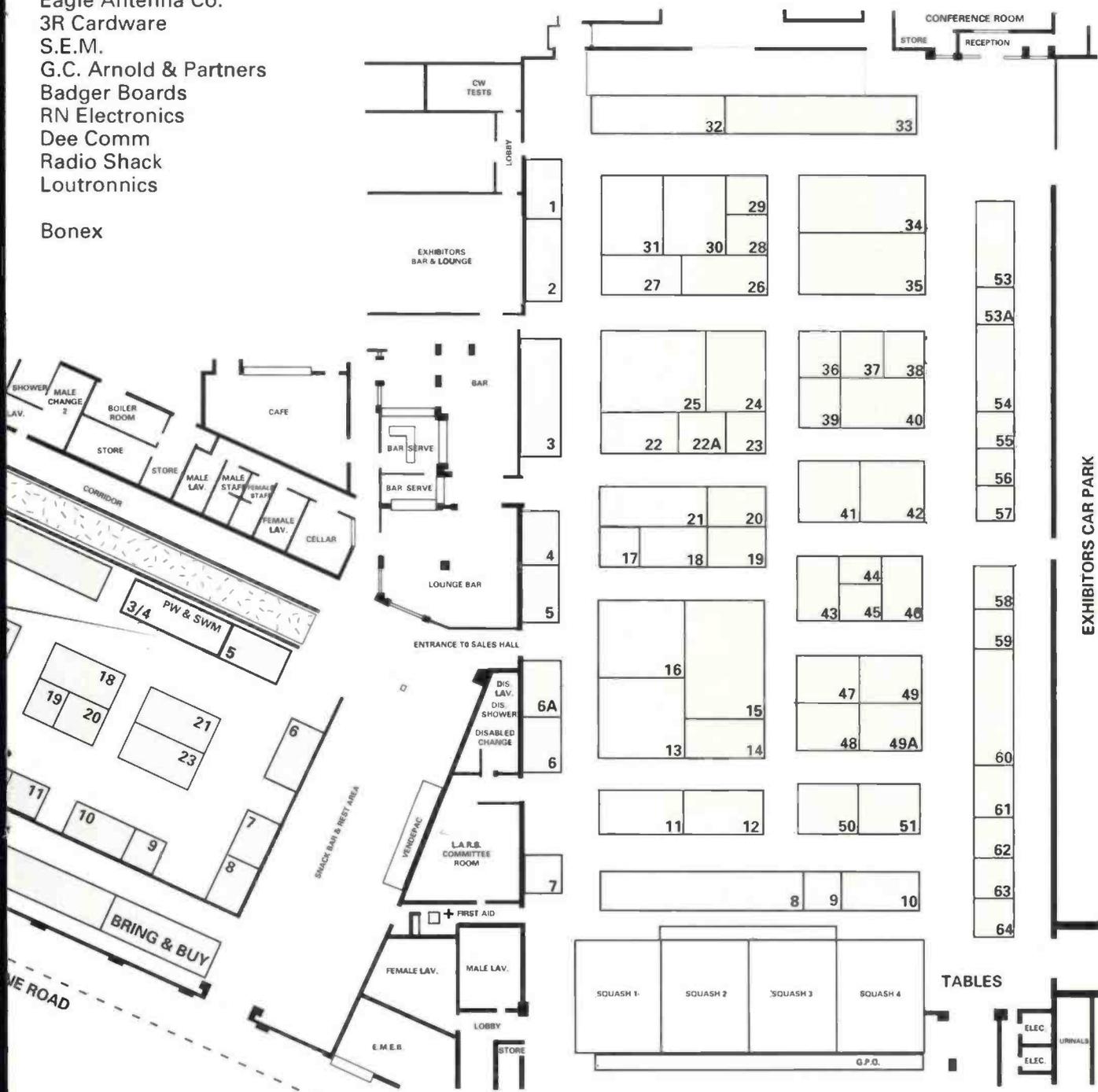
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continued from page 40

**Table 1**

**St Brandon DXpedition**

1967	Don Miller, Bill Rindone and Larry Page
1968	VQ8CDB
1969/70	VQ8CFB
1970	3B7DA
1980	3B8CD/3B7 & 3B8DO/3B7
1981	3B7CF
1991	3B8CF/3B7

fun during the period, but his sleep pattern was severely disturbed!

The schedule he tried to maintain was basically designed to enable as many amateurs, world-wide as possible, to benefit from the rare call sign.

Station equipment included a Kenwood TS-440S with an FD4 dipole (Windom) and for RTTY a Tono 7000 computer system.

**Station Set-Up**

Jacky is a meteorological technician employed by the Mauritius Meteorology Department to service the satellite installations dotted around the dependencies of Mauritius. It was after a period of this servicing work that he returned to St Brandon (Raphael Island) to set-up the station he was to operate under the call sign 3B8CF/3B7.

The operation commenced on September 6 1991 and lasted until October 9 1991. During this period, Jacky worked over 20,000 QSOs on s.s.b., c.w. and RTTY modes. Frequencies used ranged from 3.5 to 28MHz and included the WARC bands.

The DXpedition was the first one to use WARC and RTTY from this location. Jacky enthusiastically admits to having had a lot of

**Rare Callsigns**

It had been 22 years since Jackie's first operation from the St Brandon group, under the call sign VQ8CFB, which took place between September 1969 and May 1970. Since 1967, there have been six DXpeditions from the group. These are as shown in Table 1.

I am sure that many of the amateurs who read this article will join with me in thanking Jacky for his enthusiasm and hard work in activating the rare callsigns in the Indian Ocean around his beloved Mauritius. Like me, I've no doubt they wish him and his family the

very best of luck and goodwill for the future.

**Mountains of Mail**

For those unsure as to how to QSL for QSOs with Jacky, please send direct a self-addressed envelope, with sufficient return postage, (preferably dollar bills, greenbacks) to: **Jacky Mandary, 6 Shastri Road, Candos, Quatre Bornes, Mauritius, Indian Ocean.**

Having seen the mountains of mail he normally receives during my last visit in 1986, I suggest you please spare a thought and make his life easier. He too is a family man and likes to spend some time with his! By following the correct QSL procedure, cards can be despatched so much faster.

For those interested in further reading about this historically fascinating area: *'Limuria' the lesser dependencies of Mauritius*, by Robert Scott (Oxford, University Press) ISBN 0837180589, will serve to complete one's studies. Although it is possible to obtain the book prices at approximately £30, a good reference library should be able to trace a copy in stock.

PW

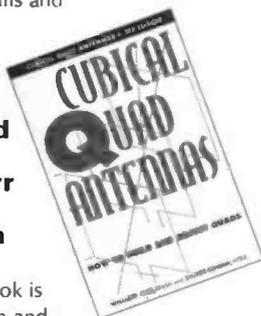
# Off The Shelf & On The Air

Rob Mannion G3XFD looks at some books available from the PW Book Service which can help you on the air, get a good antenna and chase that DX!

In line with our special articles on DX this month and knowing that PW readers enjoy a good 'browse' I've looked at some interesting books. The books I've selected are aimed at giving you operating information, DX details and antenna ideas.

**Cubical Quad Antennas (3rd Edition)**  
By William Orr W6SAI and Stuart Cowan W2LX

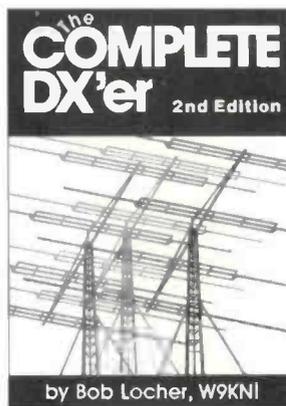
This ever popular book is now in its 3rd edition and provides an up-date on all you need to know on cubical quad antennas. In my opinion this book is 'the' standard reference source dealing with one of the most suitable (for home-brewing anyway!) directional antenna systems for h.f. Thoroughly recommended. 112 pages. £7.50.



**The Complete DX'er**  
By Bob Locher W9KNI

Idiom Press

This is an unusual book to say the least! Although it sets out to be a 'handbook' or manual, in effect it's written almost completely in a narrative style. Because of the 'chatty' narrative approach (it's almost as though you're looking over the author's shoulder as he's writing!) the reader forgets it's a text book. Interesting reading and very helpful. Providing an illuminating view of amateur radio from the American perspective, anyone reading this book (it's almost like a printed 'documentary') will pick up a host of tips on DX working and have an enjoyable read. Unusual read, packed with tips and anecdotes, ideal informal introduction. 204 pages. £7.95.



**The ARRL Operating Manual**  
ARRL

As its name suggests, this book is a manual. But in fact, it's more than just a manual as it also provides a great deal of information for anyone starting off in the hobby. It may be American orientated, but any operator or listener will find the information useful and I personally find it a good quality and comprehensive reference source (You'll find the American 'county' list useful if you're like me and find their 'counties' puzzling!). A very unusual (but helpful) feature is the printing of the various awards/certificates in full colour. Recommended. Approx. 1000 pages. £12.95.



## Tex's Treats

# The Yaesu FT-10R

'Tex' Swann G1TEX, PW's multipurpose v.h.f./u.h.f. operator takes a holiday with a new handheld.

**M**any readers think that, because we work for

*Practical Wireless we spend each and every day 'playing' with all the most modern up-to-date radios and radio related toys. Nothing could be farther from the truth! It's many months since I last had my hands on modern rig (other than for testing or photography). So imagine my delight at being asked to review the new FT-10R handheld transceiver from Yaesu.*

## Two To Play

My pleasure was even greater when I discovered that I was to have two of them. And have them to play with over my holiday period!

I come from Cumberland (now known as Cumbria or more usually as The Lake District) and I planned on heading home and doing some walking.

With walking in mind, I didn't want a difficult-to-use, or heavy hand-held rig. Gravity has a great effect on me, and I didn't want any more load than necessary!

With each radio weighing in at about 325g both were more than acceptable as luggage even for me.

Both versions of the rig are, with the exception of the keypad, identical. So I'll only mention differences as they have significance and describe the 16-key pad version.

## Comfortable To Use

The FT-10R is a small hand-held that fits neatly in the hand. It's a bulky looking set that feels comfortable to use one-handed. All the 29 options (26 with only the six-key pad version) may be activated by pressing (and holding for one second) the rotary selector switch.

The extra options available on either the keypad or menu (or both) are concerned with tone squelch and messaging, the paging mode and the digital voice recorder mode.

## Record Audio

The Yaesu FT-10R can be set up to record up to 20 seconds of audio from an incoming call. So you could talk with your friends and still

listen out for your callsign, knowing that you can break off the conversation at a convenient time.

No longer will you have to demand quiet so that you can hear the rest of the call after your own callsign. Combine this recording with tone paging and you could even check on calls after being away from the rig.

Oh yes! You can also record up to 20 seconds of sounds to be replayed over air, or via the internal speaker. If you section the time available into two segments, one segment may be used to get the rig to answer automatically by transmitting the recorded sounds, on being paged.

You can even make your set respond with a perfect Morse identification of your callsign. Merely set the CWID on and set up a series of up to six alphanumeric characters as the callsign.

## Selective Calling

A facility that is being fitted to many new hand-held transceivers is the use dual-tone multi-frequency (DTMF) for selective calling of others on the same frequency. You may use up to nine different three-digit codes.

The three digit codes may be either for an individual or a group of individuals. If you're using this system for individuals, then on being called by the calling station the code is automatically displayed. The DTMF system may also be combined with the paging facilities of the rigs.

The paging facilities available on this rig are excellent. Even to the level that each rig has the ability of autochecking that the other rig of a pair is still within range and contactable!

Every 25 seconds (settable) the rig will transmit a short burst with a Digital Code Squelch (DCS). These tones activates the second rig to answerback on receipt. Of course, both rigs must be on the same frequency and be using the same DCS tones!

## System Similar

The DCS system is similar to continuous tone coded sub-audible squelch (CTCSS) and the sets can use this method of squelch. If you don't know which CTCSS tones are being used you can always get the set to scan the incoming signal and display for you the tones it finds in the audio.

As well as this rather clever scanning technique, the FT-10R has a multiplicity of received frequency scanning modes. These various scanning modes are becoming almost obligatory on a hand-held whatever the cost or manufacturer.

Scanning a range of frequencies may be done by one of several methods. You can set



upper and lower frequency limits, scan the whole band, or scan a series of memorised frequencies. The set will pause for a set time or wait until the carrier drops before resuming scanning.

Up to 99 memories are available (on the six-key version, only one bank of 28 is available) with two special ones labelled PL and PU. These two special memories are used for the scanning lower and upper limits, when scanning a reduced range of frequencies.

Each of the available memories may be named. When named, a four character alphanumeric 'tag' can be assigned to each memory location.

The name given to the memory then appears in the window instead of the frequency. So you could give each working frequency a channel number and identity.

Memories may be locked out of a scan, or even hidden from display. When using only memories for transmission and reception, and if you have named each memory, then only the assigned name and the memory number is shown on the display.

It couldn't be simpler for an operator. But more of this later.



**Close up view of the SMA type antenna base socket, and the base of the antenna itself on the Yaesu FT-10R (see text for comments).**

## What Can It Do?

Many of the problems about reviewing modern hand-helds is that the list of what-it-can-do are becoming extremely long and complex. It's often far easier to say what it **won't** do!

So with what it won't do in mind I don't think it can make the tea first thing in the morning. (Or at least I haven't managed to find that in the handbook yet!).

Almost all of the functions of the FT-10R are activated by pressing the rotary knob on the top panel for about one second. After a beep, this knob is used to select the one of 29 (26 on the six-key version) functions.

Another short press shows the present state of the function or takes you further into other menus. Pressing the p.t.t. returns you to normal operation.

## Various Repeaters

I took the transceivers with me when I travelled to Cumberland and used them into various repeaters on the way. The 2.5W of r.f. output managed reasonable well from its own antenna (my son was driving so there were no safety considerations (at least not from the radio point of view!)).

And it was now that I found my first problem. The antenna is not fitted with (what seems to have become the standard) a BNC plug and socket. It's fitted with an SMA style plug and socket so I was unable to put the rig onto an external antenna for evaluation.

As I was unable to use a bigger antenna, I have to say that it performed at least as well as

I would expect from within the car. But I suggest that you look after your antenna, you cannot easily drop into your local radio shop and pick up a replacement.

With its two battery saving systems in effect the 6V 650mAh battery packs were in use throughout the day on the way. In several repeater areas on the way up I enjoyed periods of conversation.

All the QSOs were using high power (2.5W) and the FT-10Rs were on full receive all day. So then, you can perhaps imagine my surprise imagine the following morning, after leaving it on all night, to find sufficient power in the battery to monitor and fire up the local repeater several times.

## 'Local' Repeater

By the way, up in Cumbria My 'local' repeater was GB3GD on Snaefell on the Isle Of Man some 100 or more kilometres distant! Mind you I did have to walk into the open grounds of a school's football pitch to get a Q4 signal into the box.

I have to say at this point that the reports of the audio on

transmission were all complementary. I also found throughout the day, under changing level of traffic noise, that the audio from the internal speaker belied its tiny size.

Walking in the open hills behind the town about 20 kilometres inland from the coast, the 'GD repeater was a solid signal with no problems at all for access. So, I for one can recommend 'GD if you're walking in the western sides of the Cumbrian hills.

The FT-10R fits either hand beautifully, being small and compact with all controls accessible to a left or right-handed user. But it was in the hills that I found one other slight problem with the layout of the rig

It was when using the rig in my right hand, I found that with my fingers a little numb from the prevalent wind once or twice I inadvertently switched the rig off. The 'press-on' 'press-off' power button fell very inconveniently under the third finger of my right hand.

## Cured Problem

Changing to the rig left-handed use cured the switch-off

problem. The only other criticism I have about the set is in relation to its small size and the position of the microphone.

I for one am not happy at having 2.5W of 144MHz r.f. being radiated about 50mm from my eye. On a 12V supply this could be potentially 5W of r.f. floating about close to your eyes.

There is no identified problem with this amount of r.f. energy so close to the sensitive eye. But I keep my 'overs' down to a minimum when using a rig this small and so close to my face.

The comment I've made is a problem with size of modern rigs, not just a dig at one particular one. Perhaps a solution to my worries with this otherwise ideal rig, would have been to locate the microphone closer to the bottom of the rig. There's space for it there, as the battery pack fits onto the back of the rig, not underneath as on many others.

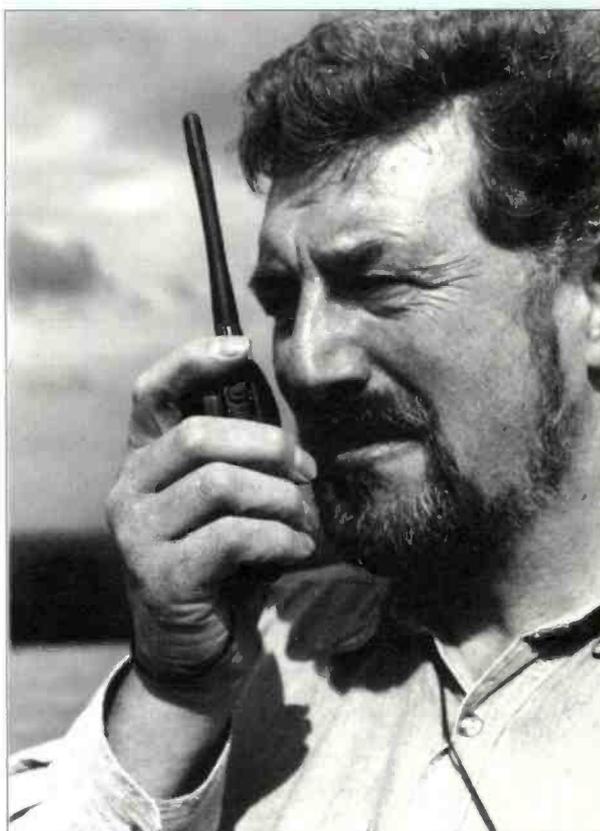
Recharging the batteries was very easy. I had the Yaesu NC-50 rapid charger on loan that seemed to take only a couple of hours to drop from rapid to trickle charge.

## Make A Clone

The FT-10R had a speciality, it can make a clone of itself. No... you don't get a never-ending supply of FT-10Rs (as you do when you buy a pair of breeding rabbits). In this case the memories and other parameters can be passed onto a second FT-10R.

The 'cloning' is the one item I said I would return to. And when used in conjunction with

**Tex Swann G1TEX on the air. He has concerns on the level of r.f. output from small hand-held transceivers which are held close to the face and near the eyes in use (see text).**



the simplified display (using memory retained frequencies) a whole series of virtually identical FT-10Rs could be created in a few minutes.

Imagine how much easier the 'cloning' could make organising nets for wide area RAYNET exercises. Or at the larger rallies where it's difficult to organise a variety of interlocking user nets on an already well occupied band!

Anyone taking over a set at a location would need the minimum of net information. The radio would, in effect, be the net information. Changeover of operators is now very simple and quick.

## The Question

Now of course I've come to the \$64,000 question! Would I keep it or even consider buying the FT-10R?

Bearing in mind my normal lack of enthusiasm for hand-helds with lots of facilities (not always as easy to use as a couple of well placed switches or knobs) I found I actually liked the FT-10R and found it easy to use. Even without the manual.

Some of the characters on the display are a bit on the small size but I can live with that. The answer to the \$64,000 question has to be an unqualified yes!

My thanks go to Yaesu UK Ltd., Unit 2, Maple Grove Business Centre, Lawrence Road, Hounslow, Middlesex TW4 6DR for the loan of the FT-10R which is available for (starting price) £269 to £339 depending on keyboard option.

PW

**After seeing a copy of the Tex Swann G1TEX review, Barry Cooper G4RKO of Yaesu UK Ltd. sent us the following comments:**

I am pleased that Tex enjoyed reviewing the two versions of the FT-10R. Although not mentioned in the review, the FT-10R and its 70cm stablemate, the FT-40R (which is available for £289 to £359 depending on keyboard option), are both available with four keypad options. Each of the keypads can be fitted by the user (ie. you can upgrade!) and offer increasing functionality. Tex mentions the SMA antenna mount which was used to save space and meet the moisture resilience necessary to meet the US MIL spec. requirements. If you wish to connect an antenna fitted with a BNC socket, Yaesu provide a SMA - BNC converter as a standard accessory.

Barry Cooper G4RKO



Photograph illustrating the choice of keyboards available on the FT-10R (see text).

## Manufacturer's Specifications

### General

Frequency range	144.000-145.995MHz
Channel Spacing	5, 10, 12.5, 15, 20, 25 and 50kHz
Repeater Shift	±600kHz (or programmable in 50kHz steps)
Emission Type	F3 (f.m)
Supply Voltage	3.5 - 12V d.c.

### Current Consumption

Auto power off	150µ A
Standby (saver on)	13mA
Receive (500mW a.f.)	200mA with 9.6V supply 50mA with 9.6V but squelched)
Transmit (2.5/5W)	1.2A
Antenna	SMA based helical-wound rubber covered
Case Size (whd)	57 x 123 x 26mm (with FNB-40)
Weight	325g (approx with FNB-40 antenna and belt clip)

### Receiver

	Double conversion superhetrodyne
	17.7MHz and 455kHz
Sensitivity	<0.16µV (12dB SINAD)
Adjacent Channel Selectivity	>70dB
Intermodulation	>70dB
Audio Output	500mW into 8Ω with 9.6V 10% t.h.d.)

### Transmitter

Power Output	5, 2.5 and 1W and 100mW (with 9.6V supply) 2.5, 2.5, 1W, and 100mW (with 6V supply)
Frequency Stability	±10p.p.m
Modulation	±5kHz (variable reactance) (May be set to ± 2.5KHz by user)
Noise (f.m.)	-40dB (@1kHz)
Spurious emissions	>60dB below the carrier
Transmit distortion	<5% (@ 1kHz and ±3kHz deviation)
Microphone	2kΩ condenser type.
CTCSS Tones	39 tones in the range 67 to 250.3Hz
DTMF Tones	697, 770, 852 or 941Hz
(paired with)	1209, 1336, 1447 or 1633Hz

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Read the review in the June issue of RadCom!



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AB118	High Performance VHF Airband	£18.80
SPA4	Scanner Pre-amp. 4 to 1300MHz	£15.90

#### RECEIVER KITS

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DXR10	10, 12 & 15M SSB/CW	£27.50
TRF3	5.7 to 17MHz TRF	£15.50

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AT160	80 & 160M AM/DSB/CW	£39.90
MTX20	20M 10W CW inc. crystal	£29.90
HTX10	10 & 15M SSB Exciter 50mW	£49.90
HXA10	10 & 15M 10W Power Amp	£39.90

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CTU150	150W 1.8 to 30MHz	£49.90

#### ACCESSORY KITS

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MA4	Mic Amp with active filter	£6.20
CM2	Electret Mic with VOGAD	£13.50
CSL4	SSB & CW Filter for DcRx etc.	£10.50
DCS2	"S Meter" for DC receivers	£10.90
DFD4	Add-on Digital Readout	£49.90
DFD5	Digital Frequency Counter	£54.90
ST2	Side-tone/Practice Oscillator	£9.80
SWB30	SWR/Power indicator/load	£13.90
XM1	Crystal Calibrator LF to UHF	£16.90

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73 from Dave G4KQH, Technical Manager.

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It's John Heys G3BDQ turn in the workshop this month. John talks about the facts and fiction of tuned feeders, before giving some practical advice on feedlines for antennas.

# Antenn

There are many centre fed antenna designs which will allow operation on more than one band. They cannot be fed with a low impedance coaxial cable, for the feed point impedance will vary greatly over the different bands. This variation means that a tuned feeder must be used between an antenna and a balanced a.t.u. or matching unit.

A distinction must be made between the use of a 'flat' line which has a characteristic impedance which matches the antenna feed impedance and a tuned line which has 'standing waves' along its length.

A tuned feedline will have points along its length of either high r.f. current or high voltage. The actual positions being dependent upon the antenna length and the frequency being used. A balanced tuned feeder can be of any characteristic impedance and may be open wires or one of the slotted ribbon feeders with impedances of 450, 300Ω or less.

## Low Losses

Balanced feeders, can give low losses, when used with a balanced antenna. They radiate very little r.f. if the spacing between the conductor wires is small in terms of wavelength. With a spacing of 150mm, the radiation loss will represent only one thousandth part of an 'S' unit at 14MHz. This means that a tuned feedline with 600mm spacing could be used on the 3.5MHz band. The actual spacing need not be constant along the length of the feeder.

The feeder in use at my QTH connects to a 27m top doublet and the feedline's 30m length is made up from an assortment of lines having different characteristic impedances. Have a look at Fig. 1 and you'll see what I mean. The set-up works perfectly from 29 to 3.5MHz

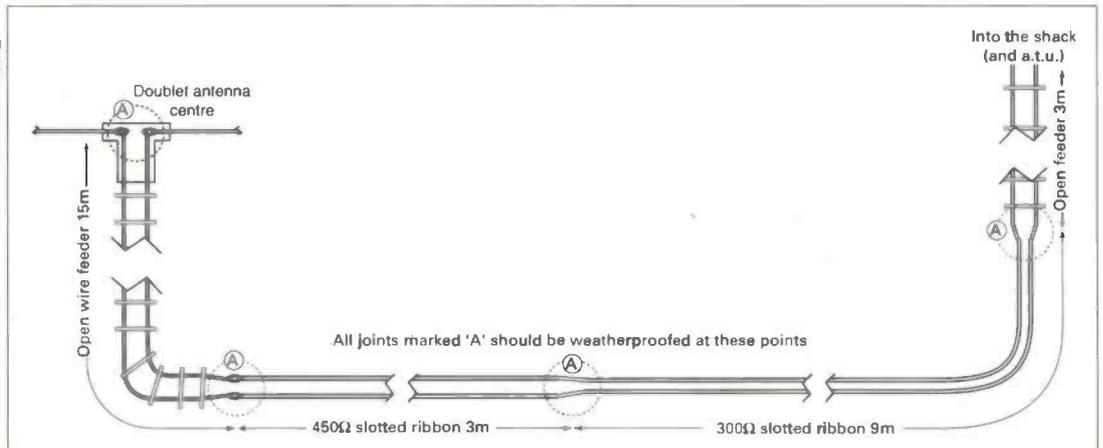


Fig. 1: How John G3BDQ, used different types of feeder for his Doublet Antenna.

and shows little loss.

A balanced open wire feeder system will have an attenuation factor no more than 0.1dB per 30m of length. Losses in the 300 and 450Ω type of slotted line

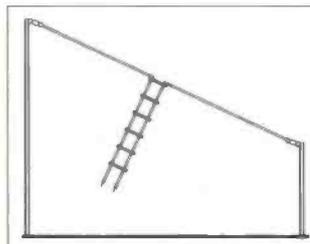


Fig. 2a: Feeder imbalance caused by a sloping antenna (one side nearer ground).

with a polyethylene dielectric will be greater (but they should still be less than 1dB per 30m at 14MHz).

A doublet antenna is no more than an open wire transmission

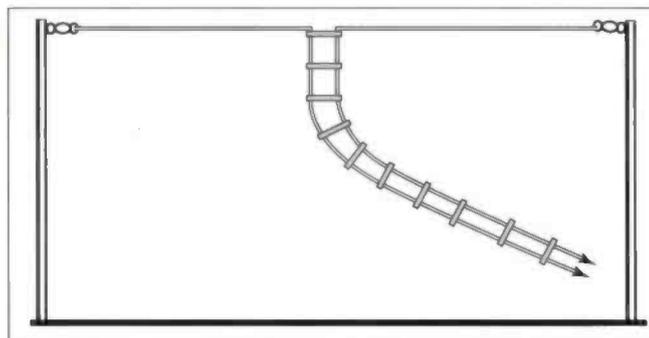


Fig. 2b: Feeder imbalance caused by the feeder not dropping vertically.

line, with part of its wires pulled away at right angles at the top. There will be hardly any radiation from the parallel wires in the feeder but the two equal lengths at the top, will carry in phase r.f. currents and will radiate.

The actual lengths of the doublet wires do not matter providing the top is at least  $\lambda/2$  long at the lowest operating frequency. A  $\lambda/4$  length top can be used, but there will be some drop in efficiency. Nevertheless, such a short doublet can still give good results.

## Balance Required

A balance system is required when using a Doublet antenna and feeder system. Both antenna wires must be electrically equal and equidistant from the ground, buildings, etc. The feeder must also fall away from

the antenna top for at least  $\lambda/4$  as shown in Fig. 2.

A neon bulb may be used close to the a.t.u. as a rough guide to balance. Hold the tube against each feeder wire in turn, and judge the light output. Don't worry unduly if a perfect balance cannot be achieved.

A feedline imbalance means that there will be some feeder radiation, but this shouldn't be a problem. Severe feeder line imbalance can cause TVI. One cure to give a better balance can be to lengthen or shorten one of the doublet top wires by a few centimetres.

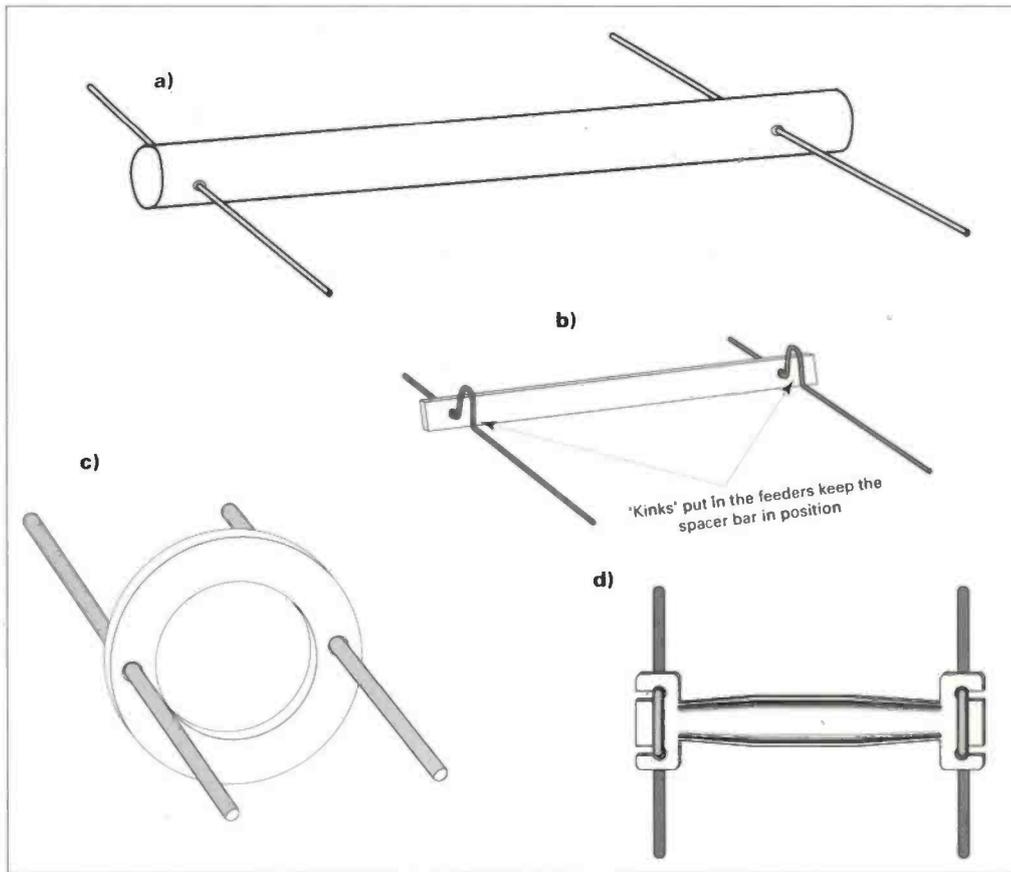
## Practical Tips

Now to the practical tips. If you decide to use commercial feeder such as the slotted types, it will have a high wind resistance and will move in the slightest breeze. This can result in metal fatigue where the wires join the antenna.

An antenna 'T' centre piece fashioned from Perspex or similar material at the antenna centre may be used to hold the feedline firmly. Then the feeder wires can be connected to the doublet legs without the strain. Rubber sealant must be used at the feeder ends to stop moisture penetrating and causing corrosion.

I find that the wider spaced 450Ω feeder is much stronger

# a Workshop



**Fig. 3: Four kinds of feeder spreaders: a) Nylon or similar rod. b) Flat strips of Perspex or similar material (wire kinks to prevent slipping). c) Long leakage paths are provided by plastic ring spreaders. d) A commercially manufactured plastic spreader.**

than the 300Ω variety. And it performs better in the wet.

## Making Your Own

Making your own open wire line can be a bit of a 'fag', but it is well worth the effort. Although I cannot recommend using insulated stranded wire to make your own.

Several amateurs I know have had problems with insulated multi-strand wires. Frequent movement of the feeder may cause a conductor to break. These breaks are usually hidden by the insulation. Then it's very difficult to locate the fault.

My preference is for 18s.w.g. enamelled copper wire. It's lightweight, easy to handle and not prone to oxidation. Both feeder wires must be of equal length. I find it's a good idea to

use a single length of wire doubled in half, rather than trying to measure two equal lengths.

Spacers or spreaders will be needed to complete your feeder line. These should be positioned 400-450mm apart to stop the wires bending in and touching. The actual spreaders should be made of good moisture shedding plastic material with a high resistance at r.f.

The spreaders need not be all exactly the same length, for the line impedance is not critical. Nylon rod, about 7mm diameter can be obtained from Maplin and other mail order firms. Or flat spreaders can be fashioned from plastic cut-offs instead.

The circular ring form of insulator will provide an excellent long leakage path, but they are hard to find. There are

commercial spacers made from a black ultra-violet resistant material that I've found very satisfactory and easy to use.

The commercial spreaders clip into position and don't involve drilling or securing. Home-brew spacers can be held in position by blobs of a water proofglue (as hot-melt glue guns). A method not involving glue is to kink the wires below the spreaders or by tying onto the line with thin wires.

## Little Used

You may have, in your scrapbox, a length of the now little used 75Ω impedance twin feeder. This will work very satisfactorily as a balanced twin feeder. The fact that its nominal impedance is low will not affect its operation as a tuned line.

The low impedance twin feeder has conductors (usually of enamelled copper) about 1mm apart. But the Polyethylene material in which they are embedded gives the feeder a remarkable puncture voltage of about 50kV. This means that it can be used safely with transmitter powers of at least 100W.

Tuned feeders must never run close to metal pipes, guttering or even brickwork. They should be spaced from such objects by at least as far as the distance between the conductor wires. Where possible, both wires must be parallel to nearby objects to maintain balance.

The feeder can be bent, but sharp bends are best avoided, especially when the angle will be sharper than 90°. A gradual curve is the ideal when changing feeder line direction.

Using a neon bulb to check balance has been mentioned. But another way to do this is to have a couple of flashlight bulbs, each connection for a few centimetres in parallel with each feeder wire.

The twin bulb technique will only work when the transmit power is 20W or more. But it's a cheaper option than having r.f. current meters in each feeder leg.

## Balun Warning

Finally, I should warn against the use of step-down (usually 4:1) baluns. They should only be used when a 'flat' properly terminated transmission line is used, i.e. when the load (antenna) impedance matches the characteristic impedance of the feeder.

Unfortunately, many advertisements for the sale of a.t.u.s say that they include a balun to allow the use of 'balanced feeders'. They fail to mention that they will be unsatisfactory with tuned feeder where there may be a wide variation of impedance and reactance.

PW

# Practical Wireless 1995 144MHz QRP Contest

Once again our dedicated adjudicator Neill Taylor G4HLX presents the results of PW's own 'fun' 144MHz contest, which without all his hard work we'd all miss!

The winners of the 13th annual PW 144MHz QRP Contest were the group known as 'Four Pack'. They had been runners-up in the 1992 event. 'Four Pack' joined 93 other groups and individuals who enjoyed a good day of low power v.h.f. activity on June 18. Plenty of stations managed to work some good distances, even though propagation conditions were un-exceptional.

## Winning Group

The winning group comprising 'Four Pack' were K. Johnson G8NTD, P. Daines G6PHJ, M. Ryder G0CDA and E. Gedvilas G8XVJ. Operating with the callsign G3CKR/P from a high spot near Leek in Staffordshire (IO93 square), they contacted stations in an impressive 34 locator squares.

The group achieved their impressive result with an amazing array of antennas, comprising four 9-element and four 18-element yagis, most of them at 20m above ground! These were connected to an SSB Products LTS2 transverter, driven by a TS-930 transceiver. As well as the coveted Winners Cup, they will receive the special prize of a TH-22E 144MHz hand-held transceiver donated by Trio-Kenwood UK Ltd.

## Second Place

Not far behind the winners, in second place were the Hereford VHF Contest Group GW1VDF/P, who had been the winners in 1993. In contrast to the winners G3CKR/P, they used only a single antenna, a 13-element long yagi.

The group's elevated site at around 610m a.s.l. in Radnor Forest, Powys (IO82 square) helped GW1VDF/P to achieve their total of 33



Under supervision of Wynn GW8AWT, Welsh Novice operators 2W1BPS

(wearing headphones and XYL of Wynn!) and 2W1CSI operating at their 300m a.s.l. site in mid-Wales from the comfort of their venerable 1960s Volkswagen motor caravan.

## Leading Stations

Overall Winner	Four Pack	G3CKR/P
Runners Up	Hereford VHF Contest Group	GW1VDF/P
Leading Single Operator	Matthew Cabban	G1WPF/P
Runner-up Single Operator & leading fixed station	Lee Adams	G4RKV
Leading English Station	Four Pack	G3CKR/P
Leading Welsh Station	Hereford VHF Contest Group	GW1VDF/P
Leading Scottish Station	Cockenzie & Port Seton ARC	GM0CLN/P
Leading N. Ireland Station	Peter Lowrie	G17JYK/P
Leading Eire Station	Declan Lennon	EI9HQ/P

locator squares. They will be rewarded with the runners-up prize, which this year is a Solar Panel Array donated by Bob Keyes GW4IED of Key Solar Products.

In third place is the leading single operator, Matthew Cabban G1WPF/P. Mathew achieved a very good score operating from Brown Clea Hill in Salop (IO82 square).

You can see the details of the other leading stations, both single and multi-operator, in the tables. One unusual feature this year is the appearance within the top ten single operators of two EI and one GI station. Perhaps there was a boost in conditions over the Irish Sea this year.

## Leading Scottish Station

The leading Scottish station, the Cockenzie & Port Seton Amateur Radio Club G0CLN/P, operated from the Lammermuir Hills in Berwickshire. They have been presented with The Tennamast Trophy 'In Memoriam to Frank Hall GM8BZX' (see 'News '95' PW October) by Frank's widow Beth Hall.

Certificates will be sent to winners and runners-up in single and multi-operator categories, leading stations in G, GW, GM, GI and EI, and leading stations in each locator square (see list).

## Congratulations To All

Congratulations to all certificate winners, and thanks to all 94 groups and individuals who entered and made the contest the success that it was.

My thanks also go to G4IQM and GM0JCN/P, who sent in checklogs. Since Martin GM0JCN/P appears to have been the only station at a good portable site in IO87 square, his presence on the band

was appreciated by the 48 stations who worked him.

If you sent an s.a.e. in with your contest entry, you will shortly receive the full detailed results list. Anyone else who would like a copy of this should send an s.a.e. to the PW offices.

Alternatively, look on your local packet BBS for bulletins from G4HLX (use the command L< G4HLX) as I shall post the full results list on the BBS network shortly after the publication of this issue. If you have access to the Internet, you should point your Web browser at <http://www.rmpc.co.uk/eduweb/sites/ntaylor/pwqrp.html>, where you will also find the full results.

Continued on page 54

## Practical Wireless 144MHz QRP Contest 1995

Pos.	Callsign	Points	Pos.	Callsign	Points
1	G3CKR/P	9486	48	G7AXE/P	918
2	GW1VDF/P	9075	49	GW1CXX/P	874
3	G1WPF/P	8608	50	GX6WWR/P	840
4	G1ORC/P	5512	51	G0FCA/P	826
5	G4RKV	5425	52	G0VYJ/P	825
6	G1WOR/P	5096	53	G4IJE	812
7	G8DDY/P	5046	54	G7OMO/P	798
8	GW11KN/P	3564	55	G7PBT	750
9	G7OC/P	3528	56	G0CRW/P	684
10	G7AQU/P	3465	57	G6GLR	676
11	G0OVA/P	3058	58	G0RRC	675
12	G1POS/P	3040	59	G1JGE/P	658
13	G4RSE/P	2961	60	GW6JNE	649
14	G0PCX/P	2921	61	G1WYC	645
15	G4RUL/P	2622	62	G0DLR	590
16	GW8ZRE/P	2340	63	G3MPD/P	585
17	G4ZTR	2300	64	G4CW/P	561
18	G0ROO	2277	64	G4SSD	561
19	G17JYK/P	2178	66	GX0ECR/P	547
20	G3BPK/P	2090	67	EI6ETB/P	533
21	G1YRC/P	1980	68	G2HR/P	496
22	G6OI/P	1972	68	G3NPB	496
23	EI9HQ/P	1911	70	G2FKO/P	482
24	EI6ARB/P	1760	71	G8XHW/P	481
25	G4IDF/P	1683	72	GW4AHO/P	456
26	G8NJA/P	1620	73	G3LNR	440
27	G3VEF/P	1615	74	EI/G17UIP/P	396
28	GM0CLN/P	1552	74	G7MMQ	396
29	G6OUT/P	1530	76	G0VSA	360
30	G7SKM/P	1512	77	G0TMT	308
31	GW7LQD/P	1485	78	PE1EWR	297
32	G7NNN/P	1442	79	G8IFU	290
33	G0PJY/P	1411	80	G4STB	243
34	G4NVM/P	1368	81	GM4YEQ/P	234
35	G7SPT/P	1360	81	G7NRO/P	234
36	G7PLR/P	1320	83	GWONCN	207
37	G1WKS/P	1296	84	G7TEJ	203
38	GW4SZV/P	1281	85	G0PZR/P	180
39	G0GZI	1254	86	G7KNQ	162
40	GM0VRP/P	1200	87	G8UKZ	144
41	G6SRC/P	1088	88	G4WBC/P	115
42	G7NBP/P	1079	89	G7JTX	105
43	G7HHK/P	1072	90	G7CBT/P	104
44	G4SRS/P	1050	91	EI9HR/P	102
45	G0ADH/P	1040	92	GM0URD	36
46	GW7EVG/P	975	93	GW8AWT/P	35
47	GM7SX/P	966	94	G0SUQ	33

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WE ARE 1 MILE FROM JUNCTION 21, M5 AND HAVE OUR OWN LARGE CAR PARK

Continued From Page 52



A clear 'take off' for G8XHW/P, also operating from the comfort of a motor caravan!

## Dry And Bright

During the contest, most parts of the UK enjoyed dry and bright weather. However, some groups who set-up portable stations on the Saturday evening found that they were doing so in the rain.

The main problem facing those who had taken to the hilltops was that well-known enemy of antenna masts...the wind. "The wind was about 40m.p.h. at times" said GM7SXI/P "and the boom developed a bend"! ("Can I now transmit round corners"?).

A number of other stations reported problems with the breeze, but it wasn't a universal difficulty. For example GI7JYK/P remarks "the weather was brilliant and a better day couldn't have been wished for, especially the lack of wind"!

The good weather may have been a blessing for those portable on the hill tops, but not necessarily for those who stayed at home! This is shown by G3LNR who reports that "good weather brought out the hedge clippers and grass cutters, causing long spells of QRN".

Another comment on the effects of the weather comes from the winners, G3CKR/P: "thanks to the recent rain the sheep muck was the correct consistency to allow us to go home with fashionable platform shoes"! (Oh well, it's supposed to bring good luck!).

## Leading Stations using a single antenna

Pos	Name	Callsign	Antenna
2	Hereford VHF Contest Group	GW1VDF/P	13-ele Cushcraft
8	The Two Musketeers Cymraeg	GW11KN/P	8-ele Jaybeam
9	John Rudd & Kevin Porter	G7OCI/P	10-ele Maspro
10	Frank Carter	G7AQU/P	19-ele
11	Tony Crake & Colin Potter	G0OVA/P	19-ele DL6WU (home-brew)
12	Jon Page	G1POS/P	14-ele MET
13	South Essex ARS (SEARS)	G4RSE/P	19-ele MET
14	Erewash Valley ARS	G0PCX/P	16-ele
15	Alastair Turner & Peter Hutchinson	G4RUL/P	10-ele DL6WU (home-brew)
16	Dave Hewitt	GW8ZRE/P	7-ele ZL-special

## Leading multi-operator stations

Pos	Name	Call	Score	QSO	Squ	Loc	Ant	a.s.l.(m)	TX/RX
1	Four Pack	G3CKR/P	9486	279	34	IO93AD	4x9Y+ 4x18Y	465	LTS2+TS-930
2	Hereford VHF Contest Group	GW1VDF/P	9075	275	33	IO82JG	17+13Y	610	TR-751E
4	Oldham Radio Club	G1ORC/P	5512	212	26	IO93BJ	2x9Y	635	FT-290R
6	Worthing & District ARC	G1WOR/P	5096	196	26	IO90TV	17Y	240	IC-275
8	The Two Musketeers Cymraeg	GW11KN/P	3564	162	22	IO81LS	8Y	420	FT-290R
9	John Rudd & Kevin Porter	G7OCI/P	3528	147	24	IO92XA	10Y	455	FT-290R2
11	Tony Crake & Colin Potter	G0OVA/P	3058	139	22	IO91GI	19Y	295	TR-751E
13	South Essex ARS (SEARS)	G4RSE/P	2961	141	21	JO01EN	19Y	55	IC-271E
14	Erewash Valley ARS	G0PCX/P	2921	127	23	IO93IC	16Y	135	FT-726
15	Alastair Turner & Peter Hutchinson	G4RUL/P	2622	114	23	JO00EX	10Y	190	IC-251E

## Propagation Conditions

Nothing exceptional seems to have occurred with the propagation conditions. Despite some spells of sporadic-E on the days before and after the contest, the only sign of it on the day itself was the one that got away at GW1VDF/P.

"When we were working Frank PE1EWR", GW1VDF/P tell us, "we had two French stations rag-chewing 'come up' on frequency. Then we were called by an SP6!!! We had no reply from him after working Frank, and presume he was on sporadic E".

So for this year's contest, the best word for the conditions was probably 'mediocre', which is just as G3NPB describes them! Nevertheless he says that the PW QRP Contest is "still the highlight of my year's operating. Fortunately the locals rallied round and I worked 48 Cornish stations. That must be some sort of record"!

## QRP Surprise

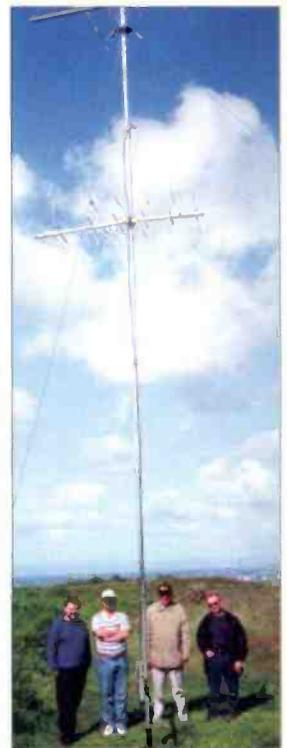
For those who are new to QRP operation on v.h.f. there's always a surprise at how far they can work. Especially on a day when there's plenty of activity from good sites around the UK, despite the mediocre conditions.

There are still surprises, even for those more experienced, "it still amazes me how far contacts can be made with QRP and a good site, three contacts over 500km, 13 over 400km" says G1WPF/P, this year's leading single operator.

As usual, I've been delighted to find the newcomers who have been 'bitten' by the PW contest 'bug', and vowing to come back for more, like EI6ETB/P who said "this is the first time we entered, you'll hear us on next year for definite"!

*Note: I hope to make an announcement very soon to further encourage keen EI entrants to the PW contest. Watch this space! Editor.*

Clearly a lovely day for the crew at GOPJY/P with (left to right) Mike GOROT, Dave G7MVF, Peter GOPJY and Graham G7SUR.



It's also pleasing to report that one feature of this contest that has remained over the years is the generally good operating practices. Commenting on this fact GM7SXI/P notes "how polite everyone was - it's a real pleasure to work stations like that".

The Stroud Radio Society G4SRS/P, had a disappointment over their plans for the day. "We were hoping to conduct the PW contest from Steephool Island in the Bristol Channel but due to severe weather conditions the skipper of the boat taking us to the island refused to land us on the island and all sailings for that day were cancelled. We were bitterly disappointed, after months of preparation. An alternative site on dry land turned out to be far inferior".

## Backpackers' Contest

One aspect of the contest which was different this year, was the second leg of the 'Backpackers' 144MHz contest run by the RSGB being scheduled for the same day. There ought to have been some synergy between the two events, since they are both suitable for small highly portable low-power stations.

However, the difficulty facing anyone who

## Leading Stations in each locator square

Square	Name	Callign	No. entrants in square
IO62	Warren Daly & Michael Kiely	EI6ETB/P	2
IO63	Declan Lennon	EI9HQ/P	2
IO64	Ken O'Reilly	EI/GI7UIP/P	1
IO70	Poidhu Amateur Radio Club	G3MPD/P	5
IO71	Aberporth YMCA ARC	GW4SZV/P	3
IO74	Peter Lowrie	G17JYK/P	1
IO80	Torbay Amateur Radio Society	G8NJA/P	3
IO81	The Two Musketeers Cymraeg	GW11KN/P	5
IO82	Hereford VHF Contest Group	GW1VDF/P	9
IO83	Dave Hewitt	GW8ZRE/P	6
IO84	David Andrew & Michael Dent	G6OUT/P	3
IO85	Cockenzie & Port Seton ARC	GM0CLN/P	3
IO86	Menstrie Morse Group	GM0VRP/P	2
IO90	Worthing & District ARC	G1WOR/P	4
IO91	Tony Crake & Colin Potter	G0OVA/P	6
IO92	John Rudd & Kevin Porter	G7OCI/P	9
IO93	Four Pack	G3CKR/P	7
IO94	York Radio Club	G1YRC/P	5
JO00	Alastair Turner & Peter Hutchinson	G4RUL/P	1
JO01	Lee Adams	G4RKV	14
JO02	Roy Smith	G0RRC	3
JO11	Frank Laanen	PE1EWR	1

**No neighbours to worry about for G7NRO/P!**



thought they might send their log into both contests was the different starting time. By the time the problem was recognised it was too late to change the start time of either event.

Fortunately the RSGB VHF Contests Committee agreed to accept logs in which the serial numbers did not start at 001. This allowed operators to use part of their logs for the day as an entry to the Backpackers' contest.

As it turned out on the day, the problems caused by the coincidence of the two contests were few. And G17JYK/P summarises it well "On the whole both the PW and Backpackers' contests ran smoothly and sorting out the duplicates from the Backpackers' contest at the end was the only real headache. It didn't really lead to the chaos most contesters would have imagined".

Also commenting on the problems of two contests G6OUT/P said that "it made things rather long winded having to give a county on each contact"! One other problem was encountered by GW8ZRE/P, whose "hill top site was invaded by a station for the Backpacker's contest! But we managed to co-exist". Sharing a hill top with another contest station on the same band is quite a feat, and could only be done in a QRP event!

The RSGB Backpackers' contests are to be continued at the same time of year. However, I'm pleased to say that we have already co-ordinated our events for 1996.

Both the PW 144 MHz QRP Contest, and a leg of the RSGB 144MHz Backpackers' contest will take place on **Sunday 16 June 1996**. This time we will have the start times coinciding: **0900UTC**, the normal time for the PW event.

And in this leg of the Backpackers' contest there will be no county multiplier (so no need to exchange county names in addition to everything else). I am very grateful to David Johnson G4DHF, and the rest of the RSGB VHF Contests Committee, for their co-operation over this important matter.

## Contest Duration

The discussions which led to the arrangements for 1996 caused me to re-consider the duration of the PW QRP Contest. It was set at eight hours back in the early 1980s, when the level of activity in v.h.f. contests was generally higher than today (we



**It looks a 'Cold 'un' at Oldham! The hardy crew at the Oldham RC's station G10RC/P.**

received 234 entries for the 1984 event and the winners worked 470 stations).

In recent years, most operators have probably found that the end of the afternoon begins to become a little tedious as the rate of contacts falls rather low. And while I was thinking about all this, a comment came in from G0ADH/P.

The comment and appeal from G0ADH/P was for an hour to be chopped off the duration of the contest: "By the time I have taken my antenna down, packed everything into the car,

driven home, unloaded the car, and had dinner, there is very little time left of the evening to take the XYL out to pacify her for my not doing all the jobs which I should have done during the day"!

Accordingly, it's my intention to reduce the 1996 PW 144MHz QRP Contest to seven hours, **0900 - 1600UTC**, unless I receive strong opposition to the idea before February when the rules are prepared for publication.

So, if you have any views on the reduction in hours for next year let me know. Write to me at: **46 Hunters Field, Stanford in the Vale, Faringdon, Oxfordshire SN7 8LX**, or E-mail to **ntaylor@mplc.co.uk** The Backpackers' contest, by the way, will end at 1300UTC that day.

## Start Planning

Next June may seem a long time off if you are reading this as the nights are drawing in for autumn, but it's never too early to start planning! You can start gathering together a group of operators, selecting the equipment you might use and antenna systems to assemble.

Drawing up a shortlist of potential portable sites can be done early, too. Then maybe you can try them out during the spring.

Look out for the contest details and rules in PW next year, but in the meantime note the date in your diary: **16 June 1996, 0900 - 1600UTC**.

Finally, thanks again to all who supported the contest this year, by sending in an entry or just by coming on the air on the day. Hope to hear you all again next year.

Neill G4HLX

## Leading single operator stations

Pos	Name	Call	score	QSO	Squ	Loq	Ant	a.s.l.(m)	TX/RX
3	Matthew Cabban	G1WPF/P	8608	269	32	IO82QL	2x9Y	455	IC-251E
5	Lee Adams	G4RKV	5425	175	31	JO01OI	2x9Y	35	IC-275E
7	Peter Thompson	G8DDY/P	5046	174	29	IO90JO	2x11Y	225	FT-221R
10	Frank Carter	G7ACU/P	3465	165	21	IO92AH	19Y	90	TR-9000
12	Jon Page	G1POS/P	3040	160	19	IO92CA	14Y	300	FT-480R
16	Dave Hewitt	GW8ZRE/P	2340	117	20	IO83JA	7Z	560	TR-751E
17	John Lemay	G4ZTR	2300	100	23	JO01KW	2x9Y	55	TS-850 + transverter
19	Peter Lowrie	G17JYK/P	2178	99	22	IO74DT	9Y	150	FT-290R
23	Declan Lennon	EI9HQ/P	1911	91	21	IO63WC	2x13Y	?	FT-290R
24	John O'Sullivan	EI6ARB/P	1760	80	22	IO63VF	8Y	440	FT-290R

**'Thank you'**  
The PW Editorial team would like to say a very special 'Thank you' to Neill Taylor G4HLX for his hard work organising the contest. Neill has been the driving force behind the event for 13 years and I hope he'll be there for many more! Thanks Neill, and we also hope to have some encouraging news for EI and GI entrants soon.  
Rob Mannion G3XFD

# The PW Daventry 7MHz Receiver Part 2

In the second and final part of the PW Daventry project, designer Dave Howes G4KQH describes the constructional and assembly stages of the receiver.



The Daventry's p.c.b. assembly is quite straightforward in concept. There's no coil winding or any special procedures, other than to observe static handling precautions with the dual-gate MOSFETS (BF981).

However, there are quite a lot of parts to fit and solder! So, it's important that your soldering equipment is in good working order and that you have good quality solder for the job.

You'll need a soldering iron with a fine pointed tip. It also needs a fair amount of power behind it to make good joints on the ground plane connections on the top of the board.

You can buy the p.c.b. for this project ready made, or a complete kit of parts (see addresses at the end of the article). So I won't go into details of how to make a p.c.b. here. However, you can make your own from the drawings if you prefer.

## The Assembly

Once you have your p.c.b. and all the parts for the project, I suggest you start the assembly of the p.c.b. module by fitting the terminal pins first. This is followed by the resistors, diodes, inductors, capacitors, crystal filter, crystal and then finally the rest of the semiconductors.

It's very important to keep all component leads as short as possible. And it's also important, where there's provision for soldering

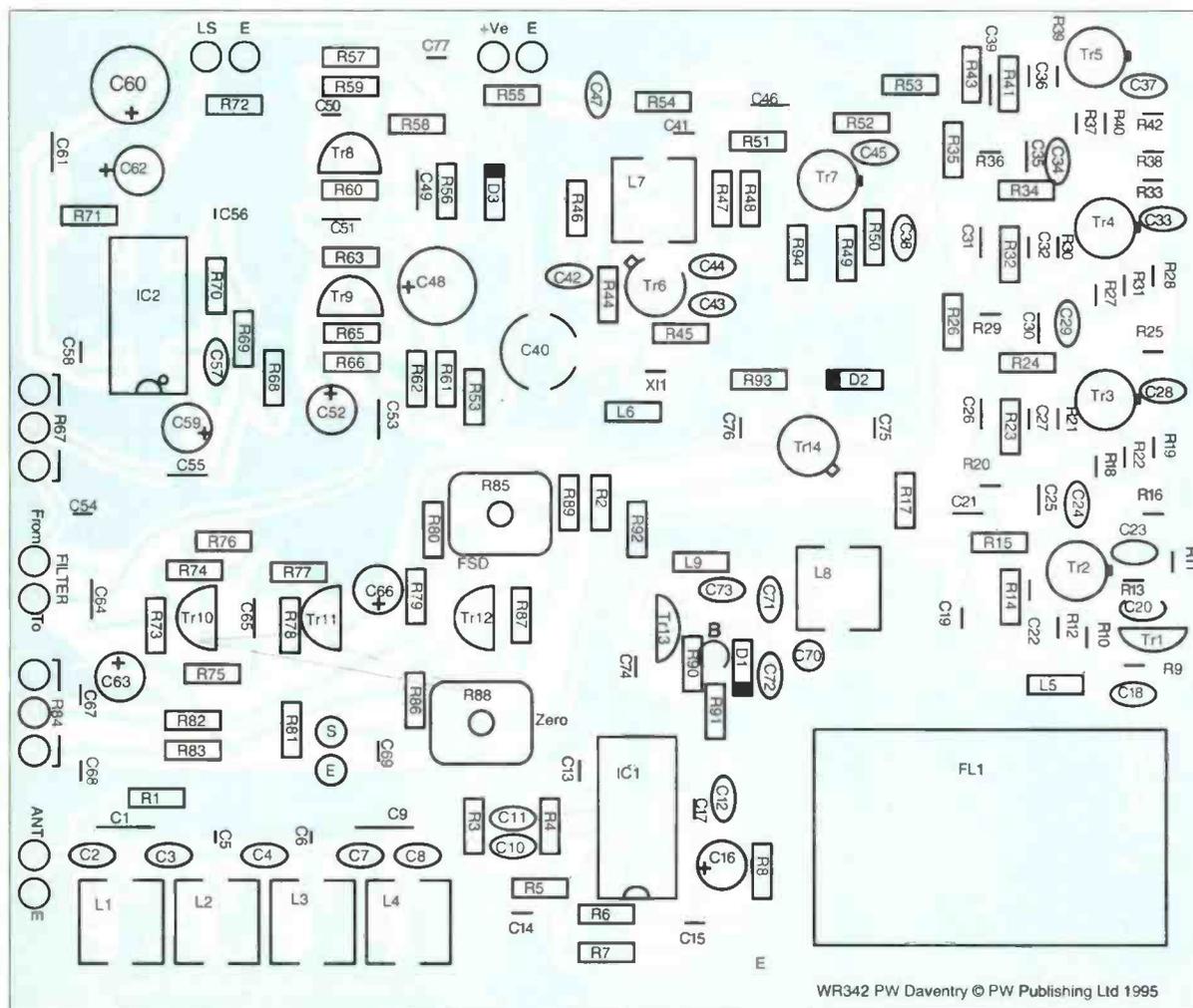
a component lead to both a track under the board and the ground plane on the top, that the connections are soldered on both sides of the p.c.b.

The inductors come before the capacitors in the

assembly list because it's a little tricky to solder some inductor's screening cans to the ground plane once the capacitors are in place. These cans can be hard to solder properly at the best of times, and it's worth scraping the can with a sharp knife on the area you are going to solder.

Some decoupling capacitors in the i.f. amplifier section of the circuit have their earth lead soldered directly to the ground plane only. These components have a p.c.b. hole for only

Continued on page 58 ▶



**Editorial note:**  
Errors & Updates on Part 1 of the PW Daventry project (published in the October issue).

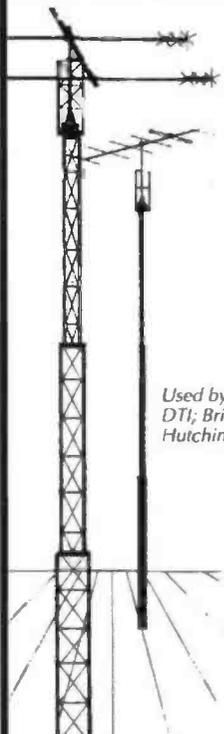
Please refer to page 30, Figs. 3 and 5.

In Fig. 3, XL2 is in fact XL1. In Fig. 5, C64 should be 100nF.

Our apologies for these errors. Editor.

**Fig. 3:** Component overlay diagram for the Daventry receiver p.c.b.

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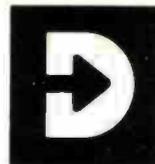
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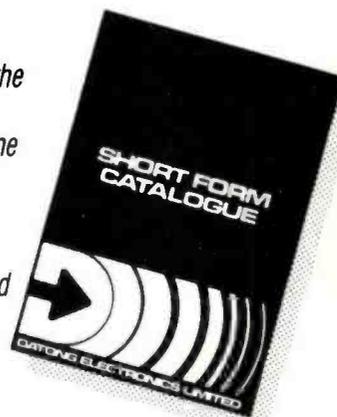
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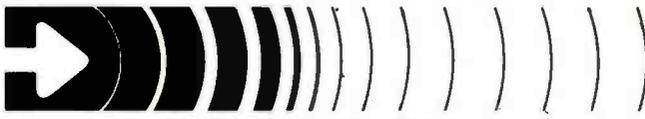
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► Continued from page 56  
one lead. Make especially certain that these capacitor's leads are as short as possible.

## Bench Testing

Once the p.c.b. module has been assembled and checked, you can start the bench testing. This is a good tip...because it's much easier to sort out any constructional errors before the board is fitted into the case.

First, carry out a basic mechanical alignment of the preset controls and coils to get them to roughly the right settings. The positions are shown in Table 1.

Please note, you must use the correct insulated trimming tool for the variable inductors. This is essential. **Do not** attempt to turn them with anything else, or you may well end up having to replace them with new ones – this is not that easy to do, and you will still have to buy the correct tool!

Next wire the **IF** and **AF** gain control potentiometers to the p.c.b. with short leads. Then link the terminal pins for the optional filter together, and connect a loudspeaker.

If you now connect up a power supply – making certain it's connected the right way round, then the receiver board should come to life. On adjusting the **AF** gain control, R67, you should be able to hear some hiss from the loudspeaker.

The b.f.o. coil, L7, now needs to be adjusted for maximum oscillation. An easy way

to do this is to listen for the oscillation a few kHz below 10.7MHz with another receiver. Alternatively, you can use a small pick-up loop near the stage to drive an oscilloscope or other sensitive detector.

With the b.f.o. output maximised, now place a finger on each of the i.f. transistors (Trs 2, 3, 4, 5 and 6) to inject some spurious signals into the i.f. strip. (You should be able to hear some broadcast signals breaking through when you do this).

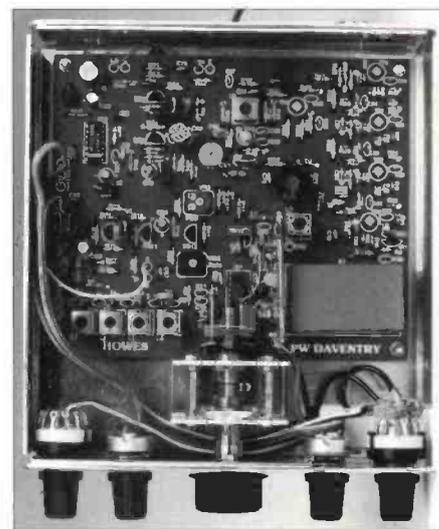
The nearer the input stage you place your finger (lower number transistor) the stronger the breakthrough should be. This is a crude test to indicate that the a.f. and i.f. stages are functional.

If all seems well, remove the power and connect up the S-meter. Reconnect the power, turn R84 to the end of its travel that gives the lowest reading on the meter, then adjust R88 to zero the meter.

The response to turning R84 is very slow (it's affected by the a.g.c. recovery delay). So wait a few seconds after adjusting it for the meter to move.

When the meter is zeroed, turn R84 to the other end of its travel and adjust R85 for full scale deflection on the meter. The S-meter is now nominally aligned.

If everything seems satisfactory so far, then listen for the v.f.o. signal with another receiver, or other detector. This will probably be oscillating somewhere around 18 to 18.5MHz with L8 core set as recommended and without

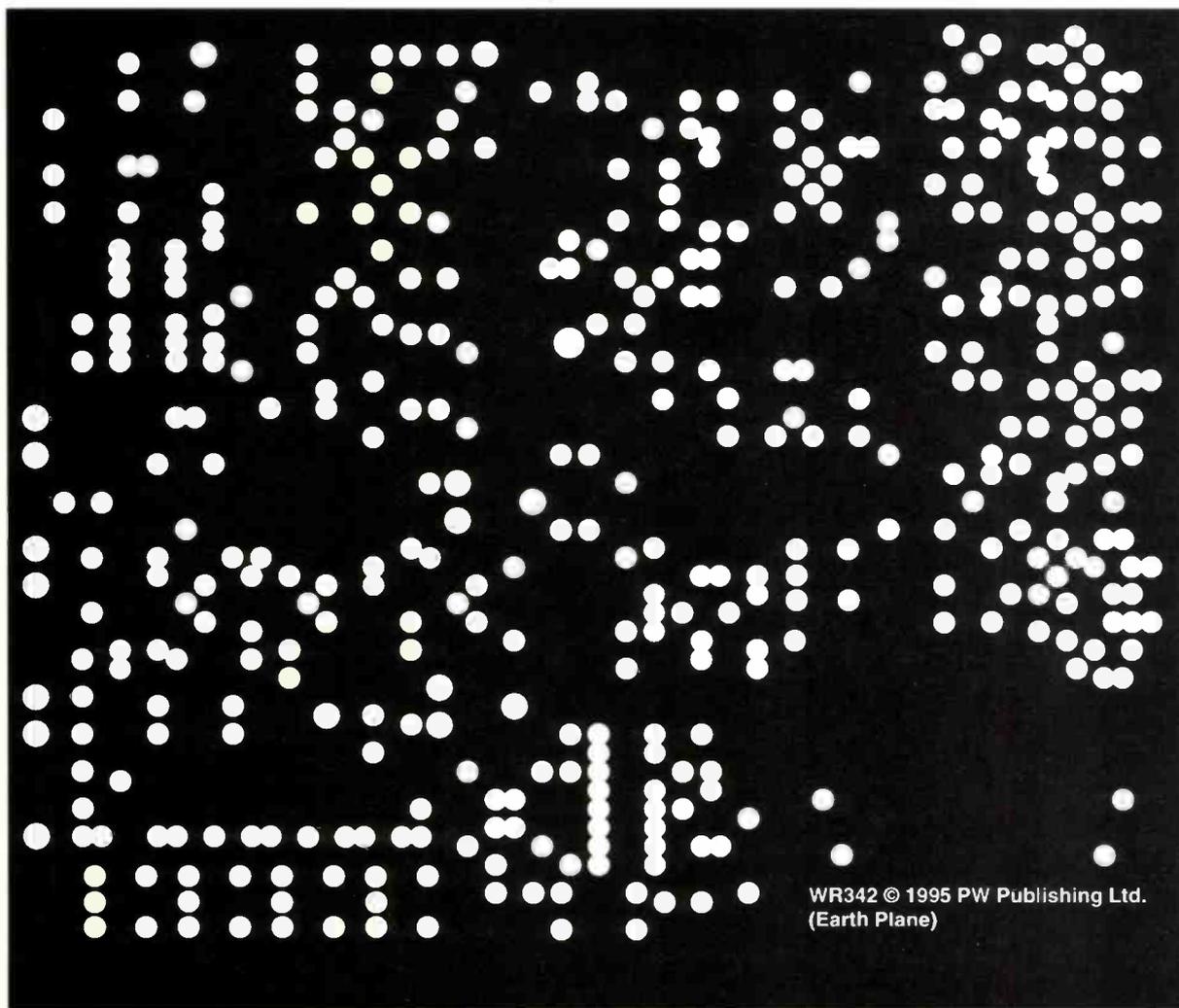


**Fig. 1: Inside view of the completed prototype PW Daventry showing main component lay-out and controls. (see text).**

a tuning capacitor (C70) being connected.

You could now try connecting an antenna to the antenna terminals and see if you can hear any signals. To do this, you'll need a decent antenna at this point because the r.f. input filter is probably not 'on the nose' yet.

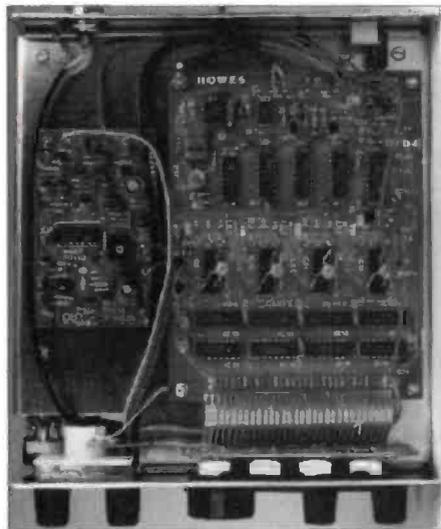
Putting your finger on C70, C72 or on the L8/C73 junctions will alter the v.f.o. frequency a little. It may even enable you to resolve a signal if you are very lucky!



WR342 © 1995 PW Publishing Ltd.  
(Earth Plane)

**Fig. 4: Ground-plane details for the p.c.b.**

But, without the tuning capacitor connected and the p.c.b. 'naked' on the bench it won't be a usable receiver yet. Despite this it should be apparent if the receiver seems to be working, or else needs some further soldering and



**Fig. 2: Topside view of the PW Daventry prototype. This receiver incorporates a digital frequency read-out option which is available as a separate kit. (See panel at end of article for details on the various kit options which are available direct from C. M. Howes).**

assembly checking.

Once your tests indicate that the module is functioning, it can be installed in a case. Then you should wire the module up properly to its controls and connectors.

## Aluminium Case

I decided to build the prototype for the PW Daventry into an aluminium case that I had to hand (as used for some other projects in the Howes Kits range). This size case enabled the installation of a couple of additional p.c.b.s to 'jazz up' the receiver to make it a little more up-market.

The boards I used provide digital frequency read-out and additional a.f. filtering. But, if you prefer to keep the project as simple as possible, then there is no need to add these extra facilities, the receiver works fine without them. However, the extra selectivity and an accurate frequency display will add to the appeal of the receiver.

A simpler case can be used if these optional items are omitted. The prototype's case has a central chassis with the receiver p.c.b. mounted below it, and the optional extras above.

If Tex Swann G1TEX the PW photographer does his stuff, the layout should be clear from the photographs. (*He did, and they are! Editor!*)

The chassis provides the screening between

the digital display and the receiver. There's no trace of any pick-up of the digital circuitry audible in the receiver. Indeed with the antenna disconnected, there is no audible trace of any spurious signal over the 7 to 7.1MHz frequency range in the prototype.

The p.c.b.s are mounted in the case on M3 bolts with nuts and washers used to space them off the chassis. To obtain the correct fixing hole locations, the p.c.b.s were simply positioned in their correct places and the chassis marked through their fixing holes with a felt tip pen.

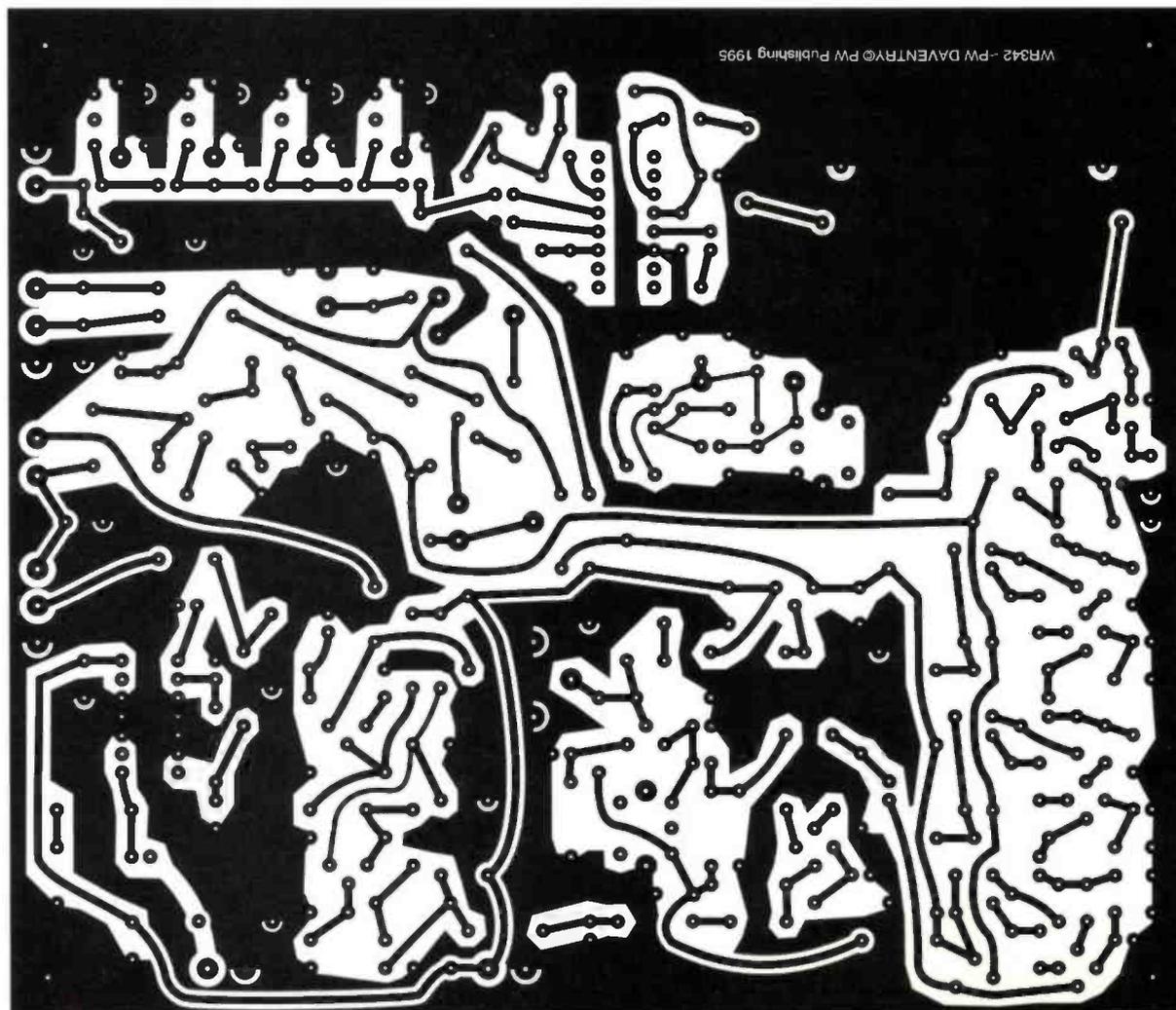
When I had done the marking out however, it turned out that one of the digital display's front fixing holes was under the mounting position for the tuning capacitor bracket. So a countersunk head bolt had to be used to get me out of trouble!

However, a second attempt at drilling one of the bracket's fixing holes was needed. It was too close to this countersunk fixing, so it ended up offset slightly to the left of my original intention.

Apart from the little problems mentioned, everything went together easily. Pretty good for a first prototype!

In my experience, it's always the mechanical bits that don't fit that cause the biggest problems in any design project. Sorting out the electronics can sometimes cause the odd headache – but if it won't fit in the box you are really in deep trouble!

Continued on page 61 ▶



**Fig. 5: Printed circuit track design for the Daventry project.**

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ECC81	3.00	GY501	3.00	UCL82	2.00	6C66A	3.00	12BH7A GE	6.50
ECC82	3.00	GZ32 Mult	8.50	UCL83	3.00	6CDS6A	5.00	12BY7A GE	7.00
ECC83	3.50	GZ33	6.00	UF89	4.00	6CL6	3.75	12E1	15.00
ECC85	3.50	GZ34 GE	7.50	UL41	12.00	6CG7	7.50	12HG7 12GN7	6.50
ECC88 Mult	6.00	GZ37	6.00	UL84	3.50	6CH6	5.00	30FL12	1.50
ECC91	2.00	KT61	10.00	UY41	4.00	6CW4	8.00	30P19	2.50
EGR0	1.50	KT66 China	10.00	UY85	2.25	5D5	5.00	300B(PR)	110.00
ECH35	3.50	KT86 China	12.00	VR105/30	2.50	8DQ5 GE	17.50	572B	70.00
ECH42	3.50	N78	9.00	VR150/30	2.50	6DQ6B	12.50	805	50.00
ECH81	3.00	0A2	2.70	Z759	25.00	6E4B	3.50	807	5.75
ECL80	1.50	0B2	2.70	Z803U	25.00	6E4S	1.85	811A	18.50
ECL82	3.00	0C3	2.50	Z021	3.50	6F6	3.50	812A	65.00
ECL83	3.50	0D3	2.50	3B28	20.00	6F07	7.50	813	27.50
ECL86 Mult	3.50	PCF80	2.00	40X250B STC	55.00	6GK6	4.50	833A	85.00
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EF40	5.00	PCF802	2.50	5Y3GT	2.50	6J6	3.00	2050A GE	10.00
EF41	3.50	PCL82	2.00	5Z3	4.00	6J7	4.00	5751	6.00
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EF184	2.00	PL81	1.75	6A25	3.25	6L6CCSYL	12.50	7025 GE	7.00
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EL33	10.00	PL83	2.50	6AS5	3.00	6L6CC GE	12.50	7199	12.00
EL34 Siemens	3.00	PL84	2.00	6AS7G	9.50	6L7	3.50	7360	25.00
EL36	4.00	PL504	2.50	6AT6	2.00	6LQ6/6UE6C	20.00	7581A	15.00
EL80	25.00	PL508	5.50	6AUSGT	5.00	6Q7	4.00	7586	15.00
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**Table 1 (Alignment)**

These are the mechanical settings of the preset components taken from the prototype receiver.

Part	Adjustment
L1, L2, L3 & L4	Core 3mm below top of screening can
L7	Core 1mm below top of screening can
L8	Core 2.5mm below top of screening can
R85	Set half way
R88	Turned one third clockwise
C40	Vanes one third meshed

► Continued from page 59

## Tuning Capacitor

For the tuning on the Daventry, I used a 50pF air-spaced variable capacitor driven by an in-line reduction drive with about a 30:1 ratio. This capacitor connects across C72 to reduce the frequency swing of the circuit. A terminal is provided on the board for connection of a much smaller value capacitor or tuning diode if you wish to use electronic tuning. (*Editorial note perhaps a v.h.f. varicap diode with approximately 2 to 10pF swing would be adequate. G1TEX.*)

On testing the prototype, I pulled off some of the capacitor's vanes until I achieved the tuning range I wanted. The v.f.o. was finally set to tune the receiver from 7 to 7.1MHz with about 5kHz extra at each end of the range.

Setting the tuning coverage involved pruning the capacitor until it had three moving vanes and three fixed ones (it started out with six moving and seven fixed). This procedure is best done after the receiver has been fully wired and tested in its case.

With the ball-drive used, the tuning rate is around 8kHz per turn, which is quite slow. So, an 8:1 'vernier' type tuning dial would work quite well if you fancy an alternative arrangement.

## Final Alignment

Once everything is wired up in the case, and it all seems to be working, then you should carry out the final alignment of the receiver to maximise the performance.

Use another receiver or a frequency counter with a high impedance probe to set C40 for the specified u.s.b. carrier frequency for your crystal filter (hold the probe near Tr6). Then align the v.f.o. coil (L8) so that the receiver tunes from approx. 7 to 7.1MHz.

Use a signal generator or crystal calibrator to set the v.f.o. tuning. But if you are using a digital readout in your project, then you can read the frequency directly.

To align the r.f. front-end filter, tune the receiver to a steady signal at about 7.05MHz and simply tune L1, L2, L3 and L4 for maximum signal strength. The S-meter alignment is carried out as detailed above.

Your receiver can now be air tested to see how it performs in practice. It should give a good account of itself and give clearer reception than many more expensive factory made receivers. Who said '40' was too noisy to hear anything?

PW

## Shopping List For The PW Daventry

### Resistors

Carbon Film 0.125W

100Ω	8	R12, 13, 21, 22, 30, 31, 39, 40
220Ω	1	R16
470Ω	1	R9
680Ω	3	R25, 33, 42
2.2kΩ	4	R10, 20, 29, 36
10kΩ	3	R19, 28, 38
82kΩ	1	R11
100kΩ	3	R18, 27, 37

Carbon Film 0.25W

2.2Ω	3	R2, R3, R71
10Ω	2	R89, 92
47Ω	4	R8, 53, 61, 83
100Ω	8	R14, 17, 23, 26, 32, 35, 49, 94

150Ω	3	R5, 6, 65
330Ω	2	R91, 93
390Ω	1	R4
470Ω	4	R46, 52, 66, 76
560Ω	1	R7
1.0kΩ	4	R41, 54, 55, 87
1.8kΩ	2	R58, 59
2.2kΩ	6	R15, 24, 34, 43, 51, 60

3.3kΩ	2	R45, 86
4.7kΩ	4	R63, 69, 70, 75
10kΩ	8	R1, 44, 48, 50, 64, 68, 72, 74

33kΩ	3	R47, 77, 81
------	---	-------------

47kΩ	1	R57
------	---	-----

56kΩ	2	R56, 62
------	---	---------

100k	6	R73, 78(a.o.t.), 79, 80, 82, 90
------	---	---------------------------------

Miniature preset (horizontal mounting)

5kΩ	1	R88 (a 4.7kΩ type may be used)
-----	---	--------------------------------

2.2MΩ	1	R85
-------	---	-----

Variable (rotary panel mounting)

5kΩ	1	R84 (linear)
-----	---	--------------

5k	1	R67 (logarithmic)
----	---	-------------------

### Capacitors

Plate ceramic (NPO)

2.2pF	3	C3, 4, 7
-------	---	----------

Plate ceramic (N150)

47pF	4	C2, 5, 6, 42
------	---	--------------

68pF	1	C8
------	---	----

120pF	1	C71
-------	---	-----

150pF	1	C43
-------	---	-----

Disc Ceramic

22pF	1	C73
------	---	-----

100pF	1	C44
-------	---	-----

1nF	20	C10, 11, 12, 18, 20, 22, 23, 24, 27, 28, 29, 32, 33, 34, 36, 37, 38, 45, 47, 57
-----	----	---

10nF	13	C15, 19, 21, 25, 26, 30, 31, 35, 39, 54, 67, 68, 69
------	----	---

100nF	9	C13, 14, 17, 41, 58, 74, 75, 76, 77
-------	---	-------------------------------------

Mylar

10nF	1	C56
------	---	-----

22nF	1	C50
------	---	-----

100nF	8	C46, 49, 51, 53, 55, 61, 64, 65
-------	---	---------------------------------

Polystyrene 2.5%

120pF	1	C9
-------	---	----

330pF	2	C1, 72
-------	---	--------

Film Trimmer (horizontal mounting)

65pF	1	C40
------	---	-----

Variable C804 type

50pF	1	C70
------	---	-----

Electrolytic 25V working (radial lead)

22μ F	4	C16, 52, 59, 66
-------	---	-----------------

100μ F	3	C60, 62, 63
--------	---	-------------

470μ F	2	C48, 60
--------	---	---------

### Semiconductors

1N4004	1	D3
--------	---	----

1N4148	1	D1
--------	---	----

2N3053	1	Tr14
--------	---	------

BC307B	1	Tr12
--------	---	------

BC550C	4	Tr8, 9, 10, 11
--------	---	----------------

BF245A	2	Tr1, 13
--------	---	---------

BF981	5	Tr2, 3, 4, 5, 7
-------	---	-----------------

BSX20	1	Tr6
-------	---	-----

BZX55C10	1	D2 (10V Zener diode)
----------	---	----------------------

LM380N	1	IC2
--------	---	-----

SL6440C	1	IC1
---------	---	-----

### Inductors

Axial (10%)

8.2μ H	1	L6
--------	---	----

220μ H	2	L5, 9
--------	---	-------

Toko shielded type 10K

K1731	2	L7, 8
-------	---	-------

K4921	4	L1, 2, 3, 4
-------	---	-------------

### Miscellaneous

One 10.7MHz (30pF parallel) for XL1, one 10.7MHz 2.4kHz bandwidth filter with 200Ω Z<sub>in</sub> and Z<sub>out</sub> (Howes part No. XFL6-10.7-2.4). One TO5 size heatsink and mounting pad (for Tr14), a case to house the unit, connecting wire, terminal pins, plugs and sockets, a 6:1 (or 36:1) slow motion drive. You will also need a frequency display, knobs other items to suit your own version of the project.

## Kits For the PW Daventry Project

Dave Howes has informed us that the retail prices for the kits for the PW Daventry will be as follows:

**DAV40 Electronics kit:** priced at **£69.90**. This is the electronics kits with p.c.b. and all board mounted components including crystal filter plus the control potentiometers. The r.f. attenuator is **not** included.

**SHS1 Moving coil S-meter:** Price **£8.90** scaled as shown in Daventry article photographs.

**HA40R basic hardware pack:** Price **£27.90** (not as per photograph, no digital read-out provision or r.f. attenuator) but including 8:1 slow-motion drive,

50pF tuning capacitor, knobs, sockets, nuts and bolts, etc. Size and styling to match other Howes receiver hardware packs. (for comparison purposes, see DXR20/HA320R kits in the C. M. Howes advert).

**CA40M Deluxe hardware pack:** Price **£59.90** Dave Howes informs us that this hardware pack (as per article photographs) including high reduction ball drive, display bezel, knobs etc., will be available if there is enough demand.

Please contact **Dave Howes G4KQH at C. M. Howes Communications, Eydon, Daventry, Northamptonshire NN11 3PT, Tel: (01327) 260178** regarding for any enquiries regarding the kits for the Daventry project.

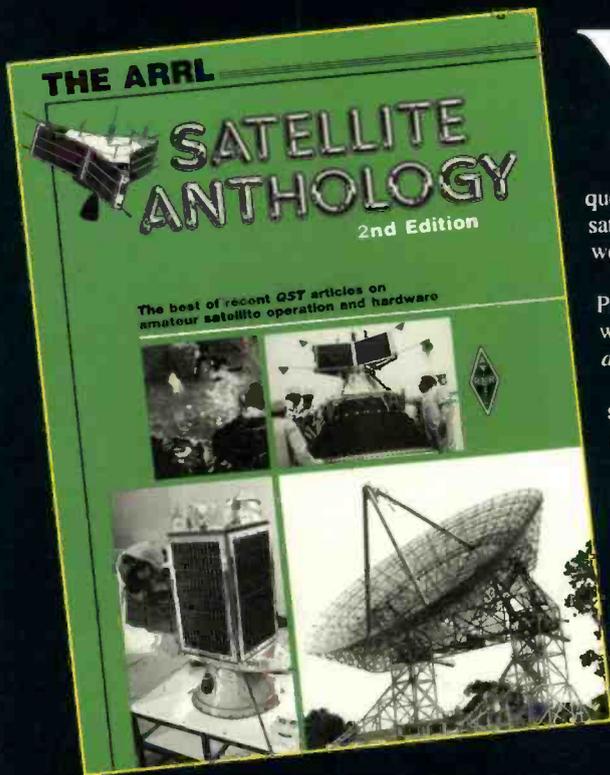
# BOOK BONANZA

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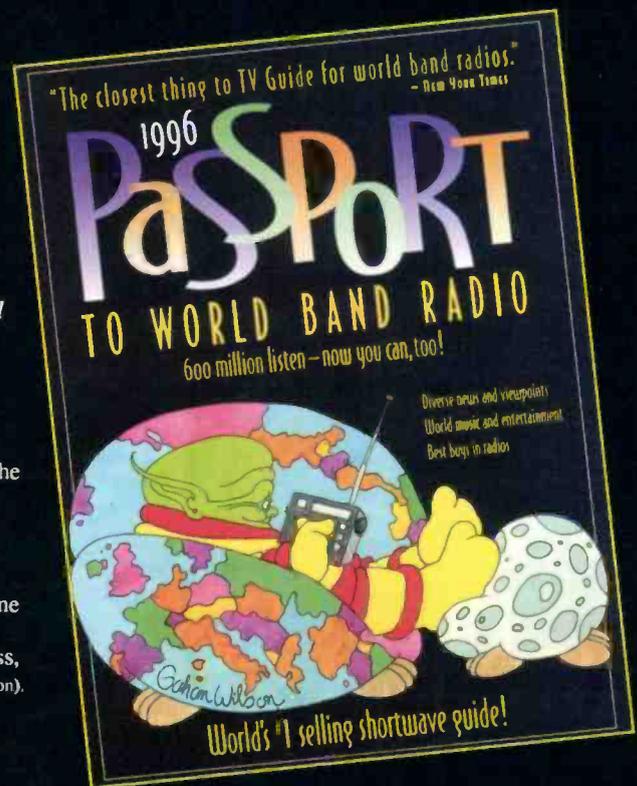
**T**he PW Book Service have recently received first shipments of the 1996 edition of *Passport To World Band Radio* ready for you to read. This book has over 340 pages of news, views and reports of radios and radio stations from around the world.

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# EQUIPMENT

# SPECIFICATIONS

Ian Poole G3YWX, begins to unravel and explain the mysteries behind transmitter specifications.

One of the most basic parameters for any transmitter is its output power. Its main purpose is to generate a radio frequency signal which can be radiated by the antenna, and the size of this signal is

today, this was not the case many years ago. As a result it was decided that the best way to measure the capability of a transmitter was to measure the power entering the final amplifier stage. This was very much easier because ordinary test meters

transmission the only point which can be measured is the peak power of the envelope of the signal being transmitted, i.e. the peak envelope power (p.e.p.). This can be related to the power of an ordinary a.m. transmitter. When fully modulated i.e. with 100% modulation the voltage peak of the signal rises to twice that of the normal level as shown in Fig. 2.

If the voltage doubles then the power will rise four fold. In other words a 150W a.m. transmitter will have a peak power input of 4 x 150W, or 600W. Assuming an efficiency of 66%, this gives a peak envelope output power of 400W.

seen. This is exactly the same as dBW except that the ratio is expressed as a comparison with a milliwatt.

Naturally dBm is used for lower power levels, and may be used for intermediate stages in the set, or for specifying levels for components like mixers. For example the drive levels for the ports may be +12dBm.

**That's it for this month, don't forget if there are any specification mysteries you'd like unravelled drop me a line via the PWEditorial Office and I'll do my best to solve them.**

As Ian says, some power meters are not very accurate. However, they are a good indication of what r.f. power is available. And you can make your own power meter.

For low power transmitters the following circuit will work quite well up to at least 144MHz and 10W of power. But RL must be able to stand the maximum power and may be made from multiple resistors.

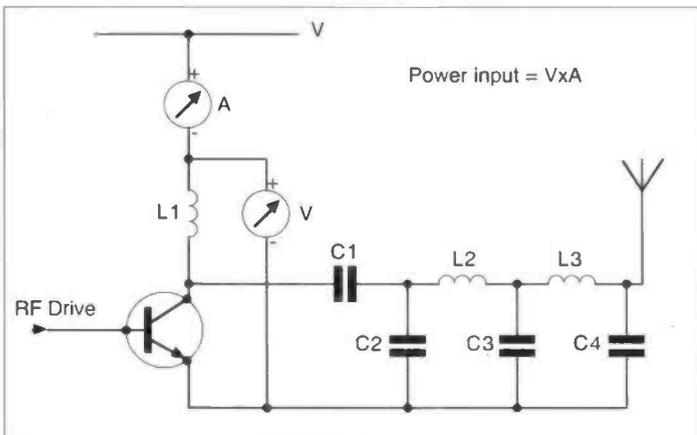


Fig. 1: Measuring the input power to the final amplifier stage.

of fundamental importance.

There is an enormous variety of transmitter output powers. At the low end of the scale are the h.f. QRP sets and the v.h.f./u.h.f. handie talkies running just a few watts.

At the other end there are the high power systems running the full legal limit of 400W. However, there are a number of ways in which this power can be expressed, and this can often lead to some confusion.

## Input And Output Power

The most obvious way of measuring the power of a transmitter is to place a power meter on its output. Unfortunately, it's not always easy to measure the power output in this way.

Power measurement cannot be done using an ordinary test meter because of the frequencies involved. Instead, a special power meter must be used.

Today many s.w.r. meters give a power reading, but this is not always very accurate, typically only within about 10%. Even meters like Bird ThruLines are only specified to give an accuracy of ±5%.

Although it's easy to obtain a reasonably accurate power meter

could be used and accurate results obtained.

The power entering the final amplifier is simply the d.c. voltage times the d.c. current supplying the stage as shown in Fig. 1. Being so much easier to measure the input power used to be the quantity which was specified in the transmitting licence. A maximum 10W input was the limit on 'Top Band' (1.8MHz), and 150W input on the other h.f. bands, etc.

Naturally the output power is dependent on the input power. As a rule of thumb it's often possible to have an efficiency of up to 66%. With this efficiency a radio frequency amplifier with 100W input power will generate 66W of a radio frequency signal.

## Peak Envelope Power

The 'power in' method of measuring the input power of a transmitter was quite satisfactory for c.w. or a.m. transmissions. But, when s.s.b. came along it was not possible to measure the steady direct current input to the last amplifier because the input power level varied according to the level of the audio.

To measure an s.s.b.

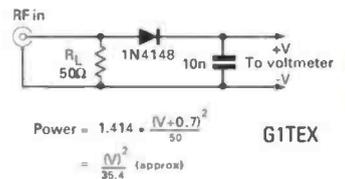
## Expressed In Decibels

Apart from measuring power directly in watts, the term dBW is now seen quite often. In fact, the power levels mentioned in the licence are all referred to in terms of dBW and not directly in watts.

Although dBW may not be quite as easy to use, its concept is quite straightforward. It's simply the measured power expressed in decibels relative to 1W.

To give an example, a power of 10W is 10dB increase on 1W, and so it can be described as a level of 10dBW. Similarly a power of 400W is 26dB above 1W and this means it can be expressed as 26dBW.

Sometimes the term dBm may be



$$\text{Power} = 1.414 \cdot \frac{(V+0.7)^2}{50}$$

$$= \frac{(V)^2}{35.4} \text{ (approx)}$$

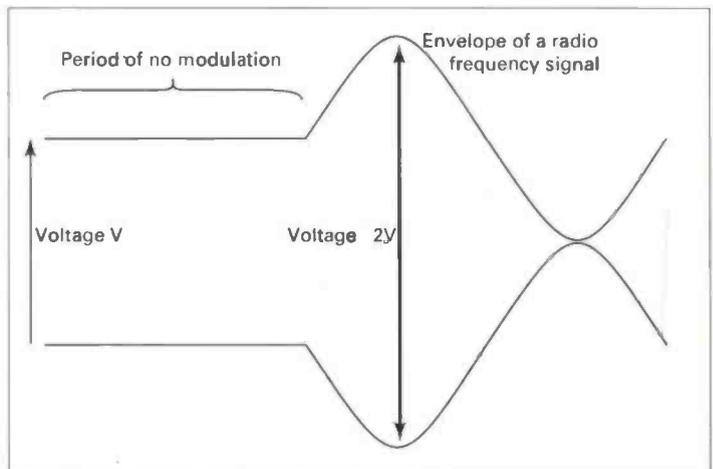


Fig. 2: An a.m. signal with 100% modulation.

**END**

# LEIGHTON SMART GWOLBI

# HF FAR & WIDE

*Leighton Smart GWOLBI provides his monthly report on what's happening on the h.f. bands and judging by the number of reports this time...there's a lot happening on h.f.!*

**A**t the time of writing, (August) the hot weather has given no indication that it is going to let up. As a result, many of our reporters have taken refuge in the relatively cooler temperatures of their respective stations, and have produced a large amount of DX reports for the column.

Conditions seem to be very patchy according to our reports. This is as usual for the summer months, but reasonable propagation has been reported on the bands below and including 14MHz, particularly from the evening onwards.

The 7MHz band has been quite productive in the early mornings, particularly on c.w. So listening or operating on this band from 0400UTC onwards may pay good dividends.

It seems that the 'summer doldrums' can provide some good DX. And I guess that our reporters know just where and when to look!

## Andaman Island

**Professor Oshan Fernando 4S70F** in Sri Lanka has sent information on VU2JPS (Port Blair, Andaman Island). This station is now active around 14.200MHz s.s.b. with VU2AU co-ordinating traffic from mainland India. He operates almost every day at around 0300 and 0900UTC.

As for himself, Oshan is also busy. He's active around 14.225MHz s.s.b. and 14.020MHz c.w. from 1130UTC onwards.

## Your Reports

This month we have no less than 15 reporters, so without any further ado, and in order to save space, I'm going into your reports starting with the 1.8MHz band.

'Top Band' has been affected very heavily recently with high levels of atmospheric noise, 'static crashes' and so on. They can cause S-meter needles jump to full scale!

However, **Eric Masters GOKRT** in Worcester Park, Surrey, has been busy. Using his QRP Plus and a modified W3EDP wire antenna, 26 metres long, Eric managed to work GX4SGL (Feltham Sea Cadets club station in Middlesex), and G2HS also in Middlesex, both on 5W s.s.b. at around 1945UTC.

On c.w., Eric had his best DX so far on 1.8MHz. This was when he worked LA5FHA (Norway) at 2251, and SM6PXI Gotene, (Sweden), at 2301, again on 5W.

**John Heys G3BDQ** near Hastings has found conditions on the higher bands to be very poor generally. But he turned up on 1.8MHz during daylight hours (at 1048UTC) to work G3ZGC in Newbury, G3RZN/M and 'the Cobweb Antenna man' Steve G3TPW in York. All on s.s.b. with 30W.

John says that 1.8MHz can offer good contacts during daylight hours with stations all over England (and all over Wales, John!) providing locally generated electrical noise is not too high. Sunday mornings seem to be very popular for rag chewing on this band, usually around 1.933MHz.

## The 3.5MHz band

**Dave Griffiths GW0JUJ** in Pontypridd, Wales, has been trying out the 'DX section' of the 3.5MHz band for the first time. He reports working (to his great satisfaction) Bill VK6ACY (Australia), 56 at 2301UTC, and Juan LU9VAJ in Rio Negro (Argentina) at 2200. Dave uses a Kenwood TS-440 transceiver at 100W on 3.5MHz, into an 80m long wire.

Short wave listener **Dennis Sheppard** in Earl-Shilton, Leicestershire, using a KW2000 and a 20m sloping wire antenna reports hearing our very own Rob G3XFD, working EI7BA in Cork (Republic of Ireland) on s.s.b. on 3.734MHz. Dennis reports Rob's audio as sounding somewhat muffled. Get it sorted Rob! (All fixed *Leighton!* Editor).

Incidentally, Dennis has been trying h.f. RTTY for the first time. He lists hearing GM3KHH working G3EFY via this mode at 1451UTC.

**Eric GOKRT** has been busy here as well on 3.5MHz. He logged QSOs with Tony 2E0AIR in Cambridge at 1658UTC, G0PEM at 0700 during the RSGB low power contest, and Paul LA6CAA (Norway) at 0021, all with QRP c.w.

## The 7MHz Band

**John G3BDQ**, using a doublet antenna on the 7MHz band, has stuck

entirely to c.w. due to the poor conditions on the bands. He lists contacts with JH6QZW (Japan) at 2106, SV9/DJ0MBT (Crete) at 2117, 7X2ZV (Algeria), through a huge pile up at 2052, and A71EZ (Qatar), at 2056UTC. John managed all with a maximum power output of 80W.

**Keen s.w.l. Charlie Blake RS96034** in Milton Keynes uses an NRD 525 receiver and 11m sloping wire. He listened extensively around his usual monitoring frequency of 7.065MHz, and reports s.s.b. reception of VE3YJ Canada, in QSO with G3NL at 0515UTC, VK7AZ (Australia) working F3RT in France, Donald LA0EP (Norway) working Colin G4FZJ at 06.34, OE6MBG Austria, working ZL2APW (New Zealand) at 0504. Later Charlie heard HB9IAM (Switzerland) in contact with XE0EWC in Mexico. He also logged HB9FAD working Gil, G0AOR at 0500, and IK1LOC Italy (who had very distorted audio) working G00WV at 0507UTC.

From the Isle of Sheppey in Kent comes another 'early bird' - **Ted Trowell G2HKU** who has been very active on 7MHz. Using all c.w. from his Ten Tec Omni V rig at 70W plus G5RV and HF6 vertical antennas to work some very nice DX.

Ted has listed 3V8AS (Tunisia), ZL2AGY New Zealand, VK2ZC and VK3MR in Australia. Ted mentions that VK3MR is 86 years of age and he remembers first working him 50 years ago.

At the other end of the age scale, Ted worked KO4ID Washington DC in the USA. The operator is just 12 years old, and was using a Yaesu FT-747 and R7 vertical antenna.

Finally, for this band, Ted reports contacts with FY5YE (French Guiana), and FM5DJ (Martinique Island). All contacts took place around 0500UTC.

**Carl Mason GW0VSW** in Skewen, West Glamorgan, has had a few contacts on 'Forty' recently. Carl used his Icom 737A transceiver at 50W and a G5RV dipole.

Carl lists s.s.b. contacts with DA0RAF (Germany) at RAF Bruggen at 1057UTC, (QSL via G0TQJ), TM7XX (France) at 1222. He also worked PA6WSJ, the special call for the World Scout Jamboree, in Dronton,



**Gordon Foote G7NCR uses a Howes Communications d.c. RX for his s.w.l. activities (see text).**

Netherlands at 1329, and while on c.w. Carl reports CT1ETT/P (Portugal) on the Algarve, at 0555UTC.

## The 14MHz band

Again the 14MHz band has been the most productive band, as our reporters show. And I'll start off with **Steve Locke GW0SGL** in Mountain Ash, Mid Glamorgan.

Steve recently acquired a Kenwood TS-940 rig. And running 100W s.s.b. into a TH7 beam antenna at 20m has reported contacts with HZ1TA (Saudi Arabia), at 1644 (QSL via OE6EEG), JT1BG (Mongolia) in Ulan Bator, at 1707, 4S7EA Sri Lanka at 1845.

He also worked 9M8FC (Malaysia) at 1816 and Bob ZS5BL in Durban, South Africa at 1715. (Bob operates on 14.164MHz every evening at 1815UTC). Also logged club station 3V8BB (Tunisia) at 1726, and 9G1BG Ghana, at 1803, (QSL via G4XTA) 5A1A (Libya), at 2314, 9L1PG (Sierra Leone) in Freetown with a 59 +10db signal at 2049, and D3T (Angola), at 2313UTC (QSL via ON5NT).

Steve says he has found conditions variable, with propagation reasonably good after 1530UTC to the East, with Africa coming in well after 1700. For some reason, he found propagation to the West not so good this month. He also mentions T88A 'Principality of Seborga', and wonders about its legitimacy and/or

DXCC status. Any information on this anyone?

Oshan Fernando 4S7OF in Moratuwa, Sri Lanka, (briefly mentioned already) reports for the first time. Oshan logged s.s.b. contacts with TT8NU (Chad), 9U/F5FHI (Burundi), 9N1RHM (Nepal), 9K2TA (Kuwait), HZ1AB (Saudi Arabia). He also worked A71DX (Qatar), VK9XI (Christmas Island), VK9CJ (Cocos Keeling Island), and a c.w. contact with 3W5FM (Vietnam).

Our 'Yeovilian' DXer, Don Mclean G3NOF has a station comprising a Kenwood TS-940 100W transceiver and a 3-element beam. He indicates that conditions have again been patchy but some good openings have been apparent.

Don says that the best times for DX have been in the evenings, from around 1600UTC onwards. Little DX has been heard during the mornings and early afternoons. His large 14MHz s.s.b. log includes HC8KU (Equador), at 2314UTC (QSL via DK5VP), PJ7/K2GSJ (Leeward Islands) at 2207, T88A (Seborga) at 2256 (QSL via I1RBJ), VP5/KN4UG (Turks & Caicos Islands) at 2030, 3V8BB Tunisia at 2044, (QSL via G0UCT - QSL info varies with different operators), 9G1RY (Ghana), at 1946 (QSL via PO Box 932, Accra, Ghana), and 9L1PG (Sierra Leone), at 1715UTC (QSL via NW8F).

Dave GW0JUU reports success with his new TH3 beam antenna on 14MHz by listing 100W s.s.b. contacts with HK4QIM (Colombia) at 2231UTC, T17DBS (Costa Rica), at 2329, ZS2BL (South Africa), at 1710, AP2MH (Pakistan), at 1730, XJ1CWI (Pictou Island) at 2308, AH8A in Poa Poa (American Samoa) at 0757, Y11RS (Iraq) in Baghdad at 1748, and finally VE7GAS/VP9 (Bermuda), at 2300UTC.

No less than four logs were received this month from Gordon Foote G7NCR in Bristol, of which here is only a small selection due to space limitations. Gordon uses a Howes d.c. RX receiver, shown in Fig 1, on this band with a 20m end fed wire antenna.

The 'cream' of Gordon's reception reports on 14MHz are CP2AA (Bolivia) at 1840UTC, ZS6LAW (South Africa) in QSO with F5PFP at 1915, and SM6FJY (Sweden) working G0JRR at 1832.

Gordon also logged ET3AA (Ethiopia) in contact with HA5BAW (Hungary) at 1643, TU5BC (Ivory

Coast) working IT9BLB at 1815 and 9K2MU Kuwait, in QSO with G0DDL at 1747.

'Aeronautical Mobile' WDSJYP/AM flying to the USA, working Reg G0DEF in Sheffield at 1845 was also logged by Gordon along with YE50RI (Sumatra) Indonesia, working GW3AHN at 1745, and Z32RC Macedonia (QSL to PO Box 60, Stip, Macedonia) in QSO with Roy G0JAP at 1806UTC.

New reporter Jeff Morgan GW4AYJ of Swansea uses a Kenwood TS-850 rig and a TH3 3-element yagi at 17m. Jeff reports s.s.b. contacts on this band mostly between 1900 and 2100UTC with P40AN (Aruba Island) V21PI (Antigua & Barbuda), 9J2BO (Zambia), J24FZ (Djibouti), VU2AG (India), SU2MT (Egypt), 5X1F (Uganda), Y11EB (Iraq), and AP2JZB in Pakistan.

Another new reporter, s.w.l. Len Stockwell from Grays in Essex reports reception of 4X4NC (Israel) at 1851UTC, 4S7RF (Sri Lanka) in QSO with HA1CW at 1432, 8S3BG (Sweden) working 9A1BHI (Croatia), and 9A1ST Croatia working GM3UDJ at 1510UTC all with a Drake R4C receiver and a full size G5RV dipole at 7m.

Up north, (north Wales that is!) David Ian Wright GW0VML in Wrexham has been having a whale of a time on the bands, working some new countries. Although there's no details of equipment or the power used, he reports contacts with 7X2VXK (Algeria), at 1507UTC, SV5TS (Dodecanese Islands) at 1056, 3V8BB (Tunisia), at 1151, TA2XP (Turkey), at 1446, JY74X (Jordan) at 1636 (QSL via JY6ZZ), 9L1PG Sierra Leone at 1629 (QSL via NW8F), and SV1DHU/P (Greece), at 1845 (QSL via SV1CIB).

Finally for 14MHz there's s.w.l. David Henry of Aberdeen with a detailed log for late July/early August. David notes reception of OD5NJ (Lebanon) at 2308UTC (QSL via Box 70647 Beirut), 6Y5AR (Jamaica) at 2355 during the 'Caribbean Net' on 14.147MHz, ED1PAL (Pancha Island) at 2332 (QSL via EA5AEN).

David also logged JY1 King Hussein of Jordan operating the JY74Z Mount Nebo station. Special QSLs signed by King Hussein will be sent in response to reports sent to: JY6ZZ, The Royal Jordanian Amateur Radio Club, Box 2353, Amman,

Jordan. He also heard XT2CH (Burkina Faso) at 2258, and S92SS (Sao Tome & Principe) at 1720UTC, all using a Trio R1000 receiver and an indoor 20m wire antenna.

## The 18 & 21MHz bands

Now it's time to look at the 18 and 21MHz bands. And 'Fifteen' has started to show some signs of life of late, perhaps it's a sign of better things to come as the summer draws to a close?

Don G3NOF has been digging out some juicy s.s.b. DX on 18MHz in the form of contacts with AP2JZB (Pakistan), at 1257UTC, D44BS (Cape Verde Islands), at 1814, HV4NAC (The Vatican State in Rome), at 1243, HK0EFU (San Andreas Island), (QSL via PO Box 464, San Andreas Island), KP2/AA1BU (US Virgin Islands) at 2106, XE3VD (Mexico) at 2300, 5A1A (Libya), at 1819 (QSL via PO Box 78665, Tripoli, Libya), 5N0GC (Nigeria), 8P6DA (Barbados), at 2308, 9Q2L (Zaire), at 1951 (QSL via PA3DMH) and 9J2JOCV (Zambia), at 1837 (QSL via JH8BKL), while on 21MHz he hooked up with VP8CRT in the Falkland Islands.

Ted G2HKU reports 18MHz s.s.b. contacts with J28JA Djibouti, (QSL via F2BU), and OD5/SP7LSE Lebanon, around 1500, W1AW (the ARRL Headquarters station in the USA), EL2NB (Liberia), A92Q (Bahrain), 4Z4SZ (Israel), and LU5GPL (Argentina), again around 1500UTC.

John G3BDQ lists c.w. contacts with SU2MT (Egypt), at 1447UTC, 9U/F5FHI (Burundi), at 1513, OH0/DL1RNW (Aland Island) at 1349 on 18MHz, with OY1G (Faroe Islands), at 1323, and 3V8BB (Tunisia) at 1353UTC on 21MHz.

Back to Jeff GW4AYJ who reports 21MHz s.s.b. contacts with CX6BC (Uruguay), CE6BTN (Chile), LU4HAL (Argentina), ZP1XCP (Paraguay), and 9J2BO Zambia, all at

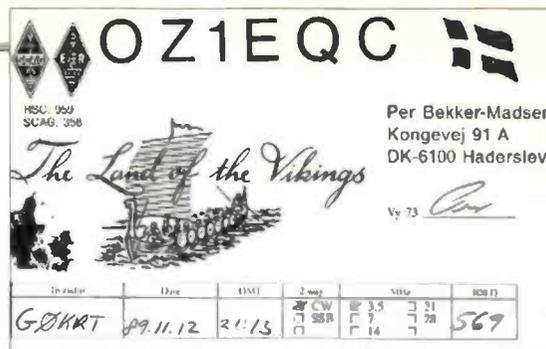


Fig. 2: An attractive design QSL card earned by GOKRT's QRP c.w. operations (see text).

around 2000UTC.

Finally, Eric GOKRT reports that his QRP reached out to YU1KJ (Serbia), at 1500, UA3RG (Russia) at 2030, and KZ1H (USA) at 2035UTC for his first US QRP contact on 18MHz.

## The 24MHz Band

Just a couple of reports this month for the very under-used 24MHz band. But remember it can throw up a few surprises from time to time!

Don G3NOF dug up D3T (Angola) at 16.18UTC (QSL via ON5NT), S92SS (Sao Tome & Principe), at 1713 (QSL via PO Box 522, Sao Tome), UA2FC1 Kaliningrad, at 1645 (QSL via Box 215 Kaliningrad) and 8S3BG (Sweden).

Eric GOKRT in Surrey on the other hand, reports low power contacts with DL6UNF Germany, at 1757, and EA2COV Spain, at 1953UTC.

## The 28MHz band

At long last the 28MHz band has started to provide some of the longer distance contacts it's famous for! Jeff GW4AYJ reports mid-day s.s.b. QSOs with K51L, WY2V, and KN2T all in the USA, as well as VE3XO (Canada), and S50HQ (Slovenia) for a sole European contact.

Listener Dennis Sheppard reports sidebar reception of Mike C31HK (Andorra), working DL5ARX in Germany at 0952, and the Jordanian Mount Nebo special event station JY74Z working HA4XW on 28.500MHz at 1633UTC.

## Sign Off

That wraps it up for this month and it's time to sign off. My thanks to our reporters for their invaluable assistance with the column. Without your regular input it would not be possible!

Again, reports please (don't forget to provide the important full details on your equipment, antennas, times and modes), (and photographs!) and any other information for the column by the 15th of the month to: Leighton Smart GW0LBI, 33 Nant Gwyn, Trelewis, Mid Glamorgan, Wales CF46 6DB. Tel: (01443) 411459. Cheerio until next time.

**END**

## Practical Wireless Listening & Operating Watch List

(All times in UTC).

**Charlie Blake RS96034** listens: 0500-0700 on 7.061MHz s.s.b. with an NRD 525 RX/sloping wire antenna.

**Gordon Foote G7NCR** listens: 1730-19.30 & 2030-2200 (weekdays) and 1430-16.30 (weekends) 14.250MHz s.s.b. using Howes d.c. RX/long wire antenna.

**Steve Locke GW0SGL** operates: 2000-2100 (Sundays) 14.250MHz s.s.b. using Kenwood TS-940/TH7 beam.

**Don Mclean G3NOF** operates: 0930 Saturdays 3.685MHz s.s.b., and 0930 3.665MHz s.s.b. using Kenwood TS-950/trap dipole antenna.

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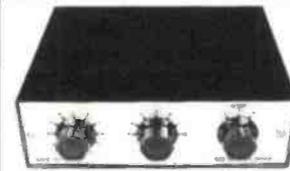
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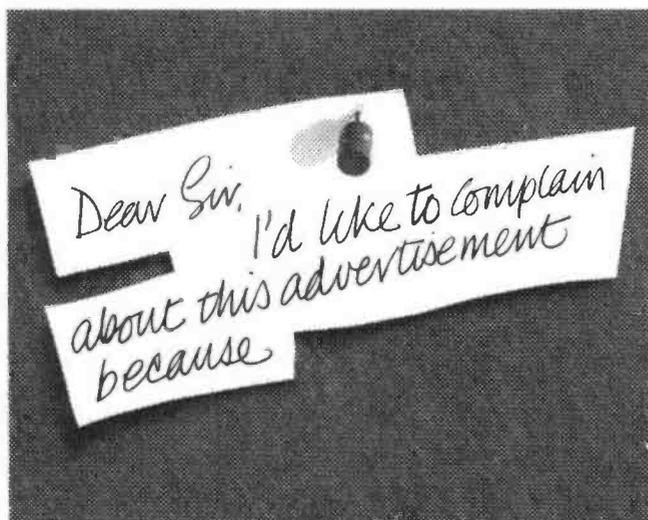
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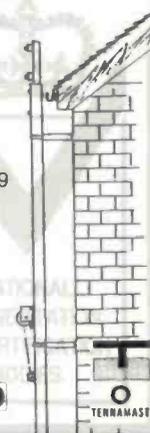
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# W valve & vintage



*Ben Nock G4BXD, although already busy writing for the magazine, has agreed to 'help out' in the PW 'wireless shop'. So, we've found him just the job...looking after the valved and vintage amateur radio equipment and military radios!*

I was most pleased to be asked to contribute to 'Valve & Vintage'. My interest in valved and vintage items are only surpassed by my interests in the British hop growing industry and the final product in the pint (not metric) glass!

Hopefully I can share a bit of my enthusiasm with you and show that the valve is not totally dead! In fact, in the words of Eddy VE3CUI... "Real radio still glows in the dark". I think that's an apt slogan for this column!

To start off, I'm going to look at one of the nicest looking older receivers often seen at the rallies - the Heathkit RA-1 amateur bands receiver. It's a very pleasing, straightforward set supplied, both as a kit of parts and an assembled receiver, in the 1960s by the Daystrom Company in Gloucester.

## Six Bands

The RA-1 has a six band coverage of the 1.8, 3.5, 7, 14, 21 and 28MHz amateur bands. It provides the user with a.m., c.w. and s.s.b. reception.

An internal crystal calibrator was fitted. And it was also provided with a half lattice crystal filter in the i.f. amplifier chain. This ensured a high degree of accuracy and a fairly good selectivity factor given the average price of these sets.

The RA-1 uses eight valves and had a quoted sensitivity of  $2\mu\text{V}$  for 10dBs/n ratio or better. On the specifications Heathkit quoted 40dB or better image rejection.

On the audio side, the receiver had an internal  $3\Omega$  speaker, and there was a useful 2W of audio output available. Headphone output,

to match  $600\Omega$ , was available via a jack socket.

Dimensions of the receiver are approximately 13 x 11 x 6in and it weighs in at 18lbs. Mains power consumption is 50W.

If bought originally as a kit, the RA-1 components would have included 65 capacitors, 48 resistors, the valves, the ready-built 'front-end', nuts bolts, the familiar green & white case, wire and dial string. In fact everything needed to complete the kit was provided by



**Fig. 1: The Heathkit RA-1 amateur bands only communications receiver.**

Heathkit.

## Large Dial

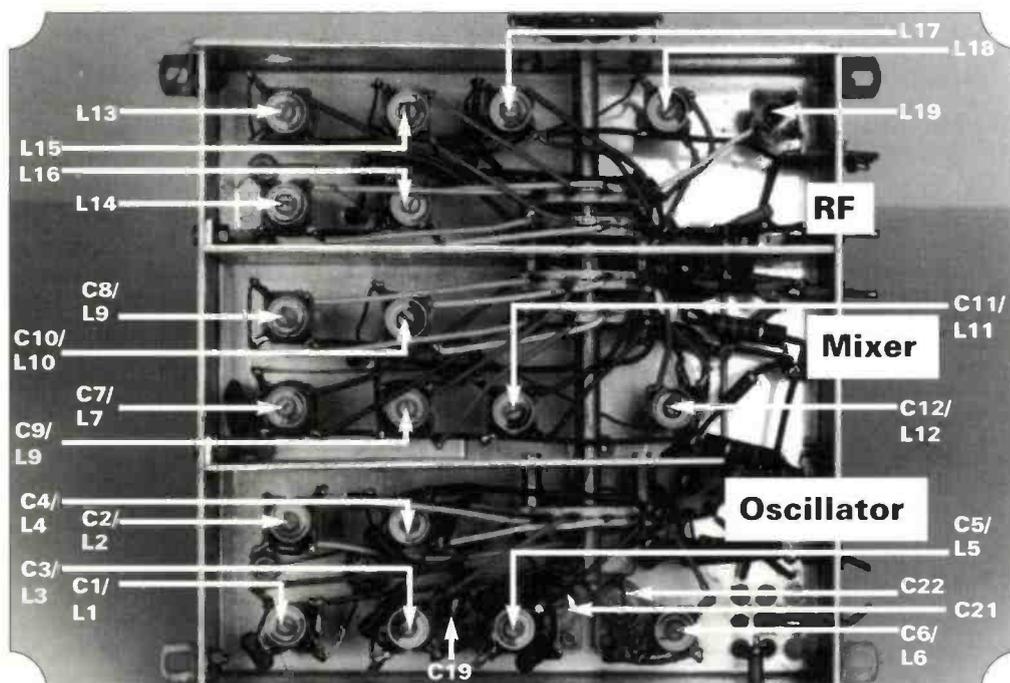
The large illuminated, rectangular tuning dial provides an 'easy-to-read' analogue frequency scale which is some 5in long. A two speed slow-motion drive arrangement allows both speedy sweeping across a band and also the gentle tuning required to

resolve s.s.b. transmissions.

It must be said though that the tuning on the RA-1, while being adequate for the time of manufacture, is now dated. It lacks the smoothness that operators have all come to expect in modern equipment with digital displays.

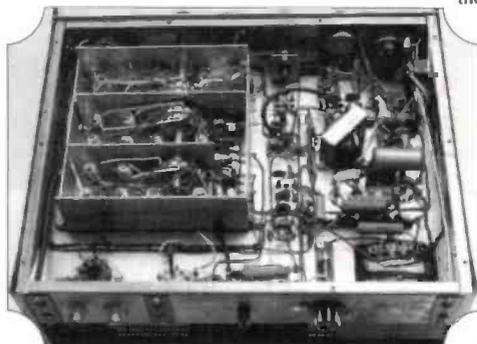
On the front panel, the **AF** and **RF** gain controls provide adjustment. There's also the main tuning control knob, the **Band Switch**, **Noise Limiter** control, **BFO On/Off** switch, **USB/O/LSB** switch, **AVC On/Off** switch. Additionally, there's a push to **Calibrate** switch, a **Calibrate**

**Fig. 2 Annotated photograph showing locations of inductors and capacitors referred to in Table 1 for alignment of the 'Electroniques' ready-built 'front-end' in the Heathkit RA-1. Photograph shows the underside of the unit, (the inductors to be adjusted are accessible from the corresponding locations on the upper side). Please note the instructions (and warning regarding L3, 4, 5 and 6) in Table 1.**



### Adjustment and finally an Antenna Trimmer.

The RA-1's headphones socket is mounted on the front panel for easy access. Other features including S-Meter Adjust, and the 75Ω antenna input socket, and the speaker terminals, are mounted on the rear panel of the receiver case.



**Fig. 3: Underside view of the RA-1 chassis. The 'Electroniques' r.f. 'front-end' (supplied as a ready-built and aligned unit) can be seen dominating the left-hand side of the photograph.**

### Nice Feature

A further nice feature is that the knobs are big enough. They're laid out well, so as to be easy to operate. There's no fiddling with 'teeny weeny' little things cramped so close together only infants of six months and under can reach them!

Heathkit also included provision for muting the receiver, when used with a transmitter for example. And in the past, I've used this receiver with several transmitters, such as the KW 'Vespa', with quite good results.

There is also provision for attaching a device called a 'Q' multiplier to the i.f. stages to increase the selectivity and gain. Although I have never had one of these they're quite simple in operation and work by having a stage which can be brought into controlled oscillation (or just before 'the threshold' of oscillation) dramatically improving selectivity and gain.

An 8-pin octal plug on the rear of

the RA-1 provides for the a.c. input and d.c. h.t. and heater 'take off'. This was a useful feature for supplying v.h.f. and u.h.f. converters and other accessories in the days when they too were valved.

### Crystal Calibrator

The crystal calibrator unit, (although the adjust and push switch were already ready fitted to the main receiver) came as an optional extra. It was mounted inside the set.

In effect the crystal calibrator consisted of a small unit housing a 6AU6 valve and a 100kHz crystal with associated components. It was plugged into a holder mounted on the receive chassis.

### Front -End

The ready-built and aligned 'Electroniques Quoilpack' 'front-end' unit used on the RA-1 was provided with an r.f. amplifier stage using an EF183 valve. The mixer uses an ECH81 as the mixer and combined local oscillator.

A further EF183 was employed as the 1st i.f. amplifier. An ECF82 triode pentode is used as the combined 2nd i.f. amplifier and beat frequency oscillator (b.f.o.) with the triode section of the valve acting as oscillator.

Noise limiting on the RA-1 is provided by an EB91 double-diode valve. An ECL86 triode-pentode is used as both audio preamplifier and output stage.

Power is provided by an EZ81 rectifier valve and voltage stabilisation is carried out by an OA2. (Fortunately, all the valves used in the RA-1 are still available today at rallies or through specialist suppliers).

Semiconductors do appear in this

predominately valved design! They appear in the shape of two OA81 semiconductor diodes which are used as audio detector and automatic volume control (a.v.c.) rectifier.

### Intermediate Frequency

The local oscillator on the RA-1 runs on the high side of the antenna frequency to produce a 1.621MHz intermediate frequency. For example, tuning the receiver to 3.6MHz, the oscillator will be on 5.221MHz.

A pair of quartz crystals form what's termed a 'half lattice' filter. This is in circuit between the mixer output and the first i.f. amplifier.

Used as the main or even backup receiver, the RA-1 is very easy to operate and tune. In use the b.f.o. is switched between upper sideband (u.s.b.) and lower sideband (l.s.b.) thus making it easier for newcomers to resolve s.s.b. signals.

The crystal filter provides good selectivity, even on the crowded 7MHz band. And although the RA-1 does lack the newer WARC bands (10, 18 and 24MHz) with the supply take-off at the rear, a small one or two valved converter could easily be built to provide this facility.

### Aligning The Receiver

Aligning the receiver requires a calibrated signal generator capable of providing an amplitude modulated (a.m.), signal and a few plastic trimming tools. The correct tool should be used as this will reduce the risk of breaking the coil cores and causing further hassle!

The RA-1 alignment can be done by 'ear'. Alternatively it can be carried out by measuring the voltage across the speaker terminals with the speaker connected.

During the various steps or stages of alignment, the dial should be placed at the required spot. Then the oscillator brought into line by adjusting the L (inductor or coil) or C (trimming capacitor). The diagram, Fig. 2, indicates the relative position of each inductor and capacitor in the 'Electroniques' front end. The output of the signal generator should be progressively reduced to avoid overloading the set and to give you the best 'peak' on each adjustment. Repeat the alignment at each end of each band until no further improvement can be obtained. (see Table 1).

There was a similar general coverage receiver, the RG-1, which

was available around the same time as the RA-1. Both sets used virtually the same components and were identically styled.

### General Coverage

The RG-1 employed the general coverage version of the Electroniques' front-end to provide 500kHz to 30MHz tuning, employing a much larger three section variable capacitor rather than the much lower value 'bandspread' version used in the 'amateur bands' only unit.

Despite being on the market for 30 years, the RA-1, and the RG-1 for that matter, make ideal introduction receivers. They are suitable for beginners to the hobby whilst not costing the more normal 'second mortgage'.

I must provide one word of caution though! As the sets were mainly bought as kits (around £40 in the late 1960s) the state of the second-hand purchase does rely a lot upon the soldering skills of the original builder. But having provided the warning, I think any major faults should have been solved long ago.

Personally I think the RA-1 does look very nice on the shack shelf. I've had hours of fun with this set, it's a receiver you can feel at ease with without being intimidated by dozens of knobs and functions.

Although Daystrom, the UK subsidiary of Heathkit, has ceased manufacturing amateur radio equipment all is not lost. A company called Cedar Electronics, Tel: (01242) 602402, may be able to help by having the odd spares for the RA-1.

### Interesting Items

In future editions of 'V&V', when it's my turn to 'man the shop', I hope to cover some of the more unusual and interesting items of amateur and military equipment. And of course this will be done along with the better known valved equipment.

And of course I'll be most pleased to hear from anyone with an interest in the vintage aspect of radio. I would also welcome photographs and details of anything you would like to share with other enthusiasts.

Contact me directly on packet radio via GB7BBS. #28.GBR.EU or on the 'landline' on (01562) 743253. So, I'm looking forward to meeting you again when it my turn to open up the 'shop' in the February issue.

Table 1	Alignment Details		
	Sig Gen Setting	Osc. Adjust	Mixer & r.f. adjust
1.8MHz	1.7MHz	L1	L7 and L13
	2MHz	C1	C7 and antenna trim
3.5MHz	3.5MHz	L2	L8 and L14
	4MHz	C2	C8 and antenna trim
7MHz	7MHz	C19	L9 and L15
	7.3MHz	C3	C9 and antenna trim
14MHz	14MHz	C20	L10 and L16
	14.4MHz	C4	C10 and antenna trim
21MHz	21MHz	C21	L11 and L17
	21.5MHz	C5	C11 and antenna trim
28MHz	28MHz	C22	L12 and L18
	30MHz	C6	C12 and antenna trim

\* Note: The cores of L3/4/5 and 6 must not be adjusted.

# VHF REPORT

*This month David Butler G4ASR takes a look at long distance communications on the v.h.f. bands and how you can join in the 'DXfun'.*

Contacting stations in far-away places 'working DX' is one of amateur radio's greatest challenges. Especially if you choose to do it on the v.h.f., u.h.f. or s.h.f. bands.

When these bands open up for DX they can produce some truly exotic signals. It can be truly fascinating! If you start to get interested you could soon be hearing the raspy sound of signals reflected back from an aurora. Then there's the stunning strength of Sp-E signals or the startling bursts of s.s.b. or high speed c.w. scattered from meteor trails.

And one day, if you really go for it, you could be hearing your own signals echoing back from the moon. The sky's not the limit with v.h.f.!

To work DX to a great extent you're very much dependent on prevailing conditions. Propagation is by far the most important factor effecting whether you can work a particular station or not.

If there is no propagation path open to that station, the sad fact is that site, equipment and operating skill are all to no avail. On the other hand, when the band is wide open, people can work all kinds of DX with minimal equipment.

So be aware of the various propagation modes. And make good use of them when they occur.

## Uncluttered Horizon

Another important factor on the v.h.f., u.h.f. and s.h.f. bands is your location...a clear, uncluttered horizon is far more important than absolute height. Even if you live in a poor site, don't despair!

Choose your band and propagation mode appropriately. Remember that the lower v.h.f. bands (50 and 70MHz) are less affected by a screened location.

If your site really is in a bottomless pit you may still be able to work the world using amateur satellites or even moonbounce. A quiet environment with enough space for the antenna is more important for these modes of propagation.

## The 50MHz Band

One of the easiest v.h.f. bands on which to work DX is the 50MHz

band. Antennas can be relatively small and you don't need lots of power either.

I've already mentioned that the most important feature that enables DX to be worked on any band is the existence of suitable propagation. At this point in the sunspot cycle the best DX opportunities on the 50MHz band come via Sp-E.

Unfortunately the Sp-E mode only occurs for about three months in the summer and about two weeks in the winter. So for the rest of the year, apart from occasional auroral openings, the band can remain fairly quiet.

Of course the real DXer knows that troposcatter and meteor scatter can fill in the gaps. But it takes a fair bit of dedication at both ends of the path to succeed in these modes.

Ionospheric F2-layer propagation is used by h.f. operators to contact stations around the world. When all the factors are favourable the maximum usable frequency (m.u.f.) extends to 50MHz and occasionally to 70MHz.

Under the m.u.f. conditions are favourable the 50MHz band resembles that at 28MHz. Sometimes signals can be very strong because ionospheric absorption is lower at v.h.f. Factors that determine the level of F2-layer ionisation are the solar cycle, the season of the year and the time of day.

## Solar Cycle

The best time for F2-layer propagation is during the peak of the 11-year solar cycle, commonly known as sun spot maximum. Regrettably I must inform you that you have a few years to wait, as sunspot minimum is forecast to take place during the summer of 1996.

The good news however, is that astronomers at the California Institute of Technology say they have identified the first new sunspot group in the next sunspot cycle.

Early in the 11-year cycle, sunspots appear rarely and at relatively high solar latitudes of around 30 to 35°. The spots then increase in number and appear at lower latitudes until sunspot maximum is reached.

After the peak in activity the number of sunspots slowly decline.

They then appear ever closer to the sun's equator until they reach a relatively quiet phase called sunspot minimum.

The sun has been in a quiet period through much of 1994-95 with a few spots showing up near the equator. The new sunspot group which became visible on August 12 appeared at a solar latitude of 21° and its magnetic polarity was opposite to that seen over the last decade.

Scientists reported that they were expecting an early beginning to solar cycle 23, but not this early. (Incidentally, there's always an overlap period during which spots from both the old cycle and the new cycle appear).

The month of the sunspot minimum is the month in which the smoothed 12-month running average sunspot number (counting sunspots from both cycles) is a minimum. Sunspots in the new cycle however should rapidly become more common and reach a high level of activity in 1998 or 1999.

So there's plenty of time to get your 50MHz equipment ready for the real DX!

## Season Good

I mentioned earlier that Sp-E occurs in the summer. This year the season was particularly good with openings virtually every day during much of May, June and July.

I'm pleased to record that I actually predicted this would happen (April issue) and is based on the fact that Sp-E seems to be more prevalent during the period of sun spot minimum. So theoretically next year could be even better.

A report from Geoff Fowle 2E1CSR shows what can be accomplished on the 50MHz band with low power and a small antenna. He reports that he's had incredible results running less than 3W into a home-made dipole only 3m above ground.

This year was Geoff's first Sp-E season and he was very pleased to work a total of 19 countries. Some of his DX contacts, both on s.s.b. and c.w. I'm pleased to say, included HV3SJ, IA5/OE5D, OY9JD, 4U0ITU and 4X1IF.

Some other European and

African DX as reported by the UK DX Cluster this summer included: G4AFJ/TF/M, CN2JA, D44BC, EH8BPX, EH9IE, HV4NAC, OX3LX, SORASD, S07URE, 4U/KC0PA, 4K6D, 5T6E and 5T5BN.

The Cape Verde activity, from the QTH of D44BC (HK76), was organised and run by Geoff Brown GJ4ICD. In total he worked twenty-six DXCC countries including contacts with FG5BG and V44KA0.

It's expected that D44BC will continue where Geoff left off. That's because a TS-60 transceiver and 50MHz antenna were left for future operation.

## Transatlantic Openings

Last time, I took a look at transatlantic openings on the 50MHz band and presented some theories about how they occur. This year's results surpassed all expectations with a total 18 days when the path to North America opened up. (And that was just to the UK!).

According to Emil Pocock W3EP the 50MHz band was open to Europe on no less than 37 occasions during the summer! For those that missed them the UK transatlantic openings occurred on June 7, 12, 13, 16, 18, 19, 20, 21, 22, 27, July 2, 3, 4, 5, 6, 7, 8 and 10.

Although there were many openings, signals were generally fairly weak and most activity was therefore carried out on c.w. During these openings only the better equipped stations got consistent results.

So, those running low power and a small antenna had a frustrating time trying to make it across. In previous years, the transatlantic signals have been very loud and much of the activity has been on s.s.b.

Openings were widespread with every call area in the USA, apart from W6 and W7, being worked at some time or other. Stations in Canada, VO, VE1, VE3 and VE9, were also contacted as were FP5EK, KP4EIT, KP4EOR, YV4AB, YV5ZZ and ZF1DC.

The distances involved were fairly long. For example, in an opening on July 3 between 1330-1630UTC, I contacted 20 USA

stations at distances up to 7000km.

One of the best openings occurred on July 7 when North Americans were worked for over 12 hours. The opening extended from Venezuela in the south and Greenland in the north and was probably the biggest 50MHz transatlantic Sp-E event of the decade.

### Records Of Openings

Incidentally I've kept records of 50MHz transatlantic openings from the UK since 1984. Contacts have been made every year except in 1986 when no stations were heard.

My data indicates that the best conditions during the recording period occurred in the summers of 1987, 1988 and 1995. Between 1984-1995 a total of 25 openings were observed in the month of June and 14 during July.

### Meteor Scatter

The meteor scatter (m.s.) mode of communication works by scattering v.h.f. signals from the ionised trails of meteors. Although the reflections, or bursts, are generally quite short, contacts can be made with similar enthusiasts up to 2200km away.

The best time for m.s. is during a major shower. One of these showers, the Perseids, occurred recently during August.

In a previous issue I predicted that the peak of this year's shower would occur between 1500-1800UTC on Saturday August 12 and 0400-1000 on Sunday August 13. This assumption was based on the fact that the earth intercepts the shower orbit every 365.25 days.

So, by simply adding six hours to the date and time of the previous year's radio peak, a fairly accurately prediction for maximum meteor activity can be made. From reports received it seems that this year's Perseids shower was not particularly good and the maximum was difficult to find.

However, many operators suggested that reflections were quite good during the afternoon of August 12 and during the early morning of August 13. Some good DX was worked on the 144MHz band from the UK.

Among the stations noted on the s.s.b. calling frequency were CT1WW, EA3DUY, ER/LZ1KW, HA3UU, HB9FAP/P, I8MPO, LA8KV, LY3BF, LZ2UU, OH1AYQ, OK1KF, SM3JLA, SP9EWU, S50C, YU1VG and 9A1CCY.

Interestingly Ray James **GM4CXM** (I075) reports that on August 12 his packet radio system received a burst from an IW3 station. Nothing surprising about that except that it was on 433.650MHz!

Ray was using a 13-element Yagi beaming in the correct direction so it may have been possible. Did anyone else have similar results with their packet radio equipment?

### Moonbounce Contest

You've still got time to participate in this year's ARRL e.m.e. 'moonbounce' contest. The second leg of the contest will be held during the weekend November 4-5 and provides a great opportunity to work some of the larger e.m.e. stations.

The annual contest attracts a lot of interest and often stimulates DXpeditions and other special stations. It can be particularly interesting to the first-time listener although it has to be noted that the hurly-burly of a contest is not necessarily the best way to start your e.m.e. activity.

The accepted operating procedures are often shortened between stations with good signals. And this may cause confusion to anyone not fully conversant with the correct procedures.

If you want to cut corners with e.m.e. procedures you need to be an experienced 'moonbouncer' and require no lessons from me. But if you're a beginner or you want to be absolutely sure of making the contact, then stick to the procedures. Details of these can be found in *The VHF/UHF DX Book* (ISBN 0-9520468-0-6).

### Fighting Chance

If you can get at least 100W of c.w. at the antenna (note at the antenna!) and have a sensitive receiver you'll be in with a fighting chance of making your first contact via the moon. Of course much depends on the antenna and I don't recommend you use anything less than a yagi with a boom length of  $3\lambda$  at 144MHz.

On the 430MHz band, because of the higher path loss, a simple array of four  $6\lambda$  Yagis should be sufficient. Incidentally some of you may not be conversant with the idea of measuring boom lengths in wavelengths.

The symbol  $\lambda$  (Lambda) indicates wavelength. So a Yagi with a boom length of  $3\lambda$  on the 144MHz band is 3 x 2m long or 6m long.

In the other example given the 430MHz Yagis will be 6 x 70cm or 4.2m long. Finally, don't waste your valuable antenna gain, receiver sensitivity and transmit power by using poor coaxial cable! Use a hardline cable such as Andrews LDF4-50 (or LDF5-50) and keep it as short as possible with a minimum number of connectors as possible.

### Radio Telescope

Last month, I mentioned that the Toronto VHF Society will be active in the e.m.e. contest with a 46m diameter radio telescope dish antenna. The group, using the



You could 'bank' on good results if you had e.m.e. access to Jodrell Bank radio telescope!

callsign VE30NT, will be operating on 144.100 and 432.050MHz.

On both bands they will be listening for replies up to 10kHz higher in frequency. In order to maximise your chances of making a QSO make use of the entire receive window.

In previous years the best weak-signal successes have been well away from their transmit frequency. On the 144MHz band the group plan to be QRV from 2135UTC on November 4 to 0910 on November 5 and again on the same day between 2205-2400.

Operation on the 430MHz band is scheduled between 0000-0805UTC on November 4. However, you should note one important fact. If you live in the UK the moon will be below the horizon for much of this time!

At my QTH (and for most of the UK for that matter) the moon sets at 0330UTC on November 4 and rises again at 1530. It will then remain visible for e.m.e. communication until it sets at 0430 on November 5. At 1600UTC it rises again allowing another eight hours of contest activity before the end of the competition at 2400.

If you send me an s.a.e. I'll provide you with a list of azimuth and elevation bearings for use during the e.m.e. contest. Don't forget to give me your full six figure locator. And

for good measure I'll throw in a copy of the relevant e.m.e. procedures. I can also accept requests via packet radio and the Internet.

### Deadline Time

Deadline time again. And if you've made any DX QSOs recently or just wish to pass on any news...please let me know about it.

As usual send details (to reach me by the end of the month) to: **Yew Tree Cottage, Lower Maescoed, Herefordshire HR2 0HP**. You can also contact me via packet radio @ **GB7MAD, the DX Cluster @ GB7DXC** or the Internet **davebu@mdlhr1.igw.bt.co.uk**. Alternatively you can telephone me on **(01873) 860679**.

Cheerio for now and Good DX on v.h.f. and u.h.f.!

**END**

# BITS & BYTES

## - COMPUTING IN RADIO

Mike Richards G4WNC has all the latest computing news and views for you including details of Internet sites to look out for.

**M**any of you who wrote to me during August with either questions or orders will have suffered much longer delays than usual. This was due to an unfortunate clash between my holidays, publishing deadlines and a particularly healthy response to the readers special offers!

As a result we were inundated with mail which took us into early September to deal with. So, by the time you read this, normal service should have been resumed. I hope I didn't cause too much inconvenience - we'll have to plan our break differently next year!

### Demon Service

**Demon Internet** of Finchley have been a major supplier of dial-up Internet service and have become best known for their low-cost full access at just £10 per month. The only snag with the service was the rather cumbersome software that was supplied to IBM PC users.

Demon have now corrected the shortcoming with the launch of a brand new Windows software package. The package comes complete with a built-in dialler and the important applications such as Netscape WWW browser, mail, news, FTP and TelNet.

The use of a fully integrated package with a simple start-up means that all the family can get on the Internet. Put this together with the new weekend 'phone rates and the Internet really starts to become attractive.

In addition to the new software, Demon have also launched a new glossy magazine for its customers. As well as covering Demon related topics, the magazine provides lots of tips and information for UK Internet users. It looks as though they're shaping up to give CompuServe some stiff competition.

For more details contact **Demon Internet Limited** at Gateway House, 322 Regents Park Road, Finchley, London N3 2QQ. Tel: 0181-371 1234 or E-mail: internet@demon.net

### Interference Filters

Hugh Galt EI2IH of Shankill has recently returned to amateur radio

after an absence of 25 years. Unfortunately, Hugh is plagued by severe QRM particularly on the 1.8 and 3.5MHz bands.

The source of the interference is his 10 year old burglar alarm. He's taken a number of steps to reduce the noise on the higher bands by using ferrite clamps on the sensor leads. However, this has had little effect on 1.8 and 3.5MHz.

He's considered replacing the alarm system, but all the neighbours have the same system so he would be left with their noise. Other than wanting general help, he asks if a d.s.p. based audio filter is likely to help.

Although elimination at source is always the preferred way to overcome interference problems, a d.s.p. filter should help, particularly as Hugh's main interest is c.w. working. Modern d.s.p. filters can produce very narrow bandwidths with minimal ringing that can cut through a lot of the noise.

The noise reduction can be further enhanced by using a d.s.p. filter with a denoise algorithm. This will provide a significant random noise reduction whilst leaving the coherent tone of the c.w. signal intact.

The trick is to try before you buy, preferably in your home location - but you need a friendly local dealer to do that. If anyone else has suffered and cured interference from intruder alarms perhaps you'd write to me with the details.

### Internet News

The Internet continues to expand at an amazing rate and readers have sent in a number of interesting locations for you to explore. I'm also busy putting together my own home page on the BBC Networking Club's WWW site - details later.

Those with a particular interest in d.s.p. work should find the DSP WWW home page very useful. This can be found at <http://www.dspnet.com/welcome.html> My thanks to Derrick Darlow for finding this one.

Wayne Dillon G0JJQ from Stanmore is a regular user of the Internet to support his radio activities and has sent in details of his favourite sites. One very good starting point

that provides links to many other pages is the Yahoo entertainment, amateur radio page this can be found at:

<http://www.yahoo.com/yahoo/Entertainment/radio/amateur-radio/>

If you're a keen OXer then the DX info page is a must. This provides details of PacketCluster spots, DX mailing lists and full details of forthcoming DXpeditions. The location for this site is

<http://ve7tcp.ampr.org/DX/>

This same site is packed with other amateur radio information including an archive of ARRL DX Newsletters. These are to be found in the directory <http://bulletins/dxnl>

If you're out of bookshelf space for all those call books there's another WWW site that contains a mass of QSL information. The location is <http://www.systemtechnik.tu-ilmenau.de/ham/ham.html> Other interesting sites to watch out for are:

EI5DI home page (SuperDuper contest log and other programs):

<http://www.iol.ie/~okanep/>

GJ4IC0's Ham Radio Pages (general info):

<http://user.itf.net/~equinox/>

KA9FOX home page (contest and DX information):

<http://www.infoanalytic.com/ka9fox>

On-Line Amateur Radio Magazine:

<http://www.amateurradio.com/index.html>

QRP Radio Home Page:

<http://www.acs.ncsu.edu:80/HamRadio/HF/qrp/>

If you have any details on particularly good sites please E-mail me the details.

**That's it this month, however if you're planning to attend the Leicester Amateur Radio Show over the weekend of October 20 & 21st why not call at the PW stand where I'll be running a combined 'Bits & Bytes' & 'Decode' Clinic? So until then 'happy computing' and keep sending your letters to me Mike Richards G4WNC, 'Bits & Bytes', PO Box 1863, Ringwood, Hants BH24 3XD. CompuServe: 100411, 3444; Internet: mike.richards@bbcnc.org.uk**

### Special Offers

This month I've made some changes to the way I distribute software for special offers. The present system is proving very time consuming as I have to custom build each disk with the required software.

I've also had problems with reader's supplying faulty or unformatted disks or just not enough disks. So, I've put together a set of four disks with the most popular software combinations.

To speed things up, I will now supply the disks! Please allow up to two weeks for delivery.

#### IBM PC Software (1.44Mb disks):

**Disk 1 (Order Code DK1)** - JVFAX 7.0, HAMCOMM 3.0 and WEFAX 3.0  
**Disk 2 (Order Code DK2)** - DSP Starter plus Texas device selection software.  
**Disk 3 (Order Code DK3)** - Ultrapak 2.1 and NuMorse  
**Disk 4 (Order Code DK4)** - Mscan 1.3 and 2.0

#### Printed Literature:

Beginners Utility Frequency List (Order Code BL)  
Complex Signals Utility Frequency List (Order Code AL)  
Decode Utility Frequency List (Order Code DL)  
**FactPack 1** - Solving Computer Interference Problems (Order Code FP1)  
**FactPack 2** - Decoding Accessories (Order Code FP2)  
**FactPack 3** - Starting Utility Decoding (Order Code FP3).  
**FactPack 4** - JVFAX and HAMCOMM Primer (Order Code FP4).  
**FactPack 5** - On the Air with JVFAX and HAMCOMM (Order Code FP5).  
**FactPack 6** - Internet Starter (Order Code FP6).

For the printed literature just send a self addressed sticky label plus 50p per item (£1.50 for four, £2.50 for 7 and £3.00 for 9). For software send £1.00 per disk (£1.75 for 2, £2.50 for 3 or £3.00 for all 4) and a self addressed sticky label (don't forget I provide the disk!).

**END**

## BROADCAST

## ROUND-UP

Peter Shore rounds-ups all the latest news from the broadcasting world.

**W**ayne Dillon G0JJQ has written to me from Stanmore in Middlesex with news of two computer programs he thought might be of interest to readers of *PW*. Wayne told me that he is a keen amateur operator, but also enjoys listening to the broadcast bands, and had been looking for a computer program to help him keep a log of international radio stations.

Wayne logged into the ARRL bulletin board and found two programs which might fit the bill. One runs under DOS and produces report sheets which can be sent off to broadcasters as a reception report which should qualify for a QSL card.

The other is a Windows-compatible program which is an international radio database that can also control a radio set with the right interface (which includes Icom, Kenwood and Yaesu models at the moment). While the demonstration version is free, to get a copy with all the relevant data costs US\$25.00.

Wayne suggests this may represent good value, though. For more information, contact Wayne via E-mail at [w.dillon@ic.ac.uk](mailto:w.dillon@ic.ac.uk) or via snail mail at Flat 1, 31 Stanmore Hill, Stanmore, Middlesex HA7 3DS.

### Broadcast News

On to the broadcast news now. Long wave enthusiasts may have noted the return of RadioRopa to the frequency of 261kHz. That is the old Radio Volga and Radio Russia channel which entertained Soviet troops until their withdrawal, a couple of years ago, from the former GDR.

The long wave channel is operational from 0400 to 2100UTC. And you can also hear the station on short wave on either 5.975 or 5.98MHz.

Now some news for satellite listeners. Radio Netherlands is using two audio subcarriers on the RTL 5 television channel on Astra.

The Radio Netherlands Transponder 60 on 10.963GHz is carrying English and Dutch from the station. Try English on 7.74MHz at 0030, 0430, 1830 and 2030UTC and 7.92MHz at 0430, 0730, 1930 and 2230UTC.

Radio Sweden has moved its

audio service on Astra from transponder 26 to transponder 33 following the change of TV service on 26. The ZDF TV at 10.964 now has Radio Sweden in English and other European languages at 7.38MHz. Meanwhile, traditional radio listeners can tune to Stockholm at 1615, 1730, 2030 and 2130UTC on either 1179kHz medium wave or on 6.065MHz short wave.

Radio Norway's weekly English programme, *Norway Now*, can be heard in Europe at 1300 on 15.34 and 9.59MHz, at 1800 on 15.22, 13.805 and 5.96MHz, and 1314kHz medium wave.

Radio Norway transmitters relay

Deutsche Welle and the BBC World Service, was evacuated when it looked as though the volcano was about to blow its top.

The station HCJB in Ecuador has stopped transmitting on single sideband. Budget cuts forced the ending of the service at the beginning of September which until then operated on 15.54 and 21.455MHz.

The station received reports from almost every part of the world for its s.s.b. transmissions. It's a shame that what could have been seen as a good marketing exercise for the station has been dropped.

The Voice of America's (VoA) weekly

*Communications World* has a new presenter following the departure of Gene Reich to WorldSpace, a satellite communications company based in Washington. Kim Elliott, the VoA audience research officer, is hosting for the time being, so listen out at 2130 on Saturday on 6.04, 9.76, 9.77, 15.205MHz and the upper sideband channel of 19.379MHz.

Iran is increasing its international broadcasting, with a reported Serbo-Croat service started in August. There is a daily transmission at 1630-1700 on a new out-of-band

frequency of 7.07MHz (slap in the middle of the 7MHz amateur band), and at 1800 on 11.715 and 9.65MHz.

### Religious Stations

A new religious station launched a few weeks ago, WGTG in McCaysville, Georgia, is on the air on 7.355MHz. At the time of writing had been heard on Friday, Saturday and Sunday between 1300 and 2200UTC.

The WGTG Station owner, David

Frantz, said in an interview on Radio Netherlands' Media Network that he planned to increase to seven day a week tests from his 50kW transmitter soon. The station's address is WGTG, PO Box 1131, Copperhill, Tennessee 37517, USA.

Meanwhile, WYFR is reported to be in financial trouble. The station is run by Mr Harold Camping who claims the world ended in 1994. That must be the reason he is apparently not paying his staff, but why he sees the need to continue broadcasting if none of us exists anymore defeats me...!

A third religious station to be heard on the short wave bands out of the US is WJCR in Kentucky. It operates in English and Chinese on 7.49 and 13.595MHz using 50kW transmitters. The station runs 24 hours-a-day, and can be reached at PO Box 91, Upton, Kentucky 42784, USA.

### Burma Jamming

Jamming has affected broadcasts into Burma after the release this summer of the opposition leader Aung San Suu Kyi. The BBC World Service Burmese programmes are suffering interference, according to Bush House, as are broadcasts from the Democratic Voice of Burma relayed from Norway. That station has extended its evening transmission at 1430, running now for 45 minutes instead of 25. The channels used by the station are 11.85, 9.725 and 7.135MHz.

That's all I've got for you this month so, until next month keep listening and sending your letters to me via the *PW* Editorial Office.



neighbouring Denmark's external service, currently in Danish only. But from the start of 1996, Danmarks Radio plans to reintroduce English for listeners overseas, the first time the station has broadcast in another language since the 1960s. Watch out for more details in this column.

An erupting volcano forced international transmitters off the air on the Caribbean island of Montserrat in August. The Caribbean Relay Company, operated jointly by

**END**

# PACKET PANORAMA

This month Roger Cooke G3LDI returns to the computers of yesteryear, before bringing some disturbing news for packet users.

Some time ago, on a reader's behalf, I asked for information about using the Sinclair Spectrum computer for packet radio. From the replies, it would seem that there are quite a few amateurs doing just that!

I received a letter from J & P Electronics Ltd., regarding their mention in the September column. Apparently, they can offer a whole range of programs for the Spectrum, and in addition they can offer the modem.

The cost of the packet modem with watchdog timer including free software for the Spectrum is £75.00. It's also available with a printer port for £85.00. J & P Electronics can also supply programs for the Commodore 64, VIC-20, BBC-B, Atari ST/STE, Amiga 500/600 and others. The Spectrum has been around for a number of years now, but like the BBC-B, there are still many, possibly thousands, being used.

The strange commands referred to in the original reader's request, could possibly be the remote commands, starting with a double forward slash pair '//'. For example:

```
//L Lists messages *
//R name Read named file *
//S subject Send message to mailbox*
//. After sending message to mailbox,
next transmission must be //, to close
file *
//I Read information file
//J Read last 16 stations heard
//R H Read Help File (This list of
remote commands) *
//D Disconnect
```

Commands marked with a \* are for microdrive versions only.

## Law of Defamation

The use of the laws of defamation have been creeping into packet radio recently. Whilst I was in Australia last year, I was reading an amateur radio journal and came across an article which I think bears comment here.

I would imagine that most sysops are totally tired of the sick individuals who use the BBS and packet system as a wall, putting their vile rubbish out as bulletins, usually from a pirated

callsign. We will continue to suffer this barrage of rubbish, until we do something about it ourselves.

We must police the network with a series of personally issued passwords, M-filters, reject files and so on. Until that day comes, there will always be messages to trap and kill daily.

I am not a lawyer, so please excuse the lack of legal jargon and references. But looking at it purely from a layman's point of view, we are in a more invidious position than we realise. The media, newspapers, radio and television publish countless expressions of opinion from a diverse range of people.

If a person feels that their reputation has suffered as a result of such publicity, they sue for damages, usually with amounts looking like telephone numbers! In doing so, both the publisher of the title and author of the article are normally sued, the author for writing it and the publisher for publishing it.

It is not even necessary for the person's name to be mentioned if the description or identification of him or her is sufficient to enable people to recognise who is being spoken or written about. Thus it is common for people who try to defame without identifying any particular individual by name to find themselves being sued.

## Defamatory Words

The law presumes that, if defamatory words are spoken or written and published, what is written is false unless the person sued proves to the contrary. So, the normal onus of proof - whereby a person is deemed to be innocent until proven guilty - is effectively reversed because the person doing the suing goes into court with a presumed good reputation and the onus is on the person sued to show that this is undeserved.

By allowing systems automatically to send on messages that they receive, the damage can be done without the sysop even knowing about it, as we all know. This means that an amateur in such

a situation could be liable for prosecution even though he was not the instigator of the message.

Defamation is spoken of in the text books as being like a strict liability. Because the negligence has little to do with liability, it is in fact irrelevant that a publication accidentally defames, so long as the person intentionally published.

Where a bulletin board or repeater is allowed to publish without supervision a court could find that the publication was intentional. This would be a very dangerous situation for the average sysop, even with a lottery win to back him up!!

Now I come to the nub of this preamble. According to a report in the *Sydney Morning Herald*, a West Australian man was awarded Australian \$40,000 damages after a message libelling him was found on a computer bulletin board. This is believed to be the first time a successful defamation action has been taken in Australia over material published on an electronic mail system.

Apparently, an anthropologist working in the Kimberley region sent a message to a world-wide science related network of bulletin boards. This message alleged sexual misconduct as well as professional misbehaviour, reflecting on the academic competence, of a Dr. David Rindos. Dr. Rindos was, at the time, at the University of Western Australia's department of Anthropology.

The judge hearing the case commented about the slurs, before going on to say that the nature of the remarks was such that they are likely to be repeated. He also said that any rumours of a like kind, circulating previously, were likely to gain strength from the new publication. Quotes from this case are courtesy of the WIA.

## Profound Implication

This case has profound implications, not just for telephone-accessed computer bulletin board networks, but for the amateur packet radio network, too. Items, articles or bulletins sent as 'electronic mail' are 'published' by the computer network system, just as



With the Australian story this month, 'Packet Panorama' has a real British Commonwealth flavour, made even stronger when Roger Cooke G3LDI tells us he's persuaded Canadian friend Dave VE7IM onto packet! Roger G3LDI is pictured (far right) at VE7IM's QTH during his 1994 visit. Others in the picture (left to right) are Suzanne, XYL of VE7IM, Jean, XYL of VE7PL (Fred VE7PL is behind the camera) and the new packeteer himself VE7IM @ VE7FMY.#NVI.BC.CAN.N.

surely as printed journals.

The issues and implications are complex, and the legal arguments tortuous, but BBS sysops, and the whole amateur community, will have to come to grips with the situation sooner or later. I know it has been stated that the originator should bear the responsibility, but is this enough to protect the sysop?

I think we need a legal ruling on culpability. Hopefully the DCC will be actively engaged in producing such a ruling!

Let's hope this will make people think twice before putting digits to keyboards. I don't suppose for one minute it will stop the average hooligan that crawls around the network.

But as sysops, we must be more vigorous with our editing and ensure that comments on our BBS stay legitimate. Political or religious comment or questions about the integrity of others have no place in the amateur segment of the r.f. spectrum.

On that low note I'll say, see you next time. As usual, I may be contacted as follows:

On Packet: G3LDI @ GB7LDI.#35.GBR.EU

By Email: (with thanks via) mtaylor@uk.mdis.com

By Telephone: (01508) 570278.

On Snail mail: The Old Nursery, The Drift, Swardeston, Norwich, Norfolk NR14 8LQ.

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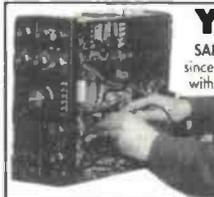
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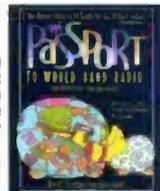
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Dick Eldridge G8PDS  
This long awaited new edition has been extensively up-dated and is full of diagrams and photographs. This book is a complete handbook/reference work and project book all rolled into one. The final innovation is that the necessary p.c.b. templates for the featured projects are provided at the end of the book making them much easier to work from when making your own p.c.b.s. 750 pages. £20.00.

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I. D. Poole  
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Mike Mansfield G6AWD  
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There is a lot to see, learn and do with packet. You don't need to be a 'guru' to join in the fun. This collection of articles and updates from ARRL *Computer Networking Conference Proceedings*, IAPR's *Packet Status Register*, *GEX*, *QST* and the *ARRL Handbook* promises an exciting ride for both packeteers and future packeteers. Hang onto your seat and start-up your modem! 144 pages. £12.95

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Stan Horzepa WA1LOU  
What is packet radio good for and what uses does it have for the 'average' amateur? What are protocols? where, why, when? Lots of the most asked questions are answered in this useful book. It included details of networking and space communications using packet. 278 pages. £8.95

### YOUR PACKET COMPANION

Sieve Ford WB8IMY  
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John Branegan GM4IHJ  
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## QRP

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Edited by Rev. G. Dobbs G3RLV

This paperback book has been compiled from circuits published in the G-QRP Club Journal Spirat from the years 1974 to 1982. Essentially it's a collection of circuits and projects covering everything from receivers, transmitters, antennas and accessories together with set QRP test equipment. This book is aimed at the keen constructor and provides all the information required to build the host of projects described. 96 pages. £8.50

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George H. Fathauer

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(Original Publishers Radio Corporation of America)

Re-published by Antique Electronic Supply (Arizona)

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This is a stiff covered paperback novel-sized book. And if you've got an interest in transmitting with valves, this is a useful reference source for valves up to 4kW input. The RCA authors have included some interesting practical circuits using their valves, including some for s.s.b., v.h.f. and others. Highly recommended reference source. 318 pages. £9.95.

## Projects

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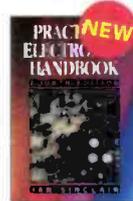
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# ENDNOTES

**L**ike everyone else on the *PW* Editorial team I have my share of sub-editing to do. I always enjoy the job (I wouldn't work in journalism if I didn't!) but occasionally I have an exceptionally fascinating article to work on. This month that job was 'subbing' G3SED's 'DXpertise With Devereux'.

Mike's article on his adventures with the Camel Trophy Team was a fascinating read and a joy to prepare. In particular, I felt I could share Mike's thrill at hearing old friends from the UK when he was in exotic DX locations. I hope you enjoyed his article as much as I did!

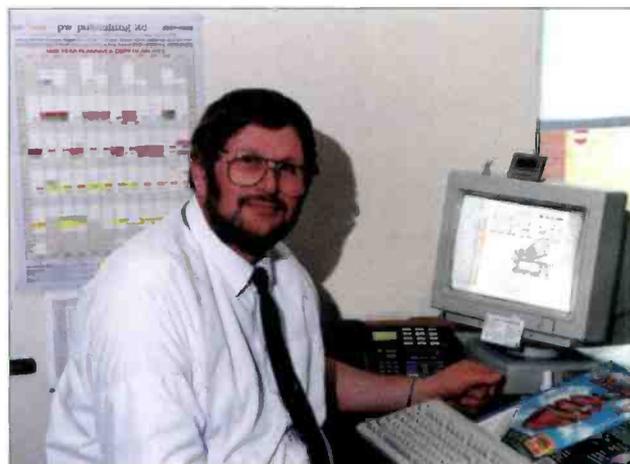
Altogether, I think this month's selection of DX related articles have proved most interesting. And now that Chris Page G4BUE has offered his advice on 'Breaking The 100 Barrier' to get that coveted 'Honor Roll'...perhaps you'll be encouraged to have a go!

On to a personal note now, and it's in the form of a 'thank you' to the many readers who responded to my comments on my interests in railways (including trams!). And although my idea for a 'railway' Net isn't going to get off the ground, many readers wrote to me on the subject.

I was also contacted by old friends from the British Rail Amateur Radio Society, of which I'm proud to say that I was a founding member. They reminded me of their activities and Nets. So, if you're interested in joining an existing Net where railways are the core subject, drop me a line.

And don't forget, if you ever want to join me (whenever I can get on the band!) I can often be heard on around 3.720MHz ( $\pm$ QRM) anytime (UK 'clock' time) after 7pm. I'd be delighted to work friends old and new.

The times I'm on the band should also satisfy those stations who were concerned I would 'interfere' with their own specialised 'Net'. They've no need to worry...my aim is to encourage the hobby, not to cause bad feeling. By the time I appear (if I do!) they've finished for the evening.



Finally on railways & radio I'd like to especially thank Ben Nock G4BXD for the superb photographs he sent me of the locomotives on the Welshpool & Llanfair Railway in Wales, and also Bruce McCartney GM4BDJ for the (autographed) copy of his book *The Railway To Langholm*. Thanks Bruce (the illustrated story of this Scottish Borders Railway is fascinating!).

Bruce McCartney also sent photographs of narrow gauge railways he saw on a visit to Lithuania. There was a great deal of Amateur Radio interest and I suggest that if you've had an interesting holiday, exchange visit or organised tour abroad meeting other enthusiasts, your story could make an interesting article for *PW*.

The more we meet our friends abroad, the more truly international our hobby becomes. So, before you go on holiday again, ask us for a *PW Author's Guide*...and you could share your holiday experiences with other readers and further extend the hand of friendship.

Next month, as the dark evenings draw in, *PW* is spending some time on the workbench and using/building some interesting test equipment. So, dust off that multimeter and prepare your bench. We're going to be busy!

Rob G3XFD

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We will always try to help readers having difficulties with *Practical Wireless* projects, but please note the following simple rules:

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- 4: Make sure you describe the problem adequately, with as much detail as you can possibly supply.
- 5: Only one problem per letter please.

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Over the years, *PW* has reviewed many items of radio related equipment. A list of all the available reviews and their cost can be obtained from the Editorial Offices at Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW for a large stamped self-addressed envelope.

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Components for *PW* projects are usually readily available from component suppliers. For unusual or specialised components, a source or sources will be quoted. Each constructional project is given a rating to guide readers as to the complexity.

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'Start Here....' Elaine Richards G4LFM takes a break from 'Novice Natter' to help you set up a workshop.

Mike Rowe G8JVE has some further ideas on the popular *PW* Robin frequency Counter

**Workshop Worries? - No Problem! - Ben Nock G4BXD says that being 'disabled' shouldn't put you off home-brewing and describes his own techniques to encourage you to get busy on the bench.**

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## Index to Advertisers

Aerial Techniques .....	66	J Birkett.....	66	QRP Component Co. ....	60
AH Supplies.....	66	Kenwood.....	5	QSL Comms .....	53
Altron Comms.....	57	Lake Electronics .....	66	Quartslab .....	77
Chevet Books .....	66	Langrex Supplies.....	60	RAS Nottingham.....	66
Cirkit.....	4	Leicester ARS .....	41	RSGB.....	29
Coastal Comms.....	53	Lentini Comms.....	66	SGC .....	4
Colomor Electronics .....	77	Lowe Electronics.....	6/7	Short Wave Magazine .....	26
Cricklewood Electronics.....	77	Maplin Electronics.....	cover iv	Siskin Electronics.....	49
Datong Electronics.....	57	Martin Lynch .....	38/39	SMC Ltd .....	2/3
EARS .....	77	Mauritron Technology .....	67	Spectrum Comms.....	67
Eastern Comms.....	24	Monitoring Times .....	24	Suredata .....	67
Haydon Comms .....	14/15	Nevada Comms .....	22/23	Tennamast.....	67
Holdings Amateur Electronics.....	77	North Wales Radio Rally .....	60	Venus Electronics.....	67
Howes, CM .....	49	PCB Service .....	60	Waters & Stanton .....	8
Icom UK .....	cover iii	Photo Acoustics .....	57	Yaesu UK.....	cover ii
Interconnections .....	49	PW Publishing.....	44		

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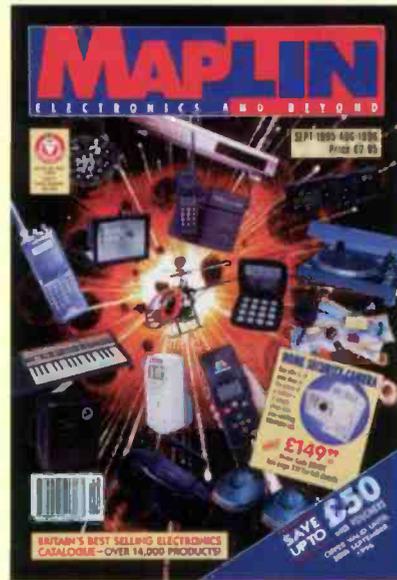
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