Reviews:
Alinco DJ-F1E Miniature Hand-Held Transceiver
Optoelectronics Frequency Meter
Nelson Electronics Three Band VHF Antenna
The Untenna VHF & UHF Low Profile Mobile Antenna

Build
The Beaver 50MHz AM Transmitter

Plus:
Amateur Radio In The Gambia
New-Style Competition
Special Offer
And Much More!
THE NEW
FT-1000 FOR DYNAMIC DX

The FT-1000 is a new top of the range all mode h.f. transceiver that is the result of more than 25,000 hours of intensive research by Yaesu’s top design engineers. They have adopted a completely new approach to the application of digital and RF technology. The extensive use of surface mounted components has allowed six microprocessors and five Direct Digital Synthesisers to be integrated with a simple to use operator interface to give a highly reliable full featured transceiver that has been optimised for serious h.f. applications. Please write or call SMC or your local authorised Yaesu dealer for the full specifications of this dynamic new transceiver and discover how you can open up the bands.

YAESU
UK Sole Distributor
South Midlands Communications Ltd
S.M. House, School Close,
Chandlers Ford Industrial Estate,
Eastleigh, Hampshire SO5 3BY
Tel: (0703) 255111

Prices and specifications are subject to change without notice.
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Until now, you needed to carry both a transceiver and a wideband receiver to enjoy a QSO and wideband receiving. Icom now offer two new handhelds, which combine a 144MHz or 430MHz transceiver with wideband receive capability.

**Receive it all from 25-950 MHz**

VHF and UHF frequencies plus simultaneous 2-frequency receive capability are within your reach. Choose from a ham band signal and another from FM broadcasting, TV audio, VHF air band, marine band and more in the AM, FM or wide-FM mode.

This feature also enables simultaneous 2-frequency receiving on the ham band or cross-band QSO with a dual band FM transceiver.

*specification guaranteed: 50 - 905.

**Complete and compact**

These ruggedly-built, splash-resistant handhelds fit snugly into your hand.

**Full 5 Watt output power**

By connecting an external 13.5 ~ 16V DC power supply, a full 5 Watts of output power is available. You can choose 3.5W, 1.5W or 500 mW of low output power.

**Product shown larger than full size.**

**Separate indications and controls**

The large easy-to-see function display with lighting shows operating frequencies, S-indicators, and memory or call channels for both bands. Independent volume and squelch controls allow you to change settings in each band separately.

**24-hour clock with an ON/OFF timer**

This function can be used for convenient scheduled QSO and standby receiving, turning the transceiver ON and OFF as specified to conserve battery power.

Appearing simultaneously are the clock and transmit frequency for total monitoring capability.
Advanced scan functions
Find desired stations swiftly with the full scan, programmed scan, memory scan, memory skip scan and priority watch.
These operate independently on each band and allow undesired frequencies and memory channels to be skipped.

Total recall capability
Store and retrieve all necessary frequencies with 96 channels as follows:

<table>
<thead>
<tr>
<th>Ham band</th>
<th>Wideband receiver</th>
</tr>
</thead>
<tbody>
<tr>
<td>Memory ch.</td>
<td>30</td>
</tr>
<tr>
<td>Call ch.</td>
<td>1</td>
</tr>
<tr>
<td>Scan edge ch.</td>
<td>2</td>
</tr>
</tbody>
</table>

Ready to operate
A battery pack or battery case, wall charger, flexible antennas, hand strap and belt clip come with the transceiver.

Other attractive features
Listed below are a few of the other sophisticated features.

- Triple tuning system: direct keyboard entry, the up/down keys or main dial on the top panel.
- Pocket beep, tone squelch and subaudible tone encoder functions.*
  *an optional UT-63 Tone squelch unit is required
- 15-digit auto dialling with 4 DTMF memory channels for.
- One-band indication for simplified operation.
- Monitor function to check the repeater input frequency.
- Fully programmable offset frequency.
- External DC power jack with charging capability. (Except for the BP-85.)
- A variety of tuning steps separately programmable for each band.
- Simple 1750 Hz tone call transmission for the IC-2SRE and IC-4SRE.
- Memory masking function for first recall of often-used channels and hiding of seldom-used channels.
- Memory transfer function.
- PTT lock function.
- Lock function for the keyboard and main dial.
- Automatic power saver for longer operating times.
- Automatic power-off function.
- SET mode for critical settings.
- Transmit/receive indicator.
- Accepts all battery packs and battery cases for ‘S’ series transceivers.
NEW PRODUCTS COMING SOON FROM YAESU

FT-890 all band HF Transceiver

- Built in ATU
- 13.8V DC Operation
- Compact size

NEW HANDHELDs FOR 2m AND 70cms

- Miniature size
- Front Panel Keyboard
- Based on the popular FT-26/76

ULTRA COMPACT HANDHELDs

Based on a long line of outstanding handhelds, the FT26 and FT76 offer a vast array of features made possible by the very newest manufacturing miniaturisation techniques. The diecast alloy rear cast/heat sink and the thick high impact polycarbonate front panel provide the ruggedness demanded by constant day to day use.

Up to five different user selectable power levels are available (with 12VDC battery) and an external DC jack is provided on the top panel to power the transcievers from a 5.5-16V DC external source.

The large LCD has selectable lighting mode, shows a full six digits and has a bar graph for signal strength and power output.

Vox circuitry is included to enable hands-free operation with the optional YH2 headset.

Battery saving functions are standard with a constantly updated battery save facility based on past operation history. Automatic power off can be selected for 10, 20 or 30 minutes.

Other features include 53 memories, 5, 10, 12.5, 15, 20 or 25kHz + 1MHz steps are available along with an optional CTCSS unit and many other matching accessories - see below.

- FTS17A CTCSS module
- FBA12 6 x AA cell case (empty)
- FNB25 7.2V 500mAH nicad
- FNB26 7.2V 700mAH nicad
- FN27 12V 600mAH nicad
- EC-DC-5 DC adaptor w/noise filter
- MMB49 Mobile bracket
- CSC53 Vinyl case for FNB25
- CSC55 Vinyl case for FNB26

Both the FT26/FT76 come supplied complete with FNB25, NC28C and CLIP3 as standard.

---

Southampton (0703) 255111
Leeds (0532) 350606
Chesterfield (0246) 453340
Birmingham 021-327 1497
Axminster (0297) 34918

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Southampton (0703) 255111
SMC HQ, School Close, Chandlers Ford Ind. Est, Eastleigh.
Hants SO5 3BY
9am - 5pm Mon-Fri
9am - 1pm Sat

Leeds (0532) 350606
SMC Northern, Newhall Lane Ind. Est, Nowell Lane, Leeds LS9 6JE
9am - 5.30pm Mon-Fri
9am - 1pm Sat

Chesterfield (0246) 453340
SMC Midlands, 102 High Street, New Whittington, Chesterfield, DE12 7AT
9am - 5.30pm
Tues-Sat

Birmingham 021-327 1497
SMC Birmingham, 504 Alum Rock Road, Alum Rock
Birmingham B14 6ND
9am - 5.00pm, Tues-Fri
9am - 4pm Sat

Axminster (0297) 34918
1 Western Parade, West Street.
Axminster
Devon EX13 5NY
9.00am - 5.20pm, Tues-Sat

---

Practical Wireless, November 1991
SMC are pleased to announce that we are now the official UK Distributor for the complete range of DAIWA products.

POWER SUPPLIES

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>PS120M2</td>
<td>3.15v Variable 9A/12A max.</td>
<td>£69.95</td>
</tr>
<tr>
<td>PS304</td>
<td>1.15v Variable 24A/30A max.</td>
<td>£129.95</td>
</tr>
<tr>
<td>PS60X</td>
<td>1.15v Variable 32A/40A max.</td>
<td>£189.00</td>
</tr>
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</table>

COAX SWITCHES

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS201</td>
<td>2 Way S0239 DC-600MHz 1kW</td>
<td>£13.95</td>
</tr>
<tr>
<td>CS20152</td>
<td>2 Way N DC-2GHz 1.5kW</td>
<td>£27.50</td>
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SWR METERS

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
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<tbody>
<tr>
<td>CM101</td>
<td>1.8-15MHz 15/150/1000W</td>
<td>£59.95</td>
</tr>
<tr>
<td>CM101N</td>
<td>250-25MHz N</td>
<td>£59.95</td>
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LINEAR AMPLIFIER

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<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
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<tbody>
<tr>
<td>LA208H</td>
<td>2m 1.5-5W in 30-80w out</td>
<td>£59.95</td>
</tr>
</tbody>
</table>

SMC FOR ALL YOUR ACCESSORIES

SMC are proud to be associated with COMET Co LIMITED

COMET produce arguably the best quality base and mobile antennas available today on the amateur radio market. Discerning radio amateurs will appreciate the outstanding combination of amazing performance and aesthetically pleasing styling of some of the latest range of antennas available from COMET via SMC, the authorised UK distributor. New additions to the range, which will be available soon are the

B10 2m/70cms Mini Car Mount (Black) 3.0m long (£12.75)
B11 2m/70cms Mini Mount (White) 3.0m long (£12.75)
B22 2m/70cms Car Mount (Black) 0.89m long (£13.25)
SS 9 Mini Truck Mount (Black) 2m/70cms 2.1m long (£16.50)
CM-702 2m/70cms Tribander 2.1m long (£25.00)
CA-785 40cms Monobander 2.1m long (£29.00)

FILTERS

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
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<tbody>
<tr>
<td>CF-520</td>
<td>1/4 of 15/16W P.E.P.</td>
<td>£24.85</td>
</tr>
<tr>
<td>CF-521</td>
<td>1/4 of 15/16W P.E.P.</td>
<td>£24.85</td>
</tr>
<tr>
<td>CF-30H</td>
<td>2 Way 15/16W P.E.P.</td>
<td>£22.60</td>
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<tr>
<td>CF-320</td>
<td>2 Way 15/16W P.E.P.</td>
<td>£22.60</td>
</tr>
<tr>
<td>CF-31H</td>
<td>2 Way 15/16W P.E.P.</td>
<td>£22.60</td>
</tr>
<tr>
<td>FF-60S</td>
<td>4 Way 15/16W P.E.P.</td>
<td>£18.35</td>
</tr>
<tr>
<td>FF-30P</td>
<td>2 Way 15/16W P.E.P.</td>
<td>£18.35</td>
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SWR METERS, SWR

<table>
<thead>
<tr>
<th>Item</th>
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<tr>
<td>CM-420</td>
<td>1/2 of 15/16W P.E.P.</td>
<td>£24.75</td>
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<tr>
<td>CM-421</td>
<td>1/2 of 15/16W P.E.P.</td>
<td>£24.75</td>
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<tr>
<td>CM-150</td>
<td>1/2 of 15/16W P.E.P.</td>
<td>£24.75</td>
</tr>
<tr>
<td>CM-420</td>
<td>1/2 of 15/16W P.E.P.</td>
<td>£24.75</td>
</tr>
<tr>
<td>CM-300</td>
<td>1/2 of 15/16W P.E.P.</td>
<td>£24.75</td>
</tr>
<tr>
<td>CM-310</td>
<td>1/2 of 15/16W P.E.P.</td>
<td>£24.75</td>
</tr>
<tr>
<td>CM-300</td>
<td>1/2 of 15/16W P.E.P.</td>
<td>£24.75</td>
</tr>
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COAX SWITCHES

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
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<tbody>
<tr>
<td>CSW-20</td>
<td>2 Way 15/16W P.E.P.</td>
<td>£20.50</td>
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<tr>
<td>CSW-30</td>
<td>2 Way 15/16W P.E.P.</td>
<td>£20.50</td>
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BASE SETTINGS

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>BASE1</td>
<td>Automobile 1/2 of 15/16W P.E.P.</td>
<td>£24.75</td>
</tr>
<tr>
<td>BASE2</td>
<td>Automobile 1/2 of 15/16W P.E.P.</td>
<td>£24.75</td>
</tr>
<tr>
<td>BASE3</td>
<td>Automobile 1/2 of 15/16W P.E.P.</td>
<td>£24.75</td>
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MOUNTS

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
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<tbody>
<tr>
<td>M31T</td>
<td>40ft 2 Way 15/16W P.E.P.</td>
<td>£24.75</td>
</tr>
<tr>
<td>M31T</td>
<td>40ft 2 Way 15/16W P.E.P.</td>
<td>£24.75</td>
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</tbody>
</table>

MOBILE ANTENNAS

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>CAS-410</td>
<td>4m 1/2 of 15/16W P.E.P.</td>
<td>£24.75</td>
</tr>
<tr>
<td>CAS-411</td>
<td>4m 1/2 of 15/16W P.E.P.</td>
<td>£24.75</td>
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MIDITOWER SERIES

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Price</th>
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<tbody>
<tr>
<td>MID 1D</td>
<td>Base plate</td>
<td>£36.30</td>
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<tr>
<td>MID 2D</td>
<td>Base plate</td>
<td>£36.30</td>
</tr>
<tr>
<td>MID 3D</td>
<td>Base plate</td>
<td>£36.30</td>
</tr>
</tbody>
</table>

Channel antennas

+ Free Finance on selected items, subject to status. Details available on request.
+ Up to £1000 instant credit, a quotation in writing is available on request, subject to status.
+ Yeasu Distributor Warranty, 13 months parts and labour.
+ Carriage charged on all items as indicated or by quotation.
+ Prices and availability subject to change without prior notice.
+ Same day dispatch wherever possible.
HIT THE BULLSEYE WITH

ARROW

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We give you a

ICOM

IC-W2

HANDHELD

NOW IN!

£389

NEGOTIATE YOUR OWN DEAL!

Our sales staff will provide a recommended retail price for any item.

DUAL BAND HANDHELDs

C528 £359 extended receive mod
TH77E extended rx £397

BARGAIN IC24ET £299

HF TRANSCEIVERS

FT757DX Yaesu (RRP £969)
£869 save £100!!

NEW TS450S £1150 (RRP)
TS550S Kenwood
RRP £1399 £ PHONE

FREE 20 AMP PSU or FREE FINANCE
(Goods at rrp only).

RECEIVERS

IC-R7 ICOM £585 cash price
AR2000 £259 inc latest mods
IC-R1 ICOM £339
MVT7000 £289

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TH27E Kenwood inc nicad/charger £254
New FT28E Yaesu inc nicad/charger £239.95
IC2SE ICOM inc nicad/charger & receive
extend! £249

MICROSET

LINEARS

New well-made range from Italy
VUR30 FM dual band amplifier 2m/70cm...
SR100 2m 4/25 IN-100W OUT Preamp
RS8 2m 1/7 IN-50W OUT Preamp
RS20 2m 1-4 IN-30W OUT Preamp

VHF/UHF BASE STATIONS

TS790E Kenwood £1499
IC-275E (2 metre) ICOM £999
FT356R Yaesu £1299

ALINCO

Dje new Mini 2m Handy with Airband £229
DJ580E 2m/70cm Handy with Ext Rx £336

GR590E 2m/70cm mobile £472.50

2 METRE/70CM MOBILES

TM241E Kenwood £295
TR751E Allmode £599
FT5200 Yaesu £599
TM702E Kenwood £455

ROTATORS

G250 200kg/cm. Light duty £75.95
G400 600kg/cm. Medium duty £145
G600RC 600kg/cm. Round cont £175
G600RC 700kg/cm. Med/large £229

Other models — discount prices on request.

NEW! CONTEST HEADSET

This NEW headset from TELEX has 50-15000Hz response and noise cancelling dynamic mic favouring 100-8000Hz.

SAE for data sheet and PRICE.

RADIO TECH MODIFICATIONS

This excellent new book from USA gives hundreds of Mods, for receive/tx, repeater etc, etc

£14.50

TONNA ANTENNAS

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SAE for catalogue

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2M HANDY WITH BUILT-IN-SCANNER!
£425

ay you unbelievable part-exchange prices OR will slash the price outrageously!

DAIWA
AMATEUR RADIO EQUIPMENT

N5660P PEP METER
£169.95

ICOM IC735
HF TRANSCEIVER
(RRP £1000) OUR PRICE £889 - SAVE £101

COMET ‘THE EFFECTIVE ANTENNA’
NEW RADIAL: Mobile antennas independent of vehicle ground plane.

0% FINANCE
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Many items available on 0% finance. Please enquire if the equipment you want qualifies — if not we can probably save you the finance charges anyway!

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AND AT ALL ARROW SHOWROOMS

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Still rates as the most comprehensive hand held dual-bander available to the amateur!

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ARE NOW SOLD THRU ICOM DISTRIBUTORS THROUGHOUT THE WORLD.....

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WITH OUR MODIFICATION THIS RECEIVER IS A WORLD BEATER! £1049-

IC-R100 = ONLY AVAILABLE from A-R-E
WITH S-S-B - WHY SETTLE FOR ANYTHING LESS !
500 HZ - 1800 MHZ
100 MEMORIES

IC-R1 They said it couldn't be done...
NOW AVAILABLE WITH S-S-B!
100 KHZ - £399-
1300 MHZ WITH S-S-B £399-
WITHOUT S-S-B

IF YOU HAVE ANY UNIT TO SELL OR PART EXCHANGE - COME TO US
FOR A TERRIFIC DEAL!

IN STOCK NOW
ALINGO DJ-F1E
V-H-F HAND HELD
MUST BE SEEN!

The UNBEATABLE
KT22 2Metre Hand Held
NOW IN STOCK!

H-P AVAILABLE
ALL EASY TERMS
ARE BASED ON AN
APR of 24.4%!

Check out our local
Competitors - THEY CHARGE MORE!

WE CARRY A FULL RANGE OF KENWOOD PRODUCTS
AT UNBEATABLE PRICES!

NOW IN STOCK

ARE COMMUNICATIONS
EASY PARKING
AT REAR
COME AND SEE US AT THE LEICESTER EXHIBITION ON OCTOBER 25/26

LEICESTER AUTUMN SALE
ALINCO – HIGH IN PERFORMANCE – LOW IN COST

Normally £189
DJ-S1E
2m FM MINI HANDHELD TRANSCEIVER
* 40 memory channels
* 8 scan modes
* Programmable VFO
* Half duplex operation
* 6 channel steps
* Frequency lock
* One touch squelch
* Beep on/off function
* Battery save function
* Dial control reverse
* Automatic lamp-off

Normally £239
DJ-F1E
2m FM MINI HANDHELD TRANSCEIVER
* 40 memory channels
* 8 scan modes
* Programmable VFO
* Half duplex operation
* 6 channel steps
* Frequency lock
* One touch squelch
* Beep on/off function
* Battery save function
* Dial control reverse
* Automatic lamp-off

Normally £359
DJ-560E
DUAL BANDER
RX option: 110-137MHz/400-520MHz
includes:
* Full DTMF – Ni-Cad pack & AC Charger
* 144/430-440MHz
* 3 watts (5 watts max)
* 1 CD readout
* 5 ch. steps
* Dual display
* Dual watch
* Rotary dial selector
* Rotary function
* Reverse repeat
* Battery save on/off

Normally £539
DR-590E
DUAL BANDER DETACHEABLE HEAD
RX options: 137-174/410-470MHz
* Dual illumination
* Reverse repeat
* 1750Hz tone
* Priority functions
* Mute function
* Multiple memory
* Detachable head
* Lcd down mic.
* All hardware
* 150 x 50 x 178mm

YUPITERU SCANNERS ASK FOR SPECIAL SHOW PRICE

NEW LOW PRICE
MVT-5000 £229
The MVT-5000 is still available and covers 26-550/800-1300MHz. If you don’t mind missing the TV band, this model has to be one of the best ever scanners built. Its sensitivity is still unbeaten and its construction and reliability is legendary. FREE CHARGER!

THE NEW
MVT-7000 £299
1MHz-1300MHz
* AM-NBFM-WBFM
* Multiple steps
* Better than 0.5µV
* 200 memories
* Rotary dial
* S-meter
* Fast scan speed
* Lockout/priority
* Ni-Cads
* Charger/AC PSU
* 12V lead

THE NEW
VT-125 £169
AIRBAND MK-II
* 108-142MHz AM
* Better than 0.5µV
* Ultra compact
* 30 memories
* Super audio
* Ni-Cads
* Charger
* 12V DC
* 25kHz steps

PACKAGE DEAL AVAILABLE ON ALL HF TRANSCEIVERS

Some examples are shown here!

ICOM IC-725
£759 + FREE 20 AMP POWER SUPPLY

KENWOOD TS-450S
£1099 + FREE 20 AMP POWER SUPPLY

ICOM IC-735
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Keylines

We’ve got a new competition for you this month, and like many facilities in today’s world of electronics, it’s interactive. Our ‘Cartoon Caption Competition’ allows you to have a bit of fun, make your own topical comment and provides a chance for you to win a prize into the bargain!

As usual, John Worthington G3C0I, our cartoonist, has come up trumps interpreting a topical subject. Before I explain though, why don’t you look at the competition page and try and guess what the topical comment is this month. I don’t think you’ll have much trouble!

We’re planning to run this competition fairly regularly and it will aim at a topic of interest to the radio hobby. If, like me, you are a keen Punch reader (my dentist keeps a goodly stock ranging from 1952 to 1972), you’ll have seen their excellent cartoon caption competitions. The PW team is looking forward to your captions, whether they’re acid, decidedly corrosive or just plain funny. So get writing NOW!

A Testing Time

Exams provide more than a test of academic ability. They also try the patience, your good humour and nerves and help you remember things you never realised you’d absorbed.

Now and again though, the examinations themselves are called into question, as people realise that problems have been found. The recent high tide of interest regarding the Novice Licence introduction, left behind some interesting comment on the City and Guilds Radio Amateurs’ Examination, as the initial flood of publicity receded.

It turns out that many operators, including me, realise that the Novice training course has touched raw nerves. Far from being a second best system, the Novice scheme has included some long-needed practical training in the course.

In my mind, and others too as I’ve heard on the bands, the requirement for Novice trainees to receive practical training in conducting a QSO, is an excellent idea. Obviously, John Worthington’s cartoon takes the idea to humorous extremes, but the basic idea surely makes sense?

Proven Pilot

When I learned to pilot an aircraft myself, I eventually had to prove that I could apply the theory learned in the classroom, into a practical flight and safe landing (albeit rather bumpy!).

There wasn’t a requirement to prove myself in a similar way with the RAE. Despite the fact that I had been immersed in radio for quite a few years before I got my licence, I made some embarrassing mistakes when I first came on the air. For example, the late Jack Watts G2DSW very rightly gave me ‘a right telling off’ when I once used a semi-automatic bug key on 1.8MHz c.w. without key-click filter.

Dear, crusty old G2DSW knew instinctively that I’d not even remembered to filter the key. My key-clicks had been heard all over the band throughout Hampshire that evening. If I’d thought a little more about it, and had been shown the effect during training, the annoyance could have been avoided.

So, why can’t we incorporate simple, practical tests into the RAE? As I’ve said, it’s difficult to imagine the scene G2O0I’s drawn for us, but at least the nearby carpenter would provide experience in carrying out a simulated QSO in the face of interference!

Practical Tests

As I see it, RAE candidates would have to prove that they knew how to use an absorption wavemeter and tackle simple interference problems. The practical tests could be taken separately, and to save (us) money, could be overseen by radio amateurs themselves.

Having to undertake a simulated QSO, using ‘phone or c.w. or both, wouldn’t be a problem either, because this aspect would have been covered in their course. Many readers have written to me on this point, and I’ve yet to see or hear anything against the idea.

My comments aren’t meant to be taken as a criticism of the system. It’s just that as our hobby matures and approaches its second century, to cope with the onslaught of modern technology (with all its weaknesses, whether it be originating or suffering from interference), we must adapt to survive.

The Lad Himself

Editors often drop clangers, but how could an amateur radio magazine journalist forget the name Hancock! I did, and offended someone into the bargain.

I owe a sincere apology to George Hancock G1ZJH of Hull, who although shown in the picture (page 17, August PW) at the Dayton Hamvention standing between Michael GINee and Liz’ GOJWN, wasn’t even given the courtesy of a mention!

Sorry about that George, and I hope that your friends will now believe that you really did go, and that PW didn’t intend to ignore you. Put it down to G3XFD’s size 14 hobnails again!

Leicester Show

I’m looking forward to meeting many of you at the 1991 Leicester show as I really enjoy the annual Granby Halls event. I’ve only missed one show. Last year, despite having moved QTH on the Friday (and not finishing the move until 2am on the Saturday!), I wasn’t there on the second day.

This time, I’m planning to be there throughout the two days. So, please come along to the Practical Wireless and Short Wave Magazine stand.

I’ll look forward to chatting to you, and hearing your ideas, comments and criticisms. They’re all welcome because we care. See you there!

73 DE
Rob Mannion
Dear Sir
In reply to the ‘Receiving You’ column (September) and cartoons with captions as an extra competition. I have enclosed some of the old chestnuts which I enjoy.
John Tye G4BYV
Dereham, Norfolk

Editor’s reply: John Tye’s letter contained some delightful cartoons from the pen of John Worthington GW3COI. As from this month, you’ll see that we’re introducing a new competition based on a cartoon. The cartoon will reflect a topical issue involving the hobby, and be published with a caption. You then have an opportunity to comment (printable captions please!) on the topic via your caption, air your opinions in a humorous way and stand the chance of winning a prize! The first ‘Caption Competition’ pokes fun at the idea of introducing practical elements into the RAE (see ‘Keylines’). We’re looking forward to receiving your captaional!

Dear Sir
I read with interest the valve versus solid state debate. It brings back old memories of the 60s. Let’s look at it this way, valves can, and do offer a very good performance for very little cost. Often, valves can be obtained from old equipment for next to nothing. I do not agree with John Hey G3BDQ’s opinion on the t.r.f. These receivers if properly built and operated, can give a superhet a run for their money, as far as signal-to-noise ratio is concerned.
It is better to separate the regenerator from the detector, by using an infinite impedance amplifier with the help of a friend, GM4FDT. It has left a top-of-the-range solid state amplifier standing! So let’s not condemn valves, as they’re useful devices and very rugged.

If there’s a ghost of a chance that you print this letter please give donation to a good cause. They’re useful devices and very rugged.
Stuart Martin GMOHMR
Invergordon, Ross-Shire, Scotland

Editor’s reply: A voucher will be sent to the Star Letter each month will receive a voucher worth £10 to spend on items from our PCB or Book Services, or on PW back numbers, binders, reprints or computer program cassettes. Letters must be original, and not duplicated to any other magazines. We reserve the right to edit or shorten any letter. Brief letters may be filled via our Prestel Mailbox number 20671191. The views expressed in letters are not necessarily those of Practical Wireless.

Dear Sir
I first read PW during the last war, I believe the year was 1944, 47 years ago! The price was 4 old pence (two and a half new pence). I remember reading F. J. Camm’s article about TV and that it would not be possible to record TV pictures as we then recorded sound. I wrote a letter which PW published. In the letter I suggested TV pictures in the future would be recorded on a strip of metal fed through a pick-up at high speed. The editor in the next edition dismissed this idea as nonsense, but I received a little book for my letter which explained about wire and wire gauges, transformers, etc.
I’ve enjoyed PW ever since then!
Dennis Wood
Saffron Walden
Essex

Editor’s reply: Thank you for your memories and loyalty Dennis. I hope you enjoy using your voucher, but don’t wait for another 47 years before writing again! We would be pleased to receive more reader’s memories to be used in the 60th anniversary edition of PW, due to be published in the September 1992 issue.

Dear Sir
I am writing to suggest that you have an article, or better still a series of articles in PW, concerning kits and their building. In the year or so since I renewed my interest in radio (dormant for 20 years) I have greatly enjoyed reading PW, especially the constructional projects.
However, I have only ventured to build kits, it’s certainly much easier than having to first buy all the separate components! I have purchased and built kits from about half a dozen different suppliers, most of whom advertise in PW. To me the difference between a ‘good kit’ that is easy-to-build and works first time and a ‘bad kit’, are the instructions (or lack of them), a good p.c.b. with component positions printed on the upper side and no need for any test equipment (I have only a multimeter).
So how about a review of what is available and the ‘pros and cons’ of particular manufacturers/suppliers kits? Perhaps you should get someone with little or no kit building experience, to try to build each kit using only the instructions supplied. That would be most interesting!
Anyway keep up the good work at PW which I read every month and particularly enjoy, because it covers such an interesting and wide range of topics each month. I very much like the attractive, easy-to-read style in which everything is presented. It’s much more readable and enjoyable than any of its rivals.
Nick Hobbs G7IYG
Uxbridge, Middlesex

Editor’s comment: The PW team thank you for your kind comments Nick. It makes the hard work worth it! Your suggestion is a good one, and we hope to cover kits, kit building and what’s available early in the new year. We’ve got some exciting new projects and ideas coming as the magazine enters its 60th anniversary year.

Dear Sir
I may take this opportunity of thanking you for a first class magazine, but don’t hang back! By the way, in your review of the Cap.Co antenna switch (PW April) you talked about weather-proofing. What I do with my home-brew remote switches is to enclose the switching unit in an ice-cream box.
I use the lid of the carton, suitably stiffened with an aluminium sheet on the outside surface, to provide the mounting plate. The box then fits on the box in the usual way as a cover.

If there’s a ghost of a chance that you print this letter please give donation to a good cause. They’re useful devices and very rugged.

Stuart Martin GMOHMR
Invergordon, Ross-Shire, Scotland

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Dear Sir
I see that the 'Receiving You' column has not received any letters in support of Mr Mitchell E15GQ. May I, as a 'listener' offer my humble, unlicensed views?
I have been listening to short wave broadcast stations for some nine months now and contribute regularly to the 'LMS' column in your sister publication Short Wave Magazine.
Recently, I became interested in listening to the amateur bands on h.f. and 144MHz. As part of my job I regularly use v.h.f. radio. My main source of 144MHz QSOs for listening are from the two London repeaters GB3SL and GB3EL.
I find that the standard of QSO for on h.f. far exceeds that of the 144MHz. The r.t. discipline on h.f. I find to be almost 100% correctly applied, with call-signs regularly given and the content of each persons QSO informative and knowledgeable.
Unfortunately I find that a large proportion of the 144MHz activity IS foul mouthed, lacking in interest and severely lacking any semblance of r.t. discipline or procedure.
I don't think that 144MHz repeaters should be closed down, but that the elder statesman of the amateur fraternity should take the time to educate the younger ones in the correct ways and traditions of a wonderful hobby. Perhaps the RAE instructors, who do such a wonderful job, might consider this point.
A gun is only sold on production of a licence. How about this for radios? It would be simple to operate and should pose no problem for genuine amateurs.
I shall now sit back and see if this is published.

Dear Sir
Reference the articles you print in Practical Wireless. Considering that 934MHz CB is a minority group, you write mainly with that allocation in mind, in fact 75% of your article deals with it each month.

The 27MHz CB service is hardly mentioned, but that's where the bulk of the CB population is. Why not give a little more print to the many and less to the few?

Thank you for an otherwise good service.

W. Butcher, Leeds, Yorkshire

Editor's reply: Mr Butcher's letter was originally written to the 'CB High & Low' contribu-

Could the RAE ever be like this? Worthington our cartoonist has shown what he thinks a 'practical' test in the RAE could be like, when it's taken alongside other City & Guilds subjects. All it needs is a suitable caption.

So, send in your entry whether it be humorous, slightly acid, or decidedly corrosive - it could win you a prize and give you a chance of voicing your opinion into the bargain!

Write your caption here.

New Caption Competition

Could the RAE ever be like this? Worthington our cartoonist has shown what he thinks a 'practical' test in the RAE could be like, when it's taken alongside other City & Guilds subjects. All it needs is a suitable caption.

So, send in your entry whether it be humorous, slightly acid, or decidedly corrosive - it could win you a prize and give you a chance of voicing your opinion into the bargain!

The winner will receive a year's subscription, and the two runners-up will be awarded six month subscriptions.

Send your entry to (photocopies acceptable with the flash below): PW Publishing Ltd, November Caption Competition, Eneeko House, The Quay, Poole, Dorset BH15 1PP. Closing date Friday 22 November 1991. The Editor's decision will be final, no correspondence will be entered into.

Services

Queries
We will always try to help readers having difficulties with Practical Wireless project, but please note the following simple rules:
1. We cannot advise on modifications to our designs, nor on commercial radio, TV or electronic equipment.
2. We cannot deal with technical queries over the telephone.
3. All letters asking for advice must be accompanied by a stamped, self-addressed envelope (or envelope plus IRCs for overseas readers).
4. Make sure you describe the query adequately.
5. Only one query per letter please.

Back Numbers & Binders
Limited stocks of many issues of PW are available, available at £1.65 each including post and packing.

Binders, each holding one volume of PW, are available price £4.50 each (£1 P&P for one, £2 for two or more)

Send all orders to the Post Sales Department.

Subscriptions
Subscriptions are available both for the UK and overseas. Please see current prices for the latest prices.

Constructional Projects
Each constructional project is given a rating to guide readers as to its complexity.

Beginner: A project that can be tackled by a beginner who is able to identify components and handle a soldering iron fairly competently.

Intermediate: A fair degree of experience in building electronic or radio projects is assumed, but only basic test equipment is needed to complete any tests and adjustments.

Advanced: A project likely to appeal to an experienced constructor and often requiring access to workshop facilities and test equipment for construction, testing and alignment. Definitely not recommended for a beginner to tackle on their own.

Components for our projects are usually available from advertisers. For more difficult items a source will be suggested in the article. Kits for many of our recent projects are available from CPL Electronics and FJP KITS, both of who advertise in the magazine.

The printed circuit boards are available, mail order, from the Post Sales Department.

Mail Order
All PW services are available Mail Order, either by post or using the 24hr Mail Order Hotline (0202) 665524. Payment should be by cheque (overseas orders must be drawn on London Clearing Bank), Access, Mastercard or Visa please.

Wireless Line
This is an information service for the radio enthusiast, updated each Friday. Calls cost 46p per minute peak time and 36p per minute off- peak. Telephone number is: (0898) 664632.

...
Ramsey Kit Tranceiver

The Ramsey 144MHz f.m. synthesised transceiver kit is the ideal starter rig for mobile, base and packet radio (it even has a dedicated packet connector). The FTR-146 kit features six expandable diode-programmed channels, 5W r.f. output, sensitive dual-conversion receiver and easy assembly. This kit comes complete, except for the case, mike and speaker, although Ramsey do their own case for a professional finish.

The FTR-146 Kit costs £129.95, with the FTR-146C case and knobs set at £24.95.

Raycom Communication Systems Ltd.
International House
963 Wolverhampton Road
Oldbury, Warley
West Midlands B69 4RJ.
Tel: 021-544 6767.

Digital Audio CQ Call

Digital techniques have come to the contest operator. Store your 'CQ contest' call digitally and use it to control your rig next field day. The DL100 Digital CQ Loop, manufactured by CMR Audio, stores up to 20 seconds of audio, to be used in contest or for testing purposes.

Fitted between the microphone and transceiver, it offers a transmit-wait-transmit cycle, allowing the operator to control the adjustable wait period. A built-in tone gives a more constant level tone for tuning up. A quick and simple record function allows any operator to record his or her own voice, so reducing the confusion for the answering station. Other lines allow control of external units such as p.a. or pre-amp.

The Digital CQ Loop is priced at £147.50, which includes post & packaging, and you can get more information from:
CMR Audio, 40 Felton Road
Parkstone, Poole, Dorset BH14 0QS.

The G4TYF Log

Ernie Aston G4TYF has produced the latest update to his 'G4TYF Log' program, adding many new facilities to the amateur radio logging program.

Starting life for personal use, it has now been rewritten for the Commodore, C64 or Amiga, the BBC B or for the IBM PC (or clone).

The full version costs £25. If you would first like to see a free demonstration, for any of the above machines, send a suitably-sized s.a.e. to:
Ernie Aston G4TYF
64 Gurney Valley
Bishop Auckland
DL14 8RW.
Tel: (0388) 607500.

Jury Community School

Between June 24 and 28th, teachers and pupils of Jury Community School held an indoor camp at Ardwathlin Outdoor Pursuit Centre, West Baldwin on the Isle of Man.

Visits to the Manx Museum and Cregneash Village Folk Museum were among their many educational visits, but one special highlight of the trip was a visit to Ardwathlin, to see Denys Hall GD4OEL, the Isle of Man Scout and Guide adviser.

Denys set up a special event station with the callsign GB2MSR, and the children were thrilled to hear him contact a large number of countries around the world. He explained all about amateur radio to the pupils, and how the station was set up. He showed them how the antennas worked, all about QSL cards and how amateur radio can make you friends all around the world.

The teachers and pupils of Jury Community School expressed their gratitude for the time and trouble he took to put the station on the air.

German ATV Convention

The German ATV club (AGAF) has invited all ATVers to attend their 23rd ATV convention in Cologne, on October 28/27th. A fabulous programme has been laid on, including: fleamarket; scanner van; live presentation of ATV; demo of multimedia transposer DBOKO; stereo picture transmission over ATV; touch-tone remote control of repeaters and a charcoal grill evening in the Pingen forest with cutlets, roast sausages and real ale from the barrel.

Anyone interested in going, should send three 1st class stamps for an information pack to Andy Emmerson GB8PTH, 71 Falcutt Way, Northampton NN2 8PH.

j.Com

If reading the fine print has reduced the number of QSL cards you're sending out, you'll be glad to hear that there's now a better way from j.Com of Ben Lomond, California. This company is now supplying the HamBase database and retrieval software.

Owners of IBM PC compatible and Macintosh® personal computers, can access the entire database of information on over 500000 radio amateurs. The software searches all of the data for the desired call sign in a fraction of a second, and immediately displays the address on your computer screen. If you have a hard disk drive, the data files are easily installed and access to the data is virtually instantaneous. Even if you don't have a hard disk, you can still use the HamBase program. The program will even accept a text file list of call signs as input, effortlessly producing labels for clubs, hamfests and dealers.

The HamBase program is available for the PC on 17 5-1/4in 1.2M diskettes at $69.95 and 14 3-1/2in 1.44M diskettes at $79.95; or on 25 800k Macintosh diskettes at $79.95. HamBase may be purchased at your local amateur radio dealer, or directly from j.Com, PO Box 194, Ben Lomond, CA 95005 California USA.

Purchasers of the 1991 version will receive a coupon worth $20 when purchasing the 1992 HamBase available in January.
The Vityaz Award

The Museum of The World’s Ocean in Kaliningrad, Russia, is now issuing the Vityaz award, to commemorate a famous series of oceanography ships that bore the name. Each of the ships made valuable contributions to research in the world’s oceans, and the third Vityaz sailed until 1979. The ship is now moored near the centre of Kaliningrad on the banks of the river Pregol.

The awards are printed on silk pennants depicting each of the ships, the corvette Vityaz 1862-82, her successor which sailed from 1886-93 and the last research ship which worked between 1947-79. The pennants also record the countries and areas visited by each vessel. All radio amateurs and s.w.l.s can obtain the award, and contacts dating from 1979 are eligible.

There are no band or mode restrictions and the award organisers ask that only lists, NOT QSLs, are sent, although they reserve the right to ask for QSL checking. Cost of the award is $10 or equivalent. Further details on the three separate award pennants and rules can be obtained from: B. V. Osmak UK2FO, Awards Manager, c/o S. G. Sivkova, Director of the Museum of The World’s Oceans, Kaliningrad, Russia.

Orkney Wireless Museum

Orkney Wireless Museum was founded in April 1983 by the late Jim MacDonald GM8BFG, after a lifetime passion in working with and collecting all things electrical. The museum is essentially a local collection, and it attempts to capture the evolution and swift passing of an intriguing era.

Orkney’s wartime electronic history is strongly represented in the Museum, together with wireless in the Orkney home, both pre and post war.

The founder died in April 1988, before he could enjoy the fruits of his work in retirement. But his family were determined his work and collection wouldn’t be lost, and a Charitable Trust was set up in June 1990.

Many people have donated items with an Orkney connotation for the collection and in view of the interest ‘A Society of Friends of Orkney Wireless Museum’ was established on 29 June 1991 with an annual subscription of £3. Contact The Secretary, Peter MacDonald, 9 Quoybanks Place, Kirkwall, Orkney KW15 1JQ.

Supporting Research To Stem Dolphin Deaths

Developing a technique to prevent the deaths of vast numbers of dolphins and small whales each year, which become entrapped in fishing nets in many of the world’s oceans, has proved to be an immense challenge for leading scientists around the world.

Windsor Safari Park’s dolphinarium, however, recently played host to a team of researchers from Cambridge and Loughborough Universities, who are well on the way to success in meeting this challenge.

The project leaders are Dr. Margaret Klinowska of Cambridge University’s Research Group in Mammalian Ecology and Reproduction, and David Goodson from Loughborough University’s Electronic and Electrical Engineering Department. They are supported in their work by Racal Recorders, the Dolphin Centre Flamingoland in North Yorkshire, and Windsor Safari Park.

The research so far has covered the collection and analysis of data on dolphin behaviour patterns, particularly in relation to the animal’s sonar use when pursuing prey. The team have been observing how the dolphin receives returning, reflected sonar signals - a crucial factor when considering the fishing net hazard.

Both captive and wild dolphin studies provide important data, and in the latter case, the team has been studying the uniquely useful Atlantic bottle-nose dolphin - Freddie the Amble dolphin off the Northumberland coast of North East England, being the most famous of these.

The dolphin uses a region below the nasal plug to produce ‘clicks’ of ultra-high frequency. These are focused by the large head area known as the ‘melon’ and targeted towards the dolphin’s prey, which is likely to be a fish at a distance of up to 80m.

The high frequency echo reception from such a target is now known to involve the lower jaw and may exploit the teeth, whose function could be similar to that of a transducer array. This gives range and direction information to the dolphin as it homes in on the target.

Combined with studies into the underwater characteristics of net sounds, the team hopes to gain a better understanding of how a dolphin perceives nets when swimming (or why it doesn’t, as seems to be the case), so that an effective solution to one of the major causes of dolphin mortality can be eliminated.

Racal Recorders Ltd.
Hardley Industrial Estate, Hythe, Southampton SO4 6ZH.
The Art of Operation

Shown here is Nicola Harman, operating under her Novice callsign ZE1ABQ, on the morning she received her validation document. Her operating style was very good indeed, and among those she contacted were G4GCC/M, G0PAO/M and G7HMF.

Cardiff RAE Course

There's an RAE course at BT (Wales) ARS, BT Headquarters, Coryton, Cardiff. Enrolment night for the next course will be on Tuesday 22 October. For further details, please call Graham GW3BUT on (0222) 628430 office hours.

Scottish Tourist Board (RA) Expedition Group

Full lists of events, award details and an information pack on the Scottish Tourist Board Expedition Group, can be obtained from Paddy GM3MTH, tel: (0236) 40495, on receipt of two second class stamps or one dollar.

Open Night

On Wednesday 30 October, Glenrothes & District ARC have their annual Open Night at The Crown Hotel, Thornton, Fife, 7.30pm. A speaker will give a short talk on items of common interest and entertainment. Club awards will be presented. A knife and fork meal will be served and there's a Bring & Buy. All the usual hotel facilities will be available to those attending. More details from John Hardwick GM4ALA on (0592) 742763 outside office hours.

Free From Switzerland

Swiss-based Ascom Radiocom Ltd., have produced a FREE publication The Radio Communications Glossary, which can be obtained direct from their Zurich headquarters. The glossary provides answers to questions such as: 'What is radio transmission, what determines its characteristics and limits, and what effects do radio transceiver specifications have?'

This new edition of the glossary provides an introduction to the basic terminology, and the most commonly used expressions employed in radio and it can be obtained direct from: Max Flick of Ascom Radiocom Ltd., Kornmunikationstelle, Feldstrasse 42, CH -8036 Zurich 4 Switzerland.

Arrow Radio On Target

Chelmsford-based Arrow Radio Ltd., are on target to make a big impact at the 1991 Leicester Show. The company are planning to show the new Telex Contest Headset, and almost the full range of Daiwa equipment including the range of antenna tuners - including a 50MHz model.

Arrow plan to show their range of Comet antennas, and the company claim to be showing 82 different Comet products. The company are also to start distributing the antenna tuners, dummy loads, v.h.f. and h.f. antenna analysers made by MFJ Enterprises of Mississippi, USA. Contact Arrow Radio on (0246) 381626.

G QRP Club Mini Convention

The Northern Gathering for G QRP Club members is here once again. On Saturday 19 October, from 10am to 5pm, at St. Aidan's Church Hall, Manchester Road, Sudden, Rochdale, Lancashire.

Among the attractions are: a full lecture programme, bring/buy/swop stall, component and kits sales, equipment display, food and drink and Mr Salaway's famous meat pies! Admission £1. Talk-in on S22 from 9am. Bring your items to sell or swap, from equipment to just junk. Bring your home-built equipment for display and discussion.

Two guest speakers this year: Peter Dodd G3LDO, author of the new The Antenna Experimenter's Guide on antenna matters and David Stockley (Hewlett Packard) Amateur Radio Any Questions, ask any technical questions!

Accommodation in the same road as the mini-convention: 'Tudor House' B&B Guest House, Catherine Traynor (0706) 861103; 'The Midway Hotel' (0706) 32681; 'Norton Grange Hotel' (0706) 30789.

More details from the Rev. George Dobbs G3RJV, QTHR.

Alinco Introduction

Alinco have announced the introduction of their first scanning receiver. It is hoped that the first shipments will be made at the end of October or early November. Designated the DJ-X1, it comprises a very compact design measuring only 110x53x30mm, thus making it one of the smallest models available. Frequency coverage is from 500kHz to 1300MHz without gaps. It has the widest number of programmable steps ever to be made available: 5/10/20/25/30/50/100. Modes include a.m., n.b.f.m. and w.b.f.m. and sensitivity is claimed to be unsurpassed. Price has not yet been announced but it promises to be highly competitive!

For those needing details, a phone call or letter will bring full technical details to customers.

Waters & Stanton Electronics

22 Main Road
Hockley
Essex SSS 4QS.
Tel: (0702) 206835.
Practical Wireless 144MHz QRP Contest 1991 Overall Results

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BBC Engineering Information

From now on, the BBC will be using the Engineering Information page on Ceefax - Page 698 - to inform you about current transmitter activities. This is currently available from 6am to 6pm every weekday and all day at weekends.

If you have an enquiry about BBC Engineering that concerns your area, you may obtain additional information by writing or phoning to their enquiry office:

Engineering Information
BBC White City
201 Wood Lane
London W12 7TS.
Tel: 091-752 6040 (during office hours).

David’s First QSO

Here you can see David 2EOAAB putting out his first QSO from home, to his dad Alan Hull G0KYD. An historic moment for both dad and David, since dad was also the Novice course instructor. It really made dad’s day!
I was looking forward to reviewing the Alinco DJ-F1E hand-held transceiver, and wondered how different it would be from the last hand-held I'd tried. On opening the box, I was surprised that it was much smaller than I had imagined.

In front of me was a smart charcoal-grey handheld, somewhat smaller than my hand. In the middle of the rig was a small LCD display, that seemed hardly bigger than a digital watch.

Under the display was a matrix of sixteen off-white buttons, looking slightly like a small calculator. Each of the buttons had at least two annotations, marked in two colours and they illuminate for night-time use.

More Buttons

The speaker grill in the top half of the rig, had a further six light grey buttons surrounding it. All of these, bar one, again had two functions.

The top panel had three controls. A rotary switch is used to set frequency, memory or other variable quantities. The combined volume control on/off switch, was concentric with the squelch control. Finally on the top panel, was an BNC antenna connector with a helically wound antenna, colour-matched to the rig.

There are three further control buttons to be found. These are on the slight protrusion on the left-hand side of the set. A P.T.T. switch, with another, smaller switch directly underneath, engages the repeater tone access and the p.t.t. function. Above this pair, there's a slightly differently shaped function switch, used to activate the second function of all the other switches.

Extended Receive

I was particularly interested in the extended receive capability of the DJ-F1E. The handbook claimed that the set would cover 118 to 136MHz in a.m. mode.

This band 118-136MHz is used extensively for aircraft communication. I live only a few miles from a regional airport, but nevertheless it's quite busy. I find it fascinating to listen on these frequencies, even when I'm doing other other things.

A quick skim through the handbook, gave me an idea of the facilities available in this small rig. The manual specifications suggested the rig had a sensitive receiver.

The receiver is paired with a transmitter capable of producing 5W of r.f. in the 144MHz band, if it's fed from 13V or an optional battery pack. Immediately captivated, I took the set into the PW workshop to try it out.

Sensitive Receive

The receiver was indeed sensitive, and the results from my tests are set out in Fig. 1. The rig achieved well within the claimed -15dBµV(0.18µV) over the whole 144-146MHz band.

The receiver features dual conversion i.f.s of 23.05MHz and 455kHz, and gave a clean received signal. I also found the audio to be very clear and clean. This is rather surprising when the small size of the built-in loudspeaker is considered.

On switching the DJ-F1E into the extended receive mode, I was very surprised to find that it covered far more than the claimed 118-136MHz. I was able to tune the set from 108 to 143MHz.

The sensitivity was fairly constant overall the whole of this range. However, there was a small 'fall-off' towards the lower frequency end, as shown in Fig. 2. This drop in sensitivity was measurable on the test equipment, but I doubt that it would be noticed in actual use.
**Remarkably Easy**

Using the transceiver’s controls proved to be remarkably easy. In normal use, the frequency could be set by one of two methods.

For small adjustments around the frequency shown on the display, adjustment of the rotary control caused the tuning steps to move up or down in frequency.

The tuning rate could be set to 5, 10, 12.5, 15, 20 or 25kHz steps by selection (using the rotary control again). The small labelled buttons, can also be used for direct entry of frequency if you want to tune over a large range.

There is no <Enter> button, so the full frequency must be entered. The rig then flips to this new setting, as soon as the last digit is entered.

The third method of frequency setting, is to use one of the 40 memories to hold a channel frequency. As I found out later, it may also hold an extended receive setting. But more on that later.

**To Work**

Enough of this dry and dusty laboratory waffle! How did it work? I can imagine you asking.

Frankly speaking, it was very easy to get to grips with this little rig. The i.c.d. screen, which I originally thought to be very small, proved to be very easy to see and use.

I’ve reproduced the screen layout, to show just what is to be seen on the display. There are 23 areas on the screen. These are laid out around the main frequency display, and all are easy to read in spite of the small size.

Although the display was good, I found that in poor light, those items on the right-hand side did seem more difficult to see quickly, when I was using the in-built green illumination.

**Month’s Loan**

I used the set over the period of about a month. I found it to be as easy to use as my other portable rig, but a fraction of the size and weight.

There’s one strange effect brought about by the set’s small size, as the transceiver appears to be heavier than it actually is! On first picking up the DJ-F1E it seemed to be heavier than my Kenpro KT-44, although it’s very much smaller.

So, I weighed them on the office postal scales to compare weights. The Alinco was actually about 100g lighter. Which just goes to show how easily you can be deceived by size!

**Other Bands**

I’d tried it on the amateur band, but how was it going to measure up as a scanning v.h.f. receiver? The answer, is that it performed very well.

The rig gave a performance equal to that of my home-base scanning receiver. Even on the in-built helical antenna, sensitivity was more than adequate to pick out the various frequencies in use by Hurn (Bournemouth) about 20km away. When I re-set some of the memories, I was even able to hear the Channel Islands’ airports radio traffic.

The more I used it, the more interested I became. Not only was it a splendid amateur transceiver, but it also doubled as a very creditable scanning v.h.f. receiver, covering the a.m. air-band and the v.h.f. f.m. band from 136 to 174MHz.

**Storing Frequencies**

The DJ-F1E has 40 memories, able to store a frequency and the reception mode. So it’s possible to enter the frequencies you use most, not forgetting the local (or not so local) amateur repeater, or calling channel.

There are two further memories which are used in scanning mode. These set the upper and lower edges of the band to be scanned. So you can have 40 memories scanned, using either mode of modulation.

In v.f.o. control mode, you can scan a smaller band of frequencies, set by the additional two memories. As the receiver passes through the MHz point, it emits a pair of dual audio tones, low/high when going up and high/low when it’s going down. When the 500kHz point is passed, the receiver emits a single tone.

Other scan facilities include a timed, rather than a ‘busy’ stop and automatic power-off, if the rig is inadvertently left on, with no received signal. This facility may be turned on or off. It can also be programmed to switch-off the rig at times varying between five minutes and one hour, in five minute steps.

**Memory Setting**

Setting of the memories proved to be easy, quick and simple. Stepping to the required channel number was equally easy. This can be done by the rotary control, up/down stepping, or by direct keyboard entry.

In amateur use the repeater offset was set at 600kHz, but it could be set above or below the received frequency. The DJ-F1E can also be used on split frequencies.

In the split-frequency mode the set receives on the currently displayed v.f.o. frequency, with the transmission on the currently selected memory frequency. This includes listening anywhere within the range covered by the receiver, but allowing transmission in the amateur band only.

**Priority Channel**

A priority channel facility is included. This facility allows a 10:1 (5s to 0.5s) watch to be kept on two frequencies, with either the v.f.o. or the selected memory

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![Diagram 1](image1.png)

The remarkably small size of the DJ-F1E is made even more apparent when the unusual full-length, rear-mounting batteries are removed.

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**Practical Wireless, November 1991**
channel being given priority.

In both cases, if the secondary channel is activated, a warning beep is sounded. This may also be extended to the calling channel.

A ‘watch’ is kept on the calling channel for five seconds, and then there’s a 0.5 second switch to check the v.f.o. frequency. Again, there’s a bleep provided as the alerting signal.

If you transmit in the 5s period, priority scanning resumes after release of the p.t.t. Transmitting within the 0.5s period stops the priority scanning. Additionally, the priority scan facility may even be used during normal limit or memory scan.

**Squelch Control**

The squelch control is concentric with the audio volume control knob. This also works when the set is tuned to the aircraft band, or to the extended f.m. band of 136-174MHz.

A secondary control, the ‘sub-audible tone’ squelch, is fitted. In this mode, a low-level audio tone in the range 67-250.3Hz is transmitted at the same time as the required audio. At the receiving end, this tone is used to open up the other squelch to allow the received audio to be heard.

This technique is little used in Europe, but is sometimes used on repeaters in other countries. There are 38 sub-audible frequency settings in this facility.

An enhancement of tone squelch is the ‘DSQ’ or tone-paging function. In this mode, a series of dual-tones, similar to those found on modern d.t.m.f. (dual tone multi-frequency) telephones, are transmitted before each ‘over’. And in fact there’s a facility for this on the system although it’s not fitted as standard, and requires the optional EI-12 board (costing £35) to function.

There are two types of code. There’s ‘group code’, a three-digit code common to all members of a group. The other is ‘own code’, a three-digit code that is particular to only one person. Each person is able to choose or change his own code.

If the group code is used, then all members of the group are alerted, and their units will automatically activate.

The d.t.m.f. system, fitted as standard on the transceiver, is also useful to transmit the ‘digital message’. This is a two character message which may be sent, with reasonable security to other units. But don’t forget that any of the QSOs made using this facility, will be heard on a non-equipped rig. In other words, you can’t regard it as a ‘secure’ system in the full meaning of the word.

**How It Comes**

The DJ-F1E was supplied with an helically wound antenna, a belt-clip fixing and a wrist loop. Also standard is the EBP-16N battery pack which nominal capacity. They also supply a battery charger into which the unit, or the battery alone, is plugged.

I have one small ‘niggle’ regarding the charger unit. The unit I had, was supplied with a fixed American-type plug and a European adapter. Although this form of plug seems to be fairly common on imported equipment, as such, it wouldn’t fit into a normal UK three-pin socket. (Waters & Stanton report that they have suitable adaptors available, price £2. Editor).

To provide higher outputs the battery pack EBP-18N, a 12V 500mAH unit, is available as an optional extra. With this pack the rig will produce up to 5W of r.f. There’s also a dry cell battery case, which I’m sure will be rarely needed.

**Summary**

Although I’m running the risk of seemingly only cataloguing the features, I suppose in many respects it has to be so. There are so many available on this tiny transceiver, but I’d better sum up my opinions on this amazing little rig.

I found the small size of the rig a positive advantage when I attended rallies, etc. It could be tucked into a shirt-pocket without causing too much of a bulge and a small earpiece made it even more convenient.

The transceiver is without any doubt, very nice and easy-to-use. Many of the features didn’t require reference to the manual when I wanted to use them.

I found that the audio was crisp, and bearing in mind the small size of the loudspeaker, it was surprisingly clear. The transmitted audio was also of high quality. I found that except for very noisy locations, there was no need to ‘eat the mike’.

I enjoyed using this little rig. Alinco have really crammed an enormous number of facilities into a very small space, and half the package in the hand is the battery! My thanks for the loan of the review model go to Waters & Stanton of 22 Main Road, Hockley, Essex SS5 4QS, tel: (0702) 206835 or 204965, who can supply the DJ-F1E for £239 inclusive of VAT and p&p.

---

**Specifications**

| Physical Size | 110 x 53 x 37mm with standard supplied battery pack, and excluding the antenna. |
| Weight        | 395g including helical antenna. |
| Transmitter  Frequency | 144.005-145.995MHz |
| Power out     | High/Medium/Low 2W/1W/0.1W nominal with standard battery pack (see the r.f. power chart) |
| Offset        | Nominal ±600kHz (See text for full range of settings) |
| Receiver Frequency Coverage | 118-136MHz (actually 108-143MHz) for sensitivity see the Air-band receive chart |
| Extended      | 136-174MHz see the extended receive chart. |
| Amateur       | 144.005-145.995MHz, see the charts for sensitivity. |
| General       | Modulation Transmit 144-146MHz f.m. Receive 108-143MHz a.m. Receive 136-174MHz f.m. B0 |
| Loudspeaker   | Electret type |
| Microphone    | Operating voltage Nominal 7.2V, (6-13V range allowed) |
| Memories      | 40-2, storing frequency, offset and mode |
| Antenna       | 500 BNC fitting on top panel |

---

**Fig. 4: Details of the comprehensive l.c.d. display from the transceiver.**

---

Practical Wireless, November 1991
ALINCO

The Word is Getting Around!

RECEIVE: AM 108-142 MHz
FM 130-174 MHz

DJ-F1E
2M FM
2.5 Watts

£239

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UK Distributors:
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Tel: 0702 206835

Practical Wireless, November 1991
Rob Mannion
G3XFD and Tex Swann G1TEX,
take a look at an old idea, re-born in a new product that should encourage more radio amateurs to enjoy the challenge of v.h.f. operations.

Nelson Electronics
Three Band VHF Cubical-quad Antenna Kit

Look in many books on antennas, and you’ll find an example that looks like a spider’s web, the Cubical-quad. This is a multi-band antenna with a nominal gain of 6-8 dBi.

Unusually for a multi-band antenna, all the dimensions are correct for each band in use, and they are not electrically corrected, as many beam antennas have to be for efficient operation.

New Product

At many rallies in the south this year, there’s been a range of multi-band h.f. boomless cubical-quad antennas on sale. They’ve originated from the electronic stables of Ernie Quinnell G4JEV, of the Portsmouth district based Nelson Electronics.

Almost all commercial cubical-quads are for two or more of the h.f. bands. Due to their larger size, they really do look like a spider’s web. Many operators mistakenly believe that the cubical-quad antenna is a purely h.f. antenna. However, they’re most definitely wrong!

Ideal Alternative

The v.h.f. cubical-quad could well turn out to be the ideal alternative antenna for many potential v.h.f. operators. It has the positive advantages of providing good gain, within a remarkably small area. Despite this, the cubical-quad antenna on v.h.f. has the disadvantage of being virtually ‘unknown’ by most amateurs.

Nelson Electronics had obviously realised that an antenna of this type was unavailable to v.h.f. operators. Tex and I had shown a lot of interest in the Nelson cubical-quad for 50MHz at the Wimborne Hamfest, but we were in for a surprise and good news sooner than we’d expected.

Tex and I were surprised, and pleased one day to be asked if we’d like to try out a cubical-quad antenna kit designed for the 50 and 144MHz bands. Tex, as the sub-editor mainly involved in PW’s recent 70MHz project, immediately came out with “What a pity that it doesn’t cover 70MHz, after all the work we put into the Meon-4 transverter”!

Nelson Electronics reacted quickly. The immediate response was, “can you wait another few weeks until I’ve had time to make a few modifications”. The results of those modifications, the Nelson cubical-quad for 50, 70 and 144MHz are reviewed here.

Kit Form

Basically speaking, the Nelson v.h.f. cubical-quad antenna comes as a kit. It’s a three band v.h.f. cubical quad antenna kit, suitable for 50, 70 and 144MHz.

This antenna is capable of very good results, for a directional array with a small turning circle. But, unlike a Yagi configuration antenna, it does require some work, experimentation even, to obtain the best results for each location. Despite this, you then end up with the ability to work on the three bands, with an excellent antenna taking up less room than most single band arrays for 144MHz.

Prototypes Delivered

The day arrived, and the prototypes were delivered direct to the PW office by Ernie Quinnell himself. The antenna kits consisted of two boxes each, one approximately 1.15m long, and another one about 325mm cubed. It was the sort of box everyone’s met - you know, just a little too big to carry comfortably under the arm!

Before he left, Ernie reminded us again that the antenna was in kit form. We were also left without complete instructions, as the pre-production prototypes had been put together quickly (see note in summary). So, it was a question of ‘suck it and see’. With that in mind, Tex headed off to his QTH to try out the antenna we’d suggested, so I’ll let G1TEX take over for a while!

Boxed Spider

On arrival at the G1TEX QTH, I opened each box, wondering what I was going to find inside. In the smaller container was the centre ‘spider’ which is a truly descriptive name! This spider is made from square section aluminium alloy. The tube has eight ‘arms’ growing out of it, four at each end.

The engineering quality of the welding on this item was a joy to see. Also in the box were three double lengths of wire, and three junction boxes. Each of the lengths of wire was marked with the band it was designed for. For the 50MHz reflector, there were in addition, a small nylon spacer and a pre-wound coil of heavy copper wire. This was designed
Fig. 1: The basic components of the Nelson Electronics three band v.h.f. cubical-quad antenna. The glass-fibre spreader rods with the element fixing/adjusting clips are not in the picture. The central 'spider' is fabricated from high quality aluminium alloy.

to resonate the reflector slightly lower in frequency.

The longer box contained the eight spacer rods, strongly made from glass-fibre tubing. These were white with red marker-pen rings. The marks indicated suitable starting points for the nylon retainers, for the quad-loop wires, held in place with jubilee clips. The contents had all the appearances of a 'do-it-yourself' surveyor's pole and everything was of sturdy and high quality.

Assembling The Antenna

Assembling the frame and spreaders didn't take long. Each pole is inserted in one of the leg ends of the 'spider', until the marked ring is flush against the end of the leg.

A small hole must then be drilled into the rod. There's a hole already drilled in the spider to allow a clamping screw to seat home, and retain the rod in that position.

It really did look like a spider, once all the legs were on! Searching round for a suitable short stub mast, I discovered that the garden rake handle was just the right size. Oh well, I didn't like gardening that much anyhow!

Resonating Reflector

As we were working with few instructions with the prototype, I looked at several books dealing with cubical-quad antennas. Each book suggested that the reflector had to resonate about three to five percent lower in frequency than the driven element.

I randomly chose one end to be the reflector end, and moved nylon retainers outwards in proportion. Starting with the middle reflector (70MHz), I strung the wire through and made it as tight as I could, to a suitable short stub mast. I discovered that the garden rake handle was just the right size. Oh well, I didn't like gardening that much anyhow!

G3XFD On VHF

Tex and I had assembled our antennas independently. Despite the fact that Ernie from Nelson Electronics hadn't time to produce the final instructions, neither Tex nor I had difficulty in assembling the antenna.

Most people will realise that I have an artificial right hand. It's rather obvious, and I don't try to disguise the fact. Even though there are one or two things that cause me problems (left-hand shirt-sleeve buttons for instance!), I don't regard it as a disability.

As Tex has described, setting up is not difficult. However, with this cubical-quad, you end up with three separate feed points.

Checking the v.s.w.r. on each antenna, I found it to be about 1.3:1 at band centres. I felt that this was adequate for the purposes of testing, as it remained below 1.8:1 over the entire band.

So, that's the setting up described. It's not difficult and the antenna looks graceful and very small for a three band array.

As my QTH isn't very good for v.h.f. testing, Rob Manion G3XFD's going to take over now and describe his findings. So, the mike's coming your way Rob!

On Air

Cubical-quad antennas are renowned for providing excellent results, even when they're mounted close to the ground. I've always envied the results the late Charles Shilley G3PZO, obtained with his h.f. cubical-quad. Despite a very small garden, using his antenna only at about knee-high Charles worked all continents with 50W a.m. No-one in the Southampton club could match his results!

Although I didn't carry out comparison testing, I wasn't to be disappointed with the v.h.f. antenna. On 144MHz I worked up into East Anglia, to Holland and...
opening occurred on Sunday evening, September 8.
Like Tex, I'd arranged my cubical-quad to work mainly horizontally polarised (feed-point at the bottom), but as there's a small vertical component, it proved useful for mobile working too.

There's not a great deal of activity on 70MHz in Dorset, but I had several QSOs working portable. Personally I think that 'four' is badly neglected, and I thoroughly enjoyed working on the band again.

With the antenna mounted approximately 2m above ground, I managed to work into the Birmingham area from some open heathland near Verwood. In fact, it was only because I'd just been on 144MHz, that the 70MHz QSO took place because I worked the same station again.

Although I didn't have any 50MHz transmitting equipment, I was able to listen on the band with a kit I'd built (the Ramsey Electronics model) and found there was a pleasing amount of 'local' working. I heard stations along the south coast, up into the midlands and the London area and over towards Bristol.

I was very pleased with the results. I had three band facilities from a relatively small antenna which was very lightweight and easy to handle.

Final Thoughts

On the disadvantage side, Tex and I had several suggestions to improve the design. One involved the feed-point plastics boxes. As these are exposed to the weather, they have to be made fully weather-proof before the antenna is erected.

Another suggestion involved the 'spider' mounting spigot. This item is extremely well made, but the diameter chosen made it too big to go inside a standard scaffold pole* (see note below).

Our final, constructive, suggestion involved the cubical-quad loops. We thought that although the pre-cut colour-coded element wires (for each band) were an excellent idea, heavier gauge wire would extend the life of the antenna in our variable climate!

The other idea was to assist the setting-up, Ernie's idea of a 'squeezable' inductance on the reflector of the 50MHz element, be incorporated on the 70 and 144MHz reflectors. This would make the operation even simpler* (see right).

Fig. 2: A demonstration assembly of the Nelson antenna on the Quay at Poole. The sturdy glass fibre spreaders fit into the 'spider', with the loop element holders being spaced out along each spreader. The relatively small size of the three band v.h.f. cubical-quad can be gauged, when it's compared to Tex Swann G1TEX, who bumps his head at 1.9m!

Summary

Altogether, Tex and I were very impressed with the Nelson Electronics three band v.h.f. cubical-quad antenna. It was G1TEX who I have to thank for suggesting the idea to Ernie in the first place. We both feel that this antenna will prove very attractive for operators wishing to be active on all three bands, without a really huge antenna farm.

I'm also pleased to say that the finalised instruction booklet arrived in the office, just before we went to press. It contained simple, very easy-to-read instructions and one glance should dispel any doubts that you might have on cubical-quad assembling.

It's an economical way of getting on v.h.f., with space and weight thrown in too. I'm already looking forward to trying a 'zip-up' folding version of the antenna for regular portable operation from my car.

Tex however, will have to wait longer for a version to fit in his Reliant three-wheeler, unless we turn the roof of the famous G1TEX 'Plastic Pig' into a pop-up lid!

Our thanks go to Ernie Quinnell G4JEV, from Nelson Electronics, for the opportunity to evaluate the cubical-quad which is available from them at £165 including VAT, plus carriage at cost. They can be contacted (callers by appointment) at 36b The Green, Stubbington, Fareham, Hampshire PO14 2LE. Tel: (0329) 668080. FAX: (0329) 668080.

*Nsue: The 'squeezable' coil for reflector tuning will be incorporated in future production antennas and all production models of the antenna will have a spigot suitable for mounting on standard scaffold-type poles.

Manufacturers' Specifications

<table>
<thead>
<tr>
<th>Weight (centrally balanced)</th>
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<tbody>
<tr>
<td>Turning Circle</td>
<td>1.93m</td>
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<tr>
<td>Forward gain</td>
<td></td>
</tr>
<tr>
<td>(relative to a dipole)</td>
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</tr>
<tr>
<td>6dB (144MHz)</td>
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<tr>
<td>7.1dB (50MHz)</td>
<td></td>
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<tr>
<td>10dB (144MHz)</td>
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<tr>
<td>10dB (70MHz)</td>
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<td>15dB (50MHz)</td>
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<tr>
<td>35dB (144MHz)</td>
<td></td>
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<tr>
<td>35dB (70MHz)</td>
<td></td>
</tr>
<tr>
<td>Side rejection</td>
<td></td>
</tr>
<tr>
<td>10dB (144MHz)</td>
<td></td>
</tr>
<tr>
<td>15dB (50MHz)</td>
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<td>35dB (144MHz)</td>
<td></td>
</tr>
<tr>
<td>35dB (70MHz)</td>
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Further Reading

For information about the design of quad antennas:
All About Cubical-quad Antennas.
William Orr W6SAI and Stuart Cowan W2LX.
Available from PW Book Service £6.75 plus £1 p&p.

For general information about improving and optimising antennas:
The Antenna Experimenter's Guide.
Peter Dodd G3LDO.
Available from PW Book Service £8.90 plus £1 p&p.
Imagine an ever changing display of new and used equipment. ALL on display for you to see and feel without the pressure of buying. In fact the only area you might get bothered about is the coffee. (but there again I must maintain the tradition). Imagine a used equipment stock list which changes so often, that it is computer generated at least twice a day - not every week or month like most other retailers. Better still I don't request "SAEs" for the privilege of my listings. When was the last time you asked for your free copy?

For those of you who have not visited MARTIN LYNCH (a year gone by and you haven't visited me already?) we really are easy to get to. My shop is just across the road from NORTHFIELDS UNDERGROUND on the Piccadilly Line. It's the closest store to HEATHROW by tube. 5 minutes from the M4/40/25 motorway, and about 20 minutes from the Mt. If customers can visit the busiest Exchange Centre from as far as Australia, Canada, Sri Lanka and Marlow Bottom, surely you can make it to sunny Northfields. (Where is Marlow Bottom?)

Oh yes - what have we in stock? If it wasn't for the fact that this excellent magazine charges a fortune to advertise, I could probably fill it all! All the makes, all backed by the UK importers including YAESU, KENWOOD, ICOM, STANDARD, AOR, ALINCO, YUPITERU, TONNA, TEN-TEC AND MANY MORE, are now available, along with masses of clean, guaranteed, used equipment.

Knowledgeable staff and back-up second to none, completes your peace of mind package. For those of you who prefer to mail order, give me a try! I have many letters thanking my staff for the help and service they have received. The repeat business and recommendations tells me we are doing it right. Give it a go!

Final word, yes of course I take part exchange and yes I do want to buy your unwanted equipment. (It amazes me how often I get asked that, it's like asking a barber if he cuts hair). Where do you think all the stock comes from? So if you have an FT101ZD and want a new FT990, or own a TS830S and want the latest ICOM, give me a call TODAY. Don't wait just ring.

75 Martin G4HKS

LATEST MODELS IN STOCK: YAESU FT990, FT1000, FT5200, FT26/76, KENWOOD TS850S, TS450S, TS690S, TM741E, ICOM IC7100, IC2SRE, IC4SRE, ICW2E.

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**TS-450S features**

* Direct Digital Synthesis (DDS) gives 1Hz tuning steps with extremely low phase noise and no tuning 'glitches'.
* New, ‘two sideband’ tuning function changes tuning rate from normal 10kHz per revolution to 1kHz per revolution for ultra-fine tuning in demanding situations.
* New 15-digit auto dialing with 4 DTMF or keypad entry.
* Programmable offset frequency and 25kHz tone access.
* Bandswitching and mode changing by operator.
* External DC power jack.
* Memory mask function to hide seldom used memory channels.
* Memory transfer function.
* Memory enable function.

**TS-850S features**

* New line
* Top quality
* Separate antenna connector
* Full complement of performance and convenience features
* New 6 metres with 50W output power and separate antenna connector

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* Memory mask function to hide seldom used memory channels.
* Memory transfer function.
* Memory enable function.

**TS-850S**

**GREATNESS RE-ASSERTED**

Once again Kenwood stamping authority on the HF transceiver market with the introduction of the latest in their ever popular "8" series transceivers. the TS-850S. Designed to fit the market between the TS-440S and the TS-950S, the TS850S is another landmark in top performance "8" series transceivers, the TS-850S.

**NEW!**

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$$ \text{RX (CEPTZON) AM 108-143MHz FM 137-174MHz} $$

- 40 memories
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- 8 scan modes
- 6 channel steps
- Battery saver
- DTMF etc.

The DJ-1FE is a "block buster" of a handheld that many dealers have been waiting to get their hands on. Now it's arrived and with a specification and appearance unequalled, its small size and robust construction combine with an internal circuit design that is nothing short of brilliant. ALINCO will dominate the market with this one!

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**IC-W2E DUAL-BAND HANDHELD**

IC-W2E features include:

- Optional pocket beep and tone squelch for quiet standby
- High speed scan and priority watch
- Full 5W output power with external 13.5-16V power supply unit
- 24 hour clock with ON/OFF timer
- 1750Hz tone call to access repeaters
- Programmable offset frequency
- Monitor function that allows you to check repeater input frequency
- External DC power jack
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- PTT lock function
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**IC-2SRE 2 METER HANDHELD**

**WITH BUILT IN BROAD BAND SCANNER COVERING 25-950MHZ**

* Other attractive features
  * Triple tuning system: direct keyboard entry, the up/down keys or main dial on the top panel
  * Pocket beep, tone squelch and subaudible tone encoder functions
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£239
The annual Hamvention in Dayton Ohio, USA, has been responsible for quite a few new products arriving in the UK. The family of frequency counters from the Optoelectronics company in Fort Lauderdale, Florida is just one example.

It seemed an interesting job when the Editor of PW approached me and asked if I would take a look on behalf of the magazine. So, a Model 2600H 'Handi-Counter' eventually arrived in my shack, and I took a good look at the machine.

The Family

This family of frequency meters appears not only to be in the price range for radio enthusiasts, but they're also quite novel in that they are small enough to be hand-held. The 2600H features very high sensitivity, as it's intended for normal measurements on the test bench and 'off air' tests with its built-in whip antenna.

Significant features on the 2600 are the frequency coverage from 1MHz to 2.6GHz, better than 1mV sensitivity in the h.f. and v.h.f. range which drops to 10mV at 2.4GHz. There's also a sensitive bargraph input level display.

The standard instrument offers good frequency stability with a specification of ±1ppm from 20 to 40°C. However, the meter I had, was fitted with the high stability option, which is specified as ±0.2 p.p.m. for the same range using a temperature compensated crystal oscillator.

Frequency read-out resolution is as high as you'd expect with such high stability, being 0.1Hz in the lower range, up to approximately 200MHz. The higher frequency ranges are achieved by using the built-in prescalers, one for measurements up to 600MHz and another covering up to 2.66GHz.

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Gate Times

Push-buttons on the front panel select gate times. They are: 10ms, 0.1s, 1s and 10s. Another front-panel control is the power switch, which selects either ‘On’ or ‘Charge’, for re-charging the internal NiCad battery pack.

Other panel controls are the 'Direct/Prescale switch and a 600MHz/2.6GHz switch, depending on which prescale range is required. There's also a 'Hold' switch for 'freezing' the display when necessary.

Together with the frequency read-out and bargraph indication, the l.c.d. display annunciators include the gate time selected and a 'Prescale' flag when either of the prescalers is selected.

The r.f. input is via a BNC socket on the top of the instrument. There are also facilities for external power, 9.1V, to be connected via a standard d.c. socket on the side of the case.

Small And Smart

When I unpacked the instrument, I was struck by its small size, portability, smart overall appearance and robust metal casing. The meter is ideal for hand-held use. It comes with a soft carrying case, which also houses the telescopic whip antenna.

A good manual is essential with equipment of this nature, and the 2600's is very good. It provides detailed information, even to the extent of showing the nominal bargraph display calibration (indication threshold - 40dBm, maximum indication of 16 segments at 0dBm).

There's also a clearly presented circuit diagram supplied and the manual describes how you adjust the calibration. Re-adjustment of the calibration may be necessary after a year or so of use, to compensate for the ageing of the internal frequency standard, or when
Bench Test

Although I didn’t have access to a frequency standard of laboratory-type specifications for long-term stability tests, I made some comparative checks. The results are shown in Table 1.

I gauged the warm-up drift by monitoring the output of a high stability crystal oscillator in a Lowe HF-235 (a professional development of the HF-225) communications receiver fitted with a crystal-oven.

This receiver had been given a good warm-up period before the comparison was made. The high-stability specification of the receiver suggested that it was at least as good as the claimed specification of the 2600H.

The counter’s read-out drift over a 20 minute period from switch-on, equated to approximately 0.2 p.p.m. which wasn’t too bad at all. By this time, the drift had reduced to approximately 0.01 p.p.m every 2.5 minutes, although by this time the counter’s reference oscillator drift may have been as significant.

Sensitive Instrument

The 2600’s sensitivity was within its specification up to 520MHz (this was the upper limit of my signal generator). The sensitivity was very much better than the quoted specifications below 60MHz.

Variation in sensitivity with frequency was reflected in the bargraph input level display. This is useful as a rough guide indicating the input level, but it could of course, be used for more accurate readings if you drew up a calibration chart using a signal generator of known accuracy.

Off Air Performance

To get an idea of the ‘off air’ performance, I carried out a reception range test using my 144MHz transceiver. These were carried out running the rig at a 1W output to a 5A/8 whip antenna on the roof of my van, parked in the driveway.

I found that a reliable frequency reading could be obtained up to 150m away from the vehicle. The l.c.d. display is large and clear and is easy to read out in daylight.

The bargraph display showed that there was a fairly high level of background noise/interference. I suspect that this was mainly due to strong transmissions from short wave broadcasting stations, particularly as the meter is so sensitive at these frequencies.

The range from the transmitter therefore, could be improved considerably by the use of some filtering between the antenna and the input connector. This could be a high-pass filter or even a simple tuned circuit.

A further test was made ‘in the field’ (literally!), by going up to the local radio broadcast v.h.f. transmitter site. A read-out of its frequency was obtained several hundred metres from the transmitter. Despite this, it was difficult for the counter to pick out the broadcast signal, due to the many other services (p.m.r., etc.) originating from the same site.

With everything considered, it was a creditable performance. Obviously reception range could be enhanced considerably by using higher gain antennas, and with a fair amount of filtering and pre-amplification you could provide a frequency checking service for other amateurs, without leaving the shack!

Summary

Altogether, I think this is a rather good instrument. It has good stability for a unit of its type, and the high sensitivity makes it a very useful tool for hands-off measurements. The sensitivity was even good enough to check the frequency accuracy of my hand-held scanner, by detecting the local oscillator at the antenna input!

My thanks go to Raycom Communication Systems Ltd., of International House, 963 Wolverhampton Road, Oldbury, West Midlands, tel: 021-544-6767, for the loan of the review model which is available from them at £325 inclusive of VAT, plus carriage.

Basic Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>1MHz to 3GHz</td>
</tr>
<tr>
<td>Typical maximum frequency</td>
<td>3GHz</td>
</tr>
<tr>
<td>Frequency at 25°C</td>
<td></td>
</tr>
<tr>
<td>Input impedance</td>
<td>50Ω v.s.w.r. &lt; 2:1</td>
</tr>
<tr>
<td>Input coupling</td>
<td>a.c.</td>
</tr>
<tr>
<td>Connector type</td>
<td>BNC female</td>
</tr>
<tr>
<td>Max. input voltage</td>
<td>15dBmV</td>
</tr>
</tbody>
</table>

Table 1:

<table>
<thead>
<tr>
<th>Time from switch-on</th>
<th>Frequency Read-out</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minutes</td>
<td>Seconds</td>
</tr>
<tr>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>0</td>
<td>30</td>
</tr>
<tr>
<td>1</td>
<td>00</td>
</tr>
<tr>
<td>1</td>
<td>30</td>
</tr>
<tr>
<td>2</td>
<td>00</td>
</tr>
<tr>
<td>2</td>
<td>30</td>
</tr>
</tbody>
</table>

Table 2:

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Reliable Reading Threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>MHz</td>
<td>mV</td>
</tr>
<tr>
<td>520</td>
<td>1.4</td>
</tr>
<tr>
<td>200</td>
<td>0.81</td>
</tr>
<tr>
<td>30</td>
<td>0.1</td>
</tr>
<tr>
<td>10</td>
<td>0.16</td>
</tr>
</tbody>
</table>
Why wait weeks to sell that well loved but surplus FT101 or whatever. If you have decided you must part -
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* PRACTICAL WIRELESS & SHORT WAVE MAGAZINE IN ATTENDANCE

October 13: The Armagh & Dungannon District ARC will be held in Gosford House Hotel, Markethill, Co. Armagh. Doors open at 12pm. Usual trade stands plus other events. For further information please contact T. Hall G0MSJ, 1 Hamiltons Road, Armagh City BT60 1DL. Tel: (0806) 534944.

October 13: Blackmore Vale ARS have their annual rally at Wincanton Racecourse, Somerset. This is an indoor event, doors open 10am to 5pm and entrance fee is 50p. Talk-in on SU22. Details from Norman G4YXX on (0749) 85432.

October 13: South Devon RC have their seventh annual Ham Radio & Computer Exhibition and rally at Mill Head Camp, Mill Head, Brixham, Devon. Doors open 10am. Trade stands, AR supplies, kits, computer sales, raffle, refreshments, unlimited free parking and overnight camping. Car boot sale, bigger and better this year. Outside attractions. Talk-in on SU22 + SU22 by G7FDC and G4SSB. Special event station G84CPU. Details from GG2RM. Tel: (0803) 522216 or (0386) 577220.

October 20: The Wirral Radio & Computer Fayre will be held at The Masonic Hall, Manor Road, Liscard, Wallasey, Merseyside. Doors open 10.30am. Further details from D. Clifford G6VNF on 051-639 5522.

October 25 & 26: The Leicester Amateur Radio Show will again be held at the Granby Halls, Leicester.

*November 23: The 5th North Wales Radio & Electronics Show will be held at the Aberconwy Conference Centre, Llandudno. The rally opens at 10am with the entrance fee at £1, OAPs 50p and children under 14 free of charge. Siggy Fergusson GW0DHY. Tel: (0492) 532459 (day). Tony Wilkinson GW4P6V. Tel: (0492) 49121 (evenings).

November 10: The 1st Barnsley Amateur Radio Rally will be held at Willowgarth Senior High School, Waterhouse Road, Grimesthorpe, Barnsley, South Yorkshire. Details and trade enquiries from Ernie G4LUE, 8 Hild Avenue, Cudworth, Barnsley, South Yorkshire. Tel: (0226) 715339 (6-8pm).

*November 17: Bridgend Rally. Further details from Charles Sedgebeer, 50 Miniflare Rd, Pencoed, Mid Glamorgan, South Wales CF3 6BD.

November 24: The West Manchester Radio Club's 'Winter Rally' takes place at the Bolton Sports And Social Exhibition Centre, Silverwell Street, Bolton (town centre). All the usual trade stands, societies, Bring & Buy, etc. Admission £1. Dave GI100 on (0206) 214104 evenings only.

December 1: The Bishop Auckland Radio & Electronics Rally will be held at the Sunnydale Leisure Centre in Shildon, County Durham. Doors open at 11am, disabled 10.30am at ramped entrance. The usual traders will be present and talk-in will be via SU22 on 145.50MHz. All enquiries to G4YFF or G6FBK, QTHR or telephone (0388) 60689.

December 8: The Leeds & District ARS have their 'Christmas Rally' at The Pudsey Civic Centre, Dawsons Corner, Pudsey (at junction of the Leeds Ring Road with Bradford Road, do not follow signs for Pudsey). Doors open at 10.45am, all the usual facilities. More details from Geoff Stubbs on (0532) 58891.

December 8: Now in its 7th year, the Verulam Christmas Rally will again be held at Hatfield Polytechnic, adjacent to the A1 (M). Traders' stands are located on two floors with the main hall being located on the first floor (together with the Bring & Buy stand). A smaller number of stands are available in the ground floor refectory (together with the catering and bar area). Access to the rally will be from 8am with the rally opening to the public at 11am, although they will try to open at 10:30 if all traders are set up. Table space is allocated on a first-come-first-serve basis, so early booking is recommended. Further details from Steve Dunning on (0923) 211643.

*December 15: The Centre of England Amateur Radio Rally will be held at the British Motorcycle Museum, Bickenhill, near the NEC Birmingham (junction 6 M42). Doors open 10.30am, admission £1, OAPs 50p, children free. Over 60 trade stands in three large exhibition halls, Bring & Buy, talk-in on SU22, bar and restaurant available, ample free parking, concessionary rates to visit museum. Frank Martin GAUMF. Tel: (0952) 589173.

Practical Wireless, November 1991
Formulae appearing in textbooks often have the term we are trying to calculate mixed up with other terms. Ideally, to solve any one component term, that term should be alone on one side of the equals sign. We would then find a formula in the form $c = ??$ much easier to solve. This doesn’t mean that the original formulae can’t be used. It just means that it can’t be used in that form. We need to swap the terms around to isolate the desired unknown.

**Basic Equations**

But first, what is a formula? A formula is a statement of equality, two sets of terms separated about an equals ("=") sign. A formula says that the terms on the left-hand side (l.h.s.) have the same value as the terms on the right-hand side (r.h.s.). The centre point is of course the "=" sign.

So, I think of the rule of formulae manipulation as the ‘see-saw’ rule. Imagine an equation as a see-saw, or a set of scales, at the point of balance. Whatever we do to one side, if we do the same to the other side, balance will be maintained at all times. So, to isolate a single term on one side of an equation we use transposition and manipulation of terms.

**Rules Again**

It’s a good idea to generalise the rules before we try a few examples.

Those simple rules are:

(i) To remove a positive term on one side, move the term from that side to the other side, and change the sign to a minus.

(ii) To remove a negative term from one side, move the term from that side to the other side, and change the sign to a plus.

(iii) To remove a dividing term on one side, remove the term and multiply the other side by the same term.

(iv) To remove a multiplying term from one side, remove the term from this side, and then divide the other side by the same term.

(v) To remove a square root on one side, take the sign away and square the other side (DO NOT apply rule (vi) at this point).

(vi) When squaring one (complete) side, the other (complete) side must be squared too.

(vii) When inverting (turn upside down) one side, the other side must be inverted too.

When multiplying or dividing one side of an equation by a term, every term on that side must be multiplied, both above and below any dividing line. These rules may be combined as you become more proficient, but until then, do them as individual steps.

**Best Ways**

As usual, a worked example is the best way to explain how to do it.

If we want to find $c$, given the simple formula:

$$\frac{a}{c} = \frac{b}{c}$$

How do we determine the value of $c$?

In this case it would be fairly easy as there are only a few simple terms, but this is not always so! What we want is a simple formula of the term $c = ??$ which is true under all conditions. But $c$ is not on its own, we must transpose terms to isolate it.

Let me rewrite the equation as:

$$\frac{a}{c} = \frac{b}{c}$$

How do we change the terms around, to isolate the unknown? To begin to isolate $c$ on one side, multiply both sides by $c$, as here:

$$ac = bc$$

$$\frac{ac}{b} = \frac{bc}{b}$$

$$\frac{ac}{b} = \frac{bc}{b}$$

Similarly, to find $y$ in terms of $x$ and $z$ in the same equation, $xy = 3z + 4y$ Subract $4y$ from both sides of the equation:

$$(xy - 4y) = 3z + (4y - 4y)$$

$$(xy - 4y) = 3z$$

by putting $y$ outside the bracket, before dividing both sides by $(x-4)$:

$$\frac{y(x - 4)}{x - 4} = \frac{3z}{x - 4}$$

Cancels out the $x - 4$ on the l.h.s. leaving:
Third Form

We’ll now try the third form, what is $z$ in terms of $x$ and $y$? in the same equation. Start by subtracting $4y$ from both sides:

$$xy - 4y = 3z + (4y - 4y)$$
$$xy - 4y = 3z$$

Divide both sides by 3:

$$\frac{xy - 4y}{3} = \frac{3z}{3}$$

$$\frac{y(x - 4)}{3} = z$$  (rewritten as: $z = \frac{y(x - 4)}{3}$)

Just One More

One final example, but this time just a little more difficult:

$$a = \frac{1}{\sqrt{bc}}$$

(i) Find $b$ in terms of $a$ and $c$
(ii) Find $c$ in terms of $a$ and $b$

The $\sqrt{}$ symbol means square root of the number underneath it. So, using the 'see-saw' rules again, do onto one side as you do unto the other!

$$a^2 = \left(\frac{1}{\sqrt{bc}}\right)^2$$

Remember, as long as you do exactly the same operation to BOTH sides of an equation it will still be true, and this applies to squaring terms as well.

$$a^2 = \frac{1^2}{(\sqrt{bc})^2} = \frac{1^2}{\sqrt{bc} \cdot \sqrt{bc}} = \frac{1}{bc} = \frac{1}{bc}$$

This has isolated a simple term with $b$, on the right-hand side. So we can now multiply through by $bc$.

$$bc \left(\frac{1}{bc}\right) \text{ becomes } a^2 bc = \frac{bc}{bc}$$

$$b \left(\frac{1}{a^2 c}\right) = 1 \text{ (divide both sides by } a^2 c \text{ gives) }$$

$$b = \frac{1}{a^2 c}$$

and similarly $c = \frac{1}{a^2 b}$

Final Final Example

Take another example:

From $xy = 3z + 4y$ find $x$, $y$ and $z$. Start by finding $x$ in terms of $y$ and $z$. Divide both sides of the equation by $y$.

$$\frac{xy}{y} = \frac{3z + 4y}{y}$$

Now find $y$ in terms of $x$ and $z$.

$$xy = 3z + 4y$$

To take $+4y$ from the r.h.s. move the term to the other side of the equals sign, remembering to change its sign.

$$xy - 4y = 3z$$

The term $y$ is common to both items on the l.h.s so may be taken outside a bracket.

$$y(x - 4) = 3z$$

now divide both sides by $(x - 4)$ (using rule (vi)).

$$y = \frac{3z}{x - 4}$$

Finally, what is $z$ in terms of $x$ and $y$?

$$xy = 3z + 4y$$

Start by changing $+4y$ to the other side of the equation (don’t forget to change its sign!)

$$y(x - 4) = 3z$$

Lastly divide both sides by 3 (using rule (vi) again)

$$y = \frac{3z}{x - 4}$$

Problem Corner

Here are some algebraic problems for you to try. I’ll give you the answers in the next article.

(i) If $5x = 10y$ find $x$ in terms of $y$
(a) $x = 2y$
(b) $x = 5y$
(c) $x = 4y$
(d) $x = 50y$

(ii) If $3a = \frac{b}{2c}$ find $b$ in terms of $a$ and $c$
(a) $b = 3a + 2c$
(b) $b = 6ac$
(c) $b = 1.5ac$
(d) $b = ac$

(iii) $z = \frac{1}{w\sqrt{xy}}$ Find $x$ in terms of $w$, $y$ and $z$

(a) $x = \frac{1}{wyz^3}$
(b) $x = \frac{1}{(wyz)^3}$
(c) $x = \frac{1}{\sqrt{y(wz)^3}}$
(d) $x = \frac{1}{y(wz)^3}$

That’s the end of the purely mathematical part. From now on we will be looking at how basic maths is applied to solve practical problems facing the intrepid traveller, entering the technical jungle of the RAE and Novice licence radio theory.

Practical Wireless, November 1991
Innovation into Investment

We've always been proud of our authors and their work. Now you can join in - and win £25 - by sending circuits and projects to 'What A Good Idea'. It's the ideal solution to the advice often offered by friends who suggest that "You should publish that!"

Circuits - accompanied by the minimum of text - must be neatly and clearly drawn in ink. Wherever possible the idea must be original, although your suggestion might be a significant improvement based on another idea. In which case you should always quote the original source. All entries will be acknowledged. Send your entry, with your name and address, to: 'What A Good Idea', Practical Wireless, Euclea House, The Quay, Poole, Dorset BH15 1PF.

PLEASE NOTE: that we at PW may not have built and tested the circuit, but present it on an "as-is" basis. We do take the greatest care in preparation of the article, but cannot be held responsible for the suitability of the original suggestion, or for any damage that may occur to property or equipment in implementing this idea.

T1 is a small transistor interstage transformer of about 1:6 ratio

+9V (+12V)

+3V

T1 1.5

High impedance headphones

RFC

C2 500p

C1 500p

C3 10p

R1 3X3

Morse test. Bar & catering facilities available and parking is free. Details from Kathy G4ZEP on 061-624 7354 day or 061-652 8167 evening.

January 26: The 2nd Lancastrian rally will be held at the University of Lancaster. Opening times are 10.30am for the disabled and 11am for everyone else. Further details from Sue G10HH on (0562) 64239 or QTHR.

February 2: South Essex ARS have their 7th mobile radio rally at the Paddocks Community Centre, Long Road (A130), Canvey Island, Essex. All the usual traders, Bring & Buy, refreshments, free car parking, including parking for the disabled outside the main door. Doors open 10am. Talk-in on S22. For further information contact Dave Speechley G4UVJ on (0268) 697978.

February 23: The Northern Cross Rally is to be held at the Rodillian School, Lofthouse, West Yorkshire, nr. the junction between the M1 and the M62. All the usual rally attractions. Further details from John-Lloyd Bailes G0MVA, 239 Towngate, Ossett, West Yorkshire WF2 0GE. Tel: (0924) 260048.

March 7: Tyneside ARS have arranged a new venue for their annual Rally, the Temple Park Leisure Centre in South Shields. The centre offers up to 17 000 square metres of floor space, all on one level, with easy access for traders where needed. Catering facilities, including a bar on site, as well as family rooms. For those other members of the family not wishing to partake in the Rally, all the amenities of the Leisure Centre are there too, including heated Leisure pool and gymnasium. Plenty of free parking. Further details about the Rally from Jack G0DZG on 091-2651718.

June 14: Royal Naval ARS have their annual mobile rally at HMS Mercury, Nr. Petersfield, Hants. There will be dozens of trade stands; a Bring & Buy, flea market, radio-controlled power boats and trains; local radio clubs and repeater groups; children's rides and amusements; vintage fire engine; TV detector van; ices and refreshments; arts and crafts' exhibition; two Grand raffles; spectacular arena displays and other attractions, making this a great day out for all the family. 144 and 430MHz talk-in, free parking and picnicking, free admission for children, adults £1.50, no dogs except guide dogs. For full details, contact Cliff Harper G4UJR, 34 Neva Road, Bitterne Park, Southampton SO2 4FJ. Tel: (0703) 557465.

June 28: The 35th Longleat Amateur Radio Rally. Details from Shaun G8VPG on (0225) 873098.

July 25/26: Norfolk ARS are planning a 2-day event. G4ONF. Tel: (0603) 747782.

1992 Radio Diary

* PRACTICAL WIRELESS & SHORT WAVE MAGAZINE IN ATTENDANCE
WHY NOT COME AND MEET US AT THE LEICESTER SHOW

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SHOW OFFER £756.00

THE NAVICO AMR1000S MUST BE THE BEST VALUE 2M FM TRANSCEIVER ON THE MARKET TODAY. 5/25 WATTS OUTPUT AND 0.12uV FOR 12DB SINAD ON RECEIVE MAKE THIS AN IDEAL RADIO FOR IN THE CAR OR FOR USE IN THE SHACK. FOR PACKET RADIO AUDIO OUTPUT IS AVAILABLE FROM THE MC SOCKET SO ONLY ONE INTERCONNECTING LEAD IS NEEDED. THIS RADIO IS PACKET WITH MANY MORE FACILITIES, IT MUST BE WORTH A LOOK.

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NEW FROM YUPITERU IS THE MVT700 HAND HELD SCANNER. FOLLOWING ON FROM THE MVT500, IT NOW HAS 200 MEMORY CHANNELS, COVERAGE FROM 0.1 TO 1300MHz, AM FM, FM WIDE, NEW AUDIO SCAN MODE, COMPLETE WITH NICADS CHARGER AND DC LEAD FOR USE IN THE CAR.

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JUST PAST THE R.A.E OR THINKING OF TRYING 2 METRES FOR THE FIRST TIME? THEN WHY NOT TAKE A LOOK AT RAYCOMS NEW 2M HANDHELD. 1/2.5 WATTS OUT, FULL COVERAGE WITH THUMB WHEEL TUNING, TONE BURST ON PTT BAR COMPLETE WITH CASE, BELT CLIP, NICAD BATTERY AND CHARGER. YOU WILL NOT BE ABLE TO FIND ONE CHEAPER.

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Subscribers must include the dispatch label bearing their address and subscription number to qualify for their free advert.

Advertisements from traders, apparent traders or for equipment which it is illegal to possess, use or which cannot be licensed in the UK, will not be accepted. No responsibility will be taken for errors.

Don’t keep that old receiver, someone else needs it! Sell it in ‘Bargain Basement’ and make two people happy!

Wanted Transmitters: LabGear LG3000 TX, RCA TX of serial type ET4336, (any in series); No: 12 TX & a.u.; Racial transmitter driver; Receiver: Redifon R1345, Write to Peter G7FOX, ‘Tanglin’, 47 Ulwell Road, Swanage, Dorset BH19 1LG.

For Sale Versatower P60, Tilt over 3, section lattice galvanised steel tower 6 to 20m, with two auto braked winches and head unit, £400 o.n.o. I. Ward G8AWY, 71 Rothschild Avenue, Aston Clinton, Bucks HP22 5LY. Tel: (0296) 631174.

Wanted Ashtray. RSGB convention - Bristol - September 1954. Produced by Watcombe pottery with a cottage design. Contact Frank G4YKS, QTHR. Tel: (0737) 326781, please don’t speak to Sue - it's a present!

Wanted Amateur radio software (5½”) for Apple II Euro computer - RTTY, AMTOR, packet, etc., and RTTY or audio analysis programs. Books dealing with above also required. Contact G4GJS, 3443 Tyldesley Road, Hindford, Atherton, Greater Manchester M29 9AP. Tel: (0942) 892572.

For Sale Comet 136MHz transceiver new and unused, offers. Tel: (0860) 724180, mobile only, Stoke-on-Trent area.

For Sale Icom 275E+SM8, £175. Yaesu FRG-8800, £135. BBC-B plus monitor, drive and software, £395. All absolutely perfect, any reasonable offers considered. Must be seen soon! Robin GB8VY. Tel: (0453) 828891 (work) or (0453) 886400 (home).

For Sale Toshiba radio cassette recorder, excellent condition, very good performance I.w., m.w., s.w., f.m. Offers, £30 o.n.o. Mr M. Allen. Tel: (0742) 464186.

For Sale AOR 100 and DIJON discine, £200. Eddystone EC10 M&L, £50. Tandy 1007 4och, H/H and access, £50. All equipment as new, box included. Contact GIEYL, QTHR. Prefer buyer collects or carriage extra. Tel: (0246) 415667 after 5pm.

For Sale Icom IC730 transceiver, £450. Datong FL3 filter, £95. Datong PC1 general coverage converter, £85. BARTG Versatram RTTY terminal unit - cased, £45. Dragon 32 computer, £40. Tony. Tel: (0608) 811102.

For Sale Tokyo Hy Power HL160V 2W160W linear 144MHz, £210. Also 3W110W 430MHz linear, £300.

BNO5 12.25A p.s.w., £120. All items mint. Paul G4XH. Tel: (0293) 515201 evenings.

For Sale FT-200/FP-200 TX/RX 80/40/20/15/10 s.s.b./c.w./a.m., p.s.u., speaker, mic and manual with circuits. Fault on transmit hence only, £75. Mike Gathergood. Tel: (0753) 245020 (Slough) or (0628) 707292 (Maidenhead) daytime.

For Sale Eddystone 770U, £150 and EC1056, £55. Condition. Tel: (0720) 529292.

For Sale Yaesu FRG-8800, v.h.f. converter fitted. Realistic PRO-2004 scanner, Dressler ARA900 antenna, global AT1000 coupler, Bremi power supply Barracuda CB, s.w.r. meter/matcher, £725 o.n.o, may split. Tel: (0606) 47806.

For Sale Yaesu FRG-8800 general coverage receiver 150kHz to 29999MHz plus 144MHz module, 118MHz to 174MHz, £500. Ricky GIT7C, Manchester. Tel: 061-491 3755 after 6pm.

Wanted Ex-MOD teleprinter type Siemens T100, or other with twin 4MA current signalling carpenter type relay to suit army T234 receiving console. Mr Lebbon, 7 Keld Head Orchard, Kirbymoorside, North Yorks YO6 6EF.

For Sale Microset SR100 144MHz linear amp with pre-amp new and unused, 4 to 25W input-100W out. Save £25, price £135. Tel: (0952) 505050 (Telford).

For Sale Icom IC202E 144MHz hard-held with Nicad, charger, case, box and instructions. Excellent condition, must sell hence, £150. Tony G6HPQ. Tel: (0702) 351936.


For Sale RD & D25 quality general receiver hardly used as new, boxed and instructions. Excellent condition, £1195, tele: £695 o.n.o. Also second-hand Dressler ARA30 antenna, £25. Tel: (0202) 424219.

For Sale Kenwood TH77E 144/430MHz hand-held. Complete kit with 7.2 and 12V battery packs chargers, cases, head set/mic, telescopic antenna, all boxed, mint, £370. Also Yaesu FT-767GX transceiver with 50 & 144MHz modules fitted, excellent condition, £1350. Nick G717YG. Tel: (0895) 236397 Uxbridge.

For Sale Realistic DX200 receiver 5 bands - 150kHz-30MHz, £120 o.n.o. £110 for VCR 517B with base, £17. Valves, 850 new and ex-equipment, £120. Fairchild model 210 sound film strip system, £25. Tel: (0249) 8112293.

Wanted Ballast tube R-39 for Hallicrafters Co. model S-77A. Bill Naylor G7KKG. 80 Burnside, Parbold, Lancs WN8 7PE. Tel: (0257) 464252.

Wanted Minimitter mobile receiver for 1.8, 3.5 and 7MHz to go with my matching Minimitter mobile a.m./c.w. transmitter. G3XFD, PW Office. Tel: (0202) 678558.

Wanted information on Lunar Electronics v.h.f. 30-150 P 144MHz linear amp and its devices No. SD 1416 or equivalent. Richard Hayward, 9 Mill Lane, Wickham Market. Woodbridge, Suffolk IP13 0SP. Tel: (0728) 746741.

Wanted Eight-track cartridges, Pilot Radio, Lissen valves, old wireless books/magazines, pre-war TV, Spy sets, mikes, Morse keys etc. Douglas Byrne G3PKO, 52 Westhill, Ryde, Isle of Wight PO33 1LN. Tel: (0983) 67665.

Wanted Microwave modules 144MHz linear with pre-amp 200W output, 3, 10 or 25W input, £220 o.n.o. G4NTY, QTHR. Tel: 061-790 7673 evenings.


For Sale NRD 525 quality general receiver hardly used as new, boxed with manual, new - £1195, sell - £695 o.n.o. Also second-hand Dressler ARA30 antenna, £25. Tel: (0202) 424219.

For Sale Kenwood TH77E 144/430MHz hand-held. Complete kit with 7.2 and 12V battery packs chargers, cases, head set/mic, telescopic antenna, all boxed, mint, £370. Also Yaesu FT-767GX transceiver with 50 & 144MHz modules fitted, excellent condition, £1350. Nick G717YG. Tel: (0895) 236397 Uxbridge.

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Aylesbury VE4 RST meet 1st & 3rd Wednesdays, 8pm at the old Village Hall, Harrod, Overseal Road, Yarnton 01235 811379. Further details from Doug Egan GW4AX6. Although anyone wishing to join in is welcome. For more details on this Wiesbaden ARC - DAIWA - is a club mainly for US military personal stationed anywhere in Europe, and no special qualifications are required as an active listener. Free membership.

Barnsley & District ARC meet Mondays in the radio club room and contact the Barnsley, Lenton Road, Sheffield S10 4BD. This is a club for all levels of amateur operators and has many members overseas, who should contact their Overseas Liaison Officer - Alan Blackwell G3AXJ at 99 Tornhill Road, Cotgrave, Nottingham NG11 4LH. Thomas Dennis, G4EXX, 4 Hazel Grove, Longmanes, Dinas Powys, South Glamorgan CF6 4TE. Tel: (0222) 912999.

Bolton & District ARC meet 2nd and 4th Thursdays, 8pm at the Woodley Pavilion, Woodford Park, Hadston Drive, Woodley, Reading. Vin Robinson G4JTIL, 4 Hilltop Road, Wimbledon SW19. Tel: (0111) 029426. More details from Andy Stafford G4VPVM on (0300) 320955.

Bromsgrove ARS meet at Licky End Social Club, Alcester Road, Burcot, Bromsgrove. Mr D. Edwards G4ZWR, 2 Mason Close, Headless Cross, Redditch, Worcs B97 50F. Tel: (0529) 600963. More details from Andy Stafford G4VPVM on (0300) 320955.

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This month, Mike Rowe G8JVE describes the transmitter circuit and other details of PW’s simple 50MHz a.m. ‘starter’ rig.

The PW Beaver
A Simple Transmitter-Receiver For 50MHz Part 2

Having described the receiver in detail last month, I’ll start off this time by describing the Beaver transmitter circuitry. The transmitter circuit is shown in Fig. 2.1.

Suitable frequencies for operating a.m. were discussed with the band-planners, and together we came up with a workable channel based around 51.3MHz. Clubs and groups may want to make bulk orders on the crystals, as there are rewarding discounts to be had this way!

The oscillator is a Colpitts type using 3rd overtone crystals, tuned by a trimmer capacitor on each channel. The output of 51.3MHz is coupled from the emitter by a series tuned circuit to the buffer amplifier, which is a dual-gate m.o.s.f.e.t.

This device was chosen for its high impedance which reduces damping on the series circuit. The output from the buffer is link-coupled to the power amplifier, which is operated in class AB. Bias is provided by R36, 37, and 38.

The emitter is decoupled both for r.f. and a.f. modulation is provided by the audio amplifier, to the p.a. stage by a home-wound modulation transformer, T4. Modulation level control is provided by R39, and the stage is adequately provided with r.f. decoupling on its inputs. The r.f. output to the filter board is matched by C54 and 55 and L1.

Switching And Control

Power supplies to the transmitter, receiver and antenna switching are controlled by relay RL1, which is operated by the p.t.t. switch on the hand-held microphone. Protection against back e.m.f. from the relay coil is provided by D4.

An additional supply to the transmitter oscillator only, can be applied during reception, for netting purposes. This supply is provided by S2, which is a push-button type. When the transmitter oscillator is switched on, for receiver tuning purposes, the supply is taken from the connection RX on board 1. The diode, D3, is reversed biased under these conditions and the buffer amplifier, p.a. and modulator stages cannot be energised.

Modulation Transformer

The modulation transformer, T4, is a centre-tapped home-
Fig. 2.1: The Beaver transmitter circuit.

Fig. 2.2: The p.c.b. ground-plane, component overlay and copper track diagrams.
wound job, using a special former, the RS Components Ferroxcube 228-258. This is also available from Maplin Electronics as part FT33L. The cores are designed for power oscillators and switch-mode power supply systems. The component is made up from two 'E'-shaped halves of the ferrite core, and a moulded former. You must take great care when handling the ferrite sections, as they are very brittle. However, if you do break them, the two halves can be glued and used, but it's better to be careful in the first place!

**Moulded Former**

The transformer (in effect an auto-transformer) is wound on the moulded former, and the E-shaped ferrite cores are then added to the assembly. Wind the primary using 32s.w.g. enamelled wire starting from pin 1, (T4 Fig. 2.1) making 50 turns connecting to pins 2 and 3 (this forms the centre tap) which is then followed by the secondary winding which is made up by a further 110 turns finishing up at pin 4.

Finally, when you're soldering the winding leads out to the pin connections on the bobbins, make sure that you thoroughly tin the wire before soldering.

**Transmitter Construction**

You should start the transmitter construction in the same way I advised you to use on the receiver. It's best to use the p.c.b. component overlay guide, Fig. 2.2, when you're fitting all the resistors and capacitors. Don't forget to check the polarity of the capacitors where necessary.

After you've completed that job, it's time to wind the coils, L10 and L11 and fit them to the board. Next, it's the turn of the ready-made Toko coils, and these can be correctly orientated by using the locating moulding on the side of the coil.

The coil, L9, is a 1 turn winding wound over L8 (a ready-made Toko coil). The winding is formed from insulated wire, which is then pushed down, gently does it!, to the bottom of the former of L8. Make sure, that when you fit the coils on to the board, that the base of the formers nestle right up to the p.c.b. itself. This will help to keep them rigid on the board, and avoid any possible chance of frequency instability or microphony.

The p.c.b. (available from the PW PCB Service) provides an option for two crystals of your frequency choice. I recommend that you mount them in appropriate holders. However, if you do solder the crystals directly on to the board, take care and don't overheat and damage them.

**Heat Sinking**

After you've finished carefully mounting the various inductors, the next stage is to fit and carefully orientate all the semiconductors. A heat-sink is needed for TR6, as this device dissipates some heat. For this particular job I recommend a 25mm long heat-sink for safe operation.

So far, so good! The next job is to fit the relay RL1, and the necessary Verobins for the off-board connections. The integrated circuit, IC4, also needs a heat-sink and this can be made from a scrap of 18s.w.g. aluminium bent as shown on the diagram, and bolted to the p.c.b. The i.c. is then bolted directly to the heat-sink, no insulating washers are necessary.

Finally, the p.c.b. should be checked for solder splashes, which could cause bridging. Don't forget to carry out a thorough search for dry-joints. This should be followed up by a final check with a test-meter to trace any possible short-circuits.

**Simply Made**

We're entering the final stages now. Next time we'll be finishing the project off by assembling the filtering and metering p.c.b.s. These are very simply made, and I used the 'surface mount' technique, where the components are mounted directly onto the p.c.b.

The metering board is actually mounted directly on to the rear of the meter itself. The board is then secured by double-sided adhesive tape.

More about that next month. I shall then round off the Beaver project by describing the construction of the meter and filter boards in detail, along with the final setting-up and adjustment of the transmitter. Cheerio until then!

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**How Much?**


**Shopping List**

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<td>PW, Millstream Trading Estate, Ringwood, Hampshire</td>
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Together with the ‘bottle of bubbly’ draw on-the-hour, you could win amateur radio equipment prizes in our other FREE entry competition to be held on both days. In the morning, the prize will be £100 ALINCO EQUIPMENT VOUCHERS (kindly donated by Waters & Stanton) and the afternoon a KENPRO KT-44 U.H.F. HAND-HELD TRANSCEIVER (kindly donated by Nevada Communications).

All you have to do is drop a QSL card into the special box. Forgotten your card?, don’t worry, we can supply a blank card (and there’s extra cards when you buy books from the stall). Best of luck!

Special Book Offers such as: North American Callbook @ £13 (usual price £19.50), World Radio TV Handbook @ £15 (normal price £17.95)
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So, come and join the fun, have a go at winning a prize, buy your books and meet the team from your favourite publications, Practical Wireless and Short Wave Magazine at the 1991 Leicester Show on October 25-26.

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Cut out the coupon below and bring it with you to the Leicester Show and you can save 5% on goods bought from our stand. If you collect the coupon from two separate months of Practical Wireless you can save 10% on goods purchased from Practical Wireless at the rally.

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You’ve heard all about the magnificent trip in 1991, and now YOU can be part of the Dayton ’92 holiday!

Fly to the Biggest & Best Amateur Radio Show in the world - the Dayton HamVention being held in the Hara Arena Dayton, Ohio.

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Come and talk to me - Roger Hall G4TNT - on the Practical Wireless and Short Wave Magazine stand at the Leicester show, or complete the coupon. I’ll gladly tell you more.

To: PW Publishing Ltd., Enefco House, The Quay, Poole, Dorset BH15 1PP.
Please send me further details of the Dayton ’92 trip.

Name & Address ............................................................................................................................
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PW DISCOUNT VOUCHER NOVEMBER 1991
A Holiday of a Lifetime
Remembering The Gambia

Where is the Gambia I hear you ask? Well, it's a small strip of land approximately 240 to 320km long and anything from 24 to 48km wide around the River Gambia.

Why is it called The Gambia and how did it come to be? Well, this rather unusual strip of land takes its origin from the slave trade. The crafty British made sure that they had the land beside the river, and therefore had communication inland.

The British maintained a presence until 25 years ago, when the county became independent. The capital Bathurst was then renamed Banjul.

Easy Location

The first thing I must say is, how easy it is to work from The Gambia as an amateur radio DX location. As a holiday it's also a great pleasure as Ernie C53GS, and his charming wife Anna make everything so easy.

All you have to do is to send a photostat of your validation document, and on arrival in The Gambia, there's a reciprocal licence, rigs and a beam antenna waiting for you!

When you arrive in Banjul, local people immediately ask if you have any British newspapers. These are normally extremely scarce, and are looked on as a good source of income by the boys at the airport.

Beside The Sea

Our delightfully named guest house, '13unkoyo', was only about 400m from the Atlantic Ocean. So it's not surprising that a short CQ brings back an almost immediate call from the USA.

After the initial CQ, there can be as many as 300 people calling you at once! One of the reasons for the amazing 'pile-ups' is that apparently, your callsign immediately goes into the bulletin boards of DX packet clusters and is seen on the screens throughout the USA.

During the three weeks that I was there, I had about 750 QSOs, mainly to the USA during the night on 14MHz. In February 1989, Nigel G3TXF and Roger G3SXW made 14 783 contacts in a week!

This staggering number of contacts shows what can be done if you put your mind to the business. It makes my 750 QSOs look rather puny, but after all, I was on holiday!

Melon Medicine

Anna, our hostess, told me that G3XTF and G3SXW gave her a most difficult job. She had to literally prise them away from the rig to have a meal. And that's saying a lot because the food was really first class. She also had to treat them for swollen feet, using, funnily enough, watermelon! This delicious swollen-foot remedy now grows in their garden, along with papayas, bananas, mangoes and other 'goodies'.

My day usually started with a 'sked' at 1000UTC with my friends in north Norfolk and, of course, my old colleague G3MY. In order to try and escape forming a pile-up, it was previously arranged that they would call me.

The Gambia is the smallest independent republic in Africa. Doctor Tom Appleby G3RZ, shares the thrill of a visit to this fascinating country, where every amateur station coming on air is much sought after!

We were successful almost every day, but often ended with a free-for-all with other Europeans jumping on the band-wagon.

Interesting Countryside

One of the pleasures away from amateur radio, was when I toured around with Anna and Ernie to see something of the interesting countryside. In the evening, we would watch a video or just chat, before the real work of the day started.

Usually I worked from about 2300-0400 or 0400-0730 or so, with several trips to the fridge for a cool drink. However, after the first CQ and a normal chatty QSO, all hell was let loose!

I soon had to learn how to handle a pile-up. Everyone was calling at once. It was difficult to pick out a number and a letter consecutively, let alone a callsign.

The other hazard was that some operators insisted on calling even when I was in contact with somebody else. The frequency soon ended up as pure bedlam.

I found that if I made a list of consecutive letters heard, and then called for silence, that was the easiest way of managing the situation. My QSL information, station details, etc., could then be given at regular intervals.

But despite my organised methods, it soon became a real toil to sort out from the general noise, even consecutive pairs of call letters. Working split frequency didn't help much, until I realised that it was a mistake to say "listening 5 or 10kHz down" as the problem still remained.

The thing to do was just to say "listening down", and then at least the stations calling me were spread out a bit! I then had the chance of catching the stations on the upper and lower edges of the noise.

Fig. 1: Doctor Tom Appleby G3RZ working the bands while on holiday in The Gambia.
Impressive Hunters

I was extremely impressed with the persistence of the DX hunters. On my last night, I was amazed by the number of people who said "Thank God I've caught you at last. I've been calling you every night for the last two weeks". It's nice to be popular, perhaps for the first time in your life.

On the whole, but with certain exceptions, I found that the American stations were extremely good. They were well disciplined, and it was a pleasure to be able to give them a new country for DXCC.

One interesting point, was that I heard very few Russian stations. Their place was taken by the South Americans who were there in profusion.

Long Distance Shops

West Africa is around 5000km from the United Kingdom. Any radio amateur visitor soon realises that, for all practical purposes it's virtually the same distance from the nearest supplier of radio equipment.

The Gambia is also a Third World country, with all the associated problems. Electricity, for example, may be off at times for practically the whole day. Another problem is that the water supply is only available for short periods during the morning and evening.

Because of this everyone has large water storage tanks. The Hotels have their own generators, but fuel is often in short supply. We spent many hours driving around, looking for a filling station with petrol.

When we did find petrol, often there was no electricity to work the pumps. Filling the tank had to be done by the 'Armstrong method'. Or should I say by the 'strong arm' method!

Beam Heading

For operating purposes I had an FT-101ZD, and for back-up, a FT-707 working from a 75AH battery. The important thing however, was to remember to leave the beam pointing in the direction in which it might next be needed, before going QRT. It was quite possible that there would be no earthly (electrical) means of turning the beam when it was next needed.

It's helpful if you can do your own servicing, as there's no-one to do it for you. There are few radio amateurs in The Gambia, apart from a few priests and nuns who use the facilities for purely local communication.

Pleasant Winter

West Africa used to be called 'The White Man's Grave', but nowadays nothing could be further from the truth. Up country can be very sticky, and perhaps a bit uncomfortable. On the coast however, it's very pleasant indeed, especially in the winter.

There always seems to be a refreshing breeze coming from the Atlantic. Indeed, when I was there in January, everyone was complaining bitterly about the cold!

The local people were wearing woollen jumpers, although I was very happy in pair of shorts and a Tee-shirt, even at four o'clock in the morning.

Healthy Advice

Before going to The Gambia, you should take advice on health precautions. It's also essential to have a Yellow Fever injection. The protection given by the inoculation lasts for ten years, and my injection gave no reaction at all.

You also have to take anti-Malaria drugs, but this is no great sweat! (groan). There are, I suppose quite a few mosquitos, and I did get the odd bite, but they don't really cause a problem.

For anyone wishing to work DX from a rare country, I can thoroughly recommend 'Bunkoyo'. I'm certainly going back there again. It's quite easy, just drop a line to C53GS, PMB 274, Serekunda, The Gambia.

I'm looking forward to seeing you there!

PW
AR2002 LAST PRODUCTION SPECIAL OFFER £399

An end of production stock clearance provides the opportunity for you to acquire the high performance AR2002 wide coverage receiver at an attractive price. The AR2002 is a superb choice for the first time purchaser, combining performance with ease of operation. The business user or enthusiastic listener will appreciate the excellent strong signal handling characteristics (very important in urban areas or hill-top locations), high sensitivity and good selectivity. The AR2002 is a versatile unit covering a range of applications including airband, marine, amateur band, professional monitoring etc. If you already have a receiver, perhaps now is the time to consider buying your standby or second set.

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Control of the AR2002 is via a positive (non membrane) keypad. UP-DOWN frequency change is also available through a range. Increments for tuning and searching are available in 5, 12.5 and 25 kHz.

The AR2002 is powered from 12 - 14V DC. The set is supplied with a suitable mains adaptor, DC lead, telescopic aerial and operating manual.

AR2002 Special price £399.00 including VAT.
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Please phone for a list of participating dealers, many will be attending the Leicester show.

AOR (UK) Ltd. Room 2, Adam Bede High Tech Centre, Derby Road, Wirksworth, Derbyshire, DE4 4BG. Tel: 0629 - 825926 Fax: 0629 - 825927

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Mail order to: EYDON, DAVENTRY NORTHANTS NN11 6PT
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RECEIVER KITS

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RECEIVER ACCESSORIES

<table>
<thead>
<tr>
<th>Accessory</th>
<th>Price</th>
</tr>
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<tbody>
<tr>
<td>50kHz to 30MHz active filter</td>
<td>£18.50</td>
</tr>
<tr>
<td>Expertly fitted SSB and CW audio filter</td>
<td>£16.90</td>
</tr>
<tr>
<td>Extra SSB/CW filtering for our receivers</td>
<td>£16.50</td>
</tr>
<tr>
<td>All HF bands and 6M ATU (up to 300W)</td>
<td>£31.50</td>
</tr>
<tr>
<td>HF to VHF converter for scanners</td>
<td>£26.50</td>
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<tr>
<td>Buffer for adding capture to our SSB/CW RXs</td>
<td>£9.50</td>
</tr>
<tr>
<td>Digital frequency counter/display</td>
<td>£41.50</td>
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<tr>
<td>&quot;S meter&quot; for our receiver kits</td>
<td>£9.80</td>
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<tr>
<td>Crystal frequency calibrator (9 markers)</td>
<td>£16.90</td>
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TRANSMITTERS

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<tr>
<td>AM/SBB/CW 80 &amp; 160M 0.5-10W PEP TX</td>
<td>£39.90</td>
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<tr>
<td>Single band ORP CW transmitter</td>
<td>£31.80</td>
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<tr>
<td>10 &amp; 15M SSB and CW Exciter (filter type)</td>
<td>£39.90</td>
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<tr>
<td>30 &amp; 80 WPE Power Amp to suit XT180</td>
<td>£33.90</td>
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<tr>
<td>20M 10W ORP CW Transmitter</td>
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TRANSMITTER ACCESSORIES

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<tr>
<th>Accessory</th>
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<tr>
<td>Automatic Speech Processor</td>
<td>£21.90</td>
</tr>
<tr>
<td>Quality Mic with VOGAD</td>
<td>£12.50</td>
</tr>
<tr>
<td>VO20, 40 or 80 VFO for above TXs or TX+RX</td>
<td>£16.90</td>
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<tr>
<td>Filtered Microphone Amplifier (suit AT160)</td>
<td>£9.20</td>
</tr>
<tr>
<td>Side-tone/practiCe oscillator (sine-wave)</td>
<td>£12.90</td>
</tr>
<tr>
<td>SSB and CW Audio Filter</td>
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<td>Crystal frequency calibrator (9 markers)</td>
<td>£16.90</td>
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73 from Dave G4KQH, Technical Manager

Practical Wireless, November 1991
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Practical Wireless, November 1991
Cascode Cathode-Follower

I have often restored ex-military receivers, and like many I've tended to use the 'standard' single-ended valve output circuit. This is fine if the original, or a suitable output transformer is available. Then comes a point though, when they are not available. What then?

This circuit is one answer to that question. It is a cascode cathode-follower, with gain controlling feed-back. Valve-half V1a acts as a common-grid amplifier with the other half of the valve, V1b, acting as the anode load. This other valve-half not only acts as anode load, but also as a cathode-follower for the output side. The output impedance of a cathode follower is only a few hundred Ohms. This is unlike the anode output impedance, which may be several hundred kΩ, and unsuitable for driving a loudspeaker or headphones directly.

The gain control potentiometer should have a resistance of 5-20kΩ. This is because the resistor R2 has a shunting effect on it. Resistors R2 and R6 give a degree of overall negative feedback to maintain the gain to about 45. The small output transformer was designed for a transistor amplifier, with a turns ratio of about 10 or 12:1. Maximum output power is about 200mW into 150Ω, although it would drive an 8Ω loudspeaker with a reduced level. The level is adequate, but will not threaten your hearing.

Robert Kerr, GM4FDT
Invergordon
Ross-Shire

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R5, R7 Half-Wave Verticals
7, 10, 14, 18, 21, 24, 28 MHz

MODEL

<table>
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<tr>
<th>Frequency, MHz</th>
<th>SWR, 2:1 Bandwidth</th>
<th>Full Band</th>
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<tr>
<td>28, 24, 21, 18</td>
<td>Full Band</td>
<td>Full Band</td>
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Gain, dB
3

Electrical Wavelength (Half-wave)

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<tr>
<td>Wind Load, lb</td>
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<tr>
<td>Weight, lb</td>
<td>8.7</td>
<td>12.3</td>
</tr>
</tbody>
</table>

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Although I was told that the COM-RAD Industries ‘Untenna’ was on its way for a possible review, I was rather surprised when it arrived. When I first saw the unit, I thought it was part of a food mixer, complete with its plastic bowl!

This was a rather inauspicious start for a review on a very specialised v.h.f. and u.h.f. antenna, specifically designed for mobile use. However, as you can see from the photographs, I could be forgiven for the first, false, impressions!

My look at the antenna is not an in-depth trial. Although I didn’t get the opportunity to use the ‘Untenna’ on a test range, I tried it in various applications. I also received valuable ‘on air’ comments from other operators before reaching my conclusions.

Low Profile

I was intrigued with this low profile antenna from the very start. It’s designed for those applications where a normal sized antenna can’t fit. The American manufacturers, COM-RAD Industries of Grand Island, New York, aim at large lorries and other high-roofed vehicles where antennas are prone to damage.

The other advantages with this format are that the assembly doesn’t attract attention from unwelcome directions (vandals) and that it provides dual-band operation from one very compact unit.

What Is It?

The ‘Untenna’ is in fact a form of ‘Halo’ antenna, providing vertically polarised, virtually omni-directional transmissions on 144 and 430MHz. Although aimed specifically at the vehicle mobile market, it has many other applications.

The unit I had on loan from the UK importers, Bredhurst Electronics, came complete with a magnetic mounting assembly. The manufacturers also offer a direct mounting system for permanent fixing on a vehicle. I found that the magnetic-mounting made the ‘Untenna’ a very versatile unit, and quite frankly, for this particular antenna, I can’t see any demand for the version that requires a hole to be made.

Made from stainless steel, brass and bronze, the ‘Untenna’ is a robust little device. With its two tuning discs for 144 and 430MHz underneath the radiating elements, it will certainly stimulate technical discussions if the reaction from the staff of Practical Wireless and Short Wave Magazine are anything to go by!

Matching And Tuning

As supplied from the manufacturer, the ‘Untenna’ is matched into 50Ω. However, there’s an adjustable impedance matching point on the v.h.f. and u.h.f. elements so that final adjustments can be made.

The antenna tuning is carried out by adjustable discs projecting down from the main elements. In operation I found this was not a difficult job, as it can be done while receiving signals ‘off-air’. However, I discovered that the disc had to be re-adjusted when the antenna was moved, even on the same vehicle.

The manufacturers claim that the tuning disc on 144MHz tunes the antenna between 144 and 151MHz. My measurements agreed with their claim, but I found that tuning at the lower frequency end of the band, was quite critical. This was due to the tuning disc drawing closer to the vehicle bodywork.

On 430MHz, the tuning was much more critical, due to hand capacity effects. Despite this, once I had set the antenna up, it worked very well indeed.

Although the ‘Untenna’ is supplied with a radome type of plastics housing, I was concerned as to whether or not rain could cause detuning. To this end I thoroughly wetted the car roof, before replacing the antenna. Sure enough, the resonant frequency had shifted down a few kHz, but it didn’t seem to make any difference on the s.w.r. readings or reported signal levels.

Using The Untenna

On 144MHz, I compared the performance of the ‘Untenna’ with the λ4 magnetic-mount whip I’ve got on my elderly Ford Escort estate. Without exception, everyone I worked reported no measurable difference in the signals received from either antenna.

Sufficiently convinced that it was working, I set off gingerly and drove along the busy A31. I was half expecting to see the radome assembly appearing in the rear-view mirror in full flight! Needless to say, I needn’t have worried and it stayed firmly in place and provided excellent signal reports.

An unusual v.h.f./u.h.f. antenna has recently arrived from the USA, and after trying it out, Rob Mannion G3XFD says that it could prove to be the answer for some of those ‘difficult’ mobile applications.

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For testing on 430MHz I used a Kenpro KT-44 hand-held transceiver, courtesy of Tex Swann G1TEX! While parked on some high ground, I managed to work several stations on the ‘rubber duck’ before transferring to the ‘Untenna’.

The ‘Untenna’, as I’d expected, proved better than the transceiver’s antenna. Other operators noticed signal levels two to three S-points higher than with the KT-44’s ‘rubber duck’.

On the 430MHz band I didn’t have anything else to compare the ‘Untenna’ with. Despite this, I felt quite satisfied that it provided a useful, low profile antenna as it brought me some good signal reports.

An Ideal Solution

Altogether, I think that this antenna will prove to be very useful for any keen mobile operator owning or driving a ‘difficult’ mobile QTH. By ‘difficult’, I have in mind Luton-bodied vans, motor-caravans, lorries and other slab-sided or high-top vehicles.

Motor-caravans (particularly coach-built) are very difficult vehicles when it comes to fixing mobile antennas. Personal experience with a Commer ‘Highwayman’ over a 15-year period proved that point for me!

Many vehicles, even large lorries, have roofs and cabs made from non-metallic materials nowadays. That could be a problem, but the ‘Untenna’ can cope with this situation, provided that it is located on a metal plate. The manufacturers recommend a minimum metal plate size of 300mm² for effective operation.

Specifications

- **Frequency range**: 144 to 151MHz v.h.f. and 430 to 470MHz u.h.f.
- **Impedance**: 50Ω
- **Power handling**: 200W
- **Height**: 130mm (from magnetic base)
- **Dimensions**: 96 x 240mm (radome mounted)
- **Weight**: 700g (approximately)

Other Uses

Earlier on in the year, my wife and I had a delightful holiday on the Oxford canal, travelling up as far as we could, eventually ending up on the Ashby canal. I took a 144MHz hand-held transceiver, and enjoyed myself chatting away while working /IMM (Inland Maritime Mobile?).

Antennas are a problem with narrow boats, and the ‘Untenna’ would have been the ideal system to use on the boat we had. The magnetic base would have adhered well to the steel-hulled craft, and I would have been able to work from the cabin rather than stay up on the deck during the QSO!

Summary

So, to sum up, I think that from my practical, ‘on air’ tests and subjective trials, the ‘Untenna’ will prove to be very useful. In my opinion, the antenna will soon find its way on to the Norfolk Broads and the inland waterway network.

It is so unlike the usual antenna (hence ‘Untenna’), that many operators will find it a useful ‘invisible’ radiator. It could live on a roof, with very few people realising what it is. At least, I now know what it is, and won’t be caught by surprise again!

My thanks for the loan of the review model ‘Untenna’ go to Bredhurst Electronics Ltd., of High Street, Handcross, West Sussex RH17 6BW. Tel: (0444) 400786, who can supply the ‘Untenna’ for £69.95 inclusive of post and VAT.
The AR3000 now extends your listening horizons further than anyone believed was possible. Covering the entire frequency spectrum from 100 kHz to 2036 MHz without any gaps in the range, the AR3000 brings the general coverage receiver to a new level of performance and versatility. Not only will the AR3000 cover this extremely wide range, it will allow listening on any mode: USB, LSB, CW, AM, FM (narrow) FM (wide). Tuning rates are selectable from an ultra-fine 50 Hz step for SSB and CW, right up to 100 kHz steps for the TV bands and Band-2. A slight pull on the spring-loaded rotary tuning control will increase the tuning speed by a factor of ten for really fast tuning. 400 memory channels are provided arranged in 4 banks x 100 channels. Each memory channel will retain mode, frequency and RF attenuator setting. 15 band pass filters are used before the GaAsFet RF amplifiers, this ensures high sensitivity throughout the entire range with outstanding dynamic range and freedom from intermodulation effects. An RS232 port is provided to enable remote operation by plugging directly into most personal computers. The AR3000 is supplied with a telescopic whip aerial, 13.8V DC lead, AC power supply and operating manual.

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Novice radio amateur Richard Marks 2E1AAQ, indulged in a little mental time travel during an exam. Richard eventually discovered some fascinating details on Michael Faraday and reminds us about a special exhibition on this great man.

While I was sitting the Novice radio amateurs' examination last May, my mind wandered back in time, more than a century and a half. What started the journey? It was when I had arrived at the question asking about transformer ratios!

My day dreaming may not have done my examination chances much good, but without Michael Faraday's huge strides forward in electrical discoveries, there would be no transformers to ask questions about!

I found out that Count Rumford founded the Royal Institution in 1799. Eight years earlier, an even greater event happened, Michael Faraday was born. As I show later, these two events became very important.

Poor Family

The birth of this boy in 1791 added to the family's problems, as he was one of ten children in a poor working class household. As he grew up, there was little chance for anything that he wanted to do, because he only learned the basic things.

But at the age of 13 he started as an errand boy to George Riebua, and then a year later he became this old bookbinder's apprentice.

Some time later, a visitor to the bookbinder's shop gave him tickets to four of Sir Humphrey Davy's lectures at the Royal Institution. He found the performances so interesting, he followed up with other visits.

New Assistant

Despite the warning, he started as an assistant in 1813. Also in 1813, Davy decided to go to Paris with his new wife, and to take Faraday along too. Unfortunately at the last minute his valet panicked at the thought of being among enemies, as England and France were at war, and refused to go. Lady Davy chose to regard Faraday as a servant.

Later, Faraday started his own experiments. These were based on the remarkable discovery by Hans Christian Oersted in 1820, that electric currents produce magnetism.

Faraday tried to do the opposite thing. He found you can get electricity from a magnet, by making a coil and moving the magnet in and out of the coil.

The Transformer

The crowning glory of this search came on 29th August 1831. Michael had successfully constructed the first transformer.

He wound two coils of insulated wire on opposite sides of a soft iron ring, which was thought to be from an anchor. When he passed a current through the first coil, a pulse of current twitched the needle of his galvanometer connected to the second coil.

Was Michael Faraday the first 'radio amateur', with his success in passing a 'signal' from one coil to a completely different one 'some distance away'? Perhaps not, but it has all come from this great work.

However, part of a letter Faraday wrote to his young friend Benjamin Abbott makes interesting reading: "I Sir, my own self, cut out seven discs (of zinc) the size of halfpennies each. I, Sir, covered them with seven halfpennies and interposed between seven or six pieces of paper soaked in a solution of muriate of soda".

I think that this enthusiasm shows the very same curiosity and sense of fun, that the best of radio enthusiasts show to this day in their urge to keep on experimenting.
Interesting Experiments

You will find repeating Faraday's electromagnetic experiments just as interesting as I did. Fig. 1 and Fig. 2 show the two most easy-to-do experiments.

All you need is a bar magnet and a coil as I show, and your multi-range meter, set on the lowest current range.

If you are keen, you can repeat the 'ring' experiment in Fig. 2. If you do, you will have made a transformer a la Faraday!

I found that the work Faraday did on condensers (capacitors) and his pioneering measurement of the 'dielectric constants', has been honoured by his name being adopted as the unit of capacitance. Because of his work, we now have the Farad, and therefore the microFarad, picoFarad, etc.

So, here was the career-journey which took him from bookbinding to the capacitor. Was this journey of discovery one of the longest and most important in history? I think it was!

Consultancy Work

Michael Faraday had given up most of his consultancy work in favour of his electrical research. He was not a rich man when he retired in 1862. He went to live at a house at Hampton Court which Queen Victoria made available to him, and here he spent his last five years.

Michael Faraday advised Trinity House about lighthouses, was a member of the Senate of the University of London, and examined at the Royal Military Academy at Woolwich.

He also worked on colloids, and on the passage of electricity through gases at low pressure. Some of the things Faraday began were carried on by his admirer William Crookes and then by J. J. Thomson.

In 1897 at Cambridge, they 'discovered' the electron then first publicly described the experiments at the Royal Institution. Another admirer, James Clerk Maxwell, mathematically described Faraday's achievements in electricity and magnetism. He then added an important next step, predicting 'electromagnetic waves' and therefore radio!

Simple Headstone

Michael Faraday, great natural philosopher and Englishman, died in 1867. His grave is marked with the simplest of headstones on his insistence. It is still standing, where it has been for 124 years.

Always a modest man, an Elder in a fundamentalist church and a gifted lecturer, he was not only one of the great Victorians, but was also crucial in ensuring that we think and live in a different world from his.

Before I finish, I must thank my Club leader and Novice Instructor, Dr. Ken Smith G3JIX, for a little help with my grammar and style in this article.

Although Richard, who is 13 years-old, has been kind enough to acknowledge the assistance of G3JIX, Ken assures us that his help was minimal. In fact, Richard approached me at a rally with the idea of the article. His work and drawings have been reproduced with minimum of editing, and in the case of the drawings, as they were received in the office! Well done Richard. Everyone at PW wishes you the best of luck in your chosen hobby.

Editor.
Getting Started - The Practical Way

This month, the Rev. George Dobbs G3RJV introduces and shows you how to make an absorption wavemeter, a basic but essential workshop instrument.

When I was waiting to receive my amateur radio licence, I was given a number of things by fellow members of my radio club. My first transmitter was built with the help of my friends. It contained a power amplifier valve, variable capacitors, and was housed in a case all given to me by club members. The local clubs were like that in those days!

Odd Gift

The oddest looking radio gift I received, was a short wooden pole with a square of Bakelite at the end. The pole held a large variable capacitor, a big open wound coil and a torch bulb. It looked like an instrument from a vintage 'Flash Gordon' film!

It was of course an absorption wavemeter. However, since it didn’t cover 1.8 or 3.5MHz (my favourite bands in those days), I never used the device and lost it somewhere along the line. It’s a pity I didn’t keep it.

The Circuit

My original ‘vintage’ wavemeter was probably like the circuit shown in Fig. 1. As you can see, it’s a simple instrument.

The wavemeter consists of a tuned circuit, which is usually equipped with a large coil to pick up the signal. This is coupled via a smaller winding to a small pilot light bulb.

In use, the tuned circuit is placed near a radiating transmitter, or the tuned output stages of a transmitter. The variable capacitor is then adjusted to the frequency of the transmitter. Radio frequency energy, picked up by the tuned circuit is coupled to the bulb, which then lights up, indicating the presence of r.f. It also gave an indication of the strength of the signal, as the bulb grew brighter with more power.

The absorption wavemeter is still a useful item to have around the amateur radio station. They have a variety of uses with transmitters and antennas and are simple and inexpensive to build.

Practical Instrument

A circuit for a simple but practical wavemeter for the amateur bands from 3.5 to 30MHz, is shown in Fig. 2. You may remember that a few months ago, we looked at the circuits of a crystal set and an r.f. probe. The wavemeter circuit in Fig. 1, combines these two circuits.

A tuned circuit, formed by C1 and L1, is used to select the required frequency. The signals are received from a pick-up wire. Wavemeters are often equipped with whip-type antennas, but a pick-up wire makes the instrument more versatile. This is because the sensitivity of the wavemeter can be controlled by the length and placement of the wire.

Voltage Doubler

Two diodes, D1 and D2, provide a voltage doubler detector circuit. You’ll probably remember this idea from the r.f. ‘sniffer’ circuit we built recently.

A capacitor, C2, decouples any remaining r.f. signal to ground, and the detected signal is shown as a voltage on a meter, M1.

The meter can be any of the budget-priced types found in tape recorders. These little instruments usually have a full scale deflection of around 200µA.

There are many of these little meters available on the surplus market. To help, I’ve named the source of a suitable inexpensive meter with an f.s.d. of 250µA in the shopping list.

Building The Project

The wavemeter is housed in a plastics box, which was chosen for cheapness and simplicity. There are slight hand capacity effects (this is the effect which makes the readings change a little as the tuning knob is touched), but they are unimportant because the readings are only relative.

I used a Maplin Grey ABS Box 2004 (Order Code LH66Q) which measures 120 x 65 x 40mm, although any similar housing, made from wood or plastics would be suitable. The layout inside the box is shown in the photograph, Fig. 4. It’s not a difficult job, and there’s plenty of spare space.
Coil Winding

Past experience has taught me that if readers do go wrong, coil winding is a common stumbling block. However, you’re not going to let me down, are you?

The prototype coil was wound on a cotton reel, or cotton bobbin as they should be called. I can say this with all the authority of a Vicar, currently living in Rochdale, the best known of all Lancashire cotton towns!

The former I used, started life as a reel for the commonly available Gutermann thread, and it has a diameter of approximately 15mm. If these aren’t available, even a piece of wooden dowel could be used.

Two Parts

The coil is in two parts, L1(a) and L1(b). Begin the winding about 10mm from one end of the former by making the wire secure, with a small piece of pvc tape, and leaving a free end of some 30mm.

You should now wind 40 complete turns, close wound (side by side), on the former. This forms L1(a) and a tapping has to be made at this point.

Tapping is easy! This is done by drawing out a loop of wire about 30mm long, and then twisting the loop to make a twisted pair of the wire. This twist should keep the two ends tight to the side of the former.

A further six turns of wire are added, and the coil is finished off with another small piece of pvc tape. This forms L1(b) and completes the winding process. The completed coil should look like the diagram, Fig. 3.

More tape could be added to secure the turns but this looks untidy and I prefer beeswax. It can be dripped onto the windings and spread round the turns with a slight touch of the soldering-iron tip. I keep a block of the wax on my workbench and use it to secure coil turns and loose items on circuit boards.

Mounting Holes

It’s easy to make the mounting holes in the box using a hand-drill and small files. The layout is not critical. The bobbin coil former is a loose fit across the inside of the box, and it can be wedged with matchsticks or similar packing.

The wiring is all point-to-point, and can be seen in the diagram, Fig. 4. Remember to scrape the enamelling off the ends of the wires on the coil, and to tin the ends with solder before making connections. Finally, you should cut the end of the loop on the twisted pair of wires, cleaning and tinning both ends BEFORE JOINING THEM, to complete the coil tapping.

Calibration

Accurate calibration is not needed for most applications of a wavemeter. I simply marked the positions of the amateur bands in the range 3 to 30MHz.

The easiest way to calibrate the wavemeter is to use it, which may be a problem for the non-transmitting radio amateur. The method I used, was to feed a transmitter of known frequency accuracy, with the output reduced to about 2-3W into a 50Ω dummy load.

A piece of wire, approximately a metre long, was used from the pick-up point and this was laid over the dummy load. Keying the transmitter and rotating the tuning control for a peak reading, provided me with the calibration points for the amateur bands.

The bands are covered in two ranges using S1 to select the whole coil (L1 a and b) or the smaller section L1(b). The Low range covers the 3.5MHz and 7.0MHz bands. The High range covers all the bands higher than about 8MHz.

The sensitivity can be varied by moving the pick-up wire in relation to the dummy load. An alternative method, is to use a ‘dip meter’ to check the resonant frequency of the tuned circuit and to find the calibration points.

Many Applications

The wavemeter has many applications. These include a tuning indicator for peaking transmitter output, testing for transmitter fundamental frequency output and detecting unwanted harmonic frequency outputs. It also provides a helpful indication as to whether an oscillator is working.

A wavemeter can also help when comparing the relative outputs of transmitter stages, and making relative field strength measurements from an antenna. It can be used when adjusting an antenna for maximum gain and radiation and for ‘looking’ at approximate radiation patterns from an antenna. Another important application is the detecting of unwanted oscillations in transmitter or receiver circuits.

Build One!

Build a wavemeter and add it to your collection of test equipment. Every radio amateur should have one. Cheerio for now, and keep building!

Safety First

A word of caution! It’s dangerous to use the wavemeter too close to high power r.f. amplifier stages, especially if these contain valves and hence, high supply voltages.

Shopping List

Variable capacitor (Polyvaricon a.m. type) Maplin FT78K or similar. Diodes (2) type OA81, OA91 or similar, capacitor 10n miniature ceramic, meter 250µA f.s.d. Maplin LB80B or surplus meter (see text), single-pole change-over miniature toggle switch. One 120 x 65 x 40mm ABS plastics Maplin LH60Q or similar type. Single hole fixing phone socket, pointer knob, coil former: Gutermann cotton bobbin or similar (see text). PW
Book Reviews

W1FB's Design Notebook
Doug DeMaw W1FB
American Radio Relay League
198 pages, price £8.50
Available from PW Book Service, £1 post and packing.

The name on the front cover of this book should be enough to make many constructors go out and buy it immediately. Doug DeMaw's reputation is such that all his work commands attention. This, notebook-form, robust little manual is no exception. The newcomer to home-construction can feel quite confident that W1FB's guiding hand is there all the time, while the more experienced amateur will find much of interest. Amongst many other areas, it covers topics such as: designs and techniques, from semiconductor basics to their applications and on to construction practices, practical receivers and transmitters. There are many excellent projects and ideas, and it's a book to be recommended for your bookshelf.

Reflections - Transmission Lines And Antennas
M. Walter Maxwell W2DU
American Radio Relay League
240 pages, price £14.50
Available from PW Book Service, £1 post and packing.

This book covers a topic that many professionals, as well as radio amateurs, tend to neglect. Transmission lines, matching and antennas are often neglected, but in this hard-backed, beautifully presented and printed book, the author provides a well balanced approach. Essentially a non-mathematical look at the complex world of transformation at r.f., matching, s.w.r. and a host of other topics, many myths are destroyed by the author's essentially practical approach. Sections such as 'Low SWR For The Wrong Reasons', are countered by 'Low SWR For The Right Reasons'. Altogether, this book is an ideal companion for any enthusiast wishing to learn more about transmission lines and techniques. Recommended.

The Satellite Experimenters' Handbook
Martin Davidoff K2UBC
American Radio Relay League
ISBN 0-87259-004-6
150 pages, price £14.50
Available from PW Book Service, £1 post and packing.

The growing awareness of radio amateurs on amateur radio in orbit, is graphically demonstrated in the fact that this book is in its 2nd edition. As usual, the ARRL have done it again, and have produced another, clear, concise and 'easy reading' text book on a very deep and fascinating subject. Martin K2UBC covers a very wide subject area in his book, ranging from a look at the early history of 'amateur radio in orbit' to fundamentals, with a good section covering the often confusing topic of antenna techniques and polarisation. The 'getting started' section is well worth looking at if you are interested in the exciting world of AMSAT and OSCAR. The more advanced enthusiast is well catered for with some in-depth articles and up-dates covering orbits, tracking, radio links, systems and the very interesting 'So You Want To Build A Satellite?' section. The attraction of this book is made greater by an easy-read, bold typeface that is very pleasant to read in conjunction with the usual high standards of graphics. Recommended for your bookshelf.

The ARRL Antenna Handbook
Edited by Jerry Hall K1TD
American Radio Relay League
300 pages, price £14.50
Available from PW Book Service, £1 post and packing.

This book is considered by many people to be an amateur radio classic. Now in its 16th edition, it seems to grow thicker year-by-year. Although it's a paper-back, the quality of the paper and the sheer number of pages make it a very heavy book. Fast becoming a standard reference work, The ARRL Antenna Book, covers everything from antenna fundamentals to instruments and measurements. A truly excellent publication, it comes as no surprise that it has been a consistent best seller for over 50 years, running into many editions. Very highly recommended.

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SHORT WAVE MAGAZINE

The UK's biggest, brightest and most readable monthly magazine for the radio enthusiast.

The October issue, now on sale at your newsagent, is the largest ever with 84 pages packed with articles on all your favourite radio topics, not just scanners, but airband, DX TV, satellite television, utilities, weather satellites, propagation, broadcast station, pirates and more. Pages for the junior listener as well as the old hand. Articles on clandestine radio stations, how to increase your chances of getting a QSL, DXing in Ecuador, a Grundig s.w. car radio review, a simple a.t.u. to build and much, much more! You also get a 16-page International Radio Magazine - free!! One hundred pages all for just £1.75 - what fantastic value!
Fresh from his holiday, 'Quaynotes' has returned to find he's got a lot of letters, and some interesting suggestions from the readers of 'High & Low'.

Well, I'm back, although I don't know how long for! I enjoyed my break, and I hope those of you who were waiting for the 934MHz antenna project were pleased with Fred Judd G2BCX's design.

My invitation, following some adverse comment at how I was approaching the column, brought in a very good response. All told there were over a hundred or so letters, all containing constructive criticism and suggestions. Thank you one and all for taking the trouble to write.

Flow Pattern

I'm not going to follow my usual pattern this time, but instead, I'll let the letters flow. Despite this though, I must point out that if there seems to be more letters and comments from 934MHz operators, it's because that's the way I received them! If I don't manage to mention your letter in the column, I'll be writing to you personally as soon as possible.

Firstly, although I was away on holiday during the Wimborne 'Hamfest' in August, the Editor of Practical Wireless and the technical sub-editor, Tex Swann G1TEX, were there. These two gentleman, with the help of editorial assistant Donna 'Toad' Vincent, met many 934MHz Club UK members. Tex Swann took some photographs and I'm pleased to say that many of the 934MHz Club UK members were gathered together for the group picture in Fig. 1. I have it on good authority that the lady behind, and immediately to the right of the gentleman displaying the club pennant, is Doris Spencer UK1391, the Secretary of the 934MHz Club UK and editor of the club magazine.

Letter From Featherstone

It's appropriate that Doris Spencer appears in the picture because I've recently had two letters from the secretarial base in Featherstone in Yorkshire. One letter came to me personally, via the office and another was passed on from the editor.

In the letter Doris apologises for not writing sooner (no need Doris, I appreciate the situation!) and takes time out to thank PW, and 'High & Low' for filling a need and not ignoring CB radio.

Thank's for the letter Doris, as I'm always pleased to receive feedback from our readers. Photographs and stories of what you're up to on 27 and 934MHz are always welcome.

By the way 934MHz Club members, copies of the group photograph taken by Tex Swann at the Wimborne Hamfest, will be available through the club. Tex has suggested that any of you who want a copy, can contact Doris and the club could make a bulk order. It'll be cheaper that way. In any case, G1TEX can be contacted at the PW office on this matter.

Interesting Letters

As I've already said, all letters received were interesting. They were also very constructive in their criticism. Among the most interesting letters, crammed full of suggestions, was the one from Henry Harrison GOIVX who wrote from Stanley in County Durham.

Henry wrote that he was pleased that 'High & Low' was introduced. However, after a few months, he feels that Mr Stanley's comments (September PW), are valid. Henry says that "I feel that most of the comments to date are of an incidental nature, in view of the limited space allocated to the CB enthusiast, and offer little encouragement or advice to PW's CB readers".

I read and understood Henry's comments (agreeing with a lot of what he'd written), but he then continued with some very useful and constructive ideas to support 'High & Low'. I'm pleased to report that one or two of them will, in any case, be appearing later, but in the meantime. I've extracted all the relevant comments from a long and most interesting letter.

Henry Harrison GOIVX suggests that we should include: Tackling TVI, How to combat the problems and queries, and doing this in a way to help us to relate in a better way to other users of the radio spectrum.

Another suggestion involved the installation of mobile equipment, where best to run the antenna feeder, and where best to connect up to the car's electrics to minimise ignition interference, and the fitting of suppressors.

Next on the list are the problems associated with the base station. For example, how to choose the best location for the antenna, planning permission, what feeder to use, and the various ways of feeding the antenna. Henry also pointed out that most of the CB group he belonged to at one time, were very unsure about s.w.r., and antenna techniques and terminology in general.

Fig. 1: What a happy group! The gathering of the 'clans' took place at the Wimborne Hamfest during August.
Summing Up

I can honestly say that Henry's letter said it all! In other words, most of what he said, was said in part by all of our readers. The moral must be that there must be something in what you say!

So, I've taken into consideration the many comments from you all, whether they be good, bad, constructive or not. I think we may have come up with the ideal format for the future of the 'High & Low' column.

In the future, I plan to run this column so that a technical discussion or simple project will appear every other month, with your comments, feed-back and reports at other times. In other words, you'll have this page as it is presented in this issue, and the next month you'll have either the project or a technical topic.

I shall also endeavour to get the occasional new equipment review for your interest. In the meantime, you can help me, by ASKING for what you need to know in YOUR column! This constant (hopefully!) flow of suggestions will give me ideas on what you want to see, read and 'do'. From some of your comments, it might be a good idea to start looking at the various licence limitations...especially regarding antennas!

Thank you again, everyone, for the large number of letters and comments regarding 'High & Low'. I realise that the column is needed, but now we're established, we've got to make the most of it. I'm sorry that I've only been able to mention a few of you by name this month, but you can be sure that I'll try and write to you personally, as soon as possible.

The G2BCX Antenna

To round off this time, I have to acknowledge those readers who've asked about Fred Judd G2BCX's 934MHz antenna design. Many of you have said that although the design looks ideal, the only doubts you have on the antenna are your own constructional skills!

So, in answer to the questions posed by readers 'is there anyone who can make it for us', I'm going to make enquiries on your behalf.

For those of you who think this project a little difficult, this approach could be the answer.

Until next time, when I hope to bring you the first of the new-look 'High & Low' pages, I'll say cheerio for now and thanks for all your comments, suggestions, and most of all your support.

Quaynotes

Practical Wireless, November 1991
Colloquium

This month Pat Gowen reviews the recent University of Surrey AMSAT-UK Colloquium where a wide variety of AMSAT speakers discussed some interesting findings along with new and exciting satellite projects.

Other topics included video presentations of rare space programs, policy reviews, gateways, phase II, III and IV satellite considerations, 'A-0-13 Orbit Decay' by OE1VKW and 'UoSAT-3 and PACSAT Store and Forward Communications' by G0/K8KA.

Other areas covered were Oscar News content by G3AAJ, 'Satellites for the Simple Amateur' by G3CDK, 'Kettering Input' from Geoff Perry, 'SAREX' by KOS1, 'BME' by W2RS, and 'Phase-III-D' by DJ4ZC.

The discussion on the VITA operations of UoSAT-3 was presented by W0DQ, 'Low Cost Receivers For UoSAT-OSCAR-11 and DO-17 DOVE' was by ZS6AKV. The presentation 'Digital Satellites And Their Ground Station Requirements' was given by W1BEL.

'Oscar-13 Management' was presented by G3RUH with 'Portable Antenna Systems For UoSAT-3 and PACSAT' being given by WAZLOQ. The subject of 'WEBERSAT' was presented by KB7HTA, and details of the new UO-22 c.c.d. camera provided by the UoS team.

New Satellites

Perhaps the most exciting news was that of the future, and about satellites now in the planning or manufacturing stage. Following on from my news of last month, several new pieces of information have arrived. The news has come from those involved at the colloquium, that even more satellites are forthcoming.

ITSAT

The ITSAT microsat should fly in 1992, or if it's not fully completed and tested, it should go up in 1994. The spacecraft will use packet mode in the rate range 9600 to 32kpbs, and will also carry a scientific research payload to investigate the solar calcium spectral line.

South African Satellite

The Stellenbosch University Department of Electrical and Electronic Engineering in South Africa, are now developing the satellite shown in Fig. 1. This satellite is intended to fly with the 1994 HELIOS mission. News comes from ZR1AFH, who says that the equipment payload will consist of a 145/435MHz store-and-forward packet BBS with both f.s.k. and a.f.s.k. It will also have broad bandwidth microwave 'L' and 'S' band equipment, to be used for both communications and imaging.

The satellite will provide position location by sun, star and horizon sensors, c.d. stereoscopic and multi-spectral imaging while over South Africa. There's also to be a novel 'momentum wheel' attitude guidance and stabilisation system. This will provide a powerful and highly accurate means of control when used with magnotorquers.

The attitude control system will be controlled by a microcomputer, backed up by the main computer, the sensors and the magnetometer. The 100mm diameter 5mm thick 100g mass reaction wheels, will be able to slew the satellite through 180° in 50 seconds when driven by a 1W servo motor. In comparison, magnotorquers take far more energy, and yet takes some 10 minutes to accomplish the same task.

While the full functional block diagram of SUNSAT is shown by Fig. 2, Fig. 1 shows the constructional detail. The left-hand top projection is the momentum wheel. Next to this, placed centrally on top, is the omni-directional antenna. To its right, on the corner block, are the horizon

Fig. 1: The satellite being developed by Stellenbosch University in South Africa.

Fig. 2: Block diagram of the SUNSAT from South Africa.
The BBS will have two transmitters on 145MHz, and five receivers on 1260MHz. It will have 1200bps digipeater with 60W of power, to deploy the main panels that will generate the necessary powers.

The spacecraft will carry high-gain beam-width adjustable antennas with intended optimum gains of 13dB at 435.050MHz, and 145.125MHz. This will provide a downlink from 2446.470 to 2464.540MHz.

**News Up-Date**

Further to my news published last month, Dr. Karl Meizner DJ4ZC, head of AMSAT-DL, has provided an update. He reports that following initial injection of the Phase III-D satellite into a standard geostationary transfer orbit, they would aim for the first motor firing to occur at perigee. This would raise the apogee to approximately 50000km.

Subsequent firing of the kick motor will be made at apogee, to raise the perigee and to make a plane change to 60° inclination, for which the energy requirement will be less than that which was needed for AO-13.

The intention is to carefully and selectively thrust to meet an orbital period of exactly 16 hours. This is in order to give regular and repeatable access times, with consecutive repeating apogees occurring over Europe, the USA and the Far East. This will provide optimum access times from 0500-0800 and 1800-2400 local time.

The spacecraft will carry high-gain beam-width adjustable antennas with intended optimum gains of 13dB at 435MHz and 20dB at 1260MHz. They will be ground or on-board computer-controlled to give maximum gain narrow beam-width at apogee, widening in beam-width and reducing in gain at lower altitudes closer to perigee.

Digital communications links will be similar to the existing RUDAK, and analogue links will be equipped with the 'LEILA' system.

The 'LEILA' device is a delightful and widely applauded concept to kill the 'alligators' that continually ruin our satellite transponder links, due to the use of excessively high powers.

Excessively strong detected uplink signals would be cut down by a tone. If the power of the stations uplink is not reduced to a logical level after this warning signal, the offender will be completely notched out of the transponder passband.

There's another interesting idea, 'SCOPE', a camera experiment from Japan being carried on Phase III-D. It will have lenses with 24 and 90° angle of capture to return colour images of the earth. A third lens system to return sky, planet and star images will also be attempted. The resolution aimed for will be 750 x 580 pixels.

Yet another experiment to be carried comes from AMSAT South Africa. It will provide educational broadcasts of up to 15 minutes duration by digitised speech in the 29MHz satellite sub-band by using 'CAM'. This stands for 'Compatible Amplitude Modulation', e.g., s.s.b. plus carrier.

These transmissions are planned to occur at perigee, and are aimed as educational projects for schools, colleges and universities, etc.

Karl pointed out that despite the high loading for the launch of PHASE III-D, space on board is still available. If any group has a project or experiment to be carried, Karl asks them to let him know at AMSAT-DL at the earliest possible opportunity. This is because the formulation needs to be finalised by mid-November 1991.

Finally, if you remember last month's diagram of Phase III-D, you will recall that the 'doughnut' shape of the satellite shape selected, showed a hole in the centre. Since then I've heard that DJ4ZC and his team have been thinking about how to use this available empty space to best effect. Now I understand that they're think-
MARS-SAT

Soon after I was first licenced, I was amazed to hear an American voice with an 'AC' callsign calling 'CQ MARS', just outside the lower edge of our 14MHz band! I was even more amazed when a station responded.

Up to that time I didn’t know about the Military Amateur Radio Service stations then operating from the American Air Bases in this country! Perhaps the next time you hear this call, it may well be in earnest, as there is a distinct possibility that the doughnut hole in the centre of PHASE III-D may be filled with an amateur spacecraft intended for orbiting the planet MARS.

Engineers in AMSAT have already proved the basic technology required for this project. Other improvements incorporated in Phase-III-D, such as an on-board kick motor can make this possible.

When it’s fired at the right place, time, and attitude to change the orbit and plane, it can be used to take the time, and attitude to change the orbit possible. This depicted by spacecraft from elliptical earth orbit and plane, it can be used to take the time, and attitude to change the orbit possible.

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Ron and Joan Ham are both active archivists, and after this month’s offering could perhaps be considered as active radio researchers!

Voices From The Past

For many years, Joan and I have been members of the West Sussex Archive Society and, at present, while she is researching for her 5th local history book ‘word process’ transcriptions from original documents. For the past 18 months I have been working on the private letters to Richard Cobden M.P. who died in 1865.

After his correspondents, mainly in parliamentary circles, have written about their daily lives, I have to remind myself that these were times before the telephone and wireless was available for communication. This was when international news took weeks to travel around the world and not ‘ticks’ as we know it today. What makes this work so interesting to me, and more importantly to posterity, is that these letters were written by people of the time, which was more than 125 years ago.

All At Sea before Wireless

Recently, I found the following example that should prove my point about news:

"I write to inspire you with some confidence I feel increasing in me as the steamer bringing us the Presidential news approaches our shores. We may look for her arrival as the steamer bringing us the confidence I feel increasing in me about news: the departure of the 5th inst, will probably touch Cape Race on the 9th with the object of bringing the wireless. The steamer, which probably reach Queenstown about Monday week. If you so desire and will let me know to whom I shall address it at Midhurst, I will send you a telegram of the result immediately on the news reaching this city".

Scientific Reality

Between Cobden’s death and the end of the 19th century, scientists like Branly, Hertz, Lodge, Marconi and Maxwell showed the reality of electromagnetic waves and that messages, using the Morse code, could be transmitted and received between two points without being connected by wires. In 1901, Marconi’s ‘wireless’ signal crossed the Atlantic between Cornwall and Newfoundland and from that moment on, communication across the pond was reduced from weeks to minutes.

Wireless advanced so rapidly in the following years, that the longest delay for news was gathering, collating and preparing it for transmission. However, as we near the end of the 20th century, information reception is almost immediate.

On August 24, Joan and I were among the hundreds of people who attended a special visit to Uppark, a National Trust house and garden on the Hampshire-Sussex border. The idea was for people to see the progress of reconstruction, following a disastrous fire at the property in 1989.

On arrival I spotted the hand-held transceiver sets in constant use by the stewards controlling the car-parking, and also the sets being used by the security officers. In the exhibition area there was an impressive demonstration, showing how computer aided design (CAD) is helping the architects in the detailed restoration of this unique house.

Instant communications, handling all kinds of information, is part of our everyday lives. It involves everything from the computer networks of banks, building societies and big stores, to the hand-holds used by staff on large building sites, film-locations, sports-grounds and supermarkets and by ambulance crews and traffic wardens, just to name a few. In addition there is mobile radio used by private vehicles, ranging from farm-tractors to haulage-lorries and in public use by the police, fire and ambulance services.

Of course there are many more examples and it all adds up to massive demands for space within the limited radio frequency spectrum. Equipment efficiency, channel-sharing and low-power transmitters are just some of the methods being used to cram multitudes of signals into the available v.h.f. and u.h.f. bands.

Propagation

Despite all these highly technical, but simple-to-use transceivers, the signals they transmit must travel somewhere through the earth’s atmosphere and are sometimes absorbed, enhanced, deflected and reflected by natural causes. This is a field where amateur radio enthusiasts have a great deal of experience, because their special frequency allocations are sensibly spaced throughout the spectrum and are in daily use.

"What are the yearly ‘prop’ differences on 144MHz and does 50MHz operate like h.f. or v.h.f. for propagation?" asks Nigel Alford (Larkfield) who has an HF-225 receiver, fed by a G5RV antenna for
the h.f. bands, and a PRO-2004 scanner for v.h.f. That's a good question Nigel, and thanks to the consistent observations over several decades by thousands of radio enthusiasts like yourself, we now have some of the answers. There are many fine books published on this subject and because you can buy copies, or possibly borrow a few from your local library, I will confine my reply to general guide lines.

Firstly, you should keep in mind that a radio signal, on any band, has an intended path to its target area, which it follows according to the laws of nature governing that particular area of the radio frequency spectrum. For instance, a broadcast signal around 15MHz, leaving the UK for Australia, will be transmitted towards the ionosphere at a pre-determined angle.

On arrival at this natural refractive region it will be gradually deflected downward to the earth's surface where, at point of contact, it bends back to the ionosphere and so on, until it reaches its target. Everything's fine, until a solar flare, disrupts the state of the ionosphere and either makes it so dense that the signal is sharply reflected and so drops short of its target, or it is absorbed by the ionosphere and consequently goes nowhere.

The result of the latter is a 'radio blackout' and normal service cannot be resumed until the ionosphere reforms. To provide a world service, broadcast engineers and programme planners must also consider that, because it is influenced by the sun, the normal state of the ionosphere varies between day and night and so must the frequencies they use. On the other hand, radio signals transmitted in the v.h.f. and u.h.f. bands have a much shorter range, and are usually line-of-sight travelling through the troposphere. The latter, being the home of the earth's weather, means that the normal range of these signals can be retarded or enhanced by a combination of changes in atmospheric pressure, humidity and temperature.

In your case Nigel, this applies to the 144MHz band and can of course happen at any time of the year, especially when the weather is on the change following a period of high pressure and a fine spell. A sure sign of a v.h.f. opening and the likelihood of 'DX' on 144MHz is patterning on your home u.h.f. television receiver and/or continental and Scandinavian programmes appearing, in Band II (87.5-100MHz), on your domestic portable. This is caused by stations sharing the same, or nearby frequencies, increasing their normal range due to the changing conditions. Generally speaking, to overcome such interference problems and to get a 'clean' signal between two, line-of-sight locations, broadcast authorities, like the BBC and the ITC (formerly IBA), use microwaves sent and received on a pair of precision aligned 'dish' type antennas. One of these, mounted on a mobile unit, is featured in Fig. 1.

**Sporadic-E And 'F2'**

The 50MHz region is used in many countries for their domestic television (see World Radio TV Handbook) and, because of the interesting propagation that often occurs around this frequency, some countries have permitted amateur radio operators to use 50 to 54MHz for general communications.

Briefly, the E-layer of the ionosphere, about 100km above the surface, forms at sunrise and disperses at sunset. However, during the months of May to August, peaking in June and July, it is liable to break up suddenly into random clouds of more densely ionised gas, from which signals in the vulnerable 50MHz region can increase their range by a factor of 10. This is known as Sporadic-E. During one such opening I received a sports programme from the USSR on Ch. R1 (49.75MHz), Fig. 2.

Television pictures that appear smears, distorted and unlockable, usually have arrived over great distances via disturbances in the upper ("F2") layer of the ionosphere. Such events normally take place in the winter months and Simon Hamer (New Radnor) has, in the past, positively identified signals from Australia, New Zealand and China. Back in February, Lt. Col. Rana Roy, (Meerut, India) logged Bangkok TV via this mode on Ch. E2 (48.25MHz) Fig. 3 and his photograph of their 'CHY' transmission clearly shows the distortion that occurs.

**Sporadic-E Expedition**

Between June 1 and 27, Bob Cooper Jr. ZL4AAA from Mangonui, New Zealand, using the callsign CU3/K6EDX, operated a special expedition station, on 50MHz in the Azores, along with CU3AK and ZL1GG, to study Sporadic-E propagation. During the period they contacted 429 stations spread through 28 countries.

Their equipment included an Icom 575H for the 50 and 28MHz bands fed by a Cushcraft 3-element and a Tonna 5-element beam respectively. They also installed a 17-element Tonna array to feed an Icom 271A for the 144MHz band.

In addition, the crew kept a watch for television signals in Band I, especially on Chs. E2 and R1 and were rewarded periodically with pictures from Belgium and Germany. They received all Scandinavia, Spain and Yugoslavia on Ch. E2, and Austria, Czechoslovakia, Hungary, Poland and many regions of the USSR on Ch. R1.

**August Reports**

While using his spectrophotometer, Cmdr Henry Hatfield (Sevenoaks) located two sunspot groups, 14 filaments and six quiescent prominences on the sun's disc at 1440 on August 4 and recorded individual bursts of solar noise, at 136MHz, on the 5th, 1297MHz on the 4th and 5th and a very high noise level at 136MHz on the 6th. Patrick Moore (Selley) kindly sent a drawing of the sunspot group that he observed at 0840 on the 7th, Fig. 4 and Ted Waring (Bristol) counted 56 individual sunspots on the 18th and 22 on the 26th. Between them Gordon Foote (Abingdon) and Ern Warwick (Plymouth) heard the German beacon DK0WCY on 10.144MHz, give auroral warnings at 1350 on the 2nd, 1515 on the 3rd, 1600 on the 4th and 11th, 1700 and 2000 on the 12th, 1740 on the 15th and 1800 on the 16th. Ern Warwick heard solar noise around 28MHz at times on days 2, 3, 4, 13 and 21 and Fred Pallant (Storrington) reported "high level of solar noise all day" on the 19th. Ern also found the 28MHz band "dead" at 1625 on the 3rd, 1800 on the 4th, 1500 on the 5th, often on the 6th, 1600 on the 11th, during the afternoons of the 17th and 18th and at 0930 on the 23rd. Fred Pallant's 28MHz log for the 27th and 28th reads, "Two very 'quiet' days - like someone has stolen the ionosphere."

I send my congratulations to Francis Cloke, who has built a simple magnetometer and would like a "glossary of terms" to explain some of the technical words used in both radio and astronomical work. For this information Francis, I suggest you try your local library for The Practical Astronomer by Colin Ronan (ISBN 0 330 26231 9) or something similar. The RSGB publication Radio Auroras by Charlie Newton (ISBN 1-872309-03-B) is also a good reference book on the subject.

**A New Toy**

Finally, readers, I have just added an Amstrad PC2286 with a 40mb hard disk to my office computing arrangements at home. So far, all is running well and I now realise just how fast a hard disk really is!
**R. N. Electronics**

Professionally designed equipment for amateurs

SEE US AT THE LEICESTER SHOW ON STAND 58

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All prices include VAT. **Export prices available on request.**

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**Our Aim is 100% Satisfaction**
In response to my outspoken views on certain bulletins in the July issue, I am presenting extracts from ALL the mail received on the subject. In view of the way I worded my comments, and the disparaging remarks I made regarding some of the bulletins, I was quite surprised at the few replies received. I can only come to one of three conclusions, and leave you to assume the one that I believe to be the case!

1. Everybody else agrees with me.
2. Nobody on packet reads Packet Panorama. (!)
3. All those who did disagree either couldn’t be bothered to reply, or were on holiday.

In any event, my comments set people thinking and I did get a response. So here are the unsolicited and, what’s more, uncensored comments (due to space considerations they have been edited, but not censored. Ed.)

The first to write was Chris G7HUV, who vented his anger and wrath upon me thus:

"First of all let me say that I have the greatest of respect for the pioneering work you and others have done to set up the packet network, and am aware that we wouldn’t have a network without this work".

Not an apparently good start, then he went on:

"In my message to him [Dave G3VOM] I said how lucky I was to live near G87LDI, as I was able to get foreign language bulletins before they got deleted".

He then got down to the what he wanted to say:

"Your article cannot be ignored. The fact remains that it does define ALL foreign language bulletins as ‘garbage’, whose only use might be for students of the language. It does call for them ALL to be deleted".

"The issue at stake here is not just that some of us in Britain want foreign language bulletins. It is much more than that. The real question is whether we truly wish to become part of an integrated INTERNATIONAL network. Isn’t there something absurdly anomalous about @ EU bulletins from Britain to Britain being vetted in Israel? Why can’t we have a series of h.f. links directly to Europe? At the moment, it is obvious that for you to vet all foreign language bulletins for relevance, is a mammoth task. "How much easier it is to delete all foreign language bulletins! This task could be shared between a number of people in a properly integrated system. If foreign language bulletins were distributed in Britain then they would gradually become more relevant. At the moment, since Europeans get few replies from Britain they tend to ignore us. When I have replied to such bulletins the authors are generally astounded and pleased to receive a reply from Britain."

He commented further, referring to an old daily newspaper story after a fog in the channel had ‘cut off’ the continent, "The truth is, of course, that it is Britain that is cut off”.

"If British packet cannot distribute relevant foreign language bulletins, then we should be honest about it and remove @ EU and @ WWW from the system in Britain. Anything else is a fraud perpetrated against the rest of European and World packet."

"Finally, Roger, I want to make it clear that I am certainly not accusing you of deleting foreign language MAIL. I would like to thank you for the prompt way in which you have handled such mail on my behalf in both directions".

As many of you remember, in that issue I gave an invitation to attend a barbeque. Chris declined the offer with the answer, "I will, in fact, be at the Friedrichshafen rally. At the moment, it is my intention to distribute a leaflet there at the PW stand pointing out the implications of your article for European packet. I am sorry to do this but I still feel that the position you have expressed publicly in a prestigious amateur radio publication cannot be ignored or brushed aside. 73 de Chris, G7HUV @ GB7DDX".

A sting in the tail from Chris in his last paragraph! He is obviously a Scorpio, but then, so am I! I sent Chris a packet message to reassure him and received a further reply:

"Those of us who want foreign language bulletins, are probably in a relatively small minority at the moment, but it would be impossible for that number to grow if the circulation of these bulletins is curtailed". He then said that Cambridge and Heidelberg in Germany were twinned, and what a great idea, to bring amateur radio to the notice of those in authority, if the BBSs were also twinned. Sounds a super idea to me.

Some other views were shorter and indeed some like the two following, seemed to underline my comments. From Kevin G4ATZ @ GB7CYM

Hello Roger...only just read your PW Article...As ‘DXA’ would say ABSOLUTELY MARVELLOUS!!!!!!! I fully agree with EVERYTHING you say. 73 from Kevin G4ATZ Master Sysop @ GB7CYM (Boston Spa) NB..Note the ‘Master Sysop’ bit...DXA only a Remote and lesser form of life."

Then from G0CFB @ GB7CFB

"Agree with your comments entirely Rog. Most of this EU stuff is out of date anyway! 73, Rich."

### Policy

Martin GM8AOB of GB7AOB, even went as far as to accuse another sysop, by saying "It seems to be policy for him to take as much as possible whatever it is!" His final words were "I just made the point specifically on binary files, that they (more than other bulletins) should be stopped. I certainly would not decode and use a PC file now...unless it was sent to me personally by someone I know.

The point made by Martin, regarding binary files, one of 4X1RU’s pet hobby horses, is about programs with up to 70 parts. Some of these parts are very long. If one part is corrupt in only one line, the whole exercise is pointless. PLEASE do NOT send lengthy programs over packet. A disk in the post is MUCH the better way of doing this.

Another Scottish user, Jim G4RGA, who signed himself "G4RGA/GM4RGA a citizen of GM", expressed his ‘let’s have them all’ views and included a comment regarding spelling (also a pet hobby-horse of mine) in so-called ‘English’ bulletins. I might be a Sassenach Jim, but at least I can spell it! Incidentally, I
haven't seen a bulletin in Gaelic yet.

George G1NNB, is notorious for his comments, and I fully expected some from him! He sent these comments: “My first thoughts were 'blimey', Roger must have just lost a fiver and found a penny. Or he's just received his tax demand when he wrote that. You must have a very strange lot round your way. On this BBS a great deal of foreign language bulletins are read, and indeed answered. I agree one or two may be a bit out of date, but that is no reason to kill the lot.” George continued “With the greatest respect Roger, you sound very much like someone who is getting a bit fed up with running a packet BBS, or was it just a bad day when you wrote that article?

“I trust the views expressed in your article, are not the sort of thing you intend bringing up in your post as a member of the DCC, as I feel sure they do not represent the feeling on the majority of sysops and users. Best regards George G1NNB @ GB7ESX”

George also said he was for allowing humorous bulletins as long as they were humorous, did not offend and were decent.

I also achieved my aim in 'stirring' Chris GU4YMV, who also runs an h.f. BBS, into putting fingers to keyboard to send: “Hello Roger. I read your section in PW each month. This month's, is the first I felt like replying to, and in any case you did request comments”.

He then typed “I feel it is wrong of you to censor bulletins. You should only kill those which contravene your licence. Adverts yes. You advocate killing 'risque' and humour bulletins. From BR88, it only mentions 'grossly offensive' messages. Apparently, mildly (risque?) messages are OK”.

“I agree with Chris, we are over 14, but we now have the Novice licensees who will want to see what's on the board, so what then? Chris continued “Some of us do speak a foreign language. I read the French and German messages. They can be quite interesting. You are denying the opportunity to others. Is this a symptom of the general UK short-sightedness on Europe and foreigners in particular?” He went on to mention a reason why I was co-opted to the DCC. Was it really, because I wanted to ban the gang of three or four 'debating society'?

Finally he finished up with “You are wrong in censoring mail without valid reasons. GB7GUR will not be censoring mail (apart from adverts). Any valid message will be passed to and from Europe, anti RSGB included (if there are any). 73 from Chris GU4YMV @ GB7GUR”

You have to accept criticism if you run a BBS. This does not mean that friendships are at risk, indeed, it proves the friendship if you can take, as well as give, criticism.

Another Sysop, Dave G3VOM @ GB7GMX, decided to write via 'snail-mail'. He agreed with me on several points, but his major disagreement was with the foreign language and debating type bulletins.

Although Dave does not necessarily agree with the content of the debate, he leaves them all.

Lastly, a message from Peter GB7JNS, confirms the need for foreign language bulletins. There is obviously a difficulty in deciding what 'adverts' to delete, but generally if financial gain is the object of the advert, that is the deciding factor as far as I am concerned. He asked "do you REALLY consider that a couple of years ago G6TRS and I wrote an article about the use of a treadmill powered by gerbils as an emergency power source for hand-helds. When we submitted it to Radcom for the possible consideration as an April fool, the response was a 'po-faced' letter saying 'That it might upset our animal loving readers!' 73 and keep up the good work."

That Committee Appointment

My appointment to the DCC has, of course, NO bearing at all on my personal views. I was asked on to the DCC to help with the h.f. band-planning situation and so forth, having operated an h.f. BBS since packet arrived in the UK. As for the humour-type of bulletins, what might seem offensive to some can be grossly offensive to others. To quote a local example, we have a local BBS run by an Irishman who has been living in the UK for quite a number of years. There have been a plethora of Irish jokes (usually all old ones anyway) which have upset the sysop of this BBS to the extent that he had considered closing down.

The packet network is considerably overloaded enough now, without making room for frivolous, superfluous messages.

The foreign language bulletins are left alone, I also read French and German, but the out-of-date ones will be killed. Personal mail, of course, is NEVER touched. I have also asked 4X1RU to relax his editing of this type of bulletin.

The debating type messages are left alone UNLESS they are defamatory in some way, in which case, since it is my licence which is at risk, they are killed. However, I am still of the opinion that there is another place for them.

Sysops lead a lonely but busy life, and probably tend to have a blinkered view of what actually is required of them from their users. A verbal 'kick in the pants' can sometimes prove effective!

Finally

I do hope I have presented your views in an unbiased way. If you have any other views you feel strongly about, just let me know. G3LDI @ GB7LDI, QTHR, or tel: (0508) 70278, answering machine during the day.

73 and happy packeting

de Roger G3LDI
Hello again! During the past month the dramatic events in the USSR have been the focus of everyone’s attention. As I sit down to write, I wonder just what it will all mean in terms of amateur radio activity. If anything, is there an opportunity to put the DXCC scores up? Perhaps by the time everything’s settled down, we shall have more of a clue.

The week up to the time of writing has been a real heat wave in the shack, a combination of time -shortage and summer static, but QRP contacts were made between Eric GOKRT (Welling) and G3YIG and G3TLY.

Don G3NOF (Yeovil) is all QRP and the odd c.w. foray came up with K4EFZ, K8RWL, VP5VPX, 4L1QRQ, VP6CW, VP25EQ, ED5ICE, 4U1ITU, Z21HS, KUOJ, 3COCW, VP6GAV (Antarctica), WA6CTX/7 (Arizona), Z21CS, ZB2AZ, 4U1ITU, 9K2JH, and 9M2DM. Among the QRO chaps were GM3JDR contacts with EJ7FRL, CB1MD/HD4 and VK2RQ/4. Ted G2HKU’s regular s.s.b. top has continued with 073ZB, 3COCW, VP5VPX, RHOE, UA9QDQ, HIBA, CNSA, UH0UYV3H0 (Zone 23), VK2DXJ/9M2, ZH31S, RZ1DA/A and VK6BA.

As for 10MHz, the clip here mentioned GM3JDR and 2400Z0, 3COCW, 9I15TE and Ws.

The 7MHz Band
First to report on 3.5MHz is again Pat ON7PQ, who has been filling up the bottom of the c.w. end of 14MHz. Pat ON7PQ’s computer print-out is complete the set on 3.5MHz.

Angie GONHA, as shown in the photo, didn’t spend time on the bands, but she did mention QRP contacts with 073ZB, K4EFZ, 073ZB, 9K2JH, and 9M2DM. Pat now wants Zones 1, 12 and 27 to complete the set on 3.5MHz.

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The 3.5MHz Band
Another s.s.b. addict is Don G3NOF, who came on 7MHz provided Don G3NOF, 3COCW, VP5VPX, RHOE, UA9QDQ, HIBA, CNSA, UH0UYV3H0 (Zone 23), VK2DXJ/9M2, ZH31S, RZ1DA/A and VK6BA.

Don G3NOF, in deepest Notting- hamshire seems to have given the band a bash this time, as she mentions QRO contacts with E050PQ, 9H4R, FY5F, 073ZB, K4EFZ, 073ZB, 9K2JH, and 9M2DM. Pat now wants Zones 1, 12 and 27 to complete the set on 3.5MHz.

Angie GONHA, as shown in the photo, didn’t spend time on the bands, but she did mention QRP contacts with 073ZB, K4EFZ, 073ZB, 9K2JH, and 9M2DM. Pat now wants Zones 1, 12 and 27 to complete the set on 3.5MHz.

The 1.8MHz Band
First report on 3.5MHz is again Pat ON7PQ, who has been filling up the bottom of the c.w. end of 14MHz. Pat ON7PQ’s computer print-out is complete the set on 3.5MHz.

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The 14MHz Band
Now here’s a band, but those who use 14MHz mostly keep quiet about it. Ted G2HKU, notes his c.w. contacts with UZ3XMM, 05ASL, UH0UYV4H0, 073ZB and 9M2DM. On 24MHz he came up with 777, B0OXX, ZQ2DT, 3COCW, 9I15TE and Ws.

We note him on 10MHz with ZL2AGY and VK2DXJ/9M2, 3COCW, 073ZB, 9I15TE and Ws. Downtime was on 24MHz with 9M2DM and 3COCW.

The 7MHz Band
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We note him on 10MHz with ZL2AGY and VK2DXJ/9M2, 3COCW, 073ZB, 9I15TE and Ws. Downtime was on 24MHz with 9M2DM and 3COCW.
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STOCK CRYSTALS

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Practical Wireless, November 1991
Solar Data for August 1991

During the later part of July and the period up to August 4, there was a large increase in the sun spot numbers, a jump in flare activity and a rise in the geomagnetic indices. The sun spot count was around the 220 mark for up to six or seven successive mornings, the band remained open to Australia during the next few months, especially at the v.h.f. bands.

The massive increase in the sun spot count continued well into the later part of August, and it now obvious that a massive restructuring has occurred. The period just after the equinox, October/November, is normally a quiet period for auroral activity. So, look north on 144MHz if you want to work some good DX on that band.

October also frequently provides good periods of tropospheric ducting. This is when the atmosphere acts in a similar way to a waveguide, trapping signals and carrying them for a thousand kilometers or more. These ducts are sometimes referred to as temperature inversions, and they are formed during the autumn months when warm, calm days are followed by cool nights. Results can often be spectacular, especially on the microwave bands.

On July 28 of this year, Chip Angle N6CA and Paul Lieth KH6HME set a new world record on 2.4GHz and 5.7GHz by spanning the 3976km path between California and Hawaii. Both stations were running 5W into 1.2m dishes. They also worked each other on 440 and 1296MHz sea paths are very prone to this type of propagation, and the 3160km contact, shown in the 144MHz QRB Table, between GM4YXJ and E5ABBEX is just another example of what can be accomplished via this mode.

Angie GOHGA.

VHF Up

Reports to

David Butler G4ASR

Yew Tree Cottage

Lower Maesched, Herefordshire HR2 0PH

Back-Scatter

For Andrew G3VWC, c.w. was favoured; it gave him PY2BDN, PY3JR, PZ1YK, LZ1CY/MM, JATAGK and Z2ZY.

Don G3SNF reported included A2ZAA, BY5T, BZ4RBX, BZ4RXB, CE4MT, CM6LE, CN6GM, D66HH, ED5VDX, EX6V, HFPOL (S. Shetland), HDO2JP, HG2ZP, HR5JLP, HVSJ5I, IK2THW/AS, IK8INM1/1DS, JTS, JT1CE, PZ2NCS, RAI-AB, IA1/ITA EU 131, RYBDI, RY8BI, TF1JN, UB2EF, UJ8BXA, US5GYY, VE7XTN, VKS, V79NNS, VP2MR, VP3SEQ, XY9BR, YJ18RN, Y88POL (Antarctica), ZDDP, ZZ2YY.

Mary GONZA had what she described as "just a lovely" contact with Y8P9BZ.

Angie GOHGA worked N23M, U3J3SW, EX6V, K4DUL, VE5CRC, all c.w., plus VE7XN on s.s.b.

Here And There

Don G3SNF reports that Yeovil club member GA8WV has recently become licensed as XX9AW, a year after arriving in Macau. He's to be found on 14,180 or 21,250MHz, between 1500-1700GMT. I'll pass on QSL data as soon as it's known.

The 20MHz Band

This has been 'like the curate's eggs', difficult to catch but brilliant at others. It's of course, partly due to at least normal summer doldrums, but there periods when old sun seemed to have stomach ache.

For ON1PD the band seems to have tried hard: Pat recorded his keying to PY2NY and PP7JR.

Operation on 28MHz for Don G3DNF involved HG0ZI, KPZ/KP5, KPZ/VSTC, LUXSPD (Tierra del Fuego), ZDDW, S62MF and S2JHN.

Angie GOHGA had just the one morning session, and raised Y9KMCB, EA8EA, SP9YU and RH9E.

Angie GOHGA says that he received a card some time ago, from PO Box 368, Moscow 10309. Short wave listener Matthew Probert (Basingstoke) wrote to announce revival of activity after a couple of years of being QRT. Matt says he found the KPZ/VSTC operation commendable both in operating and in self-control, when the bad mannered types were湮没 brilliance. I'll pass on that to everyone who provided input this month, including the RSGB DX News Sheet, K1AR'S Contest Calendar for October, The DX Bulletin, and the DX Magazine, not to mention all our other correspondents.

Back - Scatter

Solar Data for August 1991

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Angie GOHGA.

VHF Up

Reports to

David Butler G4ASR

Yew Tree Cottage

Lower Maesched, Herefordshire HR2 0PH
worked SM5BSZ (J089), SM5MIX (J078) and DK1KO (J055), all on 144MHz, during the afternoon of August 2 but he found very little else in the way of DX. However, John Regnaut G4SWX (J090) found SM5BSZ (J089), SM5SEP (J079), SM5PRE (J078), SM6AGQ (J076), SM5BTH (J069) and SM7LX (J065). At 1647UTC, he worked O2HAW (KP10) and OH1NHX (KP91), at 1647UTC and around 1715UTC, worked GM4AUN (KP09) and U2F6WA (KP04), at 1715UTC.

Elia Martyr G6HKKM (JO01) made a number of contacts on the 50MHz band. He had the QSOs included ESOSM on Anglesey, worked a string of DX contacts included GD, GI, GM and OZ. Other contacts included GO, GI, GM and OZ. The event on August 12 was also very good up on the 144MHz band. Tony Jones G4WVEG (JD07), located on Anglesey, worked a string of DX contacts including OY and JN between 1815-2000UTC. Some of the contacts included ESSM, 50MHz and 144MHz QSOs.

At last, a 144MHz Sp-E opening which lasted more than the “five minutes wonder” recorded in June and July. The event, on August 13, was detected between 0745-0920UTC and allowed many stations in the UK to make contact with operators in Great Britain.

Steve Damon G8PYP (JD09) found YO2AYM (KN05), YU5AF (KN06), YU17BW (JN96) and YU24FB (KN05), whilst G4SWX, located a few kilometres away, worked OE5JPC and OE5QC, both in JN68, L2AB (JN33) and 8 YUs.

Gordon Smith GW6TEO (JD71), located in Pembroke, caught the opening between 0925-0920UTC and managed to work seven YUs, the best DX being YU87L at YU23B. The opening was also detected in West Yorkshire, John Hoban G6EVT hearing L17ZB at 0748UTC. He then went on to work seven YUs in JN65, JN75, JN76 and JN94 between 0831-0836UTC.

On the east coast, John G4SWX managed to work, between 0815-0850UTC, L128Z (KN41), SK2KZ (KN46) and 20 YUs. Elia G6HKKM almost missed the Sp-E opening on 144MHz as she was active on 50MHz at the time. Fortunately, she managed to work YT56, YU1EV, YU2CZC, YU3SB, YU2YYF and YU8A1.

For the most part of the August the tropo conditions were excellent, allowing many contacts to be made throughout Europe on the v.h.f. bands.

Propagation on the u.h.f. and s.h.f. bands was exceptional, and some very long distance contacts and new records were established.

Gary Nicholas G7W6G (JD83) made a number of s.s.b. contacts on 144MHz, currently, containing contacts with GM, G4AUN, G6MBO/P, G6UKY/P, GM6OM/P and G67FW/R on Raitlin Island, Co. Antrim.

Gordon G4WVEG found the 144MHz band conditions to be very good to the south on August 10. From 1315UTC he worked EA1CJT (IN63), EA1N7Y (IN73), EA1A1F (IN38), EA1 configured on the 430MHz band. On August 27 he made it to EI4AQB (KP09) and PA0BOE (JD01).

Another operator to work into Spain on 144MHz was Mark G4AIR. He worked EA2ARD (IN59) on August 4, EA1CJT (IN63) on the 5th and EA1A1F on the 10th. A meteors shower square, IN75, was added to the total by contacting EA2AO on 200UTC on August 13.

The southerly path was also very good on August 18, enabling Tony G4WVEG to work many stations on the 144MHz band. Contacts made during the opening and even included EA1CJT (IN63), EA1ADF (IN63), EA1DKV (IN53), EA1EBS (IN73), EA1OJ (IN53) and EA1DIK (IN73). At 1715UTC, the EA1A1F beacon was powering on 55 +0800. The beacon was heard again on August 20, around 2240UTC, at 529.

Conditions were also good in other directions, and on August 23 Steve G8PYP made contact on 144MHz, with O2J2VR (JD49), O2HUN (JD50) and SM6KXJ (JD06).

At my QTH, propagation was good to Scandinavia during the Opening of August 20. Contacts on 144MHz were made with O2J2VR (JD49), O2HUN (JD50) and SM70KX (JD06) and two stations in northern Germany, DK2JU and DH0LA, both in JD44.

Rik Roy R6GSBS (JD94) made some very good contacts on the higher frequency bands. The tropo ducting enabled him to get over the North York Moors to the east, and work many stations in Germany on 430MHz.

Rik reports that this band is getting more active, and that he still runs his 432.210MHz schedule every weekday at 1800UTC with G1JOW in Derbyshire. On Monday, Wednesday and Friday he then follows up with a schedule with GM0DNJ in Dundee. Incidentally, this station is now QRV on 1296MHz and is looking for contacts.

On August 30, Rik worked G0W1R on 430MHz f.m. and 1296MHz s.s.b. The station on G4MTR is looking for 25MHz contacts and has a personal beacon running on 2230 036MHz.

On August 30, G3BYPY and G6PMK contacted DC6X5 on the 10GHz band, over a path of 70km. Narrow-band equipment was used at the UK end, running 250MHz of s.s.b.

**Meteor Scatter**

The following data, concerning meteor showers occurring in the next few weeks, will help you determine in which direction to beam at spacetime, and when the shower is below the horizon.

The Orionid meteor shower will be encountered between October 17-26, peaking on Tuesday 22nd. Between 0000 to 0300UTC beam north-east or south-east, 0300 to 0700UTC beam east or west, 0700 to 0900UTC beam south-east or north-west.

The radiant is too low for effective working between 1000 to 2200UTC. This shower is broad with several subpeaks, and predicting when its maximum activity occurs is very difficult.

The Leonids shower lasts from October 11 to December 5, with maximum activity occurring on Monday, November 4. Between 2100 to 2300UTC beam north-east or south-west, 2300 to 0000UTC beam east or west, 0000 to 0900UTC beam south-east or north-west.

The radiant is low but effective working between 1000 to 2200UTC. This shower is broad with several subpeaks, and predicting when its maximum activity occurs is very difficult.

The Taurids shower lasts from November 13-18, peaking on Monday 18th. Between 0100 to 0300UTC beam north or south, 0300 to 0400UTC beam north-east or south-west, 0400 to 0800UTC beam east or west, 0800 to 1100UTC beam south-east or north-west. The usefulness of the shower for radio communication purposes is not very good from 1100UTC onwards. Between 1700 to 2300UTC the radiant of the shower is below the horizon.

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**Annual c.w. table**

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**Number of different stations worked since 1 January 1991**

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**Back Scatter**

Fig. 1: LA6HL/TF in Reykjavik, Iceland working e.e.m.e. with two 15-element Cue Dee Yagis.

Fig. 3: The 50, 144, 430, 1296MHz band meteor scatter antennas at G4FCD.
Back-Scatter

Fig. 2: Moon tracking information for the ARL e.m.e. contest.
SATURDAY OCTOBER 26 SUNDAY OCTOBER 27

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**DX On The Rock**

For a number of years there has been a contest in which stations exchange v.h.f. activity from Gibraltar. However, for the last 18 months or so, both Mark Z80T and Paul Z80W have been very active on the 50, 70, 144 and 430MHz bands.

Richard mentions that he has a bigger power amplifier! On that band he runs a TS780, GAs e.f.t. low noise amplifier, a pair of Yagis and a 4CX250B amplifier.

**DXpedition Update**

Rik G6SSB, will be active on 144 and 430MHz from the Shetland Islands.

---

**Moonbounce**

Johannes Baardsen L6RL was recently active from Iceland, and between July 12-17 he set up a two-Yagi system to run some e.m.e. tests. The 144MHz antenna, shown in Fig. 1, consisted of a 15-element Cudee Dee Yagi, with a horizontal spacing of 320 cm and mounted 2.5 m above the ground. These were fed through 15m of Cellflex hardline.

The entire system was simply done by using a compass and elevation meter. Using an FT-225 and a pair of 8679 triodes, Johannes worked DL8DAT, HB9CQC, IZ7HVR, LA1T7N, OK1MNS, PZ9CIH, PA3DZL, PA9LNM, SM2CEW, SM5FHR, SM7BAE, UZ1ACL, VE3B3H, Y22ME, A44FQ, AF9Y, KB9RQ, K8B8W, NIBU, K3SWB, N56LJ, WS9UN, WS6M2G, W7FLN and W7VWV.

Don't expect to hear stations straight on the 70, 144 and 430MHz bands.

Listen very carefully at the bottom end of 70, 144 and 430MHz e.m.e., if someone could provide me with some log data!

**DX News**

**DX News**

If you happen to be in the Cologne area during the weekend of October 26-27, then you could visit the German Amateur Television Convention being held in the city. Further details can be obtained via the G6SSB e-mail.

It was quite an impressive show, to Andy Emmerson GB3TH.

Wyn Mainwaring G8BAVT, has informed me that G6FWP will soon be active on 40m and 75m from the Falkland Islands. He will be the Archibald of Canterbury's 'man' for the Falkland Islands, South Georgia and British Antarcita.

It is with regret that I report the death of Bob Nixon G1KDF. He was a very active DXer and is well known for his frequent trips to Ireland, activating some of the rarer counties. Following a stroke earlier in the year, Bob was confined to a wheelchair but despite his handicap, still managed to get on the air. A few days before his death, at the end of August, I received a letter from Bob giving details of his recent activity on all bands between 50MHz-2.3GHz.

**Derek Moore G1THG** (I0B) has written in for the first time to the column, giving details of his v.h.f. activities. He is running a TS1100 transverter into a 3-element Yagi on 50MHz, and 20W of f.m. on 70MHz, and soon expects to have a PW Meon transverter ready for that band.

On 144MHz Derek runs 25W from a Trio TS117 into a 10-element Yagi. His location, in Wiltshire, is 90m a.s.l. and is surrounded by hills up to 330m, he then finds he has some signals on the top. Recent contacts on 144MHz have included YU7BW (JN95) on August 13 via Sp-E and EG3E (I0EGS) via tropo on August 20.

Richard Girling 4GADG informs me that he has returned to amateur radio after a break of 14 years, and that he is now active on the 50, 144, 430 and 1296MHz bands. His antenna system is shown in Fig. 3. As Richard notes, "a little more down to earth than some other contributors!" Incidentally, I would much prefer to have photographs of 'normal' systems, so please send them in and I will include them in the column.

Bob McQuarrie ZL3TY is the third reader to write to me this year from New Zealand. Happy Christmas Bob! He tells me that he's really keen on 50MHz and hopes to work into Europe sometime on that band. Bob has a 10W beacon on 50.0525MHz running into a vertical dipole, sending 'ZL3THY'. Another beacon, ZL3MRF, is on 50.043MHz and is located about 180 km east of Bob's OTH.

The station at ZL3TY runs an Ic-F501 into a 100W amplifier, feeding two stacked 5-element Yagis at 15m. If conditions look right for a QSO, I suspect this will be in March 1992.

Richard mentions that he would try for 430MHz e.m.e., if someone could provide a bigger power amplifier! On that band he runs a TS780, GAs e.f.t. low noise amplifier, a pair 17-element Yagis and a 4CX250B amplifier.

**DX News**

If you have any information or DX news that you would like to share with the readers of Practical Wireless, please feel free to contact me at: G6SSB.
between October 12-17. There is also a possibility that he may take equipment for 70MHz and 1.3GHz.

The Finnish "Vilvelns Bargain VHF-Group" plan to operate from KP22FD between 2200UTC on October 11 to 1000UTC on October 12. The group will use the call sign OH6EX on 144.13MHz for m.s. schedules and 144.14MHz for random operation, transmitting during the first 2.5 minute period. They will be running 150W into a 21-element Yagi. Keep a listen out on the v.h.f. net for either OH2BAP or OH6EX.

The recent expedition to Spain by OZ1DDO, resulted in 159 meteor scatter contacts from various locations, 23 f.i. O550s from IN3S and a number of good tropo contacts from IN63. You can obtain your QSL card from Uffe Linhardt, Ostrigsstræde 49, 2tv., DK-2300, Kobenhavn S, Denmark.

Beacon And Repeater News

Terry Cooper G4XOP, Secretary of the Mid Cornwall and Repeater Group, passes on the news that all GB3CTC beacons have changed their call sign to GB3MBC, standing for mid-Cornwall beacon. The group are also planning to build new beacon equipment, as the old units are proving to be unserviceable.

Unfortunately, as the group looks after beacons for all bands between 50MHz-1.3GHz, this will put a significant strain on the group's resources. Donations are therefore welcome and can be sent to either G4XOP or G4WVD.

The Northampton 1.3GHz repeater beacon GB3CN is now operational on channel RMR. It runs 15W output and reports of its coverage area would be welcomed by G6HWC.

QRA Contest!

The Scandinavian 50MHz activity contest takes place on October 22 between 1700-2100UTC. If you are a Morse enthusiast then you will be pleased to know of five c.w. events planned for the next few weeks. First up is the 70MHz contest on October 20 between 0800-1200UTC, followed by the last two sessions of the RSGB 144MHz c.w. cumulative being held on October 23 and November 8, between 2030-2300 local time. Only fixed QTH, single operator stations, are allowed to compete in these.

An IARU-co-ordinated 144MHz c.w. contest takes place between 1400-1440UTC on November 2. If you don't fancy pushing the key up and down for 24 hours, you could enter the RSGB six-hour section being run between 0800-1400UTC on the 3rd. If you don't like c.w. or firewoks, but you do like 144MHz, then you can participate in the Scandinavian activity contest on November 5!

A number of u.h.f. and microwave contests have been planned for October and November, to take advantage of the autumn tropo conditions. The RSGB 430MHz cumulative contests will be held on October 16 and November 1, with the 1.3 and 2.3GHz events on October 24 and November 9.

A 1.3GHz fixed station contest will be held on October 27 between 1600-2000UTC. Scandinavian activity contests are scheduled for October 15 for microwave bands and November 12 for 430MHz.

Deadlines

Please send your letters to reach me by the end of the month. I always write up the column in the first few days of the following month. Don't forget that I can also receive messages via packet radio at my mailbox GB7TCM.

Photographs of your shack, antennas or any v.h.f. activity are especially welcomed. Other pictorial items such as QSL cards, awards, certificates etc are also required. These can all be returned if necessary.

144MHz QRB Table

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The new relays via Radio Budapest of Radio France International can be heard:

0500-0800 on 17.68MHz
0500-0600 on 11.5MHz
0600-0800 on 15.3MHz

The powers are 100 and 250kW and all programmes are beamed to North Africa. The relays are possible following the cutbacks in Radio Budapest's schedules earlier this year. The current English schedule of Radio Budapest is:

0200-0300 on 11.91, 9.835 and 6.11MHz
2100-2200 on 11.91, 9.835 and 6.11MHz

There is a DX News programme aired each Tuesday and Friday, whilst a DX World programme can be heard on Wednesday and Saturday.
missions for domestic audiences. RAI's Notturno Italiana which, as its name implies operates during the night, can be heard on 6.05 in parallel with the medium wave channels of 900 and 846kHz. News bulletins are included at three minutes past the hour between 0000 and 0500. Radio Uno is on the air between 0500 and 2200 on 9.515 and 6.06MHz, whilst Radio Due, active from 0500 to 2330, can be heard on 7.175MHz. Finally Radio Tre uses 3.905 from 1400 until 2300.

Radio Sweden has introduced a new hour-long broadcast to Europe in anticipation of its satellite service over Asat, which is due to start next spring. The new programme is heard at 1350 on the medium wave frequency of 1.179MHz and on short wave at 15.27, 9.055 and 6.056MHz.

A variety of Soviet feeders have been reported by Alan Roberts in Canada:

9.18 u.s.b. Mayak network at 2325 in parallel with 18.195 and 18.87MHz.
9.21 u.s.b. Soviet domestic feeder at 2100.
14.41 u.s.b. Mayak feeder at 1855 in parallel with 18.195 and 18.87MHz.
15.75 u.s.b. Russia's Radio at 1845.
18.195 u.s.b. Mayak feeder at 1815 in parallel with 14.41 and 18.87MHz.
18.87 u.s.b. Mayak feeder at 1515.
19.056 u.s.b. Unidentified Russian language channel during 1630.
20.85 u.s.b. Mayak at 1455 in parallel with 18.87 and 20.905.
9.205 u.s.b. Mayak at 1450.

If you'd like to brush up your Russian language, the Mayak feeder at 2100 on 9.055 with strong signals on 7.175MHz.
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Vicky Foster aged 11, new Novice Licensee, 2E1AAD

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R. Collins, South Humberside

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