Diamond Jubilee year 1932-1992...Diamond Jubilee year 1932-1992

practical Wireless

NOVEMBER 1992 £1.75

Free Inside

72-page Mainline Electronics Catalogue

REVIEWED THIS MONTH

The Alan CT-145 Pocket-sized Transceiver

Plus

Around Europe With A Hand-Held

NEW SERIES

QSOs in Foreign Languages

ISSN 0037-4261

LEICESTER AMATEUR RADIO SHOW

Guide to Exhibitors With Pull-out Floor Plan

Stuck for Space?

Then why not choose the FT-5200 or FT-6200 dual band mobile transceivers. The detachable front panel can be easily mounted in a convenient location on the dash-board, while the transceiver body can be stowed under a seat or in the boot. For extra security, take the front panel with you, the transceiver is useless without it! So for extremely powerful communication capabilities with maximum user convenience and equipment security, face the facts and pick a Yaesu dual band mobile.

FT-5200/FT-6200

Boot-Mountable High Power Dual Band VHF/UHF Transceiver

- ✔ **FT-5200**: 2m and 70cms. **FT-6200**: 70cms and 23cms.
- ✔ **32 Memories:** 16 tunable memory channels for each band.
- ✔ **Channel Steps:** 5, 10, 12.5, 15, 20, 25kHz.
- ✔ **Removable Front Panels For Quick and Easy Installation.**
- ✔ **CTCSS Encode Built-In:** 38 sub-tones selectable from the front panel.
- ✔ **Full Duplex Cross Band Operation:** Independant squelch and mixing balance, for simultaneous listening or transmitting.
- ✔ **Independent TX/RX Frequencies:** Odd splits ok on any memory channel.
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- ✔ **Backlit DTMF Microphone.**
- ✔ **One-Touch Instant Recall:** Recall of CALL channels for each band.
- ✔ **Priority Monitoring.**
- ✔ **Dual External Speaker Jacks:** One for each band.
- ✔ **Built-In Antenna Duplexers:** Standard feature.
- ✔ **Reversed Masked Full Frequency LCD.**
- ✔ **8 Level Automatic Display/ Key Lighting Dimmer.**
- ✔ **Accessories Options:** FTS-22 (CTCSS Dual Decode Unit), FRC-4 (Pager Unit), DVS-3 (Voice Memory and Pager Unit), YSK-1L (6m Separation Kit Cable), SP-7 (External Speaker).

Performance without compromise

YAESU

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Eastleigh, Hants SO5 3BY.
Tel: (0703) 255111.

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The Practical Wireless 144MHz QRP Contest. The full results and details of winners of the 1992 contest will be published in the December issue.

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THE STAFF OF PRACTICAL WIRELESS LOOK FORWARD TO SEEING FRIENDS OLD AND NEW ON STAND 3 AT THE 21st ANNUAL LEICESTER SHOW ON OCTOBER 23rd & 24th

Regular Articles

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NEW

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Eartalker Microphone

The invisible mic. This is a complete new concept in microphone technology. Utilising the vibrations on the ear the "Eartalk" microphone produces superb, clean and crisp transmitted audio.

The microphone is combined within the earpiece and is worn as any normal small earphone would be - resting in the ear.

Receive volume is controlled via a thumbwheel on the central box alongside the PTT Button.

The Eartalk is set to revolutionise microphones, picking up the vibrations from within the ear itself means there is no environmental noise - the end result is exceptional audio characteristics **£32.00**

SPECIAL OFFER

Sony 2001D. Multiband portable receiver with H.F. and VHF Coverage. Direct access & analog tuning with 32 programmable memory presets. Normal Price £299.95
Our Price £269.00 with a free Mystery Book worth £5.00

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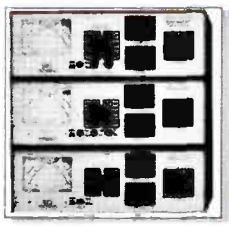

VC300 300 Watt with cross pointer meter for SWR/Power. Multiple antenna inputs and 4:1 Balun for balanced line feed **£129.00**

VC300DLP As above but with built in 300W dummy load **£149.00**

VC300D Same spec as VC300DLP but with additional peak reading digital bargraph power display **£169.00**

HFT1500 3 kW ATU with multiple inputs for balance & coaxial connectors. Cross-point SWR/Power Bridge plus digital PEP power meter.

- Vernier tuning on both 5KV variable caps!
- Variable 28µH, 5amp rolla-coaster with Counter!
- Six position antenna selector!
- Illuminated cross-over analogue meter for SWR/PWR

ALL THIS FOR ONLY.....**£399.00**

PM30 – Power meter. This Power/SWR meter measures both forward and reflected power simultaneously on its cross-point metering system.

- Freq. Range 1.8 – 60MHz
- 300W & 3KW Power Ranges (Both PEP & AVG)
- Meter back-lit illumination facility **£89.00**

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Whether your interests lie in speech or data comms or even fax reception and computer control – The R8E CAN handle it! **£965.00**

Features
★ Full filtered with AMS as standard
★ 99 programmable memories with Scan
★ Computer control
★ I.F. Pass-band offset facility

Accessories Available
★ External Speaker
★ VHF Converter (35-54, 108-174)
★ P.C. Computer Drive Software
★ Technical Manual Available

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"Eavesdrop" on all those morse and RTTY signals up and down the H.F. Bands. There seems to be an increased amount of data transmissions all over the H.F. Spectrum - with the latest version of the microreader de-coding these "Squawks & Whistles" couldn't be any simpler. Simply connect the microreader to the extension speaker socket on your receiver with the cable supplied, and with a little practice & careful tuning the de-coded words appear on the built-in 16 character LCD display. As well as the ability to interface with a computer - the microreader also incorporates a Morse Tutor, with variable speed and spacing! Get ready for the "Test" with an ERA!.....**£169.00**

New Firmware Fitted!
The Microreader now has the ability to de-code:- AMTOR (A), SISTOR (B), and NAVTEXT
Optional large display with scroll-back and printer port is now available **£178.00**

WE HARDLY EVER SAY NO TO A GOOD P.X. DEAL

Here's just a small sample of what's available

FT-790 70 cms portable all mode, v.g.c. including carrying case.....**£325.00**
Sony Alr 7 Handheld Airband Receiver. offer around.....**£185.00**
Regency 7000 Base/Mobile Scanner. Very sensitive radio.....**£190.00**
Fairmate HP2000 1000 memories, v.g.c. Tatty box.....**£215.00**
AR3000A All mode 150 KHz – 2.1 GHz. Ex-demo.....**£699.00**
Kenpro KT-22 2m "thumbwheeler". v.g.c.....**£99.00**
Kenpro KT-44 70 cms. As above. c/w case and spare Ni-Cad.....**£135.00**
Sommerkamp 75W 2m FM Rig "high power mobile".....**£175.00**
Trio R2000 Receiver. with VHF convertor.....**£495.00**
Trio R1000 General coverage RX digital display.....**£325.00**
H.F. Transceiver Similar to FT101. 80-10m Cov. Digital readout.....**£475.00**

FT101B HF Rig. Hardly marked. "A classic".....**£325.00**
JRC525 High class HF gen. cov. receiver Boxed. v.g.c. ...**£675.00**
Drake TR7 with fitted filters. Bargain.....**£625.00**
Yaesu FT290R 2m Port-a-Pac, Mutek F.E. Fitted.....**£325.00**
MM30LS 30 W 2m Amp.....**£75.00**
Yaesu FT-767GX HF, boxed, in v.g.c.....**£1225.00**
Lowe HF-125 Receiver c/w optional keypad.....**£275.00**
Yaesu FT-200, immac. cond, with all boxes and manuals, good starter rig.....**£275.00**
Drake R-4B & T-4XB seperates, c/w MS-4 PSU all in A1 condition, collectors piece.....**£450.00**

Yaesu FRG7700 Gen. Cov. Receiver. Choice of 2, 1 with accessories.....**£495.00 & £425.00**
Icom R71E Shortwave Receiver, very sought after radio, boxed, v.g.c.....**£645.00**
Yaesu FRG9600 Base Scanning Receiver, choice of 2, good condition.....**each £345.00**
JUST IN! Alinco DJ-560 Twin Band Handheld, c/w NiCad pack, all in "as new" cond.....**£230.00**
Icom IC-27E 2m 25W Mobile, boxed.....**£215.00**
Yaesu FC-707 Matching ATU, v.g.c., boxed.....**£85.00**
Yaesu FP-757 S/Mode Power Supply, boxed.....**£95.00**
CTE CT1600 2m Thumbwheeler.....**£95.00**
M/Modules 2m Transvertor 10 in 2m out, boxed.....**£150.00**
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HF-150
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£329 inc VAT

Designed as a logical alternative to the Japanese 'push button portables', the HF-150 places a 'real radio' within your price reach. Whilst reflecting the Lowe approach to simplicity of operation, the HF-150 nevertheless has all the features and facilities you need. This truly is 'Real Radio'.

Frequency coverage: 30kHz - 30MHz
Modes: USB/LSB/AM/Sync. AM (Selectable S'band)
IF Bandwidths: 2.5kHz & 7kHz
Tuning: 8Hz steps with variable speed
Memories: 60 holding frequency & mode
Aerial inputs: 600 ohms, 50 ohms & Hi-Z Whip
Power: 12Vdc from mains adaptor (supplied)
Case: All-metal light alloy case
Size: 185mm(W) x 80mm(H) x 160mm(D)
Weight: 1.3kg (less batteries)

HF-235
The Professionals' Choice

£1116 inc VAT

Frequency coverage:30kHz - 30MHz
Modes: AM/LSB/USB/CW/NBFM (Sync AM optional)
Filters: 6 Input bandpass filters
Tuning steps: 8Hz - 125Hz (stepped by mode)
Construction: Fully floating chassis
Remote control: RS232C Computer interface (optional)
Memories: 30 holding a host of data
Tuning: Spin-wheel, keypad & MHz button freq. entry
Power supply: 110-120 or 220-240Vac 50Hz
Size: 483mm(W) x 88mm(H) x 320mm(D)

HF-225
Gateway to the World

£429 inc VAT

Frequencies: 30kHz - 30Mhz
Tuning: 8Hz steps.
Memories: 30 channels
Filters: IF filters for all modes fitted
Tuning: Keypad & spin-wheel
AM/FM Sync. Detector (optional)
Keypad for remote entry (optional)
Excellent quality at reasonable cost

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Auto repeater mode
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Now with every unit
Look for the sign on the box!

The DJ-580E hand-held is the most advanced design ever offered to the radio amateur. Building on the winning formula of the DJ-560E, ALINCO have now reduced the size dramatically and introduced a combination of innovative features that will make your operating even more fun and certainly more versatile.

It goes without saying that ALINCO offer you all the standard features you expect from a hand-held including dual watch, dual controls, scanning, searching, priority, etc. Of course ALINCO's standard of engineering and reliability is now becoming the envy of its competitors. (They're also pretty envious of ALINCO's prices!) Naturally you get a full 12 month warranty including parts and labour. It's the extra features that really make this a winner.

For example you now have ALINCO's patented circuit that retains full operation with dry cells even when battery voltage falls by 50%. Great for emergency applications. You get a programmable auto power off feature, battery saver, digital telephone dialler and three output power levels. And we've only just started! Key in a special code on the keypad and your rig will turn into a fully operational automatic crossband repeater. Key in another code and you will open up the receiver for a.m. airband reception and frequency segments up to 995MHz! You can even use the DTMF feature to send and receive two digit code messages.

To learn more about the transceiver that has already taken the Japanese and American markets by storm, phone or write for a full colour brochure.

Specification

Tx	144-146MHz 430-440MHz
Rx	AM 108-143MHz FM 130-174MHz FM 400-470MHz FM 810-995MHz
Steps	5, 10, 12.5, 20, 25kHz
Memories	42
Power Output	2.5/1.0/0.3 Watts 5 Watts with 12V DC
Scan	8 Modes
Tones	1750Hz plus DTMF Optional CTSS
Sensitivity	12dB SINAD -15dBu
Size	140x58x33mm
Weight	410g

Accessories Supplied
Ni-Cad pack, AC charger, belt clip, carry strap, dual band antenna.

WATERS & STANTON ELECTRONICS

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Beat Devaluation – Buy Now!

With the falling pound, there has never been a better time to buy your equipment than now. If the downward trend of Sterling continues then the cost of all imported goods will rise. – 17.9.92

LEICESTER '92

23/24 October STAND S8

FOR SOME SUPER SPECIAL OFFERS

"ECONOMICAL & EFFECTIVE"

that's the NEW FT890 from YAESU

Blending the high performance digital frequency synthesis techniques from the FT990 and FT1000 with the convenience and affordability of the FT757GXII, the FT890 adds a built-in (or optionally remote) automatic antenna tuner and a wealth of convenient functions. For compact base, home and mobile stations, the FT890 sets the new performance standard.

Both Chris Lorek and Peter Hart agree the FT890 has "extremely versatile performance" and is "easy to use with plenty of useful features".

See RADCOM Review September '92

See HRT Review June '92

All in all a Winner!

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 Nowell 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 9.30am–5.30pm Tues–Sat	**Birmingham** 021-327 1497 SMC Birmingham 504 Alum Rock Road Alum Rock Birmingham B8 3HX 9am–5pm Tues-Fri 9am–4pm Sat	**Axminster** (0297) 34918 Reg Ward & Co. Ltd 1 Western Parade West Street Axminster Devon EX13 5NY 9am–5.20pm Tues–Sat

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HF

MM3	10-15-20m Mini-Beam	426.53	D
VR3MK3	10-15-20m Vertical	96.35	C
TB3MK3	10-15-20m 3 Ele Yagi	425.53	D
TB2 MK3	10-15-20m 2 Ele Yagi	293.75	D
TB1MK3	10-15-20m Rotary Dipole	139.83	C
TB3/SSKIT	TB3MK2 to TB3MK3 Conversion kit	79.90	B

6m & 4m

4Y6M	4 Ele Yagi 6m	66.00	C
4Y/4m	4 Ele Yagi 4m	54.40	C

2m

HO/2M	Halo Head only	13.87	A
HM/2M	Halo c/w 24" mast	16.10	B
UGP/2M	Ground Plane (folded radiator)	22.45	B
C5/2M	Colinear	124.55	C
LW5/2M	5 Ele Yagi	26.20	C
LW8/2M	8 Ele Yagi	33.60	C
LW10/2M	10 Ele Yagi	40.77	C
LW16/2M	16 Ele Yagi	59.46	D
PBM10/2M	10 Ele Parabeam	80.84	C
PBM14/2M	14 Ele Parabeam	98.23	D
Q4/2M	4 Ele Quad	49.59	C
Q6/2M	6 Ele Quad	64.51	C
Q8/2M	8 Ele Quad	80.37	D
D5/2M	5 over 5 slot Yagi	47.59	C
D8/2M	8 over 8 slot Yagi	65.33	C
5xY/2M	5 Ele Crossed Yagi	50.53	C
8xY/2M	8 Ele Crossed Yagi	64.51	C
10xY/2M	10 Ele Crossed Yagi	80.84	C

2m/70cm

6Y/12Y	6 Ele 2m, 12 Ele 70cm Yagi	72.03	C

70cm

C8/70	Colinear	132.31	C
D8/70	8 over 8 slot Yagi	47.71	C
PBM24/70	24 Ele Parabeam	73.32	D
MBM28/70	28 Ele Multibeam	38.54	C
MBM48/70	48 Ele Multibeam	61.57	C
MBM88/70	88 Ele Multibeam	85.89	D
8xY/70	8 Ele Crossed Yagi	74.03	C
12xY/70	12 Ele Crossed Yagi	91.77	C

23cm

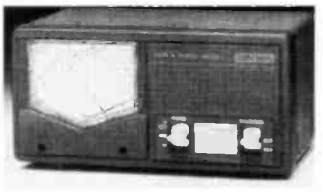
D15/23	15 over 15 slot	80.72	C
D15/24	15 over 15 slot	80.72	C

PHASING HARNESSES

PMH2/4M	4m 2 way	27.85	C
PMH2/C	2 way circular polarisation	17.86	B
PMH2/2M	2m 2 way	19.98	B
PMH4/2M	2m 4 way	48.88	B
PMH2/70	70cm 2 way	18.57	B
PMH4/70	70cm 4 way	38.07	B
PMH2/23cm	23cm 2 way	50.76	B

SWR METERS COAX SWITCHES

SMC have a wide range of SWR/PWR meters to suit almost all applications from low power hand-held to high power HF transceivers. To complement these meters a range of high quality coax switches is also available for switching all your antennas.



HANSEN

FS710V	50-150MHz 15/150W	107.80	B
FS301MH	2-30MHz 200/2000W	42.25	B
FS711H	2-30MHz 20/200W	43.65	B
FS711V	50-150MHz 20/200W	34.99	B
FS711C	26-30MHz 10/100W	24.55	B
FS20DL	3-150MHz 1/10W	43.65	B
FS20D	3-150MHz 5/20W	43.65	B
SWR3E	3.5-150MHz 20/200/1000W	28.75	B

SMC

OSCAR171-B	3.5-150MHz	27.45	B

WELZ

SP425	140-524MHz 5/15/150W	122.55	B

YAESU

YS60	1.6-60MHz 20/200/2000W	95.00	B
YS500	140-525MHz 4/20/200W	83.00	B

DAIWA

CN101	1.8-150MHz 15/150/1500W	59.95	B
CN103N	150-525MHz 20/200W	69.95	B

COMET

CM-420	140-150/430-450MHz 15/50W	39.95	B
CM-420N	140-150/430-450MHz 15/50W	45.83	B
CD-120	1.8-200MHz 15/60/200W	76.60	B
CD-160H	1.6-60MHz 20/200/2000W	90.85	B
CD-270D	140-525MHz 15/60/200W	79.65	B

COAX SWITCHES

DAIWA

CS201	2 way SO239 DC-600MHz 1kW	17.50	A
CS201G2	2 way 'N' DC-2GHz 1kW HF	27.50	B
CS401	4 way SO239 DC-800MHz 1kW	69.95	B

CREATE CREATIVE DESIGN

SMC are pleased to be able to stock a comprehensive range of HF & 6m antennas from Creative Design. Built in Japan these antennas are manufactured to the highest standard using only the best materials. Also available are a high quality range of rotators to suit all applications ranging from small 2m beams to large HF multiband beams.

HF

CV730V-1	V Dipole 40-20-15-10m	152.00	D
CD218	10-15m 3 Ele Yagi	203.50	D
CD318JR	10-15-20m 4 Ele Yagi	305.50	D
CD318	10-15-20m 4 Ele Yagi	357.00	D
CD318B	10-15-20m 5 Ele Yagi	459.00	D
CD318C	10-15-20m 6 Ele Yagi	740.00	D
CL10	10m 5 Ele Yagi	219.00	D
CL15	15m 5 Ele Yagi	325.00	D
CL40B-4	40m 3 Ele Yagi	1120.00	E
CY103	10m 3 Ele Yagi	123.00	D
CY104	10m 4 Ele Yagi	175.00	D
CV48	40m Vertical	214.50	D
AD385	40/80m Switch Box for CV48	50.00	D

6m

CL6DX	6m 6 Ele Yagi	117.50	D
CL6DXX	6m 7 Ele Yagi	176.65	D
CL6DXZ	6m 8 Ele Yagi	235.00	D

LOG P'S

CLP5130-1	50-1300MHz 25 Ele	189.00	C
CLP5130-2	105-1300MHz 20 Ele	129.00	C
CLP5130-3	90-220MHz 12 Ele	109.00	C

ROTATORS

RC5-1	Round meter variable speed	223.75	C
RC5-3	Round meter variable speed + preset	280.00	C
RC5A-3	Round meter variable speed + preset	434.00	C
RC5B-3	Round meter variable speed + preset	689.00	C

BALUNS

CB2F/2K	1:1 2-30MHz 2kW PEP SO239	30.50	B
CB2F/3K	1:1 2-30MHz 3kW PEP SO239	30.60	B
CB2F/4K	1:1 2-30MHz 4kW PEP SO239	56.00	B
CB2F/6K	1:1 2-30MHz 6kW PEP 'HN' Input	179.00	D
CB2F/10K	1:1 2-30MHz 10kW PEP 'HN' Input	460.00	D
CB2F/5K-6M	4:1 50MHz 3kW PEP 'N' Input	105.75	D

A-£2.00 B-£5.00 C-£7.50 D-£12.50 E-£16.50

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TNC 24 MKII

* No more 'add-ons' for satellite operation
* High speed morse via satellite
* TTL or RS232 input * CW I.D. built-in
* PC software included

Only £329

TNC MICRO

* Ultra compact size * AX25 level 2 protocol
* Message Board * Supplied nicad and charger

Only £209

TNC 24 on Demonstration at SMC HQ

ELECTRONIC KEYS

DEWSKEYSTD	Star Masterkey (Standard)	59.95	B
DEWSKEYM	Star Masterkey (Memory)	95.00	B

ICS ELECTRONICS

PK232/MAIL	7 Mode data terminal c/w Mail Drop	339.95	C
PK88	Dedicated High Grade Packet TU	149.95	B
D70	Morse Tutor	64.95	B

TOKYO HY-POWER LINEAR AMPLIFIERS

These are a range of high quality linear amplifiers available direct from SMC.

We have chosen these amplifiers as we feel they have been developed with the amateur radio enthusiast in mind.

A wide range of models is available covering HF to UHF frequencies with input levels and output powers to suit most applications.

We believe the Tokyo Hy-Power linear amplifiers offer outstanding value for money, tremendous specifications and no compromise operation.

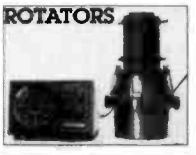
Tokyo Hy-Power HF

HL100B/10	21-28MHz 10W-100W out	£182.00	C
HL100B/20	14MHz 10W-100W out	£182.00	C
HL100B/80	3.5MHz 10W-100W out	£182.00	C
HL1K	160-10m 1kW PEP input 2x4CX250B	£959.00	D
HL2K	160-10m 2kW PEP input 2x3-500Z	£1450.00	E

Tokyo Hy-Power VHF

HL37V	2m 3W-32W pre amp	£90.95	B
HL62VSX	2m 5/10/25W in 50W out pre amp	£169.00	C
HL110V	2m 2/10W in 100W out pre amp	£220.00	C
HL180V	2m 3/10/25W in 170W out pre amp	£299.00	C
SAGRA600	2m 15-25W in 600-700W PEP output 2x4CX250B	£839.00	E
HL66V	6m 10W in 50-60W out pre amp	£131.75	C
HL166V	6m 3/10W in 50-60W out pre amp	£255.00	C
HL1K/6	6m 10W in 500W PEP output 2x4CX250B	£959.00	D
HL360U	70cm 6/10W in 25-30W out pre amp	£139.00	B
HL63U	70cm 10/25W in 50W out pre amp	£220.00	C
HL130U	70cm 3/10/25W in 120W out pre amp	£397.00	C
HL1240U	23cm 2/10W in 40W out MGF 1202 pre amp	£529.00	C

ROTATORS



Superb engineering standards combined with pin sharp setting accuracy means new technology from Yaesu create Kenbro Hygain.

A = £2; B = £5; C = £7.50; D = £12.50; E = £16.50

G-250	Bell type twist/switch CTL	£79.75	C
G-400	Bell type meter controller	£152.00	C
G-400RC	Bell type round controller	£182.85	C
G-600RC	Bell type round controller	£240.00	C
G-800SDX	Bell type 450 deg. var. speed	£332.00	C
G-1000SDX	Bell type 450 deg. var. speed	£376.00	C
G-2000RC	Bell type round controller	£454.00	C
G-2700SDX	Bell type 450 deg. var. speed	£649.00	E
G-500A	Elevation meter controller	£203.00	C
G-5400B	Azimuth/elev. dual control	£379.00	D
G-5600B	Azimuth/elev. dual control	£444.00	D
RC5-1	Bell type round controller	£223.75	C
RC5-3	Bell type preset	£280.00	C
RC5A-3	Bell type var. speed. & preset	£434.24	C
RC5B-3	Bell type var. speed. & preset	£689.00	D

ROTATOR HARDWARE

GS-050	Rotary bearing 1.5" mast	£20.39	B
GS-065	Rotary bearing 2" mast	£30.60	B
GC-038	Lower mast clamp G-400, 600 etc	£17.35	B
9523	Channel master bearing	£19.95	B
CK46	Rotary bearing 1.5-2.5 mast	£35.75	B
MC1	Lower mast clamp RC5 series	£35.75	C

COMPUTER INTERFACES FOR G-5400/G-5600B

IF-100PC	I/F C/W lead & software IBMPC	£142.00	B
IF-100C64	I/F C/W lead & software CBM64/128	£148.00	B

ROTATOR CONTROL CABLE

RC6W	6 way G-250, 400, 600, RC XR500 per mtr.	£0.74	
RC8W	8 way G-2000 create series	£0.88	

CARRIAGE

Rotator cable £3.50 up to over 20 mtrs. over 20 mtrs. £5.00

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MFJ 20m QRP CW RIG £179

The long awaited MFJ QRP rig has arrived. 5 Watts of CW with an excellent receiver including a 500Hz xtal filter. You also get semi break-in, rit in and a very smooth vfo from 14.00-14.075 MHz. Power requirements are 13.8V DC.

Used 3 Month Warranty

Yaesu FT-980 HF	£899.00
Icom IC-730 HF + psu	£499.00
Ten-Tec Argosy + psu	£499.00
Ten-Tec Corsair	£899.00
Ten-Tec Omni-V	£1395.00
Yaesu FT-747	£449.00
Yaesu FC-700	£109.00
Yaesu FC-902	£119.00
Yaesu SP-767 speaker	£49.00
Icom IC-2E	£109.00
Kenwood TH-215E	£149.00
Kenwood R-600 Rx	£229.00
Yaesu FT-73R	£149.00
Icom Micro 2A	£149.00
Icom Micro 2E	£149.00
FDK M-800D 2m FM	£139.00
FDK 725X 2m FM	£149.00
NAVICO AMR-1000	£149.00
Sony SW1E Rx	£99.00
Lowe HF-225	£329.00
Sony ICF-7600DA Rx	£69.00
ERA Display	£145.00
ERA Microreader	£129.00
Yaesu FL-2025 Linear	£89.00
Yaesu MH-12A2B	£19.95
ALINCO 30W 2m Linear	£59.00
SEM Transmatch	£79.00
Daiwa 2.5kW ATU	£199.00

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VHF/UHF All with "N" connectors "THE BEST"

6M	Price
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20808 4 el	£41.00
20809 9 el	£39.00
20089 9 el	£39.00
20822 11 el	£95.00
20813 13 el	£55.00
20817 17 el	£69.00
70cm	
20909 9 el	£33.00
29919 19 el	£40.00
23cm	
20623 23 el	£39.00
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Peter Waters G30JV/G0PEP

MFJ 1278 Multi mode Data Controller

£279

The MFJ-1278 has taken the USA by storm and is now available in the UK from stock. For the first time you get nine modes in one box! Use it for Packet, FAX, AMTOR, SSTV, RTTY, Navtex, ASCII, Electronic keyer, CW reader. Probably the most advanced modem ever offered. Now you can spend hours experimenting with the various modes, all at a very modest price and all in one box. Send today for the full details.

MFJ Products from Stock!

300W HF ATU

The MFJ-948 is a complete 300 Watt aerial matcher in one box. It will match coaxial, balanced feeder and single wires. A dual needle VSWR/Power meter makes adjustment simple and a 3 way aerial switch completes the package. Fantastic value! **£129.00**

Other MFJ Products:

MFJ-949D	ATU as above but with 300W dummy load	149.00
MFJ-901B	ATU less switch load and meter. Super!	69.95
MFJ-264	1.5kW dummy load. DC-650MHz	69.95
MFJ-260B	300W dummy load DC-160MHz	35.95
MFJ-816	HF 30/300 Watt power meter	31.95
MFJ-812B	144MHz 30/300 Watt power meter	31.95
MFJ-110	Fabulous world clock with map	29.95
MFJ-32	Packet radio handbook. Super guide!	8.95
MFJ-1286	Gray Line Graphics Programme for IBM	32.95
MFJ-1281	Easy DX logging programme	41.95
MFJ-1040	1.8-54MHz tx/rx preselector	99.95
MFJ-1020A	Indoor active antenna station. 0-30MHz	84.95
MFJ-1272B	TNC/Microphone interface	36.95
MFJ-722	Superb rx audio filter	89.95
MFJ-752C	Tuneable audio filter	109.95
MFJ-207	Antenna analyzer. Brilliant idea!	99.95
MFJ-557	Self contained CW practice key and oscillator	29.95
MFJ-407B	Electronic keyer. 8.5-WPM Self powered	79.95
MFJ-931	Artificial HF ground unit. Ideal for flats etc.	79.95
BY-1	Genuine Bencher Paddle. A precision product	69.95
MFJ-704	HF Low Pass Filter	39.95
MFJ-108B	Dual time deck top clock. LCD Display	19.95

Ten Tec Argonaut £995

We are now able to offer the latest Ten Tec Argonaut II at a new factory direct low price. This follows on from Ten Tec's new marketing policy to offer even better value for money. This 5 Watt all mode transceiver has a host of features including general coverage receiver. Ex stock.

MICROSET POWER SUPPLIES AND LINEARS

MAST HEAD PRE-AMPLIFIERS

PR-145 ....2M 100 Watt 16dB gain – 0.9dB NF	£75.00
PRH-145 ...2M 500 Watt 18dB gain – 0.9dB NF	£109.00
PR-430 .....70cms 100 Watt 15dB gain – 1.2dB NF	£85.00

MICROSET POWER SUPPLIES

PT-107 .....7 Amp 13.5V fully protected (non meter)	£49.00
PT-110 .....10 Amp 13.5V fully protected (non meter)	£69.00
PC-110 .....10 Amp 13.5V fully protected with meter	£89.00
PT-120 .....20 Amp 13.5V fully protected (non meter)	£119.00
PC-120 .....20 Amp 13.5V fully protected with meter	£149.00
PT-135 .....30 Amp 13.5V fully protected (non meter)	£149.00

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R-25 .....2M 1-4W in 30W max out SSB/FM	£79.00
RV-45 .....2M 3-15W in 45W max out SSB/FM	£99.00
R-50 .....2M 1-7W in 50W max out SSB/FM	£99.00
SR-100 .....2M 4-25W in 100W max out SSB/M	£159.00
SR-200 .....2M 10-50W in 200W max out SSB/FM	£289.00
VUR-30 .....2M/70cms 1-6W in 20/30W max FM	£229.00
RU-20 .....70cms 0.8-3 in 15-20W max out SSB/FM	£119.00
R-432-90 ...70cms 6-12 in 80-90W max out SSB/FM	£389.00

Send SAE for full colour Microset catalogue

Ten-Tec OMNI-VI

Just arriving is the all new Ten-tec OMNI-VI hf transceiver. It includes such extras as Digital signal processor, Automatic notch filter, programmable CW offset, oven stabilised xtals, "Sport" PC interface, new RIT control, 100 memories, fast CW break-in and superb receiver front end. This promises to be the most professional transceiver ever offered to the ham radio market. **Price £1995 inc. VAT.**

AMERITRON HF LINEARS

NEW

600 Watts

£699!

AL-811

This linear is incredible value. We have put it throuh its paces and it really stands abuse. 3 rugged 811A tubes provide up to 600 Watts output from 160-10m. A hunky mains transformer and full metering is included. Used by DX-peditions it has to be amazing value at **£699 inc VAT**

AL-80AX 1kW from 160-10m 3-500z tube. ***£1099.00.***

Other Ameritron linears are available. Send SAE today.

NEW FLEXI-MAST

- 9m Telescopic mast
- Closes down to 1.2m
- Erected in minutes!
- Weighs just 2kg
- Auto locking sections
- Wind survival – 100mph
- Base dia. 1.5" top ¼"
- Support bracket supplied
- Basis for many aerial systems
- Project guide supplied free

£59 plus £5pp

The Flexi-Mast is constructed of a carbon compound that makes it virtually indestructible. Nine telescoping sections quickly lock together automatically. The mast can be used as the basis for many different DX vertical systems for the HF bands or can be used to carry lightweight wire VHF antennas and inverted "V" systems. The great thing about this mast is that it is "bomb proof!" If it falls down it won't be damaged and it won't damage you! What is more, there are no metal parts to rust and its size means it can be easily transported in any vehicle or aircraft. Its telescopic portable nature means it probably won't even contravene planning regulations.

Constructed of non conductive material it has the wonderful advantage of acting like a giant coil former. A complete vertical system can be made by taping wire elements along its length, a quarter wave on 40 metres perhaps, or a ⅝th wave on 20 metres. You can directly wind coils onto it to make a base loaded or trapped HF system. What is more, because of its length it will be more efficient and have a better bandwidth than any of the shorter commercial systems advertised at many times the price. The possibilities are endless! We made a vertical system for 40 metres by taping a wire element to its length and immediately worked across the Atlantic! You'll find it great for expeditions, portable work or where space is lacking. It truly is a remarkable product that is offered at a remarkable price. p&p £5

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Jim QRP Rigs

(Formerly MIZUHO)

SSB - CW - VXO

40 or 20 Metre QRP Transceivers

★ 2 Watts Out
★ Single Band VXO
★ S-Meter
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★ Superhet
★ Noise Blanker
★ RIT
★ Attenuator
★ CW Key
★ AA Cells
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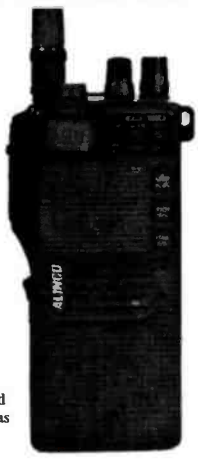
Versions available for 40, or 20 metres. Send for our new QRP leaflet with reviews.

NEW! **ALINCO** ELECTRONICS GmbH.

DJ-180 2m Transceiver

£159.95!



★ LCD Display
★ 10 Memories
★ Repeater Shift
★ 2 Watts Option
★ Ni-Cad Pack
★ AC Charger
★ Auto Power Off
★ Battery Warning
★ Steps 5kHz - 25kHz
★ Superb Audio
★ 132 x 58 x 33mm

Alinco break the price barrier again! Forget the cheap old-fashioned technology, this is brand new designed stock that will rock the market. Ideal as second rig or for those who only occasionally use 2 metres.

NEW! **ALINCO** ELECTRONICS GmbH.

DR-119E 2m Mobile 50 Watts

The latest 2 metre mobile from ALINCO now offers superb value. No larger than a car radio it boasts 50 Watts output and extended receiver coverage. Completely re-styled it offers all the usual features including memories, scanning etc, and comes with microphone, mounting kit and full warranty. For more details send or phone for brochure.

ALINCO ELECTRONICS GmbH. **Clearance!!**

2m/70cm Mobile 45/35 Watts Full Duplex DR-590E

£100 off!

£449

Brand new stock with 12 month's warranty. No catches. Just check prices with our adverts last year and you'll see the price saving is really genuine. Nobody can beat this price. Our bulk purchase has cleared the factory of this model. Act now and save £100 into the bargain. Send for colour brochure. (please note illustration shows DR-599 which is almost identiCAL)

NEW! **ALINCO** ELECTRONICS GmbH.

DJ-S1E 2m FM

Special Offer

£239

The new exciting DJ-F4E has arrived. ALINCO engineering at its best, a superbly clean transmitter and the usual "no nonsense" warranty that takes the worry away from purchasing ham gear.

Ideal for the new NOVICE license, this is a really tough little rig. Use it mobile with external 12V DC, use it for Packet radio, or just pop it in your pocket knowing you have the most advanced and reliable transceiver on the market!

★ Tx: 144-146MHz
★ Rx: 108-174MHz
★ 5 Watts output (12V DC)
★ 40 Memories
★ 3 way Power Setting
★ Illuminated Key Pad
★ 6 Programmable steps
★ Programmable Shift
★ 1750Hz tone
★ Frequency Lock
★ PTT Lock
★ Beep on/off
★ Automatic Lamp
★ DTMF Tones
★ Reverse Repeater
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★ Priority Channel
★ Fast tune function
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★ AC Hod Charger
★ Many Accessories

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NEW Packet Radio Kit

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Ramsey — USA P-IBM

★ Powered directly from RS-232 port.
★ Includes free software for IBM

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HR-40 40m DC Rx	£26.95
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This is a truly amazing kit for all those who want to get into packet radio without committing themselves to a large outlay. The complete kit of parts is provided with circuit, board layout and comprehensive manual. It can be put together in an evening. All you need is an RS-232 lead to your computer and cable connection to your transceiver mic socket. You'll be receiving and sending Packet signals in no time at all. If you haven't tried Packet radio, here's your chance to do so with minimum outlay and guaranteed results.

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Ideal for all ham stations, this large LCD clock gives both local and distant times. Completely self-contained and battery powered it has a smart satin finish.

Digital HF Antenna Analyzer MFJ-247

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1.8 to 30MHz

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AR3000A..100kHz-2036MHz All-mode.....**£765.**
AR1500.....500kHz-1399MHz All-mode.....**£279.**
AR2000.....500kHz-1300MHz AM/FM.....**£269.**
MVT7000..8MHz-1300MHz AM/FM .....**£289.**
MVT8000..8MHz-1300MHz AM/FM .....**£299.**
DJX1.....500kHz-1300MHz AM/FM.....**£249.**

HF Receivers:

R5000.....100kHz-30MHz All-mode (VHF OPT) .....**£925.**
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R72.....30kHz-30MHz All-mode (FM OPT).....**£659.**
R2000.....150kHz-30MHz All-mode (VHF OPT) .....**£549.**
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R7100.....25MHz-2GHz All-mode.....**£1120.**
FRG9600...60MHz-905MHz All-mode .....**£520.**

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WIN108.....108MHz-142.1MHz AM.....**£149.**
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VT125.....108MHz-142MHz AM.....**£169.**

Receiving Accessories:

D707 .....Diamond wideband 500kHz-1500MHz Active base antenna.....**£99.**
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MLB.....Magnetic long wire balun.....**£36.**
MLB Mk1 ..Longwire HF antenna fitted with magnetic balun .....**£56.**

In addition to our wide range of radio receiving equipment you will find that HAMSTORES also stock an equally extensive range of transceivers and accessories for the licensed Amateur. Second-hand and ex-demo equipment is always available.

We stock items by AEA, AKD, Alinco, AOR, Barenco, CDE, Comet, Cushcraft, Dee Comm, Diamond, Drae, Hills Kits, Hustler, Icom, JRC, Kenwood, Lowe, MFJ, Siskin, Sony, Toyo, Yaesu, Yupiteru etc. Gordon G3LEQ & John G8VIQ at Birmingham and Chris G8GKC at Herne Bay look forward to seeing you!

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HF - VHF - UHF IT'S ALL HERE!

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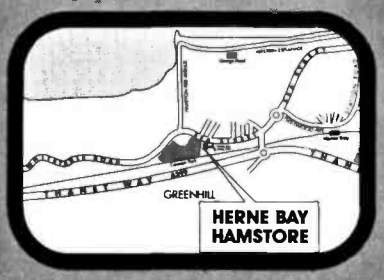

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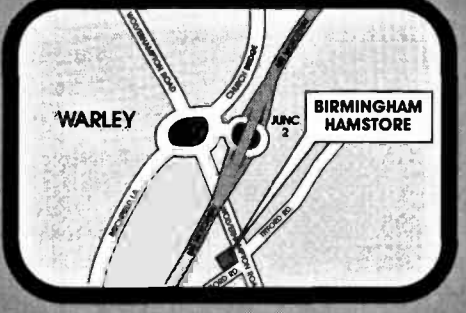

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SECONDHAND EQUIPMENT

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Kenwood TS-430S HF transceiver (mint. cond.)	£499.00	£12.00
Kenwood TS-530S HF transceiver (vgc)	£499.00	£12.00
Sommerkamp FT-767 HF transceiver	£399.00	£12.00
AR-800E VHF/UHF handheld scanner	£99.00	£5.00
JST-100 HF transceiver inc. PSU. (mint cond.)	£499.00	£12.00
Realistic PRO-2021 VHF/UHF scanner	£109.00	£7.50
Trio TH-21E 2m handheld c/w spare nicad	£139.00	£5.00
Daiwa CN-101 SWR/Power meter	£45.00	£5.00
Lowe HF-150 short wave receiver (as new)	£250.00	£12.00
Sony ICF-SW55 short wave receiver (as new)	£229.99	£12.00
Bearcat DX-1000 short wave receiver	£199.00	£12.00
Lowe HF-125 short wave receiver inc. keypad	£275.00	£12.00
Global AT-1000 short wave listeners ATU	£45.00	£5.00
Tokyo HX-240 2m-HF Transverter	£160.00	£5.00
BNOS 12/6A 6 amp power supply with meter	£49.00	£12.00
Kenwood TR-751E 2m multimode (mint cond.)	£499.00	£12.00
Drake SSR1 short wave receiver	£199.00	£12.00
PK-232MBX multimode terminal	£269.00	£12.00
Yaesu FRG-9600 HF/VHF/UHF scanner	£289.00	£12.00
Sony ICF-7600 shortwave receiver (mint cond.)	£119.00	£5.00
Welz SP-220 SWR/Power meter	£49.00	£5.00
Kenwood TH-215E 2m handheld	£169.00	£5.00
Icom IC-2SRE 2m handheld with built in scanner (as new)	£350.00	£5.00

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HF ANTENNA COUPLER
SSB, AM, CW & DATA
FAST – INTELLIGENT – ACCURATE
OPERATES WITH ANY HF TRANSCEIVER

The Smartuner high technology coupler intelligently tunes any length antenna (8 to 80ft) in the HF band. The unit will operate with any HF transceiver within its specifications. The Smartuner switches 64 input and 32 output capacitance combinations plus 256 inductance combinations in a "pi" network resulting in over a half million different ways to ensure a perfect match for the transceiver, and, it remembers the frequency and the tuning values and will re-select these values in less than 10 ms next time you transmit on that frequency.

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inc p&p

- MICROPROCESSOR CONTROLLED
- NON-VOLATILE MEMORY
- WATERPROOF
- B.I.T.E. INDICATOR
- FOR MARINE, AVIATION, HAM AND PARA-MILITARY APPLICATIONS
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- 10 TO 150W INPUT POWER
- 10ms RETUNING TIME
- 8 TO 80ft ANTENNA (ALL Types)

Visa and Mastercard/Access Accepted

We are pleased to be able to offer the SONY range of Multiband Receivers. They feature all the latest technology allowing unequalled coverage of both broadcast and short-wave bands, yet remaining both compact and easy to use. All the models illustrated cover VHF broadcast, SW broadcast, and some models cover other bands as well.

The very latest model available from SONY is the ICF-SW77. This receiver covers LW, MW, SW and FM stereo broadcast bands and has SSB reception on the SW bands. A comprehensive keypad and LCD display give easy control over the massive array of features available.

THE NEW TRIO FROM KENWOOD

TH28E around **£249**
TH48E around **£279**
TH78E around **£425**
Plus a full range of batteries, cases, chargers, tone boards and microphones

With three new handhelds in Kenwood's range there's something for everyone. Novices and experienced users will appreciate a whole range of new facilities in the UHF model, TH48E and with airband receive on the TH28E, 2m users have a lot to gain as well. They may be single band sets but they have dual band receive capability, allowing crossband working. The TH78E must be the most versatile dual bander on the market, with receive versatility approaching one of the better scanners! Duplex operation and cross band repeater operation is so easy! All feature Kenwood's unique alphanumeric message paging system to help you keep in touch.

THE PHOENIX RISES!

Not that the TS950 ever died, but the new TS950SDX will probably take you to new DX horizons. Once again Kenwood engineers have set a new standard in performance and ease of use. Better receive performance and new control software are among the highlights but let's tell you a few others...

PRICE: £3229.00

- ★ Built in DSP for RX/TX
  Front panel menu controllable tailoring RX/TX passbands
- ★ 50 volt MOSFET finals
  Excellent linearity for optimum performance and enhanced reliability
- ★ Direct digital synthesis
  1 Hz tuning steps, especially useful for digital mode operation
- ★ AIP — advanced intercept point
  Kenwood's exclusive circuit provides a superior dynamic range off 108dB
- ★ Expanded sub-receiver functions
  Including CW filter selection
- ★ Comprehensive front panel
  Menu system to customise operation
- ★ RM-1 remote function keypad included
- ★ Built in automatic antenna tuner
- ★ Quick memory feature
  Five memory channels for quick recall
- ★ SSB IF slope tuning
  IF VBT and AF VBT for CW, IF and AF notch filters (all modes except FM)
- ★ 100 memory channels
  Store frequency, mode, filter setting, auto tuner, tone frequency
- ★ Built in CW memory keyer
  Optional DRU-2 enables voice memory
- ★ TF Watch, TF Set, Delta F (frequency offset)
  For easy operation during split frequency DX chasing
- ★ Optional MC 90A microphone
  To exploit performance characteristics of DSP

ATTENTION!!

PHOTO ACOUSTICS LTD WILL PAY CASH
FOR ANY GOOD CLEAN AMATEUR RADIO OR SHORTWAVE EQUIPMENT.
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PHOTO ACOUSTICS

Keylines

In the three years I've occupied the *PW* editor's chair, I've often commented on the poor public awareness of our hobby. The recent events involving a scanner user and eavesdropped conversations, allegedly involving prominent people, have once again placed us in the media spotlight. .

Unfortunately for the hobby, and innocent radio amateurs and s.w.l.s alike, the tabloid press (and in one instance a 'quality' paper) don't seem to know what amateur radio is about. Although the newspapers concerned have been told that the term 'radio amateur' infers that the person is licensed by the Department of Trade and Industry to transmit, they insist on using the term wrongly.

Bible Story

Amateur radio in Britain needs a powerful voice to stand up and shout on its behalf. However, having tried in vain myself to convince the media that the purchase of a scanner does not make someone a radio amateur, a well known Bible story may prove useful!

The Bible tells us that the walls of Jericho "Came tumbling down" due to the actions of massed voices and trumpets. Perhaps we should try it too! Nowadays, we wouldn't get far with a trumpet (a loudhailer perhaps) but we do have the telephone, our pens and the many hands to wield them.

So, rather than leaving the task of telling the media what amateur radio and short wave listening is all about, to just a few stalwart people, let's try the Jericho approach. Let's face it, even if only 10% of radio amateurs and listeners wrote, telephoned or complained about misrepresentation in the media to the culprits themselves, they'd be inundated. Maybe even their walls would crumble!

Against All Odds

I know how hard my colleagues on *Short Wave Magazine*, and the RSGB (yes they were trying their best, against all odds) were also working to protect the name of the hobby. But you can help too, using your local influence by contacting your local newspaper, radio station and community organisations, and telling them what the hobby is all about.

You can help protect amateur radio and short wave listening. Don't be apathetic, let's get operation 'Jericho' off the ground and rid amateur radio and short wave listening of this unwarranted and unfair stigma.

Free Catalogues

Several readers have written to me recently, complaining about the inclusion of free catalogues with *PW*. Speaking for myself, I was surprised at this reaction because I consider that any source of possible components and other items for home-brewing must surely be welcomed.

As it happens, we are presenting the comprehensive Mainline Electronics catalogue this month, and I feel that it will prove useful to very many of our readers. I'm particularly pleased to see that this company is offering microwave and other specialised components.

In a way, I feel that including a catalogue is like returning to the days when *PW* was full of adverts from the smaller, specialist components dealers such as John Birkett in Lincoln.

John, who I've known for many years, won't be offended when I say that he and others like him, are difficult to find nowadays. Fortunately John Birkett, and one or two others, still regularly advertise their wares in *PW*.

Dther specialist dealers can still be found if you go to rallies. But such events aren't always an easy option (or an enjoyable one) for everyone and many people don't go to rallies or shows.

I'm pleased that we can include catalogues for the benefit of our readers. A magazine without advertising would cost the earth, and then where would we find those components?

As I've already mentioned, not everyone enjoys rallies. However, you've always got a choice when it comes to attending a particular event, and if you don't want go, you'll find something else to do.

It's just the same if you don't like the catalogue. It's there if you need it, and if you don't, you can pass it on to someone who could find it useful. The choice is yours, and it doesn't cost you anything extra.

Language Theme

Our special 'learning a foreign language' theme this month came about directly because of readers' response to one of my 'Keylines' earlier in the year. The editorial team hope you find the various articles interesting, and if you do take up another language, you'll find it fascinating.

I've got to admit that I'm becoming more involved in the study and learning of other languages. I'm enjoying using the new Linguaphone CD courses now (yes you can even get them on this format now!) and the enjoyable BBC video language courses.

My family think my language studies are becoming an obsession! However, I don't really think I'm obsessed. I can quite easily cope with an Italian language tape on the way to work, and Spanish on the way home. I think my wife's objection to preparing the evening meal menu in English, French, Italian and Dutch is quite unreasonable!

Joking apart, I hope you enjoy this month's *PW*. You may even win this month's competition, and learn Italian with the new BBC 'Get By In Italian' audio and video cassette course.

Keep writing in, as we're always interested in your comments. We've already received some interesting feed-back from readers on buying computers at car boot sales, and on computing in radio.

So, keep those pens busy, because your letters provide valuable ideas for future projects. And don't forget to come and meet the team at the Leicester show in October. We're looking forward to chatting to old and new friends.

Rob Mannion G3XFD

Services

Queries
We will always try to help readers having difficulties with a *Practical Wireless* project, but please note the following simple rules:
1: We cannot give advice 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* for past years are available at £1.80 each including post and packing.
Binders, each holding one volume of *PW* are available price £5.50 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 issues 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.
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 a London Clearing Bank). Access, Mastercard or Visa please.

Receiving You

☆☆☆☆☆☆☆☆☆☆☆☆☆☆ STAR LETTER ☆☆☆☆☆☆☆☆☆☆☆☆☆☆

Dear Sir

Reference the letter in September from Mike Hahn G4JRB regarding old computers.

As a possessor of a VIC20, recovered from a junk bin, complete with many accessories sufficient to make a working system, I would very much welcome a series of articles about add-on improvements and available software for old computers.

A swap club for software for these computers might also be a useful facility for the magazine. As a dyed-in-the-wool DIY and recycling enthusiast (junk collector my wife says) I have been trying to persuade the VIC20 to decode RTTY.

I am some way through writing a BASIC program with this in mind. But I am learning BASIC at the same time! If this is successful, AMTOR would be the next step. Packet would be too much for the very limited unexpanded VIC20 memory, I feel.

I am not a subscriber at present, but rely on friends returning from UK to bring the latest copy. If my entry to this month's competition is unsuccessful, I will be seriously considering becoming a subscriber. Keep up the good work!

Peter Rhodes G4DCM, Alicante, Spain

Editor's reply: Thank you Peter, your ideas are interesting. Perhaps other readers would let us know their suggestions on computing in radio and what they'd like to see in *PW*.

Dear Sir

I'm writing to you about the Zimbabwe 28MHz beacon Z21ANB. A considerable amount of time is involved in correspondence to those who report on reception of the above beacon. We sincerely appreciate the reports which are sent, but in order to reduce the time spent replying, and to possibly stimulating the interest of others, would it be at all possible for you to include specifications of Z21ANB in a future edition of your publication?

Publication will help warn listeners of possible periods when the beacon could be forcibly closed. These are the operating parameters:

The Zimbabwe Amateur Radio Society beacon Z21ANB is sited in Bulawayo (Grid Locator KG49). The output is 8W and the antenna is a ground plane placed on an office roof 11m above ground. The frequency is 28.250MHz.

The equipment is old, but it's lovingly tended by Eric (Z21BC/R) and Peter (Z2IHC/R).

One aspect of the national situation merits comment. Because of the very serious drought in Africa, and the necessity to conserve electricity, a plan has been evolved by the Zimbabwe Electricity Supply Authority for rotational power load shedding. This means that there may be occasions when the beacon is not heard. This may not be due to propagation conditions, but because of power cuts.

In the circumstances, the beacon co-ordinator hopes that the stoppages will not be excessive, and that listeners will make a second check before reporting the beacon non-functional. Your co-operation and help would be sincerely appreciated.

Molly E. Henderson Z21JE
Secretary of Council
Zimbabwe Amateur Radio Society
Harare

Editor's reply: We're only too pleased to help Molly. It's fascinating to know the story behind the beacons. Perhaps, next time someone's on the office roof, they'll take a photograph we can use in *PW*.

Dear Sir

I wonder if anyone has had an experience with their callsign like me?

I passed the Morse test at the end of April this year. I had to wait two months for the A licence. Anyway, it finally appeared after two phone calls to SSL, on June 20th.

The callsign was G0RSR, and I got on the h.f. bands very quickly. In under two weeks I worked 33 DXCC countries. In the meantime I had gone out a purchased QSLs, a brass plaque, and a callsign badge, none of which were cheap.

I was very happy, until I received a letter from the SSL accounts Director and another validation certificate for G0SFV. They had issued the call G0RSR to me in error. It was apparently reserved for a radio club.

They apologised for this, saying if it had caused any inconvenience to write for them which I have done. I said in that letter that I am amazed, why did it take them nearly two months to inform me? I have listed things I purchased for the G0RSR call as I think the least they can do is reimburse me for those items.

So I am in possibly the unique position of having two valid callsigns, as they haven't formally revoked G0RSR! What do you think of all that?

D. J. Burton G0SFV, Brighton, Sussex

We contacted Subscription Services Ltd., who state that they are "a wholly owned enterprise company of the Post Office", regarding Mr Burton's tragi-comic case. Here's their reply:

Dear Sir

Thank you for the opportunity to reply to Mr Burton's letter. Since April 1992, SSL has been responsible for the management and administration of all Amateur Radio and Citizen Band Licences on behalf of the Radiocommunications Agency.

With a central database of over 160 000 names, addresses and licence details, SSL provides a full support service. This includes the reservation and issuing of callsigns, co-ordination and distribution of Validation Documents, handling of payments and the issuing of renewal notices and reminders.

Due to the complexity of this computer system, I am sure you can appreciate that there were a few initial problems. Unfortunately, this resulted in a very small number of duplicated callsigns being issued to customers, all of which have now been rectified.

I would like to apologise for the inconvenience that Mr Burton has experienced due to this initial set-back. To date, the Radio Licensing Centre has not received Mr Burton's most recent letter, therefore we shall be contacting him directly. Furthermore, I wish to assure him that I shall personally see that Mr Burton's case is fully investigated and taken through to a satisfactory conclusion.

SSL is constantly examining its current operating procedures and looking at ways in which we can provide an even more efficient service to our customers. Indeed, on a lighter note, we have received complimentary correspondence congratulating SSL on its prompt response to enquiries. And I am pleased to say we are now issuing the majority of callsigns well within the publicised 2 to 3 weeks.

Bob Lessels, Head of Sales & Marketing
The Radio Licensing Centre, SSL, PO Box 884, Bristol BS99 5LF

Editor's comment: As I've been asked by various readers why SSL only advertise a PO box number, I asked them the reason. It turns out that each licensing department has its own PO box number to make sure the mail goes directly to the right office.

Dear Sir

As a subscriber of *Practical Wireless* of some years. I wish to support your policy of including a citizens' band feature every month. However, I have a number of reservations concerning the content of the feature.

In this country the citizens' band system has clear boundaries which define the frequency, mode, power level and antenna dimensions that can be used. Anything which deviates from this clearly is no citizens' band radio, and should not be included in the feature.

The first point that I feel should be reconsidered, is the inclusion of reports and information from operators on the 934MHz band. They appear to be well organised and prepared to pursue the technical knowledge necessary for success on that band.

May I suggest that the 934MHz operators' needs will be better served by allowing their reports to be included in the magazine's 'VHF Up' column? David Butler G4ASR can include them in correct spectral position relative to the amateur bands. If the feed-back is positive, the occasional dedicated article for this band could be published.

I would like to hear your comments on this suggestion, as 934MHz operators work much closer to the amateur radio disciplines than their 27MHz counterparts. The opportunity to encourage them should not be missed.

Much work can also be done on 27MHz, and this interesting band must not be ignored because of the negative elements who are in the minority. Why not encourage people to accept their limitations of the licence? This would be a considerable challenge that could be done through the pages of *PW*.

Let's hear other readers' opinions, so that you can continue to keep *Practical Wireless* the best radio magazine on the shelves.

David G. Neal G7JCO
Newmarket, Suffolk

Editor's reply: Thank you or your long and interesting letter David. I will be passing your letter over to David Butler G4ASR. Our CB contributor 'Quaynotes' is away at the moment, but perhaps we'll have a sackful of letters for him when he returns from his extended holiday. So get writing all you 27 and 934MHz enthusiasts.

Dear Sir

Responding to your request for views on your reviews. I agree with what appears to be a general opinion, that reviews should concentrate on the less expensive items and kits. In fact, nothing costing more than about £200, and many costing much less.

Those willing and able to move into four figure purchases are well catered for by the dealers, who will supply the needed specifications, and sometimes reprints of reviews from various sources. But with a title like *Practical Wireless* please keep it just that - Practical.

I am sure the majority of us must fit in amateur radio with other pressing part-time interests such as DIY and gardening, etc. All consuming our time and financial resources.

Richard Pattinson GW3KVX, Powys, Wales

Editor's reply: Any more comments on this point readers?

Dear Sir

I thought I would take the opportunity to draw your attention to the fact that the central Isle of Wight County Library service at Newport had ceased the purchase of the *PW* magazine. This move, if extended, may I feel, put a barrier to youngsters and prospective newcomers into considering wireless as a hobby.

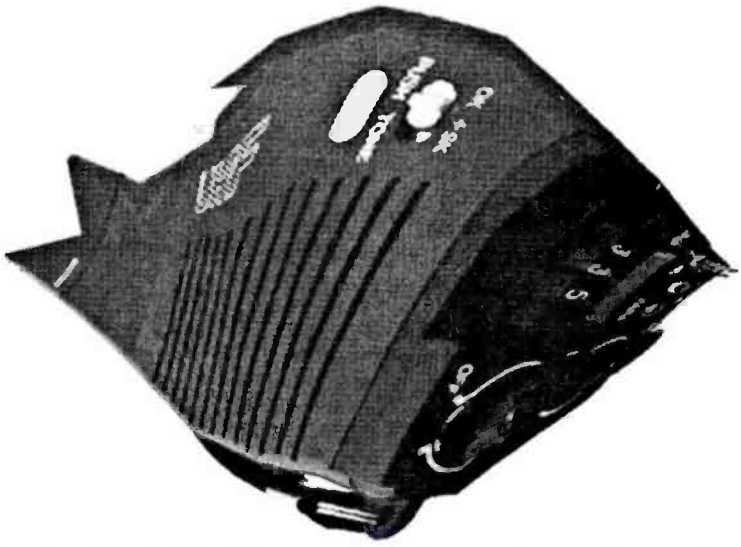
I have written a complaint to the County Librarian Mr A. Payne asking for it to be re-instated but without success. You may feel perhaps he should be sent some promotional information/literature.

A. Gardner, Newport, Isle of Wight

Editor's reply: Thank you for your letter and suggestion Mr Gardner. Unfortunately, libraries are facing cut-backs, and I feel you have a valid point. However, I know many libraries still carry *PW* as my wife's mother reads it in Southampton Central library, so there won't be any mother-in-law jokes on this page!

COMPETITION CORNER

Spot The Rig And Win A Cushcraft R5 Vertical Antenna Or The New Italian Video And Audio Cassette Language Course From The BBC!



Can You Smell A Red Herring ? Get Hooked On Our Competion And You Could Land A Large Scale Prize!

First prize is A Cushcraft R5 Vertical Antenna (as reviewed in September *PW* by G3XFD) kindly donated by **Specialist Antenna Systems**, and **Second** prize is the BBC Italian Language Course, **Third** prize is a one year subscription to *PW* or vouchers to the same value.

I think this rig is an.....

Name.....
Address .....
.....
.....
.....

❑ Subscription ❑ Voucher

Send your entry (photocopies acceptable with coupon) to: Competition Corner, Spot The Difference, November '92, PW Publishing Ltd., Enefco House, The Quay, Poole, Dorset BH15 1PP. Editor's decision on the winner is final and no correspondence will be entered into. Entries to reach us by Friday November 20.

Competition Corner Nov '92

Newsdesk '92

35th Jamboree On The Air
October 17-18th

The 35th JOTA will be held over the weekend of October 17 and 18th.

The JOTA is a world-wide event. Units may operate for 48 hours, from Saturday 00.00h to Sunday 24.00h local time. Due to the world's time difference, this period is not the same for everyone.

Any authorised frequency may be used to establish a contact. National radio regulations must be strictly observed. To easily find each other listen on the agreed World Scout Frequencies, which are:

Band	SSB	Morse
80m	3.740 & 3.940MHz	3.590MHz
40m	7.090MHz	7.030MHz
20m	14.290MHz	14.070MHz
17m	18.140MHz	18.080MHz
15m	21.360MHz	21.140MHz
12m	24.960MHz	24.910MHz
10m	28.990MHz	28.190MHz

For further details, contact:
World Scout Bureau, Box 241
1211 Geneva 4, Switzerland

Bowes Museum Calling Europe

The summer of 1892 saw the Bowes Museum, on the outskirts of Barnard Castle in Teesdale, open its doors to the public for the first time. One hundred years, and countless visitors later, the Bishop Auckland Radio Amateur's Club (BARAC) helped celebrate the museum's centenary with their Special Event Station GB100BMC.

The use of radio to mark the event was appropriate as Project Director David Rennie explained. John Bowes, founder of the museum, together with his French wife Josephine, had strong European connections and travelled widely abroad. They were, he concluded, far ahead of their time in their vision of a peaceful and united Europe, and bearing in mind the inaugural BBC motto "Nation Shall Speak Unto Nation" it seems certain they would have approved.


Members of the BARAC

The GB100BMC event was not without its problems as club member Ken Ritzema G0MLP pointed out. A portable building in the museum grounds with a G5RV mounted above proved to be the best option, with the station's Kenwood TS440S logging 660 contacts until close-down on August 23.

All concerned consider the venture a success, not only in terms of publicising Teesdale in general, but also with regard to promoting its cultural heritage. A copy of the log is to be presented to the curator and will be stored in the museum's archives, a possible centrepiece for the bi-centennial display 100 years hence. One can only wonder what BARAC will be planning then - GB200BMBC perhaps.....?

Exeter Wireless Society 72 Years

The Exeter ARS special event station GB2EWS, celebrated the 72nd anniversary of the Exeter Wireless Society. Left to right: G3EWS, G3TDW, G7GQU, G4YWR, with Jim Gapper, Deputy Mayor of Exeter, former member of EWS, at the microphone.

Amateurs Help Out

On Sunday June 21, licensed amateur radio operators, from the Stevenage & District RS, provided a communications network, watching over 450 or more sponsored runners in the North Herts 10km street race.

From transmitters stationed around the course, valuable progress reports were sent to the base radio station at Plinston Hall. The race organisers were constantly aware of the position of the lead runners, and in an emergency, first aid assistance could have been swiftly called to the spot if required.

Anyone interested in amateur radio activities in the Stevenage/North Herts area, please contact **Peter Good G7HCL on (0438) 724509.**

Science Course

Five members of Yeovil Amateur Radio club, Rob G3MYM, Adrian G4JBH, Linda G0PWJ, Haydn G1PZK and Nick G7GNQ, will be devoting their time to bring amateur radio to a group of 14-year old pupils attending the annual Kilve Court Space Science Course. This will be held from October 26 to 30th at Kilve Court Centre, Somerset.

This year's special radio event, will be an introduction to, and demonstration of amateur slow scan television. A transmitting/receiving station will be on the air, enabling pupils to have 'hands on' experience of this very popular branch of amateur radio.

A special event station G3KSS, will be on h.f. and v.h.f. during the five days of this course.

Anyone wishing to attend, or to obtain further details, please contact **Adrian G4JBH or Linda G0PWJ**, both QTHR.

Maplin News

The 1993 Maplin Buyer's Guide to Electronic Components features 704 pages of products and components, and also features hundreds of brand new and upgraded products.

In addition, each catalogue has £50 worth of money saving vouchers, linked to the amount spent or to be used on special items. For example, there are two £1 off vouchers if you spend more then £20 (£5 off if you spend more than £100).

For subscribers, a new 5% discount club card covering most purchases over the value of £20 from the new Maplin Catalogue has been introduced.

Available from Maplin shops or branches of WH Smith at £2.95, or £3.45 (mail order) **PO Box 3, Rayliegh, Essex SS6 8LR.**

Maplin have recently announced the forthcoming launch of Maplin (South Africa) in Southern Africa.

Maplin (South Africa) will commence business in November of this year.

The Southern African edition of the new Maplin catalogue will include a supplement priced in rands, as well as details of how to order goods from the new service.

Similar to the service currently provided in the UK, Maplin's southern African customers will be able to order goods either by mail, telephone, FAX or electronic mail.

Orders received in their Cape Town offices will be transferred at the end of each working day to Maplin here in the UK, who will despatch within 24 hours to London's Heathrow Airport. With daily flights to Johannesburg and Cape Town, and taking into account the clearing of customs in South Africa, customers should expect to see their goods arrive within approximately seven to 10 days.

Reg Ward & Co. Break-In

Reg Ward & Co. has recently been the victim of a break-in, despite considerable security measures.

The items that were taken may have been stolen 'to order', as they were not the normal type of items to be stolen.

The company are offering a reward of £1000 for information leading to the recovery of the stolen goods and apprehension of the offenders.

The serial numbers of the stolen items are as follows:

FT1000	serial number 0H070257
IC735	serial number 10030039259
HX240	

If you have any information regarding any of the above, please contact **Reg Ward & Co. on (0297) 34918, or Sergeant Amey of Axminster Police on (0297) 32231.**

The First Practical Wireless 'Elmer' Award

The first *Practical Wireless* 'Elmer', Dr. Ken Smith GJIX, has been chosen from nominations received up until the closing date on 7 September 1992. Ken, as he's known to all his friends, received many nominations from members of the Thanet Electronics Club.

Dr. Smith works in the Electrical Engineering Department of the University of Kent at Canterbury. He has been active in amateur radio for many years, particularly in the youth work aspect of the hobby.

Presentation of the award will take place at the 21st anniversary Leicester Show on Saturday October 24. The *Practical Wireless* team thanks everyone who nominated a large number of possible 'Elmers' for 1992, and looks forward to receiving nominations for 1993.

Editor, Rob Mannion G3XFD, meets some of the scouts on their stand at the NEC, Birmingham, May 30 to 31st.

GB4 Royal Signals Llandudno

GB4 Royal Signals Llandudno will again be activated over the period October 30 to November 1, at the Aberconway Centre, Llandudno, from the club room. Helping again will be Syd Richards GW0PPG.

RAE Courses

Medway District Adult Education Centre, Eastgate, Rochester-upon-Medway, Kent ME1 1EW. Tel: (0634) 845359. RAE daytime and evening courses. The daytime RAE course will be held at the above centre, course tutor Ray Petri G0OAT.

The evening RAE course will be held at Rede Evening Institute, Carnation Road, Strood. Both courses commence September. All enrolment enquiries to the Main Office, Medway District Adult Education (address above).

Somerset College of Arts & Technology, Wellington Road, Taunton TA1 5AX. Tel: (0823) 283403. Part-time CGLI 765 radio amateurs evening course. The course is of 30-weeks duration of one evening per week, 7 to 9pm. More details from **Ian Moore (Director of Studies) on (0923) 283403 ext. 373.**

Gosforth High School, Knightsbridge, Gosforth, Newcastle-on-Tyne NE3 2JH. RAE course of 24 weeks, plus three weeks revision to the exam in May. For more information, contact **Michael Stott G0NEE on (0661) 832020.**

New Component Leaflet

Torberry Engineering Company Ltd., the Hampshire-based electronic/electrical component distributor have published a new leaflet giving highlights of their extensive range of electrical contacts, carbon brushes, electronic/electrical connectors for mobile and standing equipment. Traditional lines include microswitches, fuses, d.c./d.c. converters, hand and hydraulic crimping tools.

For further information, contact **Ken Button on (0730) 894488.**

Worthing & District ARS Walk

On June 7, members of the Worthing & District ARC, launched themselves on a sponsored walk from Worthing Lifeboat Station to the Shoreham Lifeboat Station. It was in aid of the Worked All Britain Lifeboat Appeal, to celebrate 25 years of Worked All Britain.

The members managed to raise the total sum of 3912.83 towards to purchase of a Class D inflatable lifeboat.

Members of the club who took part in the walk, taken at Shoreham Lifeboat Station.

GB1 Eagle Centre Derby

After the success of the special event station GB1ECD on Saturday 29 February 1992, the members of Radio Link will be operating the station again on Saturday October 17. It will be active between 0900 and 1600 hours, from the Shopping Centre Manager's Office in Copecastle Square, Eagle Centre, Derby.

The special event station will be operated on 144MHz, and members hope to make contact and pass on greetings to approximately 70 other amateur radio stations within an 80km radius of Derby.

Radio Link is voluntary organisation and registered charity who provide programmes from their studios at the Derby City Hospital for 55 hours per week. The programmes go to the Derbyshire Royal Infirmary, Derby City Hospital, Kingsway Hospital, Derbyshire Children's Hospital and Nightingale Continuing Care Unit.

Special Event Station ON4CLM

In the autumn of 1944, Canadian troops fought a long and exhausting battle in the Belgian coast area. On 1 November 1944, the town of Knokke was finally liberated at great cost of Canadian lives.

Each year, the fallen Canadians are remembered with ceremonies, festivities and a 'Canadian Liberation March', during 'Canadian Week'. Many Canadian and Belgian veterans, radio amateurs and VIPs, participate in the events.

You can contact or listen to ON4CLM on the following frequencies:

SSB	3.685	7.045	14.145	21.245	28.545	144.250MHz
CW	3.515	7.012	14.020	21.020	28.020	144.020MHz
FM	145.475MHz					

For QSLs and more details, please write to:
Radio Station ON4CLM
PO Box 110
B-8300 Knokke Heist
Belgium

Club News

Please send in all of your 'Club News' items to Sharon George at the editorial offices in Poole.

Avon

Bristol ARC meet at 159th Scout HQ, Firtree Lane, St. George, Bristol. October 15 is a management meeting, the 22nd is home-brew equipment competition, the 29th is a computer evening with Barry G0CFM, November 6 is their AGM/home-brew contest prize giving & the 12th is QRP/home-brew play & display night with Dave G4ZBT. More details from **Lance Whitelegg G0CCU on (0272) 721744.**

Bedfordshire

Dunstable Downs RC meet Fridays, 8pm at The Old Mill, West Street, Dunstable, Beds. October 23 is a Junk Sale. Further details from **Wendy Jefferson on (0582) 451057.**

Berkshire

Reading & District ARC meet 2nd & 4th Thursdays, 8pm at The Woodley Pavilion, Woodford Park, Haddon Drive, Woodley, Reading. October 8 is 'Club Internal Quiz' by Chris Young G4CCC. **More details from Nick Challacombe G0LGG on (0734) 722489.**

Buckinghamshire

Aylesbury Vale RS meet 1st & 3rd Wednesdays, 8pm in the Village Hall at Hardwick. October 21 is Surplus Equipment Auction & November 4 is a mini construction contest. Further details about the club from **Martin G4XZJ on (0296) 81097.**

Milton Keynes & District ARS meet 2nd Mondays at North Bucks Youth Sports Hall, Haversham Road, Wolverton, Milton Keynes. October 12 is their AGM & November 9 is a Junk Sale. For more information, please contact **Julian Winson G3FGB on (0908) 611005.**

Cheshire

Stockport RS meet 2nd & 4th Wednesdays, 7.45pm in Room 14 of the Dialstone Centre, Lisburne Lane, Offerton, Stockport, Cheshire. October 28 is Sprectrum Analyser by G3LX/G3SHW & November 11 is a construction contest. Further details from **Jim France G3KAF on 061-439 4952.**

Clywd

Delyn RC meet every other Tuesday, 8pm at the Gwernymyndd Community Centre in Gwernymyndd, near Mold, Clwyd, North Wales. October 20 is Model Engineering by Line Shooter & November 3 is Hot Pot Supper. For more details, contact **Steve Studdart GW7AAV on (0244) 819618.**

Wrexham ARS meet at the Maesgwyn Community Centre, Maesgwyn Road, Wrexham. October 20 is a natter night & November 3 is a talk on 'British Nuclear Fuels Limited'. More details from **Ian Wright GW1MVL, 'Derwydd', 2 Duke Street, Rhos, Wrexham, Clwyd LL14 1SY. Tel: (0978) 845858.**

Derbyshire

Buxton Radio Amateurs meet at the Lee Wood Hotel, Buxton at 8pm. October 13 is a Home-brew night, the 27th is Events 1993 & November 10 is their AGM. For further details, contact **Derek Carson G4IHO on (0298) 25506.**

Derby & District ARS meet Wednesdays, 7.30pm at 119 Green Lane, Derby. October 14 is a Video show, the 21st is 'The Morse Test Service' by Ken Griffin G4HDP, the 28th is 'The Gas Distribution System', illustrated talk by Mr O. Smyth of British Gas, November 4 is a Junk Sale & the 11th is a night on the air. More details from **Richard Buckby G3VGW, 20 Eden Bank, Ambergate, Derby DE5 2GG. Tel: (0773) 852475.**

South Normanton & Alfreton District ARC meet at the New Street Community Centre, New Street, South Normanton, Derbyshire, 7.30pm. October 12 is a talk on 'Airband' by G4DFZ, the 19th is a Junk & Equipment Sale, the 26th is a talk by G0GHD on 'Computers In Modern Engineering', November 2 is a natter night & the 9th is a night on the air. More details from **Phil G6YAL, 6 Victoria Street, Alfreton, Derbyshire DE5 7GS.**

Devon

Torbay ARS meet Fridays, 7.30pm at the ECC Social Club, Highweek, Newton Abbot. October 23 is a talk & slide show of Mont Blanc by Fred G4FLW. More details from **Andy Stafford G4VPM on (0803) 329055.**

Dorset

Poole RAS meet 2nd Fridays, 7pm at Lady Russell-Coates House, Lower Constitution Hill Site, Bournemouth & Poole College of FE. October 9 is a talk by Tex G1TEX on 'Publishing - Past & Present'. More details from **Vernon Cotton G3BCI, 45 Branksome Hill Road, Bournemouth, Dorset BH14 9LF. Tel: (0202) 760231.**

South Dorset RS meet 1st Tuesdays, 7.30pm in the Wessex Lounge of Weymouth Football Club. November 3 is an activities evening. **Geoff Gwillian G4FJO, 13 Overlands Road, Wyke Regis, Weymouth DT4 9HS. Tel: (0305) 781164.**

East Sussex

Southdown ARS meet 1st Mondays, 8pm in the main hall of the Chaseley Home for the Disabled, South Cliff, Eastbourne. November 2 is a talk by David Summer G3PVH on 'Updating The Baird Television System'. Details from **John Vaughan G3DQY on (0323) 485704.**

East Yorkshire

North Ferriby United ARS meet Fridays, 8pm at the North Ferriby Utd. FC Social Club, Church Road, North Ferriby, East Yorkshire. October 9 is Recent QSLs & QSOs of interest, the 16th is Final preparation for JOTA, the 23rd is a night on the air, the 30th is 'The Way Ahead' Ken G4VKK & November 6 is 'Top Band DX' Neil G4DBN. Further details from **Frank Lee G3YCC on (0482) 650410.**

Essex

Clacton RC meet alternate Wednesdays in The Imperial Public House, Rosemary Road, Clacton-on-Sea. October 28 is a talk by Adrain Keeble G4HPU on 'WAB Awards'. **For their membership details, phone (0255) 672606, 436565 or 615207.**

Gloucestershire

Gloucester ARS meet Wednesdays, 7.30pm at St. John Ambulance HQ, Heathville Road (off London Road), Gloucester at 7.30pm. October 14 is construction group, the 21st is Packet Self Help Group & the 28th is home-brew clinic. Further details from **Jenny Beckingham G7JUP on (0452) 528533 Ext. 2734.**

Greater London

Acton, Brentford & Chiswick ARC meet 3rd Tuesdays, 7.30pm at Chiswick Town Hall, Heathfield Terrace, London W4. October 20 is a talk by Len Salaman on 'The Real Radio Industry - Pre-war'. Further details from **Colm Mulvany G0JRY, 11 Erconwald Street, London W12 0BP. Tel: 081-749 9972.**

Crystal Palace & District RC meet 3rd Saturdays, 8pm at All Saints Parish Rooms, Beulah Hill, London SE19 (opposite junc. Grange Road). October 17 is 'Oscilloscopes' by Peter Hale G2HS. More details from **Marino Fiorentini G7HUC on 081-653 1090.**

Edgware & District RS meet at the Watling Community Centre, 145 Orange Hill Road, Burnt Oak, 8pm. October 8 is a club meeting, the 9/13/14/16th is Edgware Activity Period, the 17th is Jamboree on the air, the 22nd is Morse training evening & November 12 is Gas Turbines revealed, Ian Cope G4IUZ. More details from **Howard Drury G4HMD, 11 Batchworth Lane, Northwood. Tel: (0923) 822776.**

Silverthorn RC meet Fridays, 7.30pm at The Chingford Community & Adult Education Centre, Friday Hill House, Simmons Lane, Chingford, London E4 6JH. October 30 is their AGM & November 6 is a Quiz night against Loughton & DARC. More details from **Andrew Mowbray G0LWS on 081-529 4489 between 5.30 & 6.30pm weekdays only.**

Southgate ARC meet at Winchmore Hill Cricket Club Pavilion, Firs Lane, Winchmore Hill, London N21. October 8 is a Junk Auction, the 22nd is a club meeting & November 12 is construction contest judging for the G6QM trophy. **Brian Shelton G0MEE, 22 Berkeley Gardens, Winchmore Hill, London N21 2BA. Tel: 081-360 2453.**

Gwynedd

Dragon ARC meet 1st & 3rd Mondays, 7.30pm at the Four Crosses Hotel, Menai Bridge. October 12 is a slow scan television evening, the 31st is club stall at North Wales, November 1 is radio & electronic show & the 2nd is a video evening. **Tony Rees GW0FMQ on (0248) 600963.**

Hampshire

Basingstoke ARC meet 1st Mondays, 7.30pm at the Forest Ring Community Centre, Sycamore Way, Winklebury, Basingstoke. October 17 is Jamboree on the air - Oakley Scouts, the 25th is 144MHz Foxhunt - OS175 - Fox: Dave G4WIZ & November 2 is 'Raynet - Past, Present & Towards 2000' by G0EWO. For further details, phone **(0256) 25517.**

Horndean & District ARC meet 1st Thursdays, 7.30pm at Horndean Community School, Barton Cross (off Catherington Lane), Horndean, Hants. November 5 is HF contesting by Ed Taylor G3SQX. For more information, contact **Stuart Swain, 35 Mavis Crescent, Havant, Hampshire PO9 2AE. Tel: (0705) 472846.**

Itchen Valley RC meet 2nd & 4th Fridays, 7.30pm at the Scout Hut, Brickfield Lane, Chandlers Ford. October 16/17/18th is JOTA - Romsey Scouts. Further details from **Maurice Cheeseman G1IPQ on (0703) 736784.**

The Three Counties ARC meet every other Wednesday, 8pm at the Railway Hotel, Liphook Hampshire. October 21 is a demonstration of Satellite Communications Equipment, Martelec Communications Ltd. & November 4 is New on the air - BBC Radio Surrey, speaker from the BBC. **Kevin Roche G8GOS on (0420) 83091.**

Hereford & Worcester

Bromsgrove ARS meet 2nd & 4th Tuesdays, 8pm at Lickey End Social Club, Alcester Road, Burcot, Bromsgrove. October 13 is a night on the air, the 17-18th is Jamboree on the air, the 27th is a natter night & November 10 is a night on the air. **Mr D. Edwards G4ZWR, 2 Mason Close, Headless Cross, Redditch, Worcs B97 5DF. Tel: (0527) 546075.**

Bromsgrove & District ARC meet Fridays at Avoncroft Arts Centre, South Bromsgrove, Worcester. October 9 is 'Loop Antenna' G0KIN. More details from **Joe Poole G3MRC on (0562) 710010.**

Hertfordshire

Dacorum AR & TS meet 1st (informal) & 3rd (formal) Tuesdays, 8pm at The Heath Park, Cotterells, Hemel Hempstead. October 20 is a Visit to County Cable, Maylands Avenue, Hemel Hempstead, at 7.30pm, followed by a talk about 'Cable TV' by David Mason, Network Technician for County Cable. Further details from **Dennis Boast G1AKX on (0442) 259620.**

Hoddesdon RC meet alternate Thursdays, 8pm at the Conservative Club, Rye Road, Hoddesdon, Herts. October 15 is an informal/project night, the 29th is a talk by Dennis G4IZU & November 12 is their AGM. Details from **Roy G4UNL on 081-804 5643.**

Humberside

Goole R & ES meet most Fridays, 7.30pm at the West Park Pavilion, West Park, Goole, last Fridays at the 'Black Swann Inn', Asselby. October 9 is a construction competition, the 16th is a talk on 'Power Supplies' by Andy G8ZCS, the 23rd is a Junk Sale, the 30th is a social evening (Black Swan Inn) & November 6 is G0OLE night on the air. Further details from **Steve Price G8VHL on (0405) 769130.**

Kent

Maidstone YMCA ARS meet Fridays, 8pm at the YMCA Sports Centre, Melrose Close, Maidstone, Kent. October 9/23 & November 6 is RAE & October 30 is a Junk Sale. More details from **Colin Roberts on (0622) 670936.**

Sevenoaks & District ARS. October 19 is "More Medical Electronics' by Peter Donaldson. Details from **The Secretary, c/o Sevenoaks District Council, Council Offices, Argyle Road, Sevenoaks, Kent TN13 1HG.**

Thanet RC meet 2nd & 4th Thursdays, 8pm at Hoverspeed Sports & Social Club, High Street, Manston, Kent. More details from **Mrs I. Whiffin G0CTQ, 42 Canute Road, Birchington, Kent CT7 9QH.**

Lancashire

Bury RS meet Tuesdays, 8pm in The Mosses Community Centre, Cecil Street, Bury, Lancashire. 2nd Tuesdays are Lecture/Talk nights & other Tuesdays are general natter nights with the club's 'new' rigs on the air. October 13 is a construction competition & November 10 is a Junk Sale. More details from **Colin Fox G3HII, 'The Lair', 5 Pinewood Crescent, Holcombe Brook, Ramsbottom, Bury BL0 9XE. Tel: (0204) 883212.**

Fylde ARS meet 2nd & 4th Thursdays, 7.45pm at South Shore Lawn Tennis Club, Midgeland Road, Blackpool. October 8 is an Equipment Sale, the 22nd is an informal & November 12 is a construction competition. **Eric Fielding G4IHF on (0253) 726685.**

Preston ARS. October 15 is a general discussion evening, the 29th is 'The Dalesway' an illustrated talk by Mr Moore & November 12 is 'QRP Radio Construction' a talk by Rev. Dobbs G3RJV. Details of their meeting place & time from **Eric Eastwood G1WCQ, 56 The Mede, Freckleton, Preston, Lancashire PR4 1JB. Tel: (0772) 686708.**

Lincolnshire

Louth & District ARC meet 3rd Tuesdays, 7.30pm at the Wellington Hotel, Ramsgate, Louth. More details from **Neil Bartholomew G0JXY, The Bungalow, Main Road, Grainthorpe, Lincs LN11 7HX.**

Spalding & District ARS meet Fridays, 8pm at The Riverside Centre, The Old Fire Station, Double Street, Spalding, Lincolnshire. October 9 is Building an HF Transceiver G4EMK. Further details from **David Johnson, 65 West Street, Bourne, Lincolnshire PE10 9PA. Tel: (0778) 425367 (6-7pm).**

Norfolk

Dereham ARC meet 2nd Thursdays, 8pm at the St. Johns Ambulance Hall, Yaxham Road, Dereham. October 8 is a night on the air & November 12 is Propagation G3YLA. More details from **Mark Taylor G0LGJ on (0362) 691099.**

Northants

Kettering ARS meet Tuesdays, 7.30pm at the Electricity Sports & Social Club, Eksdale Street, Kettering. October 13 is a talk by R. Millett of the Royal Signals & November 10 is a talk by John Allen, Regional Officer (RSGB) for the Kettering area. Further details from **Len G0RDV (but QTHR as G7EHM) on (0536) 514544.**

Nottinghamshire

Mansfield ARS meet at the Polish Catholic Club, off Windmill Lane, Woodhouse Road, Mansfield. November 5 is a talk by Chris Burbank G3SJJ on 'RSGB HF Contests - Hints & Tips' plus computer logging. Further information from **Mary G0NZA on (0623) 755288.**

Nottingham ARC meet Thursdays, 7.30pm at the Sherwood Community Centre, Mansfield Road, Nottingham. October 8 is Forum, the 15th is activity/construction/WAB, the 22nd is a talk 'Amateur Radio Observation Service' by Geoff G3STG, the 29th is a talk 'Portable Operating' by Jim G0CRZ, November 5 is Forum & the 12th is a talk 'Very Early Radio' by Ron G4NZU. Further details from **Ian Miller G4JAE on (0602) 232604.**

South Notts ARC meet at Highbank Community Centre, Farnborough Road, Clifton Estate, Nottingham, or Fairham Community College, Farnborough Road, Clifton Estate. October 9 is construction, the 11th is Foxhunt on Foot, the 16th is talk-in S22 & a talk on ATV by Richard G8BWC, the 23rd is on air, the 30th is a talk-in S22 & Junk Sale, November 6 is a talk-in S22 & open forum. For further details contact **Ray G7ENK on (0602) 841940.**

Oxfordshire

Oxford & District ARS meet 2nd & 4th Thursdays, 7.45pm at the British Legion Club, Haddow Road, Crotch Crescent, Marston Road, Oxford. October 22 is 'Mountaineering & Rock-climbing' by Mike Leask. More details from **Terry Hastings G0CFN on (0865) 863526.**

Scotland

Dundee ARC meet Tuesdays, 7pm in the College of Further Education, Graham Street, Dundee. October 13/27th are construction nights, the 20th is a talk by Ian Strachan GM4FLP on 'Raynet', November 3 is a lecture by a member of MEGS (Morse Enthusiasts Group Scotland) on 'Keys' & the 10th is a construction night. Further details from **George Millar GM4FSB, 30 Albert Crescent, Newport-on-Tay, Fife DD6 8DT.**

Somerset

Yeovil ARC meet Thursdays at Red Cross HQ, Grove Avenue, Yeovil, Somerset. October 8 is construction project testing G3PCJ, the 15th is Simple Fault-finding by G3AIK, the 22nd is construction project talk 2 by G4GVM & the 29th is is construction project testing G3PCJ. Further details from **Brian McIntyre G7KBE on (0300) 20975.**

Suffolk

Leiston ARC. November 3 is their AGM. Further details from **David Ferguson G6FS, 3 Aldeburgh Road, Leiston, Suffolk IP16 4JY.**

Sudbury & District ARC 'SANDRA' meet 1st Tuesdays, 8pm at the Five Bells Inn, Great Cornard, Sudbury, Suffolk. Further details from **Colin Muddimer G0PAO on (0787) 77004.**

Surrey

Surrey RCC meet at 'Terra Nova', The Waldrons, Waddon, Croyden, Surrey. October 19 is a natter night & November 2 is 'Artic Visit' by G0/PA3BHF. More details from **Berni G8TB on 081-660 7517.**

Sutton & Cheam RS meet 3rd Thursdays, 7.30pm at Sutton United Football Club, The Borough Sports Ground, Gander Green Lane, Sutton, Surrey, with natter nights on 1st Thursdays. October 15 is a Junk Sale, the 27th is a committee meeting & November 5 is a natter night. More details from **John Puttock G0BWV, 53 Alexandra Avenue, Sutton SM1 2PA.**

The Kingston & District ARS meet 3rd Wednesdays, 8pm at 'Alfriston', 3 Berrylands Road, Surrey KT5 8RB. October 21 is 'Packet Radio For Beginners' by Peter Burton G3ZPB. More details from **Ray Fuller on 081-398 1128.**

Wimbledon & District ARS meet 2nd & last Fridays in St. Andrews Church Hall, Herbert Road, Wimbledon SW19. October 9 is Desert Island Radio & the 30th is their AGM. **Chris Frost G0KEB, 61 Selbourne Avenue, Tolworth, Surrey KT6 7NR. Tel: 081-397 0427.**

Warwickshire

Stratford-Upon-Avon & District RS meet 2nd & 4th Mondays, 7.30pm at the Home Guard Club, Main Road, Tiddington, Stratford-Upon-Avon, Warwickshire. October 12 is work of the EMC committee, Bob Peace G8SOZ & the 26th is an evening with Herb OZ7SM. Further details from **Alan Beasley G0CXJ, 2 Ilmington Road, Blackwell, Shipston-on-Stour, Warwickshire CV36 4PE. Tel: (0608) 82495.**

West Midlands

Midland ARS meet in Unit 22, 60 Regent Place, off Caroline Street, Birmingham B1 3NJ. Wednesdays are RAE classes & Thursdays are natter nights. October 20 is their AGM, the 26th is a computer night & the 30th is an Atari night. For further details, contact **John Crane G0LAI on 021-628 7632 evenings.**

Solihull ARS meet 3rd Thursdays in The Shirley Centre, 274 Stratford Road, Shirley, Solihull, West Midlands. October 15 is their AGM. For more details, contact **Colin Taylor G3USA, 231 Robin Hood Lane, Hall Green, Birmingham B28 0DH. Tel: 021-777 9965 evenings or (0827) 53344 daytime.**

West Yorkshire

Denby Dale & District ARS meet at Pie Hall, Denby Dale, nr. Huddersfield, 8pm. October 14 is a Surplus Sale, the 21st is Kevin's Video Show & November 4 is their AGM. More details from **Ivan Lee, Clayton Lodge, Sunnyside, Edgerton, Huddersfield HD3 3AD.**

Keighley ARS meet at The Ingrow Cricket Club, Ingrow, Keighley, 8pm. October 8 is 'Microwaves the easy way (10 & 24GHz)' by G0DJA, the 15th is a night of the air GX0KRS/GX7KRC, the 22nd is a natter night, the 29th a Junk Sale & November 5/12th are natter nights. Further details from **Kathy Conlon G0RLO on (0274) 496222.**

Wakefield & District RS meet Tuesdays, 8pm in First Floor Rooms, Ossett Community Centre, Prospect Road, Ossett. October 13 is 432MHz Cumulative Contest/construction night, the 27th is on the air night, November 3 is a Pie & Pea construction competition & the 10th is 'The Packet DX Cluster System' by Steve Wilson G3VMW. More details from **Dave Ackrill G0DJA, 104 Durkar Lane, Crigglestone, Wakefield WF4 3HY. Tel: (0924) 240577.**

Yorkshire

Barnsley & District ARC meet Mondays in the radio club room & shack, at the rear of the Darton Hotel, Station Road, Darton, Barnsley. October 26 is an on the air night, November 2 is rally briefing & the 9th is a talk by George Dobbs. For further information, ring **Ernie, G4LUE on (0226) 716339.**

Bridlington & District ARS meet alternate Thursdays, 7.30pm in the Combined Cadet Building at Bridlington Upper School, Bridlington. October 15 is 'The Capacitor' by Rick G1YVL, the 29th is 'VHF Propagation' by Ted G8AZA & November 12 is 'Cadet Radio' by John G3XYF/Jack G5VO. More details from **Norman G4NJP on (0262) 673635.**

Hambleton ARS meet in West House, Allertonshire School, Northallerton at 7.30pm. October 8 is RAE, the 15th is a talk 'HF Linears' by G4KUX, the 29th is RAE, November 5 is a practical/ops night & the 12th is RAE. For more details, contact **Nigel Robertshaw G0NHM on (0609) 776608.**

Club News

We hope you like this easier-to-read layout.

Learning A Foreign Language

Professional linguist Angelika Voss G0CCI, enjoys watching and listening to international TV via satellite. She says that it can be a great help in studying foreign languages.

The learning of a foreign language is a useful bonus to the radio amateur. It needn't be painful either, so forget those traumatic schooldays while linguist Angelika Voss G0CCI passes on some professional advice.

Learning foreign languages is something that never really seems to have caught on in the British Isles. However, in countries like the Netherlands and Denmark, almost everybody knows a foreign language or two. In contrast, people in this country have often forgotten their schooling in French by the time they pick up their exam results at the end of the summer!

With the exception of those who have worked abroad or have foreign family connections, very few adult Britons are able to have meaningful conversations in anything but English. But in some ways, this is understandable.

If your native language is Dutch or Hungarian, you need to learn a foreign language to communicate with people outside your own country. English is spoken as a second or foreign language the world over, and English speakers can generally get by almost anywhere without having to know a foreign language.

Traditional Methods

Traditional teaching methods are probably also to blame for the lack of foreign language skills among British people. Fortunately though, things have changed nowadays.

Only a generation ago, language lessons were made up of boring grammar and translation exercises. Very little attention was being paid to the practical skills involved in using a foreign language.

The result of the old methods, was that school leavers were able to reel off long lists of French irregular verbs. But they were at a loss when it came to asking the way to a railway station in French, or ordering a cup of coffee in a bar!

Now that Britain is about to become part of the single European market, attitudes to language learning are beginning to change. More and more people are now looking for ways of acquiring new languages, and/or reviving the long-forgotten French or German they learnt at school.

Once the initial reluctance and apathy regarding foreign languages have been overcome, those who persevere with their studies will usually find that learning a new language can be both rewarding and fun. However, this can only happen if the lessons are presented in an interesting and entertaining way, and that students are encouraged, from day one, to make active use of their new skills.

So, if you've decided that in principle, it wouldn't be a bad idea to learn a foreign language, where do you go from here? My advice is that you read on!

What Language?

First of all, you'll have to decide what language you're going to learn. With several hundred to choose from world-wide, this is quite a difficult decision to make!

In practice, your choice will usually be limited by what language courses are available locally. This can be either at your local night school, or in the form of easily-obtainable self-study courses.

Mind you, if by looking hard and far enough, you'll probably find self-study courses for most languages. My collection includes a copy of *Teach yourself Faroese*, bought in the Faroes, and *Teach Yourself Papiamento* (one from the Caribbean island of Aruba).

Specific Reason

You may have a specific reason for learning a particular language. It could perhaps be a job in Japan, or a boyfriend/girlfriend in Finland, but if not, I recommend that you start off with a language that's easy to learn, especially if you have never learnt a foreign language before.

Very few languages are difficult or easy to learn. It all depends on the learner's starting point, i.e., his or her mother tongue.

The general rule is that the more similar a new language is to your own language (or another language you know well) the easier it will be for you to learn. For example, if your native language is English, and you already know German you won't have many problems learning Dutch.

It may be a bit of a struggle trying to master a totally unrelated language such as Chinese. But a Japanese person will find Chinese fairly easy to learn, even if they have never learnt a foreign language before.

Languages Families

The languages of the world are divided into a number of families, and sub-groups within these families. Most European languages (with a few exceptions such as Finnish, Hungarian and Estonian) belong to the Indo-European family of languages which also includes Hindi, Bengali and Farsi (the language spoken in Iran).

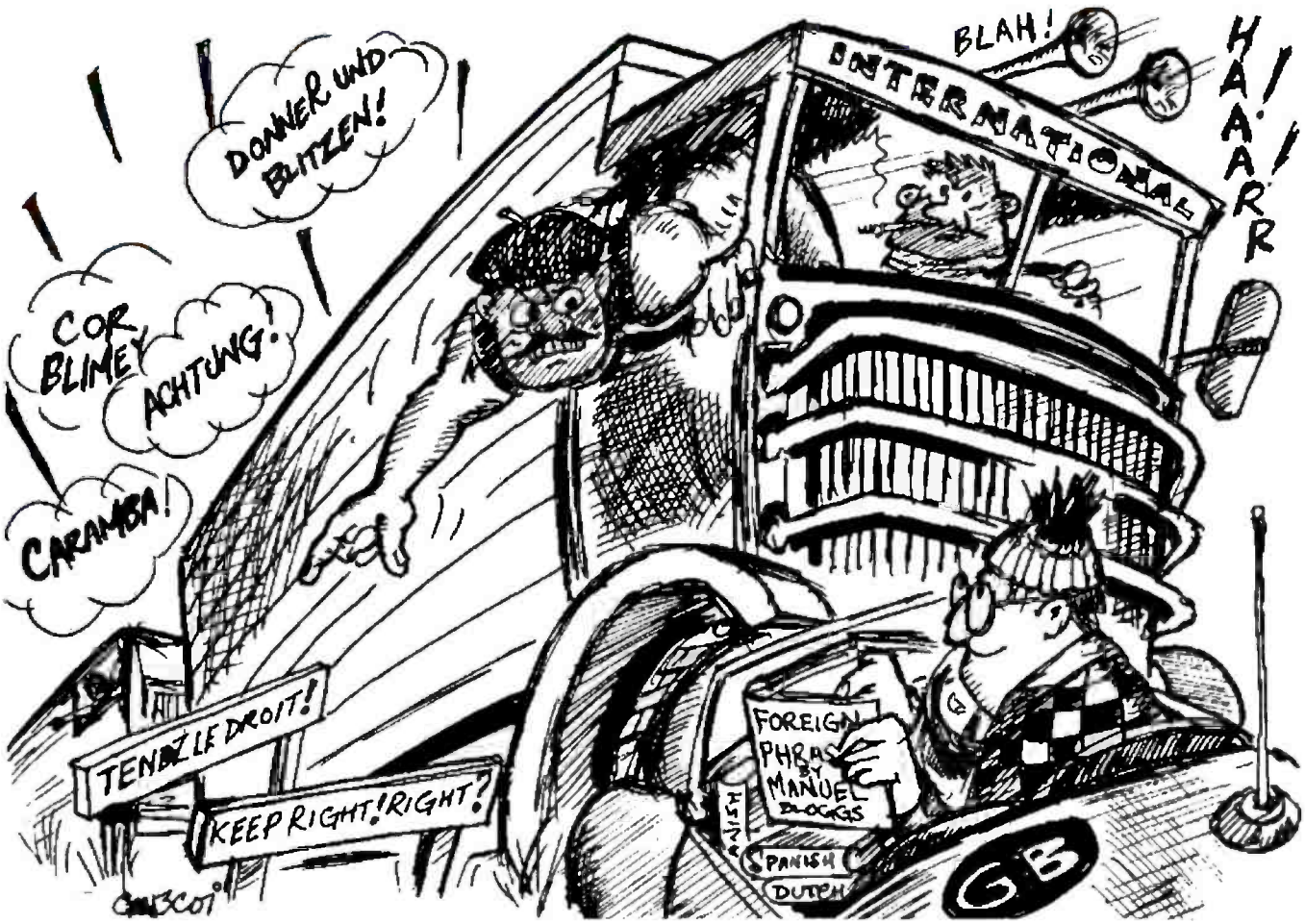
Within the Indo-European family there are a number of sub-groups such as the Germanic group (which includes German, Dutch and the Scandinavian languages). Then there's the Romance group (with French, Italian, Spanish, Portuguese, Romanian and various 'minor' languages such as Romansh and Catalan).

Next, there's the Slavonic group of languages. These are made up of the Russian, Polish, Czech and Bulgarian languages among several others.

Even within the sub-groups, some languages are more closely related than others. For example, Danish, Swedish and Norwegian are similar enough to each other to be mutually intelligible, but they are much less closely related to German and Dutch.

Influenced By Latin

English is a Germanic language, but (unlike other members of the group) it has been significantly influenced by Latin and French. This puts English speakers in quite a unique position, as it makes both Germanic and Romance languages easily accessible and easy to learn.



"First of all, you'll have to decide on what language you're going to learn".

It should be noted that even within closely related groups, some languages are easier to learn than others. For example, English speakers will find that Spanish and Italian are easier to pronounce than French. They'll discover that Dutch has a simpler structure than German, but it's more difficult to master pronunciation-wise.

I've heard that Esperanto is the easiest 'foreign' language to learn for native English speakers. But very few places offer courses in the language, and (despite the laudable intentions of its inventor) its usefulness is somewhat limited.

Esperanto might however, serve a useful role as a bridge to learning other languages. This 'invented' language could be used in much the same way as Latin was in the past.

Second Question

The second question to ask yourself before embarking on your language-learning adventure, is whether or not you will be able to use a particular language. Unless you really have nothing better to do and enjoy learning for its own sake, there is little point in learning a language for which you have no practical use.

Like most skills, language skills will go rusty unless they are practised on a regular basis. You'll have wasted your time if you learn a language, only to forget it the moment you leave the classroom for the last time.

There's no point in learning Albanian if you have no intention of ever visiting Albania, welcoming Albanians to your home or listening to the home service of Radio Tirana! Pick a language for which you will have some use, whether it is for travel, writing to penfriends, talking to immigrant neighbours or listening to foreign radio stations.

So, unless you have a specific interest in a particular country or language, it's always best to choose a language that's widely spoken so that you have plenty of chance to practise it. Having picked a language, you'll then have to decide on how you are going to go about learning it.

Ways And Means

There are many different ways and means of learning foreign languages. These include weekly evening classes, full-time intensive courses, and self-study methods using books or tapes or a mixture of both. There are also the various video-based courses put out by the BBC and other organisations.

It's also possible to acquire a language by using informal means, such as listening to foreign radio stations, watching TV in a foreign language, or staying with a family. The TV method is very much a reality in this day and age of satellite dishes!

The methods I've mentioned, work particularly well for improving existing language skills. They may also be used for learning languages closely related to the learner's mother tongue or another language he/she knows well.

You'll now realise just how many ways there are to learn another language. Faced with such a choice, many people are unsure as to what method is best.

In my opinion, there is probably no such thing as 'the best way to learn a foreign language'. It all depends on individual circumstances. There are a number of things that have to be taken into consideration before deciding on how to go about learning the new language.

The first aspect to look at is the purpose to which you are going to put the foreign language. Are you going to study for a Spanish A level, or do you just want to learn a few phrases to use on your next Spanish holiday?

Are you applying for a job in Germany? Or do you just want to watch the late-night movies on German satellite TV?

Are you going to train as a Russian-speaking bilingual secretary? Or are you more interested in reading *War And Peace* in the original language?

What you're going to do with a language will determine which of the four basic skills (listening, reading, speaking, writing) you will have to concentrate on most. If you want to do a degree course in a foreign language, you'll obviously have to work equally hard on all four skills.

If however, all you want to do is listen to the radio or chat to people on holiday, you won't have to worry too much about spelling. And if you just want to write letters in the foreign language, you won't have to bother too much with pronunciation. Of course, if your main interest is in reading foreign literature, there won't be much need to acquire 'active' language skills, i.e., speaking and writing.

Personal Factors

There are also a number of personal factors to consider. First of all, you have to look at your linguistic and educational background.

Your third or fourth foreign language will come a lot more easily than the first. I've already mentioned that there's also a world of difference between learning a language closely related to your own (or to a language you already know) and learning one which is totally different in both structure and vocabulary.

Two other important factors are time and money. If you need a foreign language to advance your career, it may well be worth investing in a full-time intensive course, where you will be taught the basics of the language in a matter of three or four weeks.

On the other hand, if you're learning a language for next year's holiday, the 'Beginners Conversation' course at your local adult education centre should prove perfectly adequate. But this will always have to be backed up by some home study, as you don't learn a language by sitting in a classroom once a week!

If you only want to be able to read a foreign language, a *Teach Yourself* book may be all you need, whereas if you're always on the move, you may find a cassette course to be the ideal solution. Some courses now come with a free battery-powered player so you are no longer restricted to listening to your language tapes at home or in the car.

Self-study courses do, however, have one major drawback. Without a teacher, or the regular commitment to attend classes once or twice a week, it's very easy to let study slip. So these courses are only suitable for those who have a high degree of motivation and perseverance.

Improving Your Skills

Once you've acquired the basics of a language, you'll need to look for ways of practising and improving your skills. Needless to say, the more practice you get the easier and the more fun it will be.

Thanks to modern technology, you no longer need to go all the way to Japan (or find a willing and chatty Japanese) to practise with. There are now numerous ways in which you can improve your language skills, without even leaving your armchair.

In learning a language, listening is almost as important as speaking. This is because you pick up a lot of things subconsciously, by listening to people speaking in a foreign language.

Of course, *Practical Wireless* readers won't need to be told that there are plenty of radio stations broadcasting in foreign languages. However, as a beginner in a particular language, you won't gain much from listening to news or current affairs programmes in a language you can barely understand.

Foreign Stations

Why not try tuning in to foreign music stations instead of Radio One? Try making a point of listening to the announcements, you'll be surprised at how much you understand!

My English improved no end when, as a 12-year-old schoolgirl, I started listening to the English service of Radio Luxembourg. I learnt Dutch almost entirely from listening to the various 'pirate' radio ships anchored off the Dutch coast in the early 1970s.

If you have a satellite TV dish, you'll already know about the German channels on the Astra service. There were seven at the last count, not including the scrambled Teleclub film channel!

Watching foreign television can do wonders for your foreign language skills. It's probably more effective than listening to the radio, as the pictures give you some idea of what is going on. You may even be lucky enough to catch a dubbed film or soap, that you've previously seen in the original English version.

In addition to the German language channels, there are two multilingual sports channels. With these services, viewers can select their own sound track from a choice of English, German, French or Dutch.

Easy To Watch

There's a Dutch satellite TV service which, although scrambled about two thirds of the time, has some easy-to-watch programmes. These include game shows, that can be seen when transmissions are in the clear.

Most satellite channels are commercial, and feature lots of advertising. These include foreign versions of commercials that are shown on British TV, which can again prove to be an aid to language learning.

The Astra service does not have any programmes in French, Spanish or Italian. However, if your resources stretch to a motorised dish, you can watch those on some of the other satellites.

Eutelsat Services

You can find a French station on Eutelsat 13°E, along with English, Arabic and Turkish channels, along with more German services. Additional Italian and Spanish programmes can be found on another Eutelsat at 10°E.

A Dutch children's channel (Kindernet) can be found on Intelsat 27.5°W. A 12GHz LNB will bring in more French and German channels although you will need a SECAM decoder if you want to watch the French programmes in colour. A larger dish will help you pick up Galavision from Mexico, as well as a couple of Scandinavian stations.

If you're a doctor or a medical student you may enjoy watching Canal Sante. This is an educational channel for the medical profession, and it features live operations with commentary in French (not to be recommended for the faint-hearted!).

Amateur Radio

Amateur radio is another medium which can be used to improve your language skills. Unlike broadcast radio and satellite TV, it helps your active skills as well as the passive ones.

Of course, non-English speakers use a foreign language each time they have a QSO in English. Fortunately (or unfortunately) for people in this country, English has become the international lingua franca of amateur radio. But there's no reason why you can't have QSOs in other languages.

By tuning up and down the bands carefully, you'll occasionally hear foreign languages spoken with an English or American accent. I know of several people who have regular foreign language skeds, and have heard of cases where such skeds have led to mutual visits and lasting friendships, putting the amateur radio spirit into practice!

Face To Face

Of course, nothing can beat talking to people in a foreign language face to face. Being able to speak the language can make a tremendous difference to a foreign holiday, especially when you have reached a level where you can do more than just order cups of coffee or ask for the bill.

My advice is - don't be shy about speaking a foreign language even if your grammar is far from perfect. No one will expect you to get all your German word endings right, or to always know the correct subjunctive in French. The important thing is being able to communicate with people who speak a language other than your own.

MARTIN LYNCH MARTIN LYNCH

ASK FOR YOUR USED EQUIPMENT LIST AT THE LEICESTER SHOW!

YAESU FT890

After Peter Harts review in September Radcom, it's a small wonder I've sold any other H.F. transceiver under £1,300!! Available from stock, list price is £1,075 without auto & £1,250 with.

My price £..... Phone now!!

THE BIGGEST AMATEUR LEICESTER SHOW AND

This is the one you've all been waiting for – a sales extravaganza at the Leicester Show, Granby Halls and throughout the whole of October at the Ealing Shop.

I've purchased extra large quantities of stock, both new and used, to give you unrepeatable bargains. This year I'm in the main hall at the famous Leicester Show – my stand last year was too small!!

YAESU FT1000

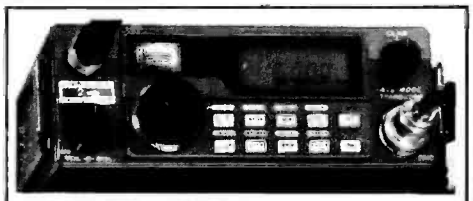
Confirmed the world's No. 1 H.F. transceiver. In stock and backed by a company who understands the requirements of the discerning H.F. operator. Very special deals for October. If you've waited this long, wait no more – if you're genuinely interested, ring me and tell me. If you are serious, you'll buy one.

List £2,995. My price £?

YAESU FT747GX

It's small, it's simple to use. It comes complete with AM/CW filters fitted, covers all H.F. bands and has a general coverage receiver. Microphone included? Not usually but I'll throw one in!

List £710. Lynchy's price? Much lower!!



YAESU FT290R MKII

Not just a "New B licence" 2M multimode, but consider the remarkable FT290R with the clip on 25 watt linear and you have a totally unique concept in 2 metre operation. Without the linear you have a true portable, capable of all modes — no other manufacturer can offer you this. **Only £409 or £519** with matching FL2025 25W linear amp.

KENWOOD TS850S

Now the initial surge is over, (two years of it?!!), the TS850 sells at a steady pace. However, for October I've given you a financial advantage. Ring me and find out how ..... **£1,475? Nope!**

TS450S / 690S

With or without the 6M option, they sell well. Offered as a mid-sized H.F. transceiver with 100W O/P, general coverage RX and optional auto tuner, they work well too!

£ Special October price!

TR751E

Remember G3OSS reviewing this super 2M 25W multimode awhile back? For Angus to say it's good, it must be good. The TR751E – the only dedicated 2M 25W multi mobile available. Newly licensed? Phone for my super deal on this one!

Kenwood's handheld range:

TH28E TH48E TH78E

They all look like they've been styled in the year 2000. All beautifully shaped and offering features the others are still dreaming about. Try them out at Leicester or at the shop. **From £249**

ELITE : Setting new standards in used Equipment.

"I have always been pretty choosy about the used amateur radio equipment I supply my customers. This is a great hobby, and for maximum enjoyment, it is vital that equipment is working up to specification. I want you to get the best . . . and let's face it . . . MY reputation is at stake otherwise!

Any equipment I am not completely happy with gets immediate attention from our engineers . . . IF IT'S NOT GOOD ENOUGH FOR ME IT WILL BE DISPOSED OF ELSEWHERE IN THE TRADE. That's no reflection on the previous owner of course, simply that the equipment isn't right for me to sell; and will not be good enough for you either. It either leaves here in clean and immaculate condition, or not at all!

Recently we have felt that the time is right to take things a little further, so we are promoting our used equipment under the name 'ELITE' . . . from MARTIN LYNCH. Any piece of used equipment you purchase from me will be the very next thing to brand new. Quality standards will continue to be uncompromising . . . and all equipment will be offered with a meaningful warranty, handbook and leads. WE WILL ALSO OFFER A FULL MONEY BACK GUARANTEE – if the equipment is not as described . . . Who else can offer a service like that?"

CALL NOW AND DISCOVER THIS MONTH'S BARGAINS – AMONG THE 'ELITE' from MARTIN LYNCH – and enjoy true PEACE OF MIND!

73 MARTIN G4HKS

cushcraft

I've been selling CUSHCRAFT for donkeys years – the range is now available either MAIL ORDER or by visiting the shop.

PRODUCT LIST

40-2CD	40m 2 element Beam	617B	6m 6 element Boomer
20-4CD	20m 4 element Beam	A50-6S	6m 6 element Beam
20-3CD	20m 3 element Beam	A50-5S	6m 5 element Beam
15-3CD	15m 3 element Beam	A50-3S	6m 3 element Beam
10-4CD	10m 4 element Beam	AR-6	6m Ringo Vertical
TEN-3	10m 3 element Beam	17B2	2m 17 element Beam
A4S	20-15-10m 4 element Beam	13B2	2m 13 element Beam
A3S	20-15-10m 3 element Beam	12AVVB	2m 4 element Beam
A3WS	17-12m 3 element Beam	A144-7	2m 7 element Beam
D40	40m Rotary Dipole	A144-11	2m 11 element Beam
D4	40-20-15-10m Dipole	A144-20T	2m 10 element X Oscar
D3	20-15-10m Dipole	AR-2	2m Ringo Vertical
D3W	30-17-12m Dipole	ARX-2B	2m Ringo Ranger II
R7	40-10m H/W Vertical	AR-270	2m / 70 cm Vertical
RS	20-10m H/W Vertical	424-B	70cm 24 element Beam
AP8	80-10m Vertical	A430-11	70cm 11 element Beam
AVS	5 Band HF Vertical	416TB	70cm 8 element x Oscar
AV3	20-15-10m Vertical	ARX450B	70cm Ringo Ranger II

SHOP OPENING HOURS:
Monday – Saturday 10am-6pm.

MARTIN LYNCH
G4HKS
THE AMATEUR RADIO EXCHANGE CENTRE

286 Northfield Avenue, Ealing, London W5 4UB. Tel: 081 566 1120. Fax: 081 566 1207

Tel: 081

MARTIN LYNCH MARTIN LYNCH

SUPPORT ✓ YOUR INDEPENDENT RETAILER . . . . . – It's the right thing to do ! !

FT990/DC £1,599 or with PSU and filters FT990 £1,799.

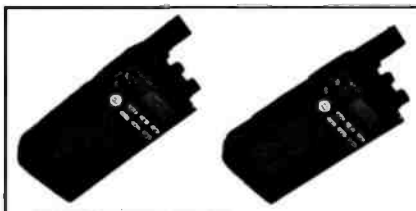
For those of you that liked the FT990 but didn't want to pay the price to include a power supply — well eeritiz! Yaesu have announced the FT990DC. Identical in spec. to the FT990, but minus the internal mains PSU and CW filter. Auto tuner, digital filters etc. are all retained, but just look at the saving .....

RADIO SALE AT THE THROUGHOUT OCTOBER

Do come along and visit us at the show, we are already taking orders and deposits for equipment to be collected there. Just phone your requirements through. If you cannot make it on the 23rd / 24th, the bargains will still be available direct from Ealing. This year the shop will be open a full six days a week, 10 a.m. to 6 p.m. including the Leicester days – so there's no excuse!

YAESU FT736R
I sold nine, last month alone. Another nine customers now have the only VHF/UHF base station to offer 25W on 2 & 70, together with 6 metres and 23CM operation as an option. Built in PSU, full duplex operation, the list goes on and on.... So you want to be the first new owner in October? Usually £1395, with 2/70.
Big savings this month . . . £ phone.

YAESU FT530R *NEW*
The latest dual band handie from Yaesu. It's been delayed in coming but it has been worth waiting for. All internal options fitted, lots of mind boggling features and built to the same robustness as the FT26/76 series. In stock October.
£379, with NICADS and charger included.



YAESU FT26/FT76
My personal favourite handies, easy to use and very well built. Very special prices on these award winning 2M and 70CM handies.
FT26 only £239 or FT76 £259
both with NICADS / charger.

The Alinco Range:

DJ580E: In a nut shell? W&S can retire on this one alone!! The best dual band handie available. Full stop.
£369 with free case!

DJF1E: The other manufacturers are getting worried – this neat little 2M handie comes complete at only **£239.**

DJF4E: *NEW* Identical to DJF1E with all the same features but on 70cms. Ideal for novice. Comes complete **only £239.**

DJS1E: As with the DJF1, but minus keyboard, (who wants to imitate Russ Conway anyway?) NICADS & charger, but less Wonga. Ideal 2M starter rig **£179.**

A Selection from the Icom range.

IC728 & IC729
Easy to use H.F. base or mobile, the new twins from Icom really fit the bill. My mate Dennis Branson at ICOM said they were good and he's right — they are! With PBT and speech processor fitted, they offer outstanding value and reliability. 100W out on all the H.F. bands and 10W on 6M with the IC729, you should have one!
From only £799.

ICW2E
Icom's dual band handie, others have copied, but none can quite match the feel of the W2E. Supplied with NICADS & charger, etc. **£375**

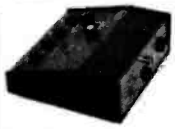
IC275H
The only company to offer you a competition grade 100 watt 2 metre multimode in one neat package. If you are keen on 2M operation, (as keen as I was years ago – remember GBJNW? – do you really want to?) Wave goodbye to the Liner 2 and become a man over night. **£995 – October only!**

MLV THE MARTIN LYNCH GIFT VOUCHERS SCHEME

For those of you who are just dying to give me your money, but can't quite make up your mind on what you want – your problem is solved! October '92 sees the introduction of The Martin Lynch Gift Voucher Scheme that not only has no time limit on spending them, but you can top it up with part-exchanges, cash, H.P., credit cards or anything else. (Legal, that is).
Available now in £5, £10 & £50 vouchers, these make the ideal way of saving for your new rig or accessory for Christmas, the retirement present, birthday and any other occasion throughout the year.
So! All those out there who would like their loved one to get them something they actually want for Xmas '92, just leave this advert in a discrete place. (Copies glued to the inside of all the windows, front of the washing machine, dash board of the car, etc).

Martin Lynch Gift Vouchers – also available mail order, payment by credit card welcome.

24 HOURS SALES HOT LINE:
TEL: 0860 339339
566 1120 NOW!



MICROKEY ELECTRONIC KEYER

Manufactured in the U.K. Airwave Systems, this is the very latest in advanced electronic keyers. Based on the Motorola 68HC705 microcomputer the designers have eliminated the requirement of input keyboards and rows of switches and knobs – in favour of you telling it what you want – by the key itself!!

- **High speed facility 70 - 990 WPM**
- **Adjustable sidetone 500Hz - 990Hz**
- **Analogue or digitally controlled speeds 6 - 60 WPM**
- **Internal 9V battery or external 9-15V DC supply**

Available now, only £99.00 inc. VAT

- **4 x 48 character memories**
- **Adjustable weighting 25-75%**
- **Contest serial number 0-9999**
- **Auto beacon mode-message loop**
- **Keyer status enquiry mode**

OPTOELECTRONICS 2300 HANDHELD FREQUENCY COUNTER/SNIFFER

It's like having a wideband receiver in your hand, displaying transmissions going on around you, but giving you the actual TX frequency they're operating on in BIG CLEAR digits! Ideal for checking your own transmitter frequency and lots of others. Can detect R.F. at over 200 meters depending on power output. Ideal for the D.F.'er. See the frequency, then tune in on your scanner.

VISA Access

Accelerated Learning - French

Clive Hardy G4SLU has tried out one of the many specialised language courses that are available. Our budding linguist had the chance to use the 'Accelerated Learning' package, and there's what he thinks.....

I've often thought that I would like to speak a foreign language. But, as with many things that don't **have to be done**, I needed some sort of motivation to give it a try.

Most of us, I'm sure, feel more than a little guilty that we don't speak another European language. I feel this way, especially when it seems that almost everyone on the other side of the English Channel speaks ours!

The obvious choice of language in my case, was to learn French. This was, because I already had some slight knowledge from having attended lessons on the subject at school over 25 years ago.

Skill In Franglais

However, I learnt so little French, that the school refused to spend its money on entering me for the GCE examination! Since then I have developed some skill in 'Franglais', but not quite to the Miles Kington level!

Learning the language properly would, of course, ruin all my 'Franglais'. Despite this I was keen to accept Rob Mannion's offer to try out the 'Accelerated Learning' language course. I've no doubt that regular *PW* readers, will already know of the editor's enthusiasm for increasing the world-wide fellowship amongst radio amateurs by the learning of other languages.

An impending visit to France, was another factor that convinced me that now was the time make the effort to learn the language. So, I collected the 'Accelerated Learning' course from the editor, and he gave me three months to do my best!

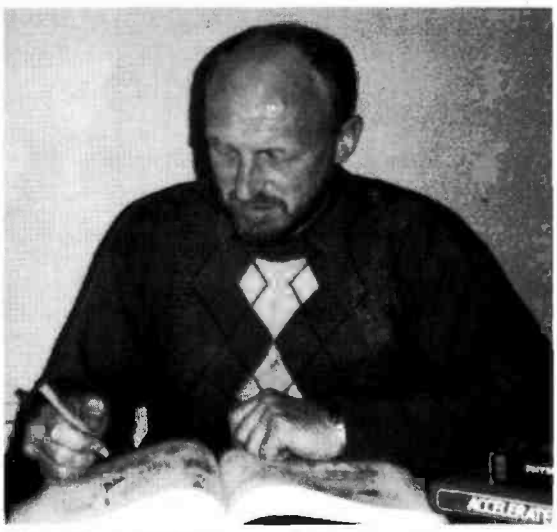
Well Produced

On arriving home, I opened up the parcel containing the course and found 12 audio cassettes in a special folder, a video cassette, three books, and a word card game. All the items appeared well produced and presented.

The course gave me the impression that I might just make some progress. So having decided to try to do the job as it was intended, I started by reading the instructions contained in the first book.

The book was aptly entitled *Introduction To Accelerated Learning*. It explained the concept behind the teaching on the course, which uses the 'multi-sensory' approach.

The course combines the spoken word with music, the printed word, and pictures. These techniques apparently bring both sides of the brain into use, and thus accelerates the learning process.



Clive Hardy G4SLU, was determined to abandon his fractured 'Franglais', and enjoyed using the 'Accelerated Learning' course to learn French.

Twelve Sections

There are 12 sections to the course with one cassette to each. The first part of each section consists of one act of a play, which continues through the whole course.

The second part consists of practice at grammar, pronunciation, and dialogues using the vocabulary used in the first part. This second part is called the 'Activation Phase', and it makes the student use the language learned in the first part.

Each act is presented in three aural modes, and two visual. The first visual presentation is of the script in French and English on the right and left-hand side of the page respectively.

Pictorial Version

The second visual presentation is a pictorial version of the story, with the main points illustrated by amusing cartoons and some of the more significant parts of the text. This is called the 'Memory Map'.

The aural presentations are of the script in French, rather like a radio play with suitable sound effects. It's then presented in French accompanied by orchestral music, and finally in English and French.

The idea of this process is for the student to follow the written script, and then the 'Memory Map', highlighting the various tenses and other points to remember with coloured pens. Having followed the instructions, I then read the second *Name Game* book, which is mostly a reminder of some of the words common to both languages.

Video Presentation

After all the reading, I watched part of the video presentation. It has several sections, each with an actor in different situations performing tasks instructed in French, first without and then with sub-titles.

Having completed the preliminaries, it was time for the course proper. At the time of writing this, I have completed about three quarters of the course and so far it has been most enjoyable and interesting.

It's certainly not a dry academic exercise. My only real difficulty has been making myself find the time each day to sit down and listen to the tapes. Each of these is about an hour long, although it's not recommended to listen to a whole tape at one session.

The instructions suggested that for revision, the student listens while driving. This seems to be a good idea for those who make long and regular road journeys.

Significantly More

So, it's time to sum up and I'm sure that I now know significantly more French than I did. But I have yet to put it to the test in the real world!

In addition to the course, I listen to Radio France Internationale on 6.175MHz in an effort to hear more of the language. Unfortunately in real life, the language is spoken much quicker than 'teaching' French.

Once you've started, constant exposure to, and use of a language, is the only certain way to become a competent speaker. However, I consider the 'Accelerated Learning' course a great help along the route to learning a foreign language.

My thanks go to Accelerated Learning Systems Ltd., at 50 Aylesbury Road, Aston Clinton, Aylesbury, Buckinghamshire HP22 5AH, tel: (0296) 631177, for supplying me with the French course. It costs £99 plus £5.50 Securicor delivery.

PW Special Reviews....

The Linguaphone Spanish Course

Following a telephone conversation with G3XFD, I found myself part of a rather interesting project. I had the chance to learn a new language. Something I had never done before!

I have always been rather relieved that English is 'the' international radio language. Despite this, I was quite excited at having the chance to learn to chat with fellow amateurs abroad in their own tongue.

Setting The Scene

First a bit about me, to set the scene. I'm 27 years old, and my job means that I work shifts and often long irregular hours. I also have commitments to other organisations which take up a lot of my spare time.

The Linguaphone course in Spanish arrived in June. It comprised of ten tapes, four books and a leaflet telling you how to use the course. The presentation was most professional, but the instructions were not so easy to understand.

All the language lesson tapes were entirely in Spanish, as were three out of the four books. I must admit this made it very difficult for me, a complete beginner.

Four Books

When I got down to work, I found I had to have all four books out in front of me to understand what was going on. I also had my own note book, and this took up a lot of space.

Being unable to keep the books out between lessons, due to lack of space, meant extra time spent setting up and packing away. Having discovered that I needed the books with the tapes, I was unable to work anywhere else than at home. This cut down my possible study time considerably.

The Linguaphone approach employs spoken lessons, and written lessons too. This makes the course really comprehensive and academic. However, the in-depth approach makes it less portable and even more of a commitment.

Hour A Day

To be fair to the Linguaphone course, I think a minimum of an hour a day is needed for this particular style of learning. Unfortunately, I did not manage to maintain this level of commitment.

As I progressed through the course I found that the handbook provided less help, and some sections of the tape were not mentioned at all. This I assume, is part of the Linguaphone teaching method, but it served only to confuse me.

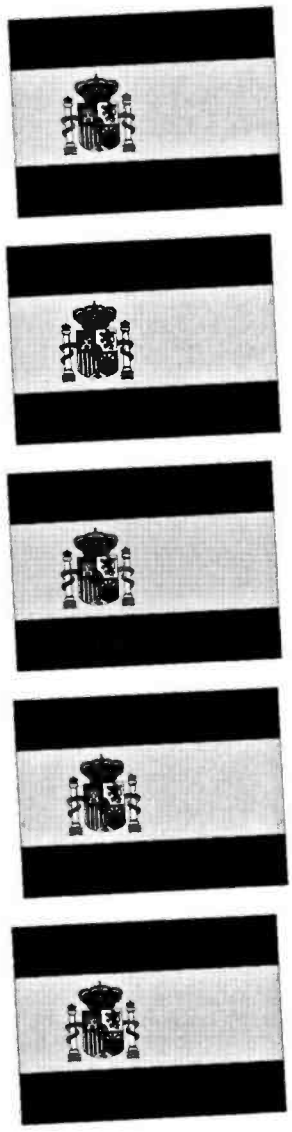
However, I soldiered on. And much to the amusement of half of the listening world, I've used my newly-learned Spanish when in QSO with Spain and South America. I have also used it to put greetings messages on QSL cards. So, I was not a completely lost cause Linguaphone!

Summing Up

The Linguaphone course was, as I've already mentioned, professionally produced and presented. However, I think that the instructions on how to use the course could be more comprehensive and 'user-friendly'.

So, in summing up, I would say that if you have plenty of spare time and space, and your intention is to thoroughly learn a new language, the Linguaphone approach is for you. Hasta luego y buena suerte!

My thanks go to the Linguaphone Institute Ltd. at St. Giles House, 50 Poland Street, London W1V 4AX for supplying the Linguaphone Standard Spanish course which costs £189.90 incl. VAT and p&p. Full information on the many different courses are available by calling Linguaphone on their FREEPHONE number (0800) 282417.



Richard Newton G0RSN, had a telephone call (in English!) from the editor who was offering him a chance to have a go at learning a foreign language. Richard accepted the challenge, and chose the Linguaphone Spanish course.

Richard Newton G0RSN has already tried his newly-acquired Spanish on the air, and when writing QSL card greetings.

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Basic QSOs in German

We start off our 'Basic QSOs' series with G. W. Roberts GW4JXN, providing you with enough information to hold a simple conversation with German speaking amateurs.

This article will not teach you how to speak German. It's designed to provide you with enough of the language for a basic QSO with a German-speaking contact.

Germen is spoken as the first language in Germany, Switzerland (where approximately 70% of the inhabitants speak German as their first language) and Austria. In addition, German is often spoken as a second language in many countries, and also by expatriate Germans around the world.

The value of speaking German, is not just that it's an important commercial language. It's also the language of a large number of very active and keen radio amateurs.

Useful Atlas

I've found it very useful to have an atlas of Europe with a detailed index. This is so that I can check fairly easily and predict the spelling of certain place names.

The German alphabet is given in the appendix, as this might be used instead of the international phonetic alphabet for the spelling of place names and operators' names. Again, the appendix has a list of first names to help make identification as easy as possible.

Bilingual Conversations

Many German-speaking amateurs, also speak very good English. They often enjoy the chance of using their language skills, but this is not true of everyone.

Some German speakers, are pleased and relieved to speak German. Sometimes, such amateurs have admitted that they hadn't quite understood the English answers, and repeated the questions in German !

It's not unusual either, to find it easier to overcome interference on h.f. by speaking the other person's language. In other words, the German contact speaks English for your benefit, and you speak German for his benefit.

It is after all, much easier to understand your own language than a foreign one in the QRM. What we should learn from the Germans speaking English, is that they are willing to try and speak English!

We should try and speak German. Even a few words of German promotes a favourable reaction.

German Stations

Many German stations can be heard on the 7MHz band, but these are usually conversations between friends. These are unlikely to be of use to the English listener.

The topics covered by inter-German QSOs are much wider ranging than those covered in my articles. There is, furthermore, a much greater dialectal variation in German, than say French and there is a great pride in these dialects.

North German is different from Southern German, and Swiss and Austrian German can be quite distinctive. In talking to strangers and to foreigners, however, a standard German 'Hochdeutsch', is used. This is the form used in the article.

Using The Information

In using the information contained in this article, please note that the amount of English technical words, e.g. 'fading' instead of the German 'Schwund', 'callbook' instead of the 'Rufzeichenliste', 'das Sked' instead of 'Verabredung' will vary from individual to individual. It's better to follow the lead given by the person you are talking to.

Purity of German language can be appreciated by the speaker as a sign of politeness. The amount of 'hamisms', e.g. the use of the Q Code, will also vary. The Q code is pronounced as in the German alphabet given in the appendix (in part 2).

As there are variances in language usage, I would welcome any corrections or alternatives offered by native German speakers. Although the contents of this article are the result of many hours' listening on the air, and checks on usage with native speakers. The whole article has been checked for correctness and authenticity, by linguistically sensitive German speakers.

The Nature Of German

Now, a very short word about the nature of German. Historically speaking, German is more closely related to English, than say French. And in fact, many children learning languages prefer German to French.

However, German tends to use home-made, long compound words, rather than borrow an English/French word of possibly Latin/Greek origin. For example 'Fernsprecher' in addition to 'Telephon'.

Many words look strange, but there is one great consolation. The pronunciation of German is much more closely related to the written form than either the French or English languages.

German is different to English, in that it has 'cases'. This needn't concern us too greatly in teaching basic German. But it does mean that you'll see, for example, many words for 'the', not just the masculine 'der', the feminine 'die', the neuter 'das' and plural 'die'.

Another point, is that German also has a very strict word order system, as the verb sometimes comes at the end of the sentence. Because of this, when you're speaking German, try to stick accurately to the text given.

Choose Suitable Sentences

I suggest that you choose your own basic QSO from the various headings. Then write down suitable sentences from the article, and keep them by your rig.

Later, when you have more practice and confidence, you can add to this and make your conversation longer. But if you don't try you'll get nowhere. So try, even if your first attempt is only 'auf Wiederhoren' ('until we hear each other again') or 'vielen Dank' ('thank you very much').

German Pronunciation

The stress varies on German words, and in the pronunciation hints with the article, the stressed syllables are set in bold type. The following German consonants are to be noted: 'v' is pronounced as 'f'; 'w' is pronounced as 'v' (remember Volkswagen): 'ch' varies dialectally between 'sh' and 'ch' as in loch (technically it is in between them) and 'z' is pronounced as 'ts'.

All letters in a word are pronounced. Vowels followed by a single consonant are generally long, but two consonants are generally short.

German has one accent, the umlaut. The umlaut changes the sound of the vowels as follows: ö becomes 'oeuh'; ü like the French 'u' or a sound between 'i' and 'w', and ä becomes 'ay'.

Finally, I'd like to thank Dr Jo Desch, Lector in German, at the University College of North Wales, Bangor, and Manfred Grab DL7GAB, for their help in preparation of this article.

Turn the page for Basic QSOs in German.

Signal report

You are five and nine in . . .	Sie sind fünf und neun in . . .	Zee sint finf wnt noin in . . .
Your report is . . .	Ihr Rapport ist . . .	Ear **ra**por ist . . .
Your signal is variable/very weak/weak/strong/very strong/excellent.	Ihr Signal ist schwankend/sehr schwach/schwach/stark sehr stark/ausgezeichnet.	Ear signal ist sh**wan**kend/seer shwach/shwach/shtark seer shtark/awsget**saich**net.
There is no interference.	Es gibt keine Störungen.	Es gibt **kai**ne sh**tir**w**n**gen.
There is a lot of local interference.	Es gibt viele örtliche Störungen.	Es gibt **fee**le o**er**tliche sh**toer**w**n**gen.
Your signals are fading.	Ihre Signale schwinden.	**Ea**re sig**na**le sh**vin**den.
Your modulation is good/bad.	Ihre Modulation ist gut/schlecht.	**Ea**re modiwlats**ion** ist goot /shlecht.
I can understand you very easily.	Ich verstehe Sie ganz leicht.	Ish fersh**tay**he zea gants laicht.
I can understand you only with great difficulty.	Ich verstehe Sie nur mit grossen Schwierigkeiten.	Ish fersh**tay**he zea noor mit **gro**ssen Shveerig**kai**ten.

Asking for information and commands

Please state your name/your location/your callsign.	Geben Sie mir bitte Ihren Namen/Ihren Standort/ihr Rufzeichen.	**Ge**ben zee mir bitter **ea**ren **na**men/**ea**ren sh**tan**dort ear **roof**tsai**ch**en.
What is your country?	In welchem Land sind Sie?	In **vel**shem lant zint zee?
Please spell your name/location/callsign phonetically.	Buchstabieren Sie bitte Ihren Namen / Standort / Rufzeichen!	Bwchshtabearen zee bitter **ea**ren **na**men/sh**tan**dort/**roof**tsai**ch**en.
Please can you give me a report?	Können Sie mir bitte einen Rapport geben?	**Koe**nen zee mir bitter **ai**nen rapor **gay**ben?
Please repeat.	Bitte wiederholen Sie.	Bitter**veeder**holen zee.
Please speak more slowly.	Bitte sprechen Sie langsamer.	Bitter sh**prech**en zee **lang**zamer.
Do you have a lot of interference?	Haben Sie viele Störungen?	**Ha**ben zee **fee**le sh**toer**wngen?
Are my signals fading?	Schwanken meine Signale?	Sh**van**ken **mai**ne sig**na**le?
Have we worked each other before on this band/on 10, 15, 20, 40, 80, 160 metres?	Waren wir schon mal verbunden —auf diesem Band/auf zehn, funfzehn, zwanzig, vierzig, achtzig, hundertsechszig Metern.	Varen veer shon mal ferb**w**nden—awf deezem Bant awf tsayn, **finf**tsayn, **tvan**tsig, **fear**tsig, **ach**ttsig, **hw**ndertsextig metern.
I'm sorry, I do not understand you.	Es tut mir leid, ich verstehe Sie nicht.	Es toot mir lait, ish fersh**tay**he zee nicht.
I do not understand/speak German very well.	Ich verstehe/spreche nicht sehr gut deutsch.	Ish fersh**tay**he/sh**pre**che nicht zer goot doitsh.
Please stand by.	Warten Sie bitte.	**Var**ten zee bitter.
Please go again.	Versuchen Sie es nochmal.	Ferz**wch**en zee es n**och**mal.
Do you receive/hear/understand me?	Können Sie mich aufnehmen/hören/verstehen?	**Koe**nen zee mich **aw**f**nay**men/**hoe**ren/fersh**tay**hen?
How do you copy?	Wie nehmen Sie mich auf?	Vee **nay**men zee mish **awf**.
Is this frequency free/occupied?	Ist diese Frequenz frei/besetzt?	Ist **dee**ze freqvents frai/be**zetst**?
This frequency is in use old man, I'm sorry.	Diese Frequenz ist schön besetzt old man, Tut mir leid.	Deeze freqvents ist shon be**zetst** old man, toot mir lait.
I have a sked.	Ich habe eine Verabredung.	Ish **ha**be **ai**ne fer**abray**dwng.
Can we change frequency? How about 10kHz up/down if the frequency is free?	Können wir die Frequenz wechseln? Wie wäre es mit zehn Kilohertz höher/tiefer, wenn die Frequenz frei ist?	**Koe**nen veer dee freqvents **vech**seln? Vee **vay**re es mit tsayn kiloherts h**oe**her/te**af**er ven dee freqvents frai ist?
How about S19?	Wie wäre es mit S neunzehn?	Vee **vay**re es mit ess **neun**zehn?
Can we go simplex?	Können wir eine Direktfrequenz benutzen?	Koenen veer aine **direkt**freqvents be**nwt**sen?
I shall see you on the . . . repeater.	Ich werde Sie über das . . . Relais wiedehoren.	Ish verde zee iber das . . . relay **veeder**hoeren.
Shall we try sideband?	Versuchen wir mal Seitenband?	Ferz**wch**en veer mal **sai**ten**bant**?
How about Morse?	Wie wäre es mit Morsezeichen?	**Vee vay**re es mit **Morstsai**chen?
I'll give you a report on the next over.	Ich werde Ihnen einen Rapport während Ihres nächsten Durchgangs geben.	Ish **ver**de **ee**nen **ai**nen rapor **vay**rend **ee**rer **nex**ten di**wgh**gangs **gay**ben.

Making a call

CQ Germany, Switzerland, Austria or a German speaking country. This is (own callsign) calling CQ and standing by.	CQ Allgemeiner Anruf an Deutschland, die Schweiz, Osterreich oder eine deutschprechende Station. Hier ruft (own callsign) mit einem allgemeinem Anruf und geht jetzt auf Empfang. Bitte kommen!	Tsay Koo **Algoemainer anroof** an **doitshlant**, dee Shwaits, **Oesterraich odoe aine doitshshprechendoe** shtatsion. Hearwft (own callsign) mit **ainem algemainem anroof** unt gayht yetst awf empfang. **Bitter** komen.

Replying to a call

(Other callsign phonetically) this is the British/English/Welsh/Scottish/Irish/Australian/American/Canadian/New Zealand/South African station (own callsign) calling you/returning your call. The German speaking station this is . . .	(Other callsign phonetically) Hier ruft der Britische/Englische/Walisische/Schottische/Irische/Australische/Amerikanische/Kanadische/Neuseeländische/Südafrikanische Sender (own callsign), der auf ihren Anruf zurückkommt. Die deutschsprechende Station hier ruft . . .	(Other callsign phonetically) Hear rooft der **Britische / Englishe / Valisishe / Sholtische / Irishe / Awstralishe / Americanishe / Kanadishe / Noyzealendishe / Sidafrikanishe Zender** (own callsign) der awf **eehren anroof tswrikkomt** Dee **Doitshshprechende shtatsion** hear rooft . . .

After someone has replied to your call

I heard more than one reply. Please try again (XYZ) please wait. (XYZ). This is (own callsign). Good morning/afternoon/evening	Mehrere Sender haben gleichzeitich geantwortet. Bitte schön (XYZ). Versuchen Sie noch einmal (XYZ). Warten Sie bitte! Hier spricht (own callsign)	Merere **zender** haben **glaichtsaitig goeantvortet**. Bitter shoen (XYZ). **Ferzoochen** zee noch ainmal (XYZ). **Varten** zee **bitter**. Hear shpricht (own callsign)
(callsign) oldman. Thank you for returning my call.	Guten Morgen/Tag/Abend mein Lieber. Ich danke Ihnen für die Antwort auf meinen Ruf.	**gooten** Morgen/Taag/**Abent** main leahber. Ish danke **eehnen** fear dee antvort awf **mainen** roof.
I think this is the first time we have worked each other.	Ich glaube das ist daß erste Mal dass wir miteinander sprechen.	Ish glawbe das ist das erste mal das viir mitai**nander shprechen**.
I think we have worked before.	Ich glaube, wir haben schon miteinander gesprochen.	Ish glawbe viir **haben** shoon mitai**nander** ge**shprochen**.
The name is . . .	Ich heisse . . .	Ish haise . . .
I'll spell it for you phonetically.	Ich buchstabiere phonetisch.	Ish boochsh**tabiere** fone**etish**.
I repeat.	Ich wiederhole.	Ish **veeder**hole.

Location

The location is . . . I'll spell it for you, in the county of . . ./state of . . . in North/South/West/East England/Wales/Scotland/Ireland/Canada/USA etc.	Der QTH/Sendeort ist . . . ich buchstabiere ihn für Sie, in der Grafschaft von . . ./im Staat von . . . in Nord/Süd/West Ost England Wales/Schottland/Irland/Kanada/in der USA.	Der **Koo Tay Ha/Zenderort** ist . . . Ish boochs**htabiere** een fear zee, in der **grafshaft** fon . . . / im shtaat von . . . in Nord/Zid Vest/Ost **Englant/Vales/Shotlant/Irlant/Kanada**/in der **Ooessah**.
The location is in the centre of . . .	Der Sendeort ist in der Mitte von . . .	Der **zenderort** ist in der **mite** fon . . .
On the island of . . .	Auf der Insel . . .	Awf der **inzel** . . .
In the small/big town/city of . . .	In der kleinen/grossen Stadt/Großstadt von . . .	In der **klainen/grossen** shdat/Grossshdat fon . . .
In the seaside town of . . .	Am Seebad . . .	Am **zaybaat** . . .
About . . . kilometres from . . .	Ungefahr . . . Kilometer von . . . entfernt.	**Wngefayr** . . . Kilo**meter** fon . . . entfernt.
The longitude and the latitude is . . . degrees—minutes North/South, degrees—minutes East West.	Die Lange und die Breite sind . . . Grad-Minuten nordlich/südlich, Grad-Minuten östlich/westlich.	Dee **laynge** unt dee **braite** zint. . . Graad-Min**wwten** nordlich/sidlich, Graad-Min**wwten** oestlich/**vestlich**.

Net working

I've forgotten whose turn it is.	Ich habe vergessen wer d'ran ist.	Ish habe fergesen ver dran ist.
I think it is (XYZ's) turn.	Ich glaube daß (XYZ's) d'ran ist.	Ish glawbe das (XYZ's) dran ist.
Over to . . . with the group.	Mikrophon an . . . mit der Gruppe.	Mikrofon an . . . mit der groupe.
Break.	Unterbrechung.	wnterbrechwng.
Over.	Zurück	tswrick.

Rig and Antenna

The rig here is . . .	Meine Station ist ein . . .	Maine statsion ist ain . . .
I'm using a . . . transceiver.	Ich benutze einen . . . Senderempfänger.	Ish benwtse ainen . . . zenderempfaynger.
I have here a . . . receiver and . . . transmitter with a transverter/with a linear amplifier.	Ich habe hier einen . . . Empfänger und einen . . . Sender mit Transverter/und Linear (Verstärker).	Ish habe here ainen . . . empfaynger wnd ainen . . . zender mit transverter/und linearferstayrker.
I am puttingout 10,20,50,100~150watts	Ich sende mit zehn, zwanzig, fünfzig, hundert, hundertfünfzig Watt.	Ish zende mit tsayn, tsvantsig, finftsig, hwndert,wndertfinftsig Watt.
The rig is home-brew with modifications.	Mein Gerät ist Selbstbau mit Verbesserungen.	Main gerayt ist selbstbaw mit ferbeserwngen
My antenna is a dipole/is a trapped dipole/a beam with three elements.	Mein Antenne ist ein Dipol/ein Dipol mit Traps/(ein Beam) ein Richtstrahler mit drei Elementen.	Main antene ist ain dipol/ain dipol mit traps/(ain beam) ain richtshtraaler mit drai elementen.
A Yagi with 10 elements.	Ein Yagi mit zehn Elementen.	Ain Yagi mit tsayn elementein.
with horizontal/vertical/circular polarisation.	mit horizontaler/vertikaler/Kreis-polarisation.	mit horitsontaler/verticaler/kraiz-polarizatsion.
with a gain of . . . ,	mit einem Gewinn von . . .	mit ainem gevin fon . . .
A quad/a long wire/an end fed Zeppelin/a centre fed Zeppelin.	Ein Quad/eine Drahtantenne/eine am Ende/eine in der Mitte gespeiste Zeppelin.	Ein kvad/aine draatantene/aine am ende/aine in der mite geshpaiste Tsepelin.
The antenna is about . . . metres above ground level.	Die Antenne ist ungefähr . . . Meter über Grund.	Dee antene ist ungefayr . . . meter iber grwnt.
The QTH is . . . metres above sea level/at sea level/below sea level.	Der QTH ist . . . Meter über Meereshöhe/auf Meereshöhe/ unter Meereshöhe.	Der koo tay ha ist . . . meter iber mereshoehe/awfmereshoehe/ unter mereshoehe.
The antenna has a rotator.	Die Antenne hat einen Rotor.	Dee antene hat ainen rotor.
I'll turn the antenna on you during the next over.	Ich werde die Antenne an Sie wahrend ihrer nachsten Besprechung richten.	Ish verde dee antene an zea wayrent earer naychsten beshshprechwng richten.
I rotate the antenna by hand.	Ich richte die Antenne mit der Hand.	Ish richte dee antene mit der hant.
The antenna is in the garden/attic/on a . . . metre high mast.	Die Antenne ist im Garten/auf dem Boden/auf einem . . . Meter hohen Mast.	Dee antene ist im garten/awf dame boden/awf ainen . . . Meter hoen mast.
I am testing the rig.	Ich prüfe die Anlage/ich prüfe das Gerät	Ish prife dee anlage/Ish prife das gerayt.
I am glad of your report.	Ich freue mich über Ihren Rapport.	Ish froye mish iber earen rapor.
I like my . . .I want to change my . . .	Mein . . . gefällt mir. Ich will mein . . . umtauschen.	Main . . . gefaylt mere. Ish vil main wntawshen . . .
How do you like your . . .	Wie gefällt Ihnen Ihr . . .	Vii gefaylt eenen ear . . .

CONTINUED NEXT MONTH

Around Europe With A Hand-Held

Licensed radio amateurs are allowed to operate in a number of European countries without the need to apply for a temporary licence - preface your call with the appropriate country prefix - and off you go, as Bob Harry G3NRT tells us!

The idea of working DX the easy way, by taking the rig there, has some appeal. So when a coach tour around several European countries was proposed, my thoughts turned to radio.

The agreement between the CEPT (Conference on European Post & Telecommunications) countries allows radio amateurs to freely operate in the respective nations within the restrictions of the licence. For example, in Germany a UK class A licensee would sign as DL/G3NRT, and a class B as DC/G8NRT, and operation would be restricted to the bands appropriate to the home licence.

The list of countries offering this bureaucracy-free arrangement is growing. Potential arm-chair DXers should check the position with the DTI (see list of telephone numbers at the end) before setting out.

Best Rig

As I was travelling by coach and only spending a few days in each country, my 144MHz hand-held seemed the best rig to take. The opportunities to set up an h.f. antenna were uncertain, and I had no intention of carrying my elderly TS520SE around the flesh pots of Europe. I considered s.s.b., but if experience in the UK was a guide, there was likely to be more activity on f.m. than on s.s.b. The trusty ICμ2E it would be - all 1W of hot r.f!

So, apart from the usual luggage, I packed my hand-held, a pair of lightweight headphones, battery-charger, log-book, notepad, pen, licence - and a European mains plug adapter. I packed it all in a separate bag, together with a customs declaration.

Formalities Minimal

Customs formalities on leaving the UK seem to be minimal, but on return there could be problems if my amateur gear was examined. To avoid difficulties on my return, I made out a customs declaration. This is a statement which lists all the equipment, including serial numbers, together with a few words to the effect that the equipment is being taken out of the country (state period) for personal use and all will be returned to the UK.

I would have packed the receipt for the rig, but I had lost it. I filled everything out, but found on arrival at Dover that it was impossible to find a customs official interested in my carefully prepared declaration. With a mental shrug (and fears for my return) I set out.

Outskirts Of Brussels

The first day's travel was tiring, but by the time we reached the outskirts of Brussels my interest in radio revived enough to tune around the band. I could hear a QSO on the local repeater, but could not get through. Later, having settled into our hotel, I worked, through the same the repeater, my first 144MHz 'DX' - ON4JX in Leuden, located about 24km east of the capital.

European Contacts

All my European contacts turned out to be via repeaters, which was not surprising considering my low power. I had borrowed a booklet listing European repeaters published by the RSGB, and it was helpful during the trip for showing whether I was likely to be in range of a repeater.

However, being in range and working through a repeater are different things as I was to find out. Back to Brussels and my battery went flat! Note: make sure battery is charged before leaving home, and take a spare if possible.

Fortunately, I had remembered the battery charger and the continental mains plug adaptor. So I was back on the air the following evening for a few more contacts, before setting out for Amsterdam the following morning.

Amsterdam

The hotel was in the RAI district of Amsterdam, south of the city, and I was several floors up. I soon had the hand-held out and a couple of repeaters were audible; PA/G3NRT was ready.

I did not get a single contact, I even tried calling CQ on S20, but no response. So, two days in Holland and no Dutch contacts. By this time I was developing a technique of occasionally (I wasn't touring just for amateur radio) listening on the coach, using headphones to reduce the background noise, and avoid disturbing the other passengers.

Into Germany

As we moved into Germany, the Cologne repeater came up in strength, and I had my first contact as DL/G3NRT/M (try saying that quickly). Further contacts were made as we drove down the autobahn past Frankfurt.

Sometimes I was only running a 100mW - I was developing a phobia about flat batteries. During my tour through Germany several repeaters were heard and accessed, but without getting a contact. I cannot speak German, and I assume this was the reason for my limited

Bob Harry G3NRT pauses to pose, in his travels around Europe.

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RX	FC757AT	Yaesu	ATU Automatic	225
SX	FT980	Yaesu	HF 100w	895
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AX	FT980	Yaesu	HF 100w	625
BX	TS-940S	Trio	HF 100w	1595
LX	TS690S (inc. ATU)	Trio	HF TX/RX (inc. 6 mtrs)	1095
CX	TS-530SP	Trio	HF 100w	475
AX	TS-530SP	Trio	HF 100w	475
RX	TS-530S	Trio	HF 100w	550
AX	FT107 (12v)	Yaesu	HF 100w	425
SX	FL7000	Yaesu	HF 500w L/amp	1295
AX	FL7000	Yaesu	HF 500w L/amp	1185
RX	FT902DM	Yaesu	HF 100w	550
AX	FT901DE	Yaesu	HF 100w	439
SX	FT101ZD	Yaesu	HF 100w	485
SX	FT101Z	Yaesu	HF 100w	449
RX	FT102 (inc. FM)	Yaesu	HF 100w	550
LX	FL2100Z	Yaesu	HF 500w L/amp	450
AX	FL2100Z	Yaesu	HF 500w L/amp	549
AX	FV101Z	Yaesu	2nd External VFO	135
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AX	IC-725	Icom	HF 100w	675
CX	IC-730	Icom	HF 100w	425
AX	AT-500	Icom	Auto ATU 500w	345
AX	AT-100	Icom	Auto ATU	239
AX	PS-55	Icom	PSU 20 amps	145
AX	FT102	Yaesu	HF 100w	495
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SX	FC-70P	Yaesu	HF ATU 200w	79
SX	SPC-300D	CapCo	HF ATU 1kw	189
AX	MT3000A	Dentron	HF ATU 3kw	199
AX	TM1000	Nevada	HF ATU 1kw	99
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CX	FRG7700M	Yaesu	RX. 150khz-30mhz	299
AX	FRG7700	Yaesu	RX. 150khz-30mhz	295
RX	FR101	Yaesu	HF RX. 10-160m	225
SX	NRD 525	JRC	RX. 150khz-30mhz	699
SX	PRO-2004	Tandy	Scanner 25-1300 mhz	249
SX	PRO-9200	Tandy	Scanner 66-512mhz	89
SX	FRG9600M	Yaesu	RX. 60-950mhz	395
RX	FRG9600M	Yaesu	RX. 60-950mhz	475
RX	FRG9600	Yaesu	RX. 60-905mhz	395
SX	IC-R70	Icom	RX. 150khz-30mhz	425
AX	IC-R72	Icom	RX. 150khz-30mhz	489
AX	IC-R71	Icom	RX. 150khz-30mhz	499
AX	R2000	Trio	RX. 150khz-30mhz	429
CX	IC-R70	Icom	RX. 150khz-30mhz	449
AX	MS1000	Nevada	RX. 500khz-30mhz	199
AX	108	Win	RX. VHF airband	119
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AX	ICF-PRO80	Sony	Portable RX. ht/vhf	149
RX	ICF-PRO80	Sony	Portable RX. ht/vhf	220
AX	ICF-2001D	Sony	Portable RX. ht/vhf	189
AX	MX7000	Regency	Scanner 25-1300mhz	249
AX	AR2002	AOR	Scanner 25-1300mhz	249
AX	AR1000	AOR	Scanner 8-1300mhz	189
SX	DX-440	Tandy	Portable RX. ht/vhf	109
SX	PRO-34	Tandy	Scanner vhf/uhf	129
AX	200XLT	Bearcat	Scanner vhf/uhf	125
AX	BJ-200	Jaguar	Scanner vhf/uhf	139

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AX	IF232C	Kenwood	Computer interface	115
SX	5000E	Tono	Multimode TU inc. KB/VDU	499
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SX	IC-575A	Icom	6mtr/10 mtr 10w	795
RX	IC-25E	Icom	2mtr FM handie	155
RX	TH215E	Trio	2mtr FM Handie	175
AX	TR751E	Trio	2mtr multimode 25w	495
AX	TR851E	Trio	70cm multimode 25w	525
LX	TS790E	Trio	2mtr/70cm multimode	1250
RX	FT650	Yaesu	6mtr/10mtr 100w	825
AX	FT690R2	Yaesu	6mtr 3w. multimode	350
LX	FT290R2 (FL2025)	Yaesu	2mtr 3w (25w) mutimode	460
AX	FL2025 (+MMB31)	Yaesu	2mtr 25w L/amp (290r2)	110
AX	FT290R	Yaesu	2mtr 3w. multimode	250
AX	FT480R	Yaesu	2mtr 10w multimode	325
AX	FT780R	Yaesu	70cm 10w multimode	375
SX	FT230R	Yaesu	VHF 25w FM mobile	139
AX	FT227R	Yaesu	2mtr 10w FM mobile	139
RX	FT203R	Yaesu	2mtr Thumbwheel handie	145
AX	FT703R	Yaesu	70cm Thumbwheel handie	149
SX	FT73R	Yaesu	70cm 3/5w FM handie	189
LX	FT470	Yaesu	2mtr/70cm FM handie	220
RX	FT727R	Yaesu	2mtr/70cm FM handie	275
RX	FTV107R	Yaesu	Transverter 2mtrs 10w	175
RX	FTV107R	Yaesu	Transverter 2mtr/70cm	275
RX	FTV901	Yaesu	Transverter 2mtrs	175
SX	HT106	Tokyo	6mtr 10w ssb/cw	249
AX	C120	Standard	2mtr 5w handie	139
AX	C5800	Standard	2mtr 25w multimode	279
AX	D520	Standard	2mtr/70cm handie + bits	379
BX	Palm-4	Dunno	70cm 6ch. Handie	99
AX	KT22E	Kenpro	2mtr Thumbwheel handie	99
AX	KT22E	Kenpro	As above + loadsa bits!	149
AX	ALM203E	Alinco	2mtr LCD + memory handie	145
AX	MML-100S	M/mouse	6mtr 100w L/amp	125
AX	MR150V	Tono	2mtr 100w L/amp 10w in	139
AX	LPM144/10/100	Bnos	2mtr 100w L/amp 10w in	189
AX	LPM144/10/180	Bnos	2mtr 180w L/amp 10w in	200
RW	MR750E	Daiwa	Rotator (no guarantee)	185

KT22

ICR1

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success. I can imagine a German-speaking amateur appearing on my local repeater, he or she would be lucky to get one contact.

Final Part

The final part of our tour was down through the Black Forest towards the Bodensee (Lake Constance). This was my first visit to this part of Germany, and I was too busy admiring the scenery to pay attention to amateur radio.

As the coach travelled along the north side of the lake and passed through Friedrichshafen I was reminded of Zepplins (this is where Count Zepplin built his first airships) and the town where the Germans hold their major amateur radio show.

A quick tune, and another strong repeater, and a chat with DL1GSN before crossing the border into Austria through Bregenz - a small town on the shores of Lake Constance. Here, my Dutch experience was repeated and although stations were heard, I could not work anyone. On our return trip we travelled via Luxembourg, and I had the novel experience of working a station in France from the coach, as LX/G3NRT/M.

The Right Choice?

Was 144MHz f.m. the right choice? Yes, because I could work the locals. On h.f. I could have worked back into the UK, but I can do that from home. The 144MHz band was the right choice for me; I worked the locals, and that added to the experience of being 'abroad'.

On return to the UK I had no problems passing through customs. I was sufficiently encouraged by the experience to take the rig on my next holiday to France - but that is another story!

National Licensing Authorities

Telephone numbers of some national licensing authorities:
UK (the DTI) 071-215 3000
Holland 010 315 0222 111 (they speak good English)
Germany 010 492 28 141
Austria 010 432 225 15 510 (not tried these two)

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Racal MkII RX, £150. RA218 s.s.b., £85. MA197 preselector, £85. MA79G driver, £180. RA137A l.f., £65. 100W p.a./p.s.u., £75. TNC220, £50. Pye Westminster w/packet crystals, £25. Tel: 081-534 3170 evenings.

Kenwood 231E 144MHz f.m. mobile 40W, £190. 531E 1296MHz f.m. mobile, £275. Both mint - used base only. SP 940 extension speaker (for TS-940) new £70. Paul G4XHF. Tel: (0293) 515201.

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Plain Speaking

Patrick Allely GW3KJW

As we've got a foreign language theme, Patrick Allely GW3KJW, reports on some 'jargonese' he's heard on the air. The mic over to you Patrick.

"Well 73 old man, I'm going qwert now". I was idly tuning (and I mean tuning, I had a v.f.o.) across 144MHz one day, when, on an obscure frequency, I overheard the aforesaid sentence. Being extremely naive, I immediately asked what qwert meant? I have been licensed for 35 years and am always willing to learn. To my surprise, the question was promptly answered. I was informed by a class A licensee that qwert meant QRT and not the first five letters on the upper row of a standard typewriter, as I had first believed.

Language Of Shakespeare

The use (misuse) of the language of Shakespeare started a train of thought, and closer investigation of the peculiarities of amateurs had proved to be a source of wonder, despair and great amusement.

Imagine that you are interviewing a candidate for a responsible position within your organisation. Sitting in front of you, dressed in his best suit, with his teeth and shoes polished, is the best qualified applicant. He is neat, tidy, educationally gifted and believed to be erudite. You obviously know his surname, and to put him at his ease, you ask him his forename. He takes a deep breath and says, "The personal this end would be Wayne" - Thank you, don't call us, we'll call you. Next applicant please!

Sounds Ridiculous

Sounds ridiculous doesn't it? But this is precisely what is said countless times over the air. If you sit back and analyse the sentence, it no longer makes any sense whatsoever. The personal - the personal what? Teacup, experience, problem? This end - well it's not my end that's for sure. Would be Wayne - well it would be Wayne if my parents had not decided to call me Alice.

It gets worse. I am in contact with someone and I am now given a location. "My QTH would be TQ63 and the book number there is 5,635,326." Means nothing to me, I tell him his report, the name of my village and my name, and occasionally my army number, it might mean something to him.

Confusion Setting In

Confusion is now setting in. He asks me for my WAB number, presumably he wants my National Grid Reference. I give him the six digits and the Ordinance Survey sheet reference, but I am told that this is not good enough for his purpose and he will work it out for himself.

I ask for a report, to my mind, the most important piece of information. I know that he is not going to give a better report than I gave him. "You are 7 over 5". I beg his pardon, so he then tells me that I am radio 5 and Santiago 7. Again, I ask what this means and could I have my report in the accustomed way of readability and strength, for that is what R and S stand for. It turns out that I am Readability 5 and Strength 7.

Description Of Stations

Now we come to the description of our various stations. He tells me that his working conditions are a TS711 and an HB9. I tell him that my working conditions are reasonable, a 39-hour week, Monday to Friday, with paid overtime and three weeks holiday every year.

He is not impressed, he's not quite speechless, although he should be, for he gave me his microphone, at least he shouted, "The mic back to you'. Perhaps we are only using one microphone between us in the manner beloved by roving street reporters. I tell him that I am running about 10W to a 9-element Yagi and my wireless is now nearly 20-years old. I think he is even less impressed.

Respective Locations

Now we describe our respective locations. I tell him that my house is 700ft above sea level and that the antenna is another 35ft above ground. This simple statement provokes another attack of pigeon English, "I wish my QTH was that high, here the a.s.l. is at sea level. Now there is a statement to consider and chew upon. Translation - the above sea level is at sea level. What does that mean, I ruminate? Still, I let it pass whilst he tells me about the troubles he's had with his antenna, he will insist on describing it as an HB9. Poor old HB9CV would be most upset to know that he was not getting credit due to his brilliant design. To get back to the antenna, Alice, sorry Wayne, had swerred it but could not get a better figure than 3:1. What did I think?

It Isn't In My Dictionary

Well now, first of all, what did the word swerred mean? It isn't in my dictionary. I might have realised. He has made a word out of three capital letters, which, in English, are all consonants, the letters S, W and R, then turned this nonsense word into a verb and placed it in the past tense. Things were now going from bad to worse, and to complicate things, after each sentence he was saying HI. Finally, the nightmare ended, as the contact terminated after he faithfully promised to see me further down the electricity bill.

Careful Listening

You may feel that I have exaggerated. But a couple of hours careful listening around the bands will convince any non-radio amateur that he has stumbled upon a secret sub-culture. They live in an electronic world and speak a language so unintelligible to normal humans, to inhibit anyone but their own kind from joining in the fun.

What makes these apparently sensible, rational people, speak such crass nonsense? Is it believed to be the accepted from of speech, an ego trip, or is it lack of knowledge of the native tongue?

The non-English nationals heard on the bands seem to experience little difficulty in speaking English correctly, and are able to speak in what is to them, a foreign language, to other amateurs. Surely, the prime criterion in a communicative hobby, is to communicate in a manner which is clear, concise and unambiguous.

I have never yet heard a Continental amateur calling for 'long DX' - for 'DX' often, but never the former. Neither have I heard anyone outside the UK say that they have been earwigging! Does the true meaning of this word follow the same rules as the word blackberrying, and mean collecting earwigs?

Unfortunate Tendency

We have an unfortunate tendency in making words out of initial letters, then pronouncing these artificial words in the most accepted way. Take Radio Teletype, RTTY for short, RITTY for idiocy. Who put an 'I' in it? Why not an A or an E an O or a U? Ratty sounds better, reminds me of *Wind in the Willows*, yes Ratty it will be for now, sounds better than Rotty or the other combinations.

Another silliness is speaking international Morse phrases, instead of their true meanings, '73' for instance, why not say best wishes or whatever it is in the other person's language. I will happily accept Hwyl fawr, but someone saying '55' to me is wasting their time, I don't know what it means.

I used to work in a department which dealt mainly with foreign nationals, most of whom had a very basic knowledge of English. One of my colleagues used to try to speak to them by using broken English and many hand movements, in the mistaken belief that they would understand this better than plain English. I think I heard him on 144MHz the other night, the hand movements sounded familiar!

A Word Of Admiration

Finally, a word of admiration for the amateur I recently heard utter "The antenna at my QTH is at 470ft and I am 50ft below it". That made perfect sense!

Alan CT145 Ha

Review

Having owned a very basic 144MHz hand-held for just over a year, I felt I was ready to try something a little more sophisticated. As luck would have it *PW* came up with the Alan CT145 for me to review. During this summer, the CT145 was almost in constant daily use while out walking or driving. It has proved to be a very reliable and worthwhile companion.

Package Price

At a package price of £199, the Alan CT145 comes with two empty battery cases, one to take four AA cells while the other holds six. In addition it's supplied with a wrist strap, a 'rubber duck' antenna, belt clip and operating manual.

Your first thoughts, were no-doubt the same as mine, "So that's how they keep the price down! No NiCads or charger". But to be fair, you would pay approximately £42 extra for a nice sealed battery pack and dedicated wall charger, which I don't consider good value for money. Especially when, at your local rally, six AA sized NiCads with a cheap universal charger wouldn't come to more than £15 all found.

Stepping Stone

Talking to Nevada, it would appear that they see the CT145 as being a stepping stone between budget thumbwheel hand-helds, and the more sophisticated all-singing all-dancing types. While in conversation, I broached the subject of a 430MHz version, to cater for the growing numbers of Novice Licensees. I was assured that this section of the market would soon be offered a look-alike unit at a slightly higher price.

Neat

I found the CT145 to be neat without being too small, and well laid out with a reasonable size display. However, I did struggle a little with the status symbols, which proved too small for me, at least without my glasses.

The unit is reasonably light and nice to handle when using the larger of the two battery packs with the supplied helical antenna. I was very surprised at the crispness of the received audio, even at high volume and amazed at the overall sensitivity of the the unit.

Even on the supplied antenna, I was able to hear no less than three repeaters from within the confines of my lounge, which is not noted as a DX site.

One slight problem I did note with the CT145 receiver, was when it was used on an external collinear antenna, it suffered breakthrough from a local Band II radio station. As this interference only appeared on two discreet frequencies in the section of the band above the repeater outputs, it seemed of little consequence. But for other users with local sources of high adjacent signal strength, it might prove to be a problem.

In Context

However, to look at the high adjacent signal strength problem in context, nearly all hand-held transceivers are designed to give good communications efficiency with a less than perfect antenna. So you might expect nearly all such equipment to have a few receiver vices, when used on a more efficient antenna system.

The CT145, unlike my own hand-held, didn't seem to suffer from overloading or apparent de-sensing from the normal source of local QRM. This QRM is caused by a high powered wide-area paging transmitter almost within sight of my QTH.

On the transmitter side of things, several stations commented that the transmitted audio was nasally and lacking in treble. Having listened to the rig on a monitor receiver, I can't say it's particularly bad, although I think the audio was probably tailored for the oriental voice.

Physical Construction

The physical construction of the CT145 is fairly robust, with the back-shell section of the case being made of die-cast alloy. This gives the design some rigidity and mass while serving as a heat sink for the transmitter.

Although the whole rig without battery pack is about the size of a pack of cards, the controls are

andy Transceiver

Reviews

We asked Richard Ayley G6AKG, to tell us about the new Alan CT145 hand-held transceiver imported by Nevada.

well laid out. To save space, the squelch control has been reduced to a user-preset type of control, only adjustable with a finger nail. I had no problems with it, and found that if the control was set properly, it didn't need constant resetting, as the squelch action proved to be very positive in its operation.

The top panel of the rig carries both rotary volume and channel change controls, along with sockets for speaker-microphone, antenna, and in addition a transmit l.e.d.

On the right-hand side of the rig is a miniature coaxial power socket for an external 12V d.c. power source. Using this power source can boost the rig's output power up to 5W.

The battery pack is slotted on to the bottom of the case via two rails, one of which is plastics and the other of alloy. This combination looks stronger than some other designs I've seen; which rely solely on the strength of plastics mouldings.

Pleasing To Handle

The CT145 is as pleasing to handle as it is to look at, with all the control surfaces finished in a very tactile type of charcoal-grey coloured, synthetic rubber. These rubber surfaces makes the rig easy to operate during the warm weather, even with my large fingers. However, when the rig is cold, the volume and channel controls seem to become rather 'greasy' to the touch. This problem is not helped by completely smooth control knob surfaces.

The l.c.d. display is easy to view at just about all angles. Although as previously mentioned, those with poor eyesight might find seeing more than just the displayed frequency rather difficult to cope with. In my opinion, the signal strength display and operational status symbols are too small, but then my eyes are not what they used to be!

Backlight Effective

The display backlight is very effective, but, in poor light without keypad illumination, more than a quick frequency check is a bit hit and miss at first.

Although once familiar with the CT145's functions, I manage to operate the rig in almost total darkness. This was done by programming all my favourite channels into the 20 available memories, along with any repeater offsets, then running through them using the rotary channel encoder.

The p.t.t. switch is of the membrane type, and is quite easy to use for short periods. However, it's not to be recommended for long rag-chewing overs, as it became uncomfortable to operate after a minute or so.

Extra Features

It can be said of modern microprocessor based equipment, that it costs virtually nothing to add extra features via software. Hand-held transceivers are a good example of this principle, and the Alan CT145 is no different.

All the more mundane functions and adjustments can be carried out from the keypad as well as via the rotary encoder. These include changing frequency, transmitter output power (three levels), repeater offset, step sizes, automatic power off, etc. Additionally there are some very sophisticated scanning and search modes to choose from.

Eight Ways

Reading through the manual I counted no less than eight ways to make the CT145 scan. First, you can scan any 1MHz segment of any band. I say of any band, because with little effort the receiver can be made to listen outside of the UK 144MHz allocation.

The review model managed a reasonable degree of sensitivity from 130MHz to 169MHz, which when viewed as a 'freebie' I didn't think was bad going. To get into this mode, press the '3' button on the keypad while switching on the set.

To reset the rig back to 144MHz only operation, switch the rig on while pressing the 'Func' (function) button and '1' on the keypad. Neither of these functions is listed in the manual.

Another option is to scan the entire 144-146MHz allocation, while there's scanning inside and outside programmed limits. Then there are two groups of 10 memories to scan, individually or together. Not to mention selected memory scan, interlaced with a dialled frequency in a priority channel watch mode.

Two Search Modes

One of two search modes can be selected. Either wait for five seconds on each occupied

Manufacturer's Specification

Frequency range	144-145.995MHz
Modulation	f.m. reactance 5kHz deviation.
Transmitter spurious signal ratio	better than -60dB
Microphone impedance	600Ω
Speaker impedance	8Ω
Operating voltage range	5-16V
Current drain	13.8V High 950mA (5W)
	7.2V Hi/Mid 650mA (2W)
	7.2V Low 350mA (350mW)
Standard NiCad pack	
Receiver current drain	Stand-by 35mA
	Battery save 13mA
	Auto-off 5mA
Receiver i.f.s	1st 21.8MHz, 2nd 455kHz
Sensitivity (12dB SINAD)	better than -10dBμV
Signal-to-noise for 0.5μV	30dB or better
Squelch sensitivity	0.1μV
Audio output	250mW-8Ω @ 10% distortion
Dimensions (excluding battery and antenna)	
Size	83.5 x 55 x 31mm
Weight	185g

The above is condensed from the manufacturer's full specifications.

Richard Ayley found the CT-145 to be neat without being too small.

Review

channel before moving on, or hold the occupied channel until the squelch closes for more than five seconds.

If all these methods of scanning have left your head ringing, imagine what it did to mine trying to write it all down!

Operation of the CT145 is not complicated, so I didn't need to carry the manual with me all the time. In fact, I'd mastered just about everything after an hour's-worth of reading the handbook and experimenting.

The manual has graphic representations of the programming steps needed for each function, together with useful notes and prompts, all making programming very simple. I did find the grammar a bit strange in places, but some people might level that criticism at my style of writing, HI. Altogether I'd give the manual eight out of ten.

I did find one important function not covered in the manual, and that was the position of the tone burst button, this I found by experimentation. However once found , I felt rather stupid, as it was plain enough. The large button next to the display marked 'Call', has a dual purpose. It recalls a user programmed channel such as your local repeater, and then on a second push (along with the p.t.t.) sends the repeater access tone.

NiCad Pack

A full range of accessories for the CT145 is available from Nevada. These include a 7.2V 700mA NiCad pack, wall charger, soft case, speaker microphone and 12V d.c. supply lead. In addition, there are other boards for optional c.t.c.s.s. (tone squelch) and d.t.m.f. (touch tone).

Summary

I tend to know almost instantly, whether I'm going to like a rig or not, by the ease of operating without reference to the user's manual. The CT145 easily met with my 'instant' criteria.

The rig is nice to handle, and with the added receive coverage and scanning facilities proved to be very entertaining. Although not an official function this, along with the price makes the CT145 an attractive package.

I did try the rig on the small battery pack using dry-cells, and I was surprised how long they lasted. The standby current of the CT145 with the battery save function is very miserly at 13mA. This, combined with selectable low r.f. power level, gave a good compromise between communications efficiency and battery life.

The CT145 is a good compact communicator for the price of a £199 and I'm sure is well placed in the market, as will be the 430MHz version when it arrives.

My thanks go to Nevada for the loan of the Alan CT145. For more details of the range of accessories available for the transceiver, and their cost, contact Nevada Communications at 189 London Road, Portsmouth PO2 9AE, tel: (0705) 662145.

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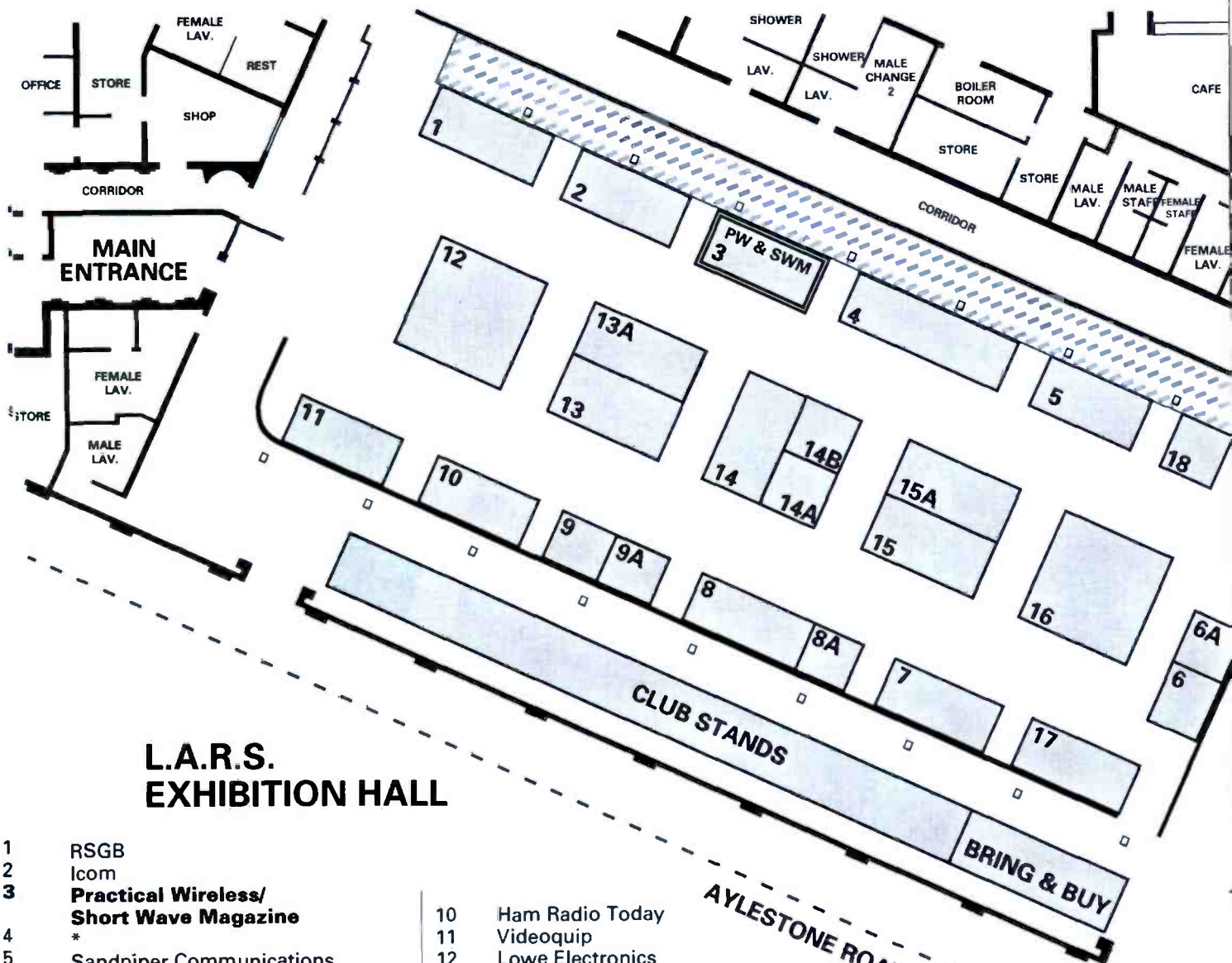

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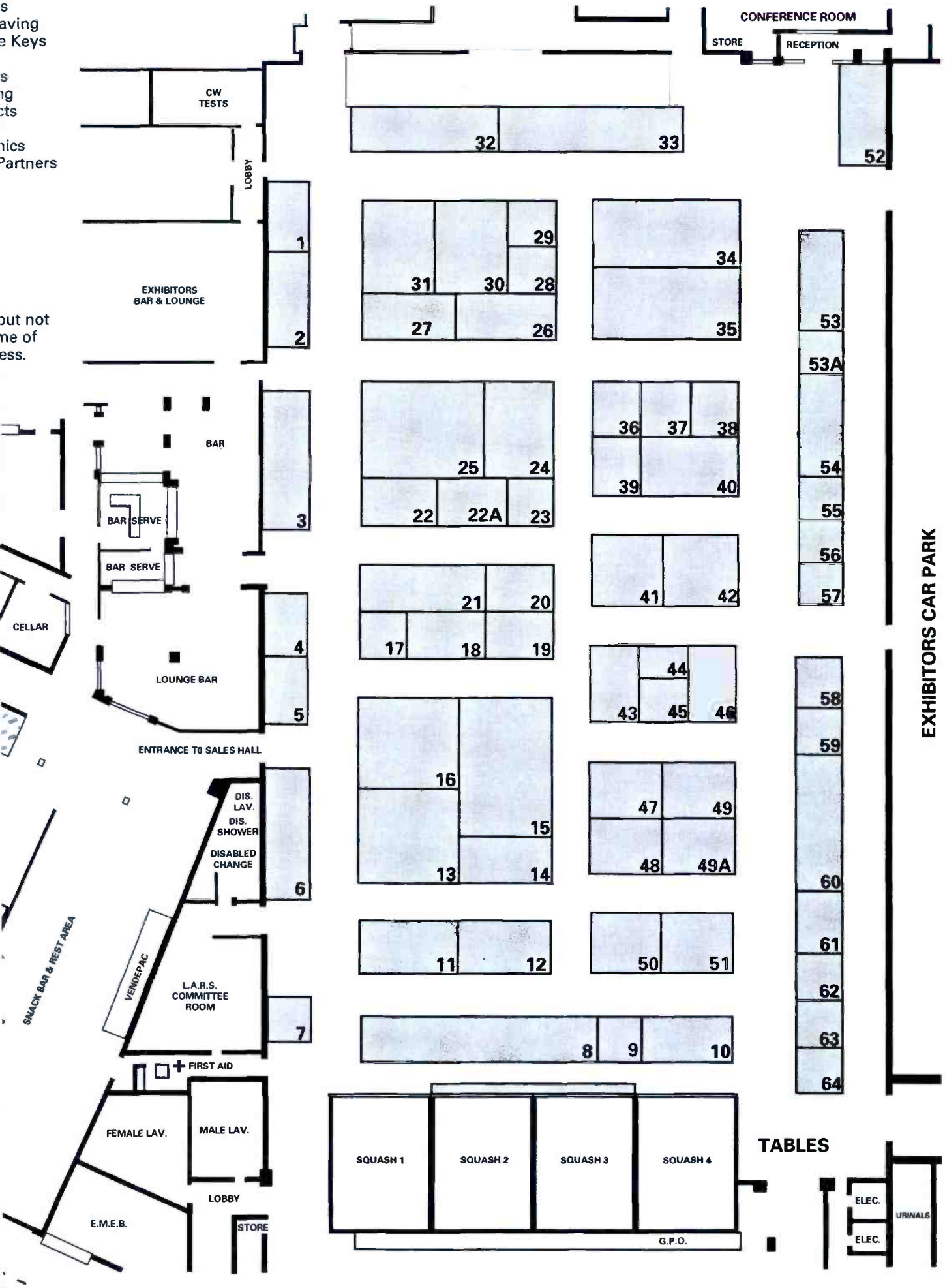

Do you want to visit

DAYTON
FRIEDRICHSHAFEN
ORLANDO

Our annual trips to the world famous radio shows in Dayton and Friedrichshafen have become a firm favourite with our readers. Now, Roger Hall G4TNT says it's time to think about next year.

The travel trade is suffering from the recession just as much as the rest of us and several ticketing companies have folded in recent months. Anyone thinking of booking a holiday for next year should make sure they book with an agent who is bonded against failure. This means that you ought to use an ABTA travel agent.

For our trips next year, we're making sure we only use companies that are fully bonded. This way, readers' money is safe, but it means that we have lost some of the flexibility that we've had in previous years. Airlines and hotels are now less willing to let us have options on seats and rooms, and we now have to give them a fairly definite idea of how many people will be going.

I need to hear from you soon if you are seriously thinking about going on one of our trips, as this will help me when I reserve seats and rooms. Please don't wait too long. A lot of readers were disappointed last year because they left it until it was too late, and the situation will be even worse this year as I won't have as many options.

Dayton HamVention

What more is there to say about the Dayton HamVention? It's the biggest and best amateur radio show in the world. At least 30 000 people will visit the Hara Arena every day and there will be some 700 major exhibitors, as well as more than 2000 stalls in the flea market. Our trip will depart on Wednesday 21 April 1993 and return on the following Monday. You'll have five nights at the Days Inn in downtown Dayton, and free buses will take you to and from the show and all the other attractions. This is always a popular trip and I need to know now if you are interested. The cost should be less than £600 - the final figure will depend on how many are going and the exchange rate at the time.

Friedrichshafen

The Friedrichshafen Hamfest is Europe's biggest radio show with attendances well in excess of 15 000. Situated on the shore of Lake Constance on the edge of the Black Forest, Friedrichshafen is well worth a visit even if you don't want to see the show. Our coach trip will leave early on Thursday June 24 and will return on the following Monday (no overnight travel!).

We'll stay in the best hotel in town, but as bedrooms are doubles and not twins, this trip is really more suitable for couples. That's why we've arranged excursions for those who don't want to go to the show. There will also be flights available for those who do not want to travel by coach. The price for the coach trip should be about £200 - please contact me as soon as possible if you want to go, as the number of places is very limited and last year there was a long waiting list.

Orlando

Fancy two weeks at the Orlando show in the sun? Have you decided on your family's holiday for next year? Well, now you can visit the world's favourite holiday resort for a full 14-night holiday and see a superb radio show while you're there.

The Orlando show is nowhere near as big as Dayton, but it's certainly bigger than anything we have in this country. If the Dollar exchange rate stays as it is now, there will be bargains to be had, as most things (not just radios) are usually the same number of Dollars as we pay in pounds.

The trip we're organising will be a full 14-night holiday in a hotel, apartment or villa (with your own private pool if you want). All the accommodation will be a few minutes from the major attractions. A hire car can be included in the price and the whole holiday will be comparable to any that you would normally book through your regular travel agent. The only difference is that ours will be timed to ensure that you will be there for the weekend of the Orlando show, during March. We should also be able to quote a reasonable price as we will make block bookings for flights and hotels. As yet, we haven't finalised our plans and we are open to suggestions, but as before it is really important for you to contact me if this idea appeals to you. I need to know soon if I am going to get the best rates.

If you would like to know more about any of our planned trips, I'll be at the Leicester Show and we should have firmer prices by then. If you won't be there, just give me a ring on **071-731 6222** during office hours and I'll be happy to have a chat. If you would prefer to write, the address is **PO Box 948, London SW6 2DS.** Drop me a line and I'll send you more details. This year we'll have to have firm bookings well in advance in order to go through bonded agents, so please let me known soon if you are interested.

To: PW Publishing Ltd., PO Box 948, London SW6 2DS.

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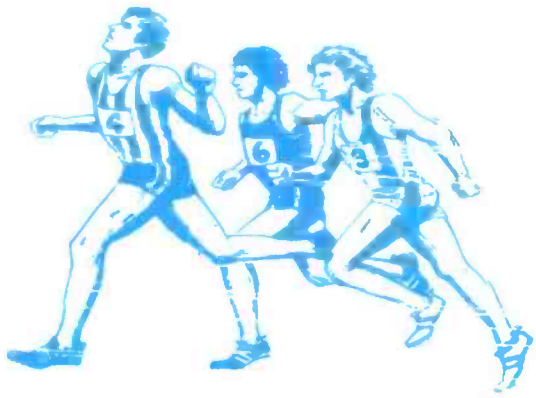


The Simple Ten

A Basic Transmitter For 10MHz

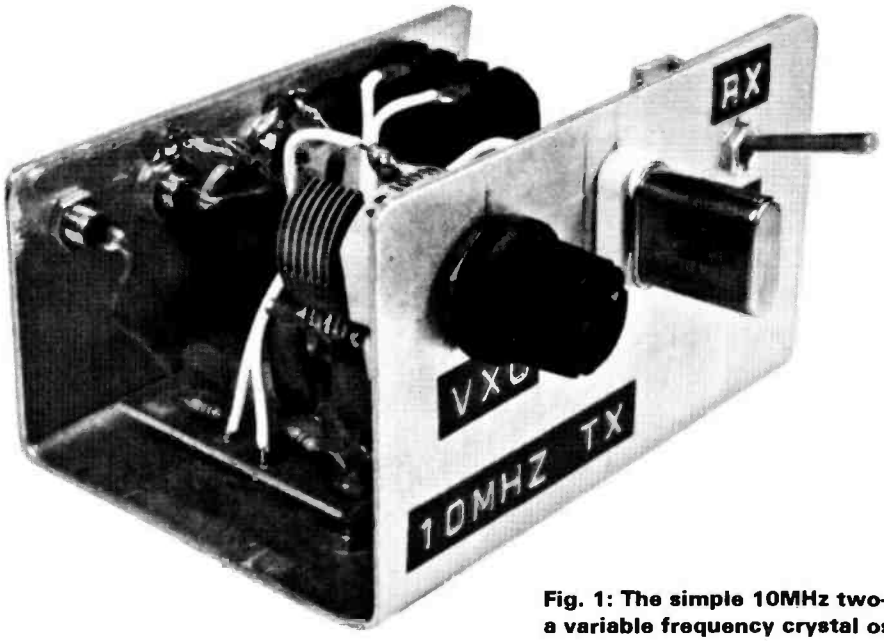


Fig. 1: The simple 10MHz two-transistor transmitter. The design features a variable frequency crystal oscillator.

Steve Ortmayer G4RAW, has been busily working away again in his workshop, perched on the edge of the Penines in Yorkshire. This time, Steve has produced another simple transmitter, to encourage h.f. operators to try working on 10MHz.

The 'Simple Ten' is an ideal starter transmitter for either the Novice or Class A amateur wanting to get onto 10MHz. This little rig can be built very quickly and cheaply.

I've looked up the dictionary definition of the word novice. I found that it means 'a probationer in a religious order or a beginner'. Some radio amateurs may take it all very seriously like a religion, but I tinker about with radio for a bit of fun!

Novice Schedule

The 'Simple Ten' project started life, when I was inspecting the Novice schedule of power and frequencies for the first time. I wondered if a Novice would have much fun with just 3W on some odd corners of some of the bands.

As the 10MHz band is only 50kHz wide, I thought that surely they will give the Novice all of it. But no, they only have the 10kHz between 10.130 and 10.140MHz.

However, every cloud has a silver lining. The consolation is that in conjunction with a good quality variable capacitor, a single crystal can be pulled nearly 10kHz on this band. This means that a Novice licensee can boast that the whole band can be covered with the one crystal!

I've no doubt that the project will also tempt Class A amateurs to have a go. So, I'm looking forward to hearing more of you on the band!

The Circuit

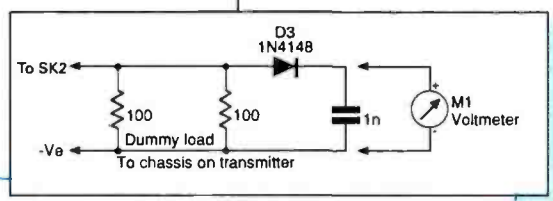
The circuit, **Fig. 1**, is a simple oscillator and p.a. In effect, it's a variation of my 'Challenger' drawing-pin transmitter for 3.5MHz, published in the *PW* December 1991 issue.

I built two prototypes of the 'Simple Ten', one on plain perforated board, and one on a printed circuit board. However, the perforated board technique has a drawback.

When using the perforated board method, I've found it's not so easy to change components. The wires often become intertwined at the rear of the board, and when they're soldered they can be difficult to separate.

Building The Project

Building the project is straightforward. You can make it up using the



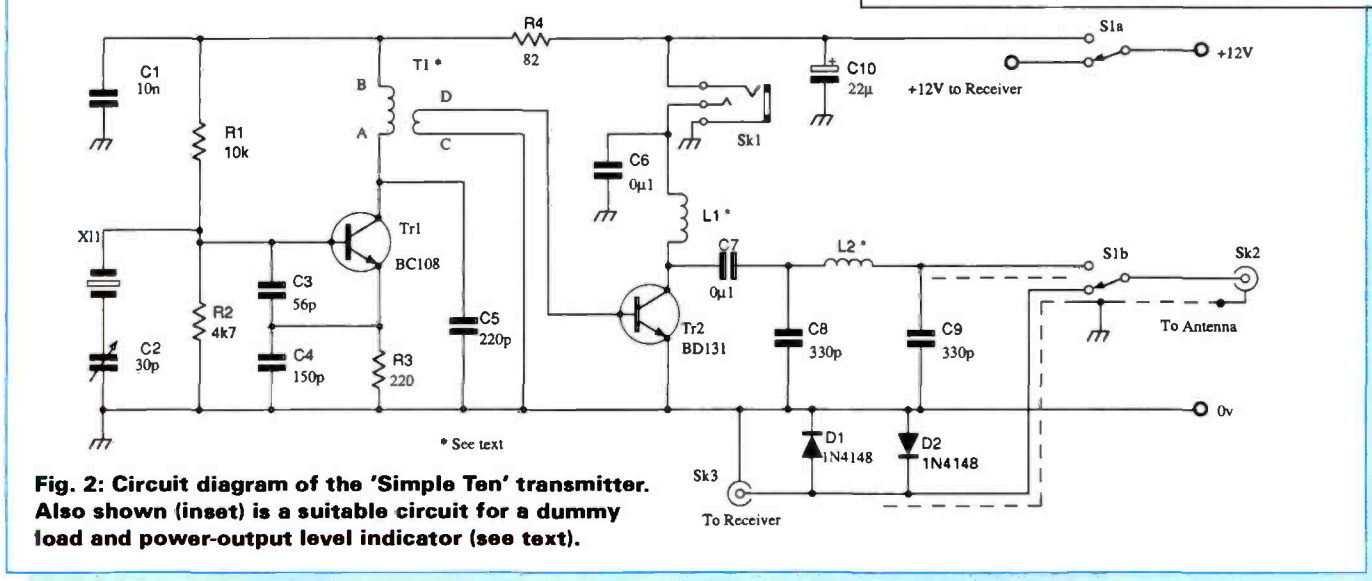


Fig. 2: Circuit diagram of the 'Simple Ten' transmitter. Also shown (inset) is a suitable circuit for a dummy load and power-output level indicator (see text).

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A4S	20-15-10m 4 element Beam
A3S	20-15-10m 3 element Beam
A3WS	17-12m 3 element Beam
D40	40m Rotary Dipole
D4	40-20-15-10m Dipole
D3	20-15-10m Dipole
D3W	30-17-12m Dipole
R7	40-10m H/W Vertical
R5	20-10m H/W Vertical
AP8	80-10m Vertical
AV5	5 Band HF Vertical
AV3	20-15-10m Vertical
A50-6S	6m 6 element Beam
A50-5S	6m 5 element Beam
A50-3S	6m 3 element Beam
AR-6	6m Ringo Vertical
17B2	2m 17 element Beam
13B2	2m 13 element Beam
124WB	2m 4 element Beam
A144-7	2m 7 element Beam
A144-11	2m 11 element Beam
A144-20T	2m 10 element X Oscar
AR-2	2m Ringo Vertical
ARX-2B	2m Ringo Ranger II
AR-270	2m/70cm Vertical
424-B	70cm 24 element Beam
A430-11	70cm 11 element Beam
416TB	70cm 8 element X Oscar
ARX450B	70cm Ringo Ranger II

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15M-4	15m 4 element Beam
10M-4	10m 4 element Beam
KT34-A	20-15-10m 4 element Beam
KT34-XA	20-15-10m 6 element Beam
6M-7LD	6m 7 element Beam
6M-5	6m 5 element Beam
2M-20LBX	2m 20 element Beam
2M-16LBX	2m 16 element Beam
2M-13LBA	2m 13 element Beam
2M-22C	2m 11 element X Oscar
2M-14C	2m 7 element X Oscar
432-30LBX	70cm 30 element Beam
432-20LBX	70cm 20 element Beam
435-40CX	70cm 20 element X Oscar
435-18C	70cm 9 element X Oscar

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B108G	2m 10-80w g/f rx
B215G	2m 2-150w g/f rx
D3030N	70cm 30w-100w
D1010N	70cm 10w-100w
D15N	70cm 2w-20w

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155CA	15m 5 element Beam
153BAS	15m 3 element Beam
105BAS	10m 5 element Beam
103BAS	10m 3 element Beam
TH7DXS	20-15-10m 7 element Beam
TH5MK2S	20-15-10m 5 element Beam
EXP14	20-15-10m 4 element Beam
TH3JRS	20-15-10m 3 element Beam
TH2MK3S	20-15-10m 2 element Beam
DX88	8 Band HF Vertical
12AVQS	20-15-10m Vertical
14AVQ	40-10m Vertical
18VS	80-10m Vertical
66DX	6m 6 element Beam
64DX	6m 4 element Beam
215DX	2m 15 element Beam
216SAT	2m 8 element X Oscar
7031DX	70cm 31 element Beam
7030SAT	70cm 15 element X Oscar

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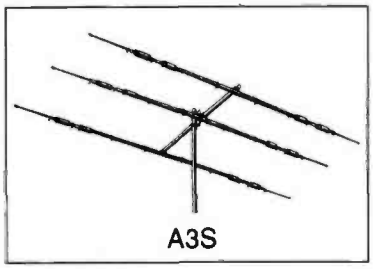
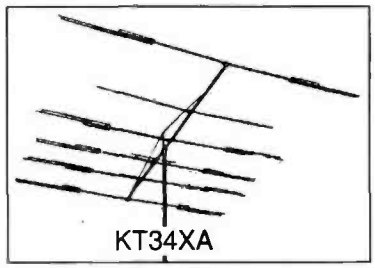


A3S



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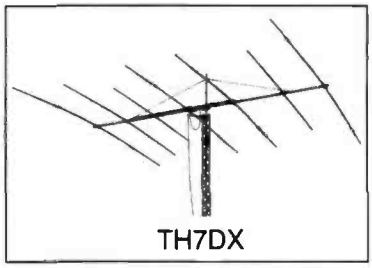

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drawing-pin method, strip-board or by using a prepared p.c.b.

The p.c.b. layout, and the component overlay are shown in **Fig. 3**. You can either make the board up yourself or use one from the *PW* PCB Service.

When assembled, the p.c.b. can be tested into a dummy load, and the power output checked with a power meter or a diode probe and volt meter.

The Testing Process

The testing process is the same as described in the 'Challenger' drawing-pin transmitter. Just in case you don't have that issue to hand, I'll run through the process again.

So, to start off, don't forget to check for short circuits, wrong connections and other mistakes. In fact, it's often best to leave the project for a while, and return to it a few hours later. Any mistakes will normally spotted very quickly!

When you're testing the transmitter, a dummy load (a suitable example is shown inset in **Fig. 1**), should be connected to the transmitter output. The inset circuit in **Fig. 1**, is of a combined dummy load and voltage probe, and it's made up from two 100Ω 1W resistors in parallel.

The output power depends on the transistors and the supply voltage. There are only two transistors, so you can try different types to see what power you get.

I used a 2N2222A and a BD131 and still got 1W with a 12V and 2W with a 15V supply.

Box Or Case

The completed board can be fitted into a box or case, but I just used a U shaped 16s.w.g. aluminium chassis. Sockets are needed for power, antenna, receiver antenna feed and key.

The key takes the full 12V, and should preferably be an insulated type of jack plug socket. If you use a metal socket, it must be mounted in a plastics panel to provide insulation.

Variable Crystal Oscillator

The action of the variable crystal oscillator can now be tried. Unfortunately, I don't know of a cheap source of crystals in the Novice 10MHz band. However, I ordered a 10.131MHz crystal so that if it oscillated at below its marked frequency, it would still be in the band.

***Editorial note**: See shopping list for a suitable crystal supplier.*

On Air Testing

For the on air testing, the little transmitter was coupled with a home made receiver. The combination was then coupled to a wire antenna tuned with an L-match. The first QSO bought a 339 report from IK2LCZ, which wasn't so good, but we did complain of QRM!

The next station was FE1LFO, and he gave the little TX 559 from his QTH near Paris. Otto LA1IE gave a 559 report, so the 2W was working well. You can't spend much time on 10MHz without hearing Otto, as he has a perfect command of the English language, and he sends the best Morse to be heard on the band.

I hope you get as much enjoyment as I have on 10MHz with this little rig. Although it's only a simple little job, it won't cost much and as you can see from my QSOs, it works!

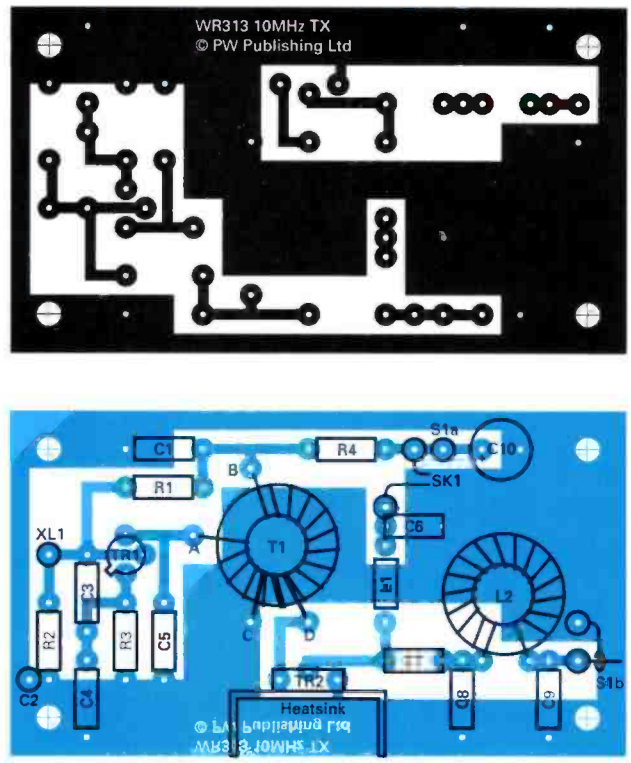


Fig. 3: The p.c.b lay-out and overlay diagrams.

How much? **Around £12 (depending on your junk box)**
How Difficult? **Beginner**

Shopping List

Resistors
Carbon film 5% 0.25W

82Ω	1	R4
220Ω	1	R3
4.7kΩ	1	R2
10kΩ	1	R1

Capacitors
Miniature ceramic

56pF	1	C3
150pF	1	C4
220pF	1	C5
330pF	2	C8, 9
10nF	1	C1

Polyester

0.1µF	2	C6, 7

Electrolytic 25V d.c. working

22µF	1	C10

Variable air spaced

5 to 50pF	1	C2 (see text)

Semiconductors
Transistors

BC108	1	Tr1 (see text)
BD132	1	Tr2 (see text)

Diodes

1N4148	2	D1, 2

Inductors
Ferrite toroid

T1	14 turns 22s.w.g. on T50-6 (yellow) (a-b) 3 turns 22s.w.g. over T1 primary (c-d)
L2	13 turns on T68-6 (yellow)
L1	6 turns 32s.w.g. wound on ferrite bead

Miscellaneous

Suitable r.f. plugs and sockets, double-pole change-over switch (wafer type or toggle), connecting wire, copper laminate blank, (ready-made p.c.b. available from *PW* PCB Service). Crystal holder. Suitable good quality variable capacitors for C2 are often available at rallies, J. Birkett of Lincoln (see advert in this issue) are another possible mail order source.

Golledge Electronics Ltd. of Merriot, Somerset TA16 5NS, tel: (0460) 73718, can supply *PW* readers with a suitable 10.131MHz crystal. It's available at a special price of £8 including p&p and VAT.

Getting Started - The Practical Way

Having returned from a well-deserved holiday, the Rev. George Dobbs G3RJV describes how you can begin to build a simple direct conversion 3.5MHz receiver. And as you would expect, George starts off with an appropriate quotation.....

"Observe how system into system runs,
What other planets circle other suns." **Alexander Pope**

Have you ever tried to tune a musical instrument? The usual method seems to be (I'm not a musician!) to compare the instrument against another accurately tuned sound.

The string or pipe, is adjusted until its note sounds the same as the known accurately tuned note. Tuners of instruments will know that as the two notes approach each other in pitch, a beat note can be heard.

The low pitched sound that they're listening for, is the difference in frequency between the two notes. This is helpful in the final stages of tuning. As the frequencies get closer, the beat note gets deeper (lower in frequency) until it finally stops, this is called 'zero beat' and the two notes are at the same pitch.

Beat Frequency Oscillator

The musical information is all very interesting stuff you're probably thinking, but what does it have to do with radio construction ? Well it is relevant, because if you remember, in the last part of this series we made a beat frequency oscillator or b.f.o.

The b.f.o. uses the same effect as the musical instrument tuner is listening for. The difference is that our version is at **radio frequencies**. We use it to mix an external oscillator's signal, with another to produce a beat note to resolve c.w. or s.s.b. transmissions.

You may recall that the information contained in a radio signal is 'carried' on the radio wave. The un-modulated (no speech or music on it) radio wave itself, is often called the 'carrier'.

Some types of radio signal require the carrier to be re-inserted by the receiver. Without adding a carrier signal, c.w. (this is actually an abbreviation for continuous wave) Morse signals would just be heard as a series of on-and-off hisses or thumps, depending on the strength of the transmission.

Carrier Suppressed

Amateur radio s.s.b. signals have the carrier suppressed before they are transmitted. The full name for this specialised amplitude modulation mode is 'single sideband suppressed carrier'.

The b.f.o. signal must be added to both the c.w. and s.s.b. types of transmissions to make them intelligible. In practice, the b.f.o. signal is close to the intermediate frequency (i.f.) signals in the receiver.

The i.f. section, is one of the processing stages in a superhet receiver. It's the b.f.o. signal, 'mixing' with the i.f., that produces the difference signal, or 'beat' note, we can hear. In effect, it uses the same principle as the beat notes used in musical instrument tuning

Colpitts Oscillator

One of the types of oscillator described last time was a Colpitts oscillator. This month, we are going to use the Colpitts version of the b.f.o., as a variable frequency oscillator or v.f.o. Now you'll realise why there was an enigmatic caption with the picture of the project on page 23 of September *PW*!

We're actually going to use the v.f.o. to make the first complete radio receiver in this series. The Colpitts oscillator will form part of a 3.5MHz direct conversion receiver.

The direct conversion (or d.c.) receiver uses the beat frequency principle to make a simple, but oddly effective, amateur band receiver. It's a case of 'systems within systems', but that's what radio construction is all about!

Block Diagram

The illustration, **Fig. 1**, shows a block diagram which explains how a direct conversion receiver works. From the diagram, you can see that radio signals are received by the antenna. The required signals are then selected by one or more tuned circuits in the **input tuning**.

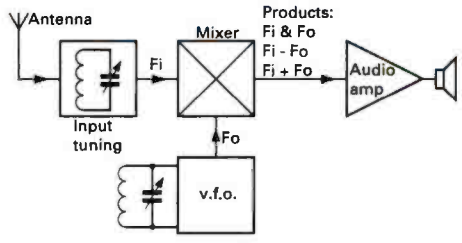


Fig. 1: Block diagram showing how a direct conversion receiver works (see text).

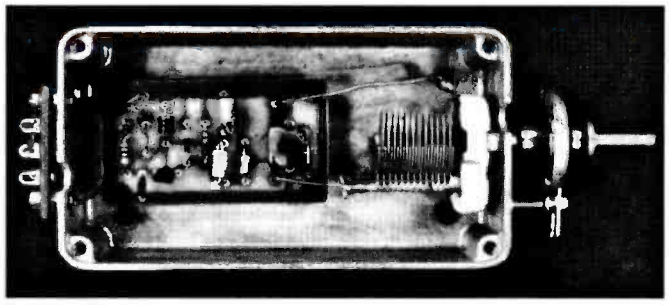
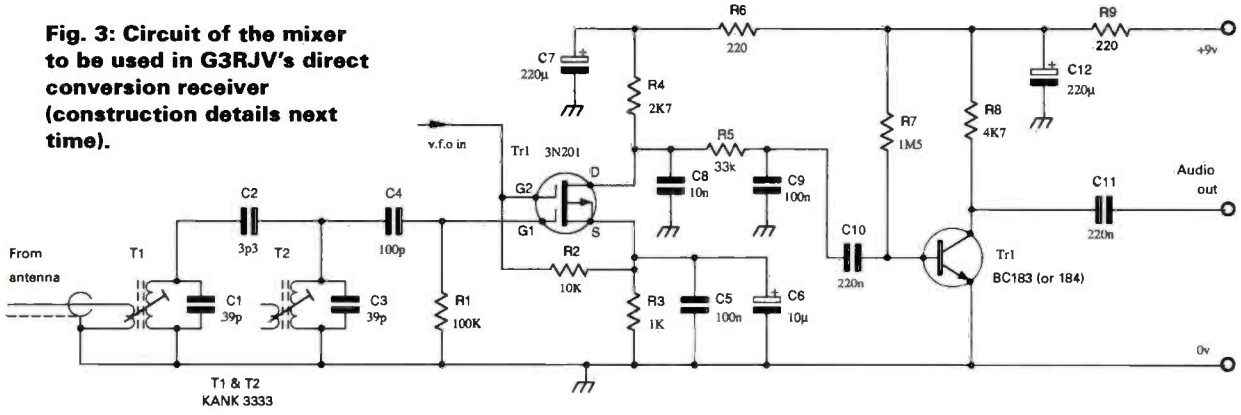


Fig. 2: The v.f.o. mounted in a die-cast box. This forms the basis of a direct conversion receiver.

Fig. 3: Circuit of the mixer to be used in G3RJV's direct conversion receiver (construction details next time).



The required signal is called Fi in the diagram, and it represents the frequency of the input. A variable frequency oscillator (v.f.o.), generates another signal, marked as Fo, and this is the frequency of the oscillator. Both of the signals are then fed to a circuit known as a 'mixer'.

Several Outputs

The mixer produces several output frequencies. The main outputs are Fo and Fi, and these simply pass through the mixer, together with Fi + Fo and Fi - Fo. The frequencies Fo + Fi and Fo - FI are generated in the mixer.

The various outputs are called the **products** of the mixer. In fact, this type of circuit is often called a **product detector**.

There are also other, unwanted signals produced in the mixer. They arise from harmonics of the input signals and radio signals not removed by the input tuning. They can be ignored for the purpose of this explanation, although they do degrade the operation of a product detector.

Audio Tone Produced

Let's continue our look at the product detector. The theory isn't half as difficult as most people imagine.

If we arranged the v.f.o. frequency to be almost at the input signal frequency, an audio tone would be produced. And the audio tone would have the frequency of the difference between the two r.f. signals.

When Fo is the same as Fi then the difference is, of course, d.c. (or 0Hz) and so nothing would be heard. If however, the v.f.o. (Fo) is above, or below, Fi by 1kHz, an audio tone of 1kHz would be produced. The only requirement is the **difference** between the two signals, and not their individual values.

When the input signal (Fi) is of the form of an s.s.b. voice signal, the v.f.o. has to be exactly on the (non-transmitted) carrier frequency. To help you understand this better, let's consider a signal: an 3.7MHz upper side-band (u.s.b.).

We'll assume the signal occupies the bandwidth 3.7000-3.703MHz. When this band of frequencies is mixed with the v.f.o frequency (set at 3.700MHz), a band of audio frequencies of 0-3kHz will be produced. As this is the range of the original voice signal, the output will be the reproduced speech.

Don't forget that my explanation has assumed that Fi is an **upper sideband** (u.s.b.) signal. If it were a lower side-band signal (l.s.b.), as it normally is below 10MHz, then the original voice would still be heard.

Remember, that below 10MHz l.s.b. is used. Fo is low, and above 10MHz with u.s.b. Fi is high. Again, it's the difference that's important.

Signal Low

The action of the product detector has turned the radio signal into an audio signal. The level of this signal is very low, so an audio amplifier is required to make it loud enough to hear.

In most direct conversion receivers, a lot of gain is required in the audio amplifier. Usually the radio signal is not amplified before it reaches the product detector.

Some types of mixer do provide a little amplification, but others reduce the signal level. Most of the receiver **gain** comes from the audio stages. This means that the **sensitivity** of the receiver (how well it can detect weak signals) is governed by the gain of the audio stages.

Input Tuning

The selectivity of receivers, the term used to describe how well they can separate individual radio signals, is mostly governed by the effectiveness of the input tuning. To achieve this, sometimes more than one tuned circuit is required to sort out signals on the crowded amateur bands.

However, direct conversion receivers are slightly different, in that they rely on their selectivity being provided by the audio bandwidth. When you bear in mind that in effect, the audio amplifier is also the 'intermediate frequency amplifier' (because we've 'mixed' down to audio) this makes sense.

Fortunately for the d.c. receiver, it's possible to increase selectivity by audio filtering. This is done by filtering, only permitting a narrow frequency range of audio signals to reach the final stages of the audio amplifier. This process results in less signals being heard at one time.

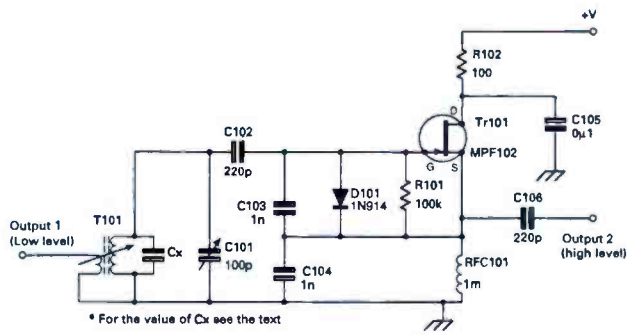
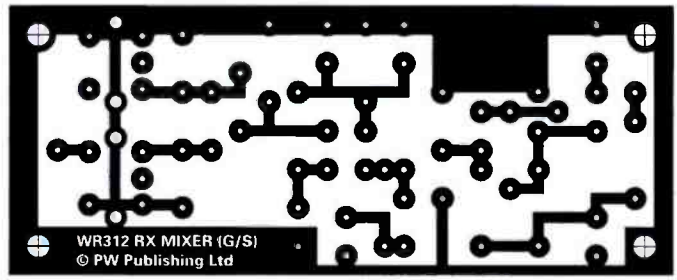


Fig. 4: The basic b.f.o./v.f.o. circuit (originally published in September *PW*), that now forms the basis of the 'Getting Started' direct conversion receiver.



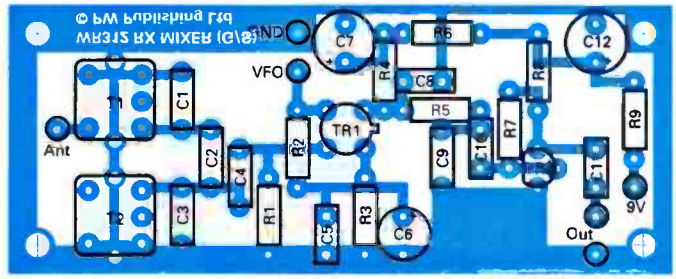


Fig. 5: The p.c.b. and associated overlay for the direct conversion receiver to be completed next time.

In spite of their limitations, direct conversion receivers provide a simple, and effective method of receiving c.w. and s.s.b. signals. A direct conversion receiver is a good first amateur bands receiver project. We're going to build a simple direct conversion receiver as the first steps into receiver construction.

Built And Tested

The first part of the project to be built, is the receiver's variable frequency oscillator. This is because it can be built and tested in its own right, before the other boards are made.

If you've actually built the project from the September issue, you'll have a choice of how to do this stage. You can either modify the b.f.o. you've made, or (it's basically the same circuit) build another oscillator.

Some constructors would say, that the v.f.o. is the most difficult stage to build. Amateur radio construction mythology is full of stories about how v.f.o.s are difficult to get right. There are many sad tales of how oscillators won't work, or when they do, they drift around the required band rather than being stable.

A Little Care

Variable frequency oscillators can be annoying and temperamental, but with a little care a good circuit isn't difficult to build. But, to cheer you up, there are many reliable and well tested circuits which can produce a stable v.f.o.

It's my opinion that the way in which the v.f.o. is built, is just as important as the choice of circuit. Because of this, the v.f.o. must be made from good quality components.

Any capacitors used in tuned circuits must be chosen for their 'good' temperature stability. The other essential quality is the good mechanical stability of the oscillator.

'Build it to be dropped from 30 000 feet!' used to be the saying about building a stable v.f.o. This is why the circuit ought to be contained in a sturdy metal box, with all the components rigidly mounted.

Simple Circuit

The receiver v.f.o. follows the design criteria mentioned. I've chosen a very simple circuit, without buffer amplifiers, which serves the purpose very well.

The v.f.o. has a good quality variable capacitor. This can be an expensive item, although I would advise the use of a surplus component if this can be found (***Editorial note:*** *see shopping list*).

The other two items that could be expensive, are a slow motion drive for the tuning control and a cast aluminium box. They're frequently available at rallies and shows, but never fear, even if they aren't cheap they can all be used again.

Nothing you have to buy will be wasted. Even if this little receiver is only being built as an exercise in construction, there will be later projects in this series using the same three items

The Circuit

Let's just look back a moment at the Colpitts oscillator. The one we're going to use, is the version described in September issue in Fig. 4. It's based on a single field effect transistor (f.e.t.) Tr101.

The output is taken from the r.f. choke in the source of Tr101. An additional output is provide by the link winding on T101. This particular inductor will of course be different in the version used in the receiver (see shopping list).

The additional output I've mentioned, could be used to check the frequency of the v.f.o. by connecting this point to a digital frequency counter.

Variable Capacitor

The tuning capacitor used in the v.f.o. version of the circuit, is an airspaced 100pF variable. As I've already mentioned, variable capacitors are items that any would-be radio constructor ought to look around for at radio rallies and junk sources.

I have a nice box full of variable capacitors, all bought cheaply when I found them at rallies, etc. Like many expensive items in radio construction, it's a good idea to buy them when they come up cheaply. You'll surely need them one day and in reducing costs, a little hoarding goes a long way!

The capacitors associated with the tuning of the oscillator should have good temperature stability. In other words, their values should change very little with temperature variations.

There are several types of capacitors which can serve this purpose. The cheapest, usually adequate type for this role, are the polystyrene foil capacitors

Printed Circuit Layout

The printed circuit board layout is as shown in Fig. 5, on page 23 of the September issue. This follows the same layout used in the Colpitts b.f.o.

There are very few differences on the v.f.o. version of this circuit. One difference is that the variable capacitor (C101 in the September issue) becomes a 100pF variable. Another difference is that the capacitor Cx, is mounted across the main tuning capacitor.

It's important to follow all the good practices in printed circuit board construction. Good, clean, solder joints and short component leads with the components mounted firmly against the board.

The board is mounted in the aluminium die-cast box as in **Fig. 2**. The p.c.b. is held inside the box using stand-off pillars or spacers to lift the copper tracks from the bottom of the box.

The variable tuning capacitor is mounted at one end of the box with the connections coming out at the other end. Stiff wire should be used to connect the variable capacitor to the printed circuit board.

Slow Motion Drive

A slow motion drive is added to the variable capacitor control shaft to provide finer control of the tuning. This is a 6:1 reduction epicyclic in-line drive as in **Fig. 2**.

The female end of the drive attaches to the control shaft of slow-motion drive. The drive itself is held in place by using a long screw, 6BA, with locking nuts, attached to the box.

Setting Up Simple

If you have access to a digital frequency meter, setting up the v.f.o. is very simple. If not, don't worry it's just as easy to use a receiver.

The v.f.o. must be set to cover the 3.5MHz amateur band, with a complete 180° movement of the variable capacitor vanes. In practice, the value of the variable capacitor is such that the band will easily fit into this range. It would also probably all fit into the range of a 75pF variable capacitor but these are now difficult to obtain.

Output 2, from the top of the radio frequency choke is used for the output in the receiver. However, the frequency of the v.f.o. may be tested using either this output, or output 1 from the secondary winding of T101.

After doing the normal checks on the board, check components against the layout and circuit diagram and examine all the solder joints. The 9V supply can then be applied to the board.

The r.f. output level from the v.f.o. can then be checked. It could be done using the diode probe (described in part 10 of this series) and a multimeter on a low voltage range.

Assuming that an output is present, the frequency range can now be set. If you don't have a diode probe, you can either make one quickly (it's worth while!) or just assume that there is an output and proceed to the next step.

Frequency Meter

If a frequency meter is available, it can be connected to either output on the oscillator. The frequency meter should then indicate an output frequency.

The required range is 3.5 to 3.8MHz. I suspect the frequency will be slightly low, because the v.f.o. has been designed so that it covers the required range with the core in T101 screwed quite a long way out of the former.

The reason for the core being a long way out, is that the material it's made from could cause possible temperature instability. Because of this, many people never use an inductor with a core in v.f.o. building.

I often use inductors with cores, because they allow a simple method of adjusting the frequency range of the v.f.o. With this in mind, I usually ensure that the core is almost out of the former at the correct frequency range.

Rule Of Thumb

When it comes to setting up, it's made easier by remembering a simple rule of thumb. When the capacitor vanes are fully meshed, the capacitance is highest, so the frequency is lowest. Conversely, when the vanes are fully out the capacitance is lowest, and the frequency is at its highest.

Therefore, the bottom end of the band, 3.5MHz, needs to be set at the point where the variable capacitor vanes are fully (or almost fully) meshed. The capacitor shown as Cx, in parallel with the main tuning capacitor, also adjusts this range.

The capacitor Cx, is the component I've already mentioned as being an 'extra'. In the September issue, this capacitor was mounted inside the inductor screening can. However, in the v.f.o. version it's connected in parallel with the variable capacitor.

In practice, Cx is connected to the same p.c.b. pads as the variable capacitor (marked "To C101" in the September issue). It should have a value of 10 or 12pF, and be either silvered mica or polystyrene.

Full Mesh

If you're using a frequency meter, set the main tuning capacitor at full mesh, and unscrew the core until the meter

reads 3.5MHz. Take care with this operation, as the core is brittle and can break.

It's best to use one of the trimming tools specially made for adjusting cores. Then rotate the capacitor until the vanes are fully open and re-check the frequency. If the frequency is very much higher than 3.8MHz, you may want to re-adjust the core to enable the band to occupy the mid-point of the capacitor's travel.

The Receiver Method

If you're not fortunate enough to have a frequency meter, you can set the v.f.o. up by using the receiver method. A receiver covering 3.5-3.8MHz can be used. The receiver must have a b.f.o., or be used in the s.s.b. or c.w. mode.

To start the procedure, attach a piece of wire, say about a metre long, from the output of the v.f.o. If you lay this near the antenna input to the receiver, it should pick up the signal from the v.f.o.

Next, set the receiver to 3.5MHz and unscrew the core on T101 until the signal is heard in the receiver. Then retune the receiver to 3.8MHz and unmesh the tuning capacitor until the signal is heard again.

At this stage, a stability test can be carried out, by leaving the receiver to monitor the signal for some time. The v.f.o. is likely to drift slightly when it's first switched on, but then it will settle down to maintain a steady frequency.

The v.f.o. is now complete. We're now going to take a brief look at the heart of the receiver, the mixer board which we'll be working on next time.

The Mixer Board

I've described the mixing process briefly, and although we're going to build the mixer board next time, to help you get organised, I've prepared the circuits in **Figs. 3 & 4**. The associated p.c.b. and component overlay are shown in **Fig. 5**.

So, that's it for this month. You've got more than enough to get on with, but I'll leave you with the shopping list for the mixer board. There's no excuse for getting on with it then! Cheerio for now.

Shopping List For Mixer Board

Resistors

Carbon film 5%

220Ω	2	R6, 9
1kΩ	1	R3
2.7kΩ	1	R4
4.7kΩ	1	R8
10kΩ	1	R2
33kΩ	1	R5
100kΩ	1	R1
1.5MΩ	1	R7

Capacitors

Miniature ceramic

3.3pF	1	C2
39pF	2	C1, 3
100pF	1	C4
10nF	1	C8
100nF	2	C5, 9
220nF	2	C10, 11

Electrolytic 16V d.c. working

10µF	1	C6
220µF	2	C7, 12

Semiconductors

Transistors		
3N201	1	Tr1
BC182 or BC183	1	Tr2

Inductors

KANK 3333	3	T1, T2 T101(for v.f.o.)

Note: extra inductor is replacement for T101 in b.f.o. project. To use as v.f.o., replace original inductor with KANK 3333. (see text).

Miscellaneous

Die-cast aluminium box for v.f.o. enclosure, suitable stand-off pillars (see text for further details, p.c.b.s (PW PCB Service), suitable slow-motion drive and fixing components. Suitable high quality variable capacitors for the v.f.o. are often available from rallies, or from suppliers such as Birkett's of Lincoln (see advert in this issue). See September issue for full shopping for b.f.o./v.f.o. project.

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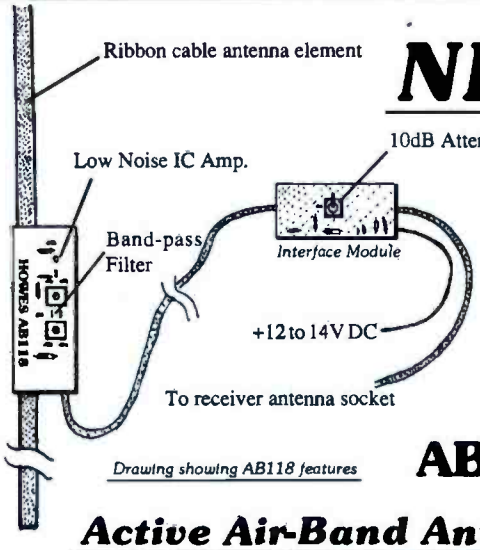

Drawing showing AB118 features

NEW!

AB118

Active Air-Band Antenna

The new **HOWES AB118** Active Antenna has been optimised for the VHF air-band listener. A low noise Integrated Circuit preamplifier gives excellent performance from 118 to 137MHz without any fall-off in sensitivity at the band edges. A band-pass RF filter on the output helps reduce out of band signals - this is especially useful when operating from hill tops and other good locations. The antenna element is formed with ribbon cable, so it can be easily rolled up and packed for holiday use. It also fits in standard 1.5inch plastic water pipe for a more permanent weather resistant installation at home. The **HOWES AB118** gives excellent air-band performance that will help pull in those more distant signals from both home and portable locations.

AB118 Kit: £17-70 **Assembled PCBs: £24-70**

The **HOWES DFD4** is an add-on Digital Readout for analogue radios. If you have an FRG7, FT101 or a similar rig, then the DFD4 has been designed with you in mind. The DFD4 is an up/down frequency counter that can be programmed for any IF offset.

Digital Frequency Readout

To make the DFD4 even more versatile, we offer the **PMB4** Programable Matrix as an optional kit. This enables you to switch between six different programmed offsets, so the DFD4 can be used with more than one radio, and to compensate for IF frequency differences when switching modes. The **CA4M** "hardware package" contains a custom made case with pre-punched anodised aluminium front panel (see photo above), plus switch, knob, BNC socket, nuts and bolts etc. to enable you to achieve a high standard of finish for your project.

DFD4 Kit: £39-90 **DFD4 Assembled PCBs: £59-90**
PMB4 Kit: £9-90 **CA4M Hardware: £19-90**

AA2 150kHz to 30MHz Active Antenna

Broad-band performance that does not tail off at the higher frequencies has made the AA2 very popular for wide band monitoring as well as for locations where space is limited.

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AA4 Kit: £19-80 **Assembled PCBs: £26-80**

PLEASE ADD £1-20 P&P for kits or £3-00 if ordering hardware.


Novice Licence Transceiver

HOWES KITS are produced by a professional RF design and manufacturing company. They contain good quality printed circuit boards with screen printed parts locations, full clear instructions and all board mounted components. There are lots more kits in our rangel Sales and technical advice are available by phone during office hours. Please send an SAE for our free catalogue or specific product data sheets. Normally all items are in stock and delivery is within seven days.

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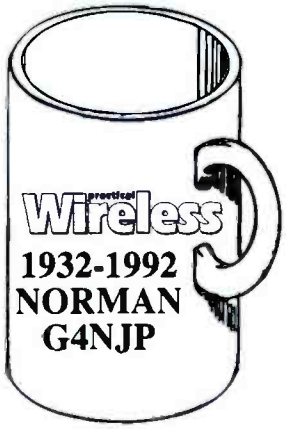

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The Lake TUA1 SWR Bridge

Review

Our technical projects sub-editor Tex Swann G1TEX, has been busy with his soldering iron. He's built the Lake s.w.r. meter, to try his hand at a kit aimed at the h.f. operator. Perhaps we're going to tempt Tex down to 'd.c.' at last!

Having looked back through the *PW* archives for the 60th anniversary edition, I was struck by the number of kit suppliers there once were. In contrast today, there are really very few suppliers of good kits.

Lake Electronics is one of these suppliers. They can supply a variety of r.f. related kits and this review is of one of them, the TUA1 low power s.w.r. bridge.

Comprehensive Instructions

On opening the package that contained the kit I found a metal box, a set of photocopied, but comprehensive instructions, and a variety of resealable polythene bags containing all the items needed to complete the s.w.r. bridge. Well not quite all, but this is something that I'll explain later.

The p.c.b. for the project is small, well etched and tinned, with all the relevant holes drilled out to suit the leads of items. When placing the components on the board, I found that all the holes were correctly placed to suit the items.

Place And Solder

When it comes to construction, I'm one who likes to place and solder items individually. This p.c.b. was an easy one to get right, as the overlay was accurate and very instructive.

All the various parts were well-marked good quality items. To help the beginner, the various conventions of marking items were explained.

I have only got one negative comment regarding the p.c.b., and that concerns the 'tinning'. The 'tinning' process involves placing a layer of solder onto all exposed copper tracks. This is to stop the copper oxidising and makes the soldering easier.

Unfortunately, with the board I received, this didn't happen. The tinning seems to have been done chemically, instead of the more usual solder bath, with the excess solder being blown away with an 'air knife'.

It's not that the solder I was trying to use wouldn't 'take', it was just reluctant to do so. Only eight out of ten here I'm afraid.

Metal Bashing

After completing the board, I turned to the metal-bashing side. Several round holes, and one rectangular, have to be made in the box supplied.

There are two holes of 12mm diameter for the coaxial connectors. There is one 10mm diameter hole for the sensitivity control, and another smaller 6mm hole for the change-over switch to be made.

The positions of all the holes are shown on a large scale drawing, and this should be studied carefully. The coaxial connector holes have to be made in the top of the 'front' panel, which is formed by one of the 'U' pieces.

To one side on the top of the 'front' panel, is the hole for the meter. The meter has a custom-made scale, showing v.s.w.r. in a clear manner.

I'd decided to use the tools most people would have to hand. I think the minimum is a good hand drill, with several bits including a 2.5 and a 5mm, with perhaps a 9mm as a useful addition. A small tapering round fine-cut file, and a sharp knife are about the only other tools really needed.

Screen Printed

The assembly of the front panel is completed, by placing a screen printed stick-on front plate, directly on the casing. This is actually stuck on over the holes.

The stick-on plate must be carefully cut out, to allow the various bits and pieces to show through. Careful trimming around these holes, could help disguise any mistakes made by over-enthusiasm at the hole cutting stage!

The next job is to stick the meter and bridge p.c.b. into their correct positions. The wiring diagram shows the interconnections to make to complete the project.

It's here where I feel a length of multi-stranded wire would be a useful addition to the kit. The single core wire, used to wind the secondary of the toroidal sensing transformer, is just a little difficult to work with at this stage.

The Lake Electronics TUA1 s.w.r. bridge as built by Tex Swann G1TEX.

Trim Capacitors

To complete the project, it's necessary to trim the two capacitors of the bridge. This is to ensure that each 'half' has a similar sensitivity.

The trimming operation is not complicated, and is adequately covered in the work sheets, and should cause few problems.

I did it by swapping input and output connections several times, to achieve the lowest (common value) s.w.r. in both directions. Even if this happens to be 1.1:1, (although in practice it should be less than this).

Summing Up

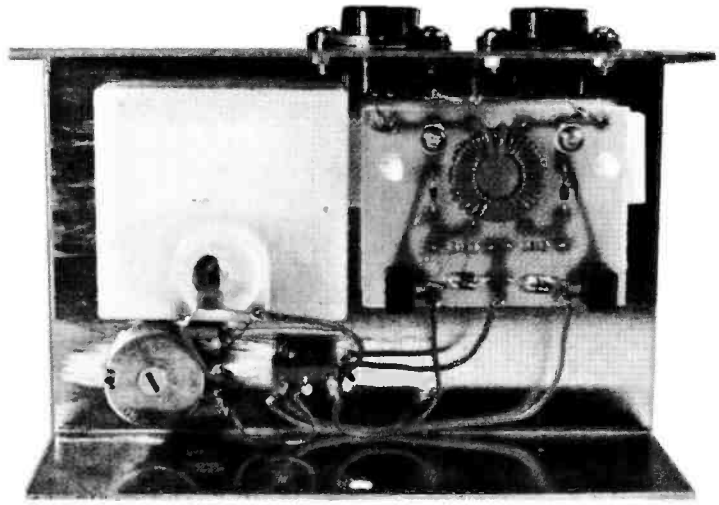
So, in summing up, you'll see from the accompanying photographs, that the kit is both comprehensive and can look smart when finished.

The kit is aimed at the beginner, but has sufficient in it to make anyone, who likes to build things himself, pleased at the results. In spite of my niggles I think nine+ out of ten would be the overall marks for this kit.

I took a little over an evening's work to finish the kit. Most of this time was accounted for by the cutting and shaping of the various holes.

The Lake Electronics TUA1 SWR Bridge would make a good project for a Novice who can cut accurate holes. But a youngster may need supervision when trimming the front panel with a sharp knife.

My thanks for the opportunity to build the kit go to Alan Lake G4DVW of Lake Electronics at 7 Middleton Close, Nuthall, Nottingham NG16 1BX, tel: (0602) 382509. The TUA1 costs £18 plus £1 p&p, ready-built it costs £30.50 plus £1 p&p.



All the sections and parts are mounted on one panel of the project, as shown here in this view from behind the front panel.

Radio Diary

October 11: Computercations '92 (Computer & Radio Rally) will be held at Hillhead Campsite, Dartmouth Road, Brixham, South Devon. Trade stands, Bring & Buy, raffle, refreshments, unlimited free parking, overnight camping & car boot sale (weather permitting). Doors open 10am. Talk-in S22 G7FDC + G4SSD. Special event station GB4CPU. Details from **W. T. Trezise G6ZRM on (0803) 522216.**

***October 23/24**: The 21st Annual Leicester Amateur Radio Exhibition will be held at the Granby Halls, Leicester. Doors open at 10am each day (9.30am for the disabled). All the usual facilities. For further information, contact **Frank G4PDZ on (0533) 553293 (business hours) or (0533) 871086.**

***October 31/November 1**: The 6th North Wales Radio & Electronics Show will be held at the Aberconwy Conference Centre, Llandudno. The show opens at 10am, entrance fee is £1 for adults & 50p for under 14s. For any further details, contact **B. Mee GW7EXH, Anncott, Hyles Lane, Rhuddlan, Clwyd LL18 5AG. Tel: (0745) 591704.**

November 8: The 2nd Barnsley Amateur Radio Rally will be held at the Willowgarth Senior High School, Brierley Road, Grimethorpe, Barnsley. Traders, radio clubs & specialised groups will all be present. Bring & Buy, refreshments, also a licensed bar. Car parking, doors open at 11am (10.30am for disabled). Talk-in on S22. Please note that due to restoration work, this rally will not be suitable for wheelchair users. For further information, contact **Ernie G4LUE on (0226) 716339 between 6 & 8pm.**

November 8: The Tyne & Wear Repeater Group Auction is to be held at Fencehouses Community Centre, Fencehouses, near Chester-le-Street, Co. Durham. Doors open 10.30am for booking-in goods, with the auction starting at 12 noon. For further details, contact **Ian G4OCQ on 091-384 0827.**

***November 15**: Bridgend & District ARC will be holding their rally at the Bridgend Recreation Centre, two miles from junction 36 on the M4. Doors open 11am (10.30am for the disabled). Cafeteria open all day, bar opens at 12, entrance fee £1 for adults. Full recreation facilities available for all the family. Further details from **Charles Sedgebeer GW3RVG on (0656) 860434.**

November 19/22: Blenheim PEL's Christmas Computer Shopper Show takes place at Olympia's Grand Hall. The show offers the complete buying solution for home and business. For further details on The Christmas Computer Shopper Show '92, contact **Mav Mann at Blenheim PEL on 081-742 2828.**

November 22: The West Manchester Radio Club's 'Winter Rally' will be held at the Bolton Sports & Exhibition Centre, Silverwell Street, Bolton (town centre). All the usual trade stands, societies, Bring & Buy, etc. All at pavement level. Refreshments available all day & bar. Doors open at 10.30am for disabled & 11am for general public. Admission £1, children free. Further details from **Dave G1IOO on (0204) 24104 evenings only.**

November 22: The Bishop Auckland Radio & Computer Rally will be held at a new venue, The Spennymoor Leisure Centre, Spennymoor, Co. Durham. Catering & bar facilities on site, as well as all the other amenities of a top-class leisure facility, for those members of the family not wishing to partake in the rally. The Venue is also very easy to find. Further details from **Mike G0PRO on (0388) 766264.**

November 28: The Greater London Amateur Radio & Computer Show will be held at Harrow Leisure Centre, Christchurch Avenue, Harrow, Middlesex. Major suppliers & manufacturers of radio equipment, computers, accessories, antennas, computer software & second-hand gear. Close to Harrow-Wealdstone BR & tube station. Easy access from motorways M1, M4, M25 & the A406 north circular road. Fully signposted by the AA. Ample car parking available. Two bars & cafe serving hot meals & drinks all day. Large Bring & Buy. Easy access for the disabled. Rally information centre on site. Talk-in on S22 & SU22. Doors open from 10.30am until 4.30pm. **CLPK, 18 Litchfield Close, Clacton-on-Sea, Essex CO15 3SZ.**

December 13: Centre of England Christmas Radio, Computer Electronics & Communications Rally will be held at the National Motorcycle Museum, near the NEC, Birmingham, junction 6 M42. Dpens 11.30am (11am for disabled visitors). Admission is £1, with a reduction for RAIBC members. Over 60 traders in three large halls, ample parking, bar & restaurant facilities. Concessionary rates for those wishing to visit the museum. Talk-in on S22. Christmas Special - 'spot the cracker', which will be on many of the trade stands to win a free prize. Details from **Frank Martin G4UMF on (0952) 598173.**

* Practical Wireless & Short Wave Magazine in attendance.

The Adapt-A-Mast

We've got an unusual review for you this time. Rob Mannion G3XFD has had the chance to try the Adapt-A-Mast, a new arrival from the well-known Tennamast stables.

It's not very often that I can claim to have been 'in' on a project from the very start. But in the case of the 'Adapt-A-Mast' from the well-known Tennamast stables in Ayrshire, Scotland, I can say that I've been 'in the know' from the beginning.

The Adapt-A-Mast story started at the London Amateur Radio Show at Pickett's Lock. It began when Norrie Brown GM4VHZ from Tennamast, came up to me with an envelope with a design on the back. And like many good engineering ideas, that's just how the design for this mast started off!

Basic Mast

Both Norrie Brown and myself were very busy at the show. Despite this he found time to sketch out a very good idea for a basic mast. In fact, a customer (literally looking over our shoulders) ordered one on the spot!

I was the loser with this project, because Tennamast were so busy building them that I didn't get hold of one for some time. This was because the Adapt-A-Masts were being sold literally as fast as they were made.

So, why is this modestly-priced mast so popular? I think the simple answer is because it is so adapatable. However, the very adaptability of the mast is causing problems for the manufacturers, because customers are wanting so many variations. One customer even wanted to order a 13m high version!

Low Cost

The Tennamast promotional leaflet says that "The Adapt-A-Mast is intended as a low cost mast with fixed mounting and limited features". Well, I've got to say that the leaflet is correct, but it gives little indication of how versatile the mast is.

Norrie Brown originally designed the mast, so that it would be ideal for someone requiring an easy erected antenna platform, that could be used against the wall of a house. When lowered, the mast stands just 4.4m high, but when winched up, it provides a useful 7.3m.

The Adapt-A-Mast is wound up by the use of a small hand winch, and only takes a few moments. I found it easy to turn the handle with my artificial arm, and because of this I consider it would be of interest to anyone who might have similar problems.

At the top of the rectangular inner (telescoping) 45 x 60mm section, there's provision to mount a stub mast. The circular brackets, complete with a pair of integrally fitted bolts, will accept a stub mast of 40mm diameter.

There are now so many ways of fixing the mast to a wall, or mounting posts that I'll recommend interested readers to contact Tennamast direct!

However, I used the original brackets supplied by Tennamast, to fix the mast to our garage (one end of which is my shack). But, instead of using a bracket at top and bottom, I made a mounting socket out of concrete for the lower end.

Unfortunately, the location I've chosen for permanent mounting, is impossible to photograph. So, for photographic purposes I had to move the Adapt-A-Mast round to the front of the garage.

Summing Up

Summing up my experiences with the Adapt-A-Mast is easy! I can thoroughly recommend it to anyone requiring a good basic, solid and dependable mast.

The mast is a no-nonsense, extremely well made and un-obtrusive item of equipment. I would feel quite happy to use if for several v.h.f. antennas. I'm intending to use mine to mount a 144MHz cubical-quad and a 70MHz 3-element Yagi.

Tennamast supplied me with a hot-dipped galvanised version. And to be quite honest, I think that anyone buying the mast, would be best advised to order the galvanised model.

I suggest the galvanising, because I don't think that many of these masts will part company with their fortunate owners for many years. The overall thickness of the metal on the bottom section, with the galvanising, is slightly over 4mm!

Conclusion

In conclusion, I'll say it again, that I recommend this mast. It has a simplicity that makes it both appealing and versatile. For example, the cable for the winch runs (for the most part) inside the mast and provides a very neat finish.

The versatility of this mast is summed up very neatly by its name. Tennamast has come up with an ideal name for a very useful product. The Adapt-A-Mast is just what it name suggests and I intend to buy mine!

My thanks go to Norrie Brown GM4VHZ of Tennamast of Mains Road, Beith, Ayrshire KA15 2HT, tel: (05055) 3824 for supplying the Adapt-A-Mast I reviewed.

The basic mast, completed, and ready for self-finishing by the customer costs £150 plus carriage. The hot-dipped galvanising treatment, to BS729, costs £30. Prices quoted were correct when we went to press, readers are advised to contact Tennamast direct for up to date figures. Additional pulleys and variations of the mast are available to order.

Fig. 1.

Specifications

Height retracted	4m
Height extended	7.5m
Raising system	Hand operated winch and cable
Lower section dimensions	70 x 70mm
Telescoping (inner) section	45 x 60mm
Stub mast acceptance dimensions	40mm
Material	3.6mm gauge steel (galvanising optional))
Fixing method	With supplied brackets (wall fixings not supplied)

Review

Fig. 2.

Fig. 1: The Adapt-A-Mast ready for mounting, with G3XFD's XYL Carol standing (although she's only five feet nothing!) by for scale.

Fig. 2: The mast attached to the end of G3XFD's garage, using one wall bracket and a concrete base socket.

Reflections

This time, Ron Ham takes a look around the 'E' region of the earth's ionosphere.

I was prompted to take a look around the 'E' region of the earth's ionosphere by Rob Mannion's reference to the 70MHz band in his August 'Keylines'. I also received an interesting letter from **Mr C. Broad** of Newquay.

At 0040 on July 24, Mr Broad saw "a falling object in the night sky" which appeared like "a very large bright star" travelling in a northerly direction at high speed. He wrote, "it took approximately six seconds to go from directly above to about 50° above the horizon, whereupon it broke up into two equally-sized particles, which lasted about 0.5 seconds before disappearing".

Your luck was in Mr Broad and I hope my interpretation of your report, based on one of my own sightings, **Fig. 1**, is to your liking. I reckon that you witnessed one of those bright meteors of the Capricornids shower entering and burning-up in the earth's atmosphere.

These are very beautiful, especially when they display colour. Have you ever thought of just how many we don't see because they manifest during the hours of daylight, or bright moonlight, or when the night sky is overcast through bad weather?

Bits Of Rock

Unknown quantities of tiny bits of rock, known as meteor particles, are floating about within our solar system. Many can be seen on a clear dark night, flaring-up, as they randomly collide with the earth's atmosphere. In the event of a particle being strong enough and/or large enough to survive the friction through the atmosphere and strike the earth's surface, it is then called a meteorite.

The craters on the moon are a good example of meteorite impact. Unlike earth, the moon has no atmosphere to slow down their approach and destroy the vast majority. Periodically, the earth, on its orbital path around the sun, **Fig. 2**, encounters great swarms of these particles which astronomers call meteor showers or, individually, by a specific name such as the Leonids.

Although the meteors disintegrate about 100km above the earth's surface, around the 'E' region of the ionosphere, a shower is named after the constellation of stars from which the radiants of the meteors appears to come. In fact, these stars are light-years away, for example, the radiants for the Persieds (August) and the Leonids (November) would seem to come from the direction of Perseus and Leo respectively.

The numbers on the path in **Fig. 2** indicate the events that can be observed during the remainder of 1992. The predicted peaks of the Orionids (1) is October 22, Taurids (2) and Leonids (3) is November 3 and 17 respectively and the Geminids (4) and Ursids (5) is December 13 and 23 respectively.

Obviously, these bits of rock vary considerably in shape and size and hit the atmosphere at all sorts of angles. This is one reason why I think Mr Broad saw that meteor breaking-up.

Something like this must be happening all the time. However, our chances of seeing it are limited to the hours of darkness and then only when the sky above your area is clear and free from moonlight (top earth, **Fig. 2**).

Imagine a club secretary booking a meteorite observation period in advance and then, at the arranged time, there is heavy cloud and rain being illuminated by sheet lightning, **Fig. 3**. The storm in **Fig. 3** happened in my area overnight on August 8/9. A non-scientific word covers my reaction to this event!

Popular Term

The popular term for a glowing meteor is a 'shooting star' which, I presume, is because of its brief star-like appearance, streaks across the night sky. Local astronomical societies usually observe these showers by arranging for a group to meet at a site that is reasonably 'light-free'. One example are the Chichester-based South Downs Astronomical Society. They meet for this purpose at their unique observatory, the old military wireless station on Trundle Hill, **Fig. 4**.

Trundle Hill is high on the South Downs, overlooking the Goodwood racecourse. Apart from enjoying the beauty of the event, the group's prime object is to estimate, if applicable, the 'Zenithal Hourly Rate' of meteors, describe their colours and report on the radiants and any 'break-ups' or fire-balls that may appear.

Decaying Trail

Now you radio people, think on. Each time a meteor burns within the earth's atmosphere it leaves, for a few seconds, a decaying trail of ionised gas, which can influence the paths of terrestrial radio signals. Those among you with a 70MHz receiver can try an experiment, and if you have a horizontal Yagi antenna it's even better.

Turn your beam to the north-east and tune your set to 70.31MHz. Then listen for a brief sample, like a 'ping', of the speech or music being transmitted by the Polish broadcast station at Gdansk. It is very unlikely that signals from this transmitter can be heard in the UK under normal atmospheric conditions, therefore the 'ping' of intelligence you hear was carried by the Gdansk signal 'bouncing' off a meteor trail.

Remember, the amount of programme received will be determined by the size of the meteor and the length of its decaying trail. The actual number of 'pings' (or bursts) recorded will depend upon the number of meteor entries.

By adding some form of electronic counter or a pen-recorder to the receiver, an hourly rate can be measured even during the hours of daylight. Obviously such recordings cannot be made when Sporadic-E is about or while a thunder-storm is in progress. The former 'sends' the Gdansk signal into the UK at full strength for several hours, and the latter delivers unwanted 'spikes' to the recording instrument with each crack of lightning.

According to my 1990 copy of the *World Radio TV Handbook*, countries like Bulgaria, Czechoslovakia, Hungary, Poland and Romania, have v.h.f. broadcast transmitters operating within the amateur section of the 70MHz band.

Full Credit

In my view, members of the amateur radio fraternity must be given full credit for pioneering and for proving just how scientifically valuable the 70MHz band can be. On the propagation front, the normal paths of all signals within this band

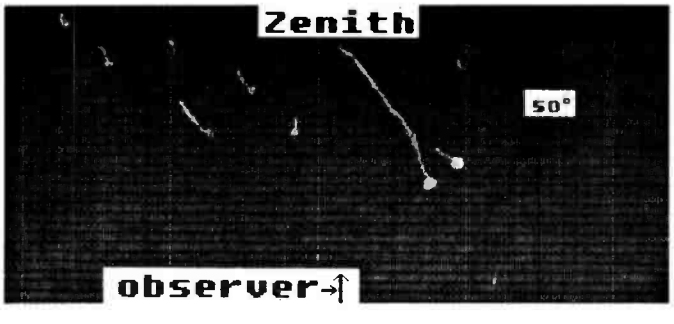


Fig. 1.

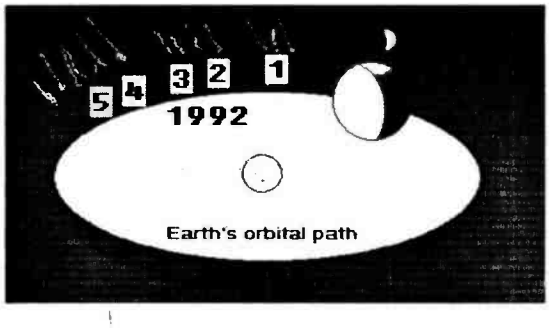


Fig. 2.

Fig. 3.

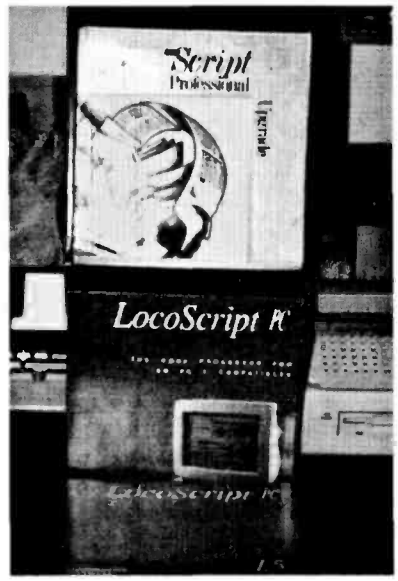


Fig. 5.

can be influenced by aurora, meteor trail reflection, Sporadic-E and upper ionospheric disturbances. The amateur use of 70MHz dates back to the 1950s when, if I remember rightly, the authorities 'loaned' the band for this purpose, on the understanding that it could be recalled for 'official' use at very short notice.

Surplus Equipment

Few sets were available for 70MHz in the 1950s and the enthusiast's choice, as usual with a new band, was, build it yourself or modify surplus equipment. From memory, the latter was limited to the ex-army B44 transceiver, fresh on the surplus market and a few elderly base and mobile radio-telephones. This was mainly valve gear and required a lot of power, especially for mobile and/or portable use.

Briefly, the valve heaters, 6 or 12V, were connected, in series-parallel or parallel respectively, across the 12V vehicle battery. But the high tension voltage for the set was another matter!

The B44 had a vibrator pack and one of the 'mobile' transmitter/receivers that I examined used rotary transformers. Although they performed in totally different ways, both of these power units were energised from the vehicle's 12V supply and consumed a fair amount of current.

Amateur Beacons

A great deal was learnt about the propagation of radio-waves on 70MHz, by monitoring the frequencies of the amateur-beacons that were installed in Gibraltar, Iceland, Malta and strategic sites in the UK. These tiny fixed frequency transmitters were made possible by the group of amateurs who built and installed them, and the co-operation of the civil and military commands and the RSGB.

I well remember the installation of the 2.5W beacon, TF3EA, in Iceland. All the doubters were proved wrong when, late one evening, its tiny signals came pounding-in to southern England during the closing stages of an extensive, day-long, Sporadic-E opening.

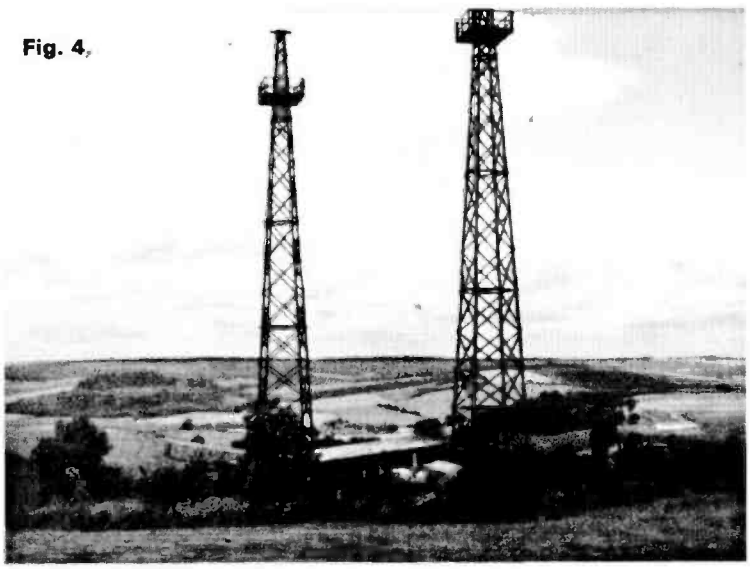


Fig. 4.

Amstrad PCW

Having used an Amstrad PCW (8512), for several years, I became familiar with the supplied word-processing package, LocoScript 1. Therefore when I changed over, early in 1990, to an Amstrad PC, I decided to stick with the program I knew and purchased a copy of LocoScript PC version 1.

The purchase was followed some six months later with an upgrade package to version 1.5 and then, last July, I took up Locomotive Software's offer and added a further upgrade, called LocoScript Professional, known as 'Script'. The original package containing manuals and discs is in the centre of Fig. 5 and the two later upgrades are at the bottom and top respectively. I have been impressed with each stage of LocoScript's development and wonder what future versions can still have to offer.

User Advice

Each purchaser is issued with a registration number, which entitles the user to seek advice from Locomotive Software if required. I have used this service twice and found the people operating the special help-line number very polite, understanding and very well-informed.

The first time, my printer would not respond to the command to switch between draft and NLQ, and the second, I had a difficulty with the data-base. Although LocoScript is very well documented and 'Script' has added an 'on-screen' help by pressing 'F1', there are times when you need a clue from the experts.

Additional Books

Two clearly labelled discs, along with additional instruction books, are supplied in the Professional carton (top Fig. 5). By following on-screen instructions the original program is quickly changed to the latest version.

Apart from my interest in LocoScript as my main writing tool, my immediate attractions to the Professional upgrade was the 300 000 word Thesaurus, the ability to print out text in columns and to insert the day and date by pressing a key. Of course there is more, but I can discuss those points later on.

Reports And Observations

Cmdr Henry Hatfield (Sevenoaks), using his spectrohelioscope, located sunspot groups and seven quiescent prominences at 1415 on July 27, four filaments and 4qps at 1420 on the 31st, 4fs, 2qps and a small eruptive prominence on the south-east limb, with a bandwidth of five Angstroms, at 1447 on August 1, 3gps, one slightly active plage near the south-east limb, 4fs, a medium fragmented loop prominence on the west-limb and two small qps at 1340 on the 3rd and 2gps, 4fs, and a medium 'cauliflower' prominence on the north-east limb at 1140 on the 7th.

Unfortunately, more detailed observation on July 30 and August 7 was hampered by cloud. Henry's radio telescopes recorded individual bursts of solar noise, at 136MHz, on July 31 and August 3, 5 and 7 and small bursts at 1297MHz on the 5th and 7th.

In Edinburgh, Ron Livesey, using a 2.5in refractor telescope and 4.0in projection screen, observed three active areas on the sun's disc on July 29, 30 and 31. Ron, the auroral co-ordinator for the British Astronomical Association, received reports of "very moderate aurora for the overnight period of July 27, 28, 29 and 31 from observers in North-Dakota and Fort Simpson. In addition, the magnetometers used by **Karl Lewis** (Saltash) and **David Pettitt** (Carlisle) confirmed Ron's own findings that magnetic disturbances occurred on the 28th, 30th and 31st.

My thanks to **Neil Clarke** (Doncaster) for the July solar flux figures. He reports that the month began at 130 units, reached a high of 176 by the 13th, then gradually fell to 104 on the 22nd and tailed off to 96 s.f.u. on the 28th. The monthly mean for July was 132 s.f.u. said Neil.

PACKET PANORAMA

Roger J. Cooke G3LDI takes a look at error correction, the popularity of satellites, 50MHz and a bug in Packet 4.

In the August issue of 'Packet Panorama', Fig. 2 was printed without the accompanying text. This system shows how a user with nothing more than a normal v.h.f. packet station can access the Fuji and Rudak satellites on a real-time basis. So, with the following description, I'll refer you back to the diagram on page 45 of August's *PW*.

The following description is by Mike Mansfield G6AWD, who is the author of the *Practical Guide to Packet Operation in the UK*. Mike explains the operation in his own words: "The Gateway offers a real-time operation to normal terrestrial Packet Operators. This is achieved by allowing my base-station equipment to be accessed, using node software, by G8BPQ. The FUJI and RUDAK satellites allow access using a p.s.k. modem at 1200b.p.s. Packet operators access my groundstation node called SATPSK which converts the normal terrestrial packet to p.s.k. modem operation.

Error Correction

"The node software takes care of all the error correction, so that only good data is sent from my station. To allow the satellite passes to be determined, there is a BBS attached to the node called FBB.

"This software has a server, which enables users to download satellite predictions so the pass times of the satellite can be determined. This is, to my knowledge, the only operational real-time Satellite gateway which allows the remote operator direct access from a remote location. Most Gateways are mail forwarding only, and work off-line to the sender.

The diagram in the August *PW* is correct, G4VSS is a local node that interlinks on 70MHz, allowing local traffic to be routed on a quiet band. G4VSS was the first to successfully operate the gateway after my tests were complete. It is hoped to explore semi-automatic operation for the PACSATS which use software that cannot route inter-node.

This operation will be achieved by running the software locally. Users will then be able to read the files on my BBS, rather than the satellite. Filescan then be requested on demand. It has taken 18 months to develop this system." Thanks for the up-date Mike!

Satellite Popularity

Packet operation via satellite has been gaining popularity since the launch of the last series of Pacsats. Packet gateways have been appearing using UO-22 to forward intercontinental mail somewhat faster than the more usual terrestrial routes. However, it is a rather expensive exercise, and one which needs a lot of patience and dedication, as I have found to my cost, while setting up a gateway of my own.

Mike has been operational for some time, using both Uosat and Pacsat satellites, using both f.s.k. and p.s.k. modes. Referring again to Fig. 2 in the August 'Packet Panorama', this shows Mike's set-up. His station has fully automatic tracking software for controlling the antennas, plus the usual PC-based software for the actual satellite communications.

The satellites accessible, using the Surrey University software, are the Uosats, Pacsats and Lusat. The FUJI Oscar satellite remains capable of normal terrestrial access using a simple terminal program.

By setting up a packet node, Mike has enabled other amateurs a real-time access to the FUJI Oscar satellite. This avoids the expense of your own ground station. Due to the different software in use, the other satellites are not supported. Mike is talking with like-minded amateurs in the USA and apparently they are thinking of a similar venture.

To prevent the ground station from being de-sensed, access to the packet node, from a remote packet node, is made on 70MHz using converted Pye Olympic transceivers.

The remote node, called WARR, is 3.84km away and operated by G4VSS. The satellite node is called SATPSK. The packet node is supported by FBB BBS software, which allows the remote amateur access to the satellite prediction program so that the pass-time can be determined remotely.

There are several other features which are to be developed, such as Beacon broadcast. In this mode, when the satellite is heard, software allows automatic mail forwarding. There is also to be experimentation to allow the Surrey University software to be used via packet nodes or within the packet node PC itself.

The whole project has taken Mike nine months to develop, and was successfully proved by G4VSS, who remotely accessed the satellite successfully on 11 April 1992.

Thanks for the exclusive Mike, let's hope it continues to behave flawlessly, at present it's the only one.

Activity on 50MHz

Charles G4VSZ, kindly sent the following information regarding activity on 50MHz packet:

"In the North Kent area there are several stations who have built the Bratbush (2W a.m.) transceiver, to a design by G4EGH. The little box is used by a small, but growing net of three stations. Three more are coming on line, allowing packet operation on a very local scale without cluttering up other frequencies.

"Currently on the net are G4EGH, G6YLW and G4VSZ. Experimentally there are links to 144.625, 144.650 and on 430MHz, but not full-time. It makes an excellent way of using construction to good ends and makes use of frequencies which would otherwise be unused. The old saying - 'Use them or lose them' applies more than ever these days."

For more information on the Bratrush, contact G4EGH @ GB7DUG.

Bug In Paket 4

News of a bug in Paket 4 comes from Peter G0GSZ. If you are still be using this old version, which has now been updated to Paket 5, please read on. Rex G0MWH, who has been testing Paket 4 on the KAM, has informed me of a very important BUG to watch out for.

It would appear that Paket 4 is very incompatible with the French Bulletin Board Software used by some packet Radio BBS Sysops. This software is known as FBB. The problem arises when a packet user 'CALLS' the sysop of the FBB BBS and he **replies**.

Somewhere in this exchange, is a bit of code that 'tells' **all** Paket 4 systems on-air at the time, that they are connected to the BBS. The TNC doesn't show any signs of a connect at all. This 'opens up' the Log-file (capture to Disc), on all the Paket 4 systems, **and leaves them open**. All traffic, from then on, goes into the disc file on your system. Until that is, either you notice what has happend, **or your disc becomes full**.

So, if you are still running Paket 4 and have an FBB BBS in your area, **don't leave the system unattended.** Failing that of course, one solution is to include this station's callsign in your LCALLS list (with BUdlist OFF). This will stop that station from making a connect. Better still, use Lan-link!!!

Lan-link version 2.00 is available from Peter Hunter

PACKET PANORAMA

G0GSZ, or myself. Please include a disk, return mailer and enough postage to cover.

Disturbing News

Disturbing news has come from America, following a report on h.f. digital communications, produced by the ARRL Committee on Amateur Radio Digital Communications. It looks as though forwarding mail to the USA (at present on h.f.) will take a 'gigantic step for mankind' backwards. American h.f. packet BBSs operate under what is known as an STA (Special Temporary Authorisation), something akin to our NOV (Notice Of Variation).

This, at present, allows unattended fully automatic BBS operation on all h.f. bands. Obviously this is necessary for mail flow, allowing for propagation, retries, and two-way traffic etc.

In case you missed the ARRL bulletin, these are the recommendations:

1. Unattended fully-automatic operation of amateur digital stations should not be authorised below 30MHz.

2. The FCC rules should be amended to allow unattended semi-automatic operation of digital stations on any frequency on which digital modes are authorised. Unattended semi-automatic stations may not initiate a contact, either with another station or via an undirected broadcast. An operator initiating a contact with an unattended station must first ascertain that no interference will be caused to existing users, and must monitor the progress of traffic.

If it becomes evident that the traffic with an unattended station is interfering with other users, then the link with that station must be discontinued. An unattended semi-automatic station must be equipped with a time-out timer to ensure that in the event of a malfunction of control equipment, or the loss of contact with the initiating station, no signal is transmitted longer than five minutes.

3. The FCC rules should be amended to allow the use of modem-dependent codes for the purpose of efficient data compression and error-control on h.f. channels. The bandwidth of such signals should be restricted to 500Hz below 28MHz, and 2000Hz between 28 and 28.3MHz.

4. The ARRL should publish a comprehensive operators guide for h.f. digital operations, clearly defining acceptable operating practices. Such a manual would delineate currently used informal sub-bands for the various modes and styles of operation, and the good operating practices required for effective mutual cooperation and co-existence.

Forwarding Network

For nearly eight years, BBS operation on h.f. has built up an international forwarding network for packet, and is recognised by most h.f. operators as a mode that is not going to fade. Now it would seem that the whole of the h.f. automatic forwarding network will just about collapse. Whilst there are a few, and I stress FEW, good points in the FCC recommendations, the overall effect will be to force BBS packet traffic off h.f., as far as the USA is concerned.

I cannot afford to be at the helm of my ship, equipped with automatic navigation, just to make sure that it works! I, and many others, have to earn a living! What is the point of developing this type of technology, proving that it works, only to have the ability severely curtailed?

The growth of the h.f. packet forwarding network has been exponential over the last eight years that I've been involved, hence my pleas for a recognised bandplan. It would be a good idea, if users of the international mail forwarding network, put pen to paper and protested to the FCC.

The satellite gateways per country, will be limited in number, so they will not be able to handle the total amount of traffic. Although, in a decade or so I can forsee the growth in this method of passing mail. However, we are involved with the present, so if you send mail to the USA via the h.f. routes, please get writing!

RSGB And HF Packet

I saw, published in the September *RadCom*, an article by Colin Richards 9M2CR. This article was written some time ago. I've had it on disk for the last **five years**, so it seems peculiar that the RSGB have only just decided to publish it! At that time, we were still struggling, against all odds, to obtain a place to operate. Now we are still struggling, again against all odds, to **maintain** the channels we have at present.

I agree with Colin, that packet is not meant as a chat mode on h.f. Neither, despite S9+ signals, does it work over certain paths, Like the polar route to VE7, multipath signals are fatal for packet, even with short PACLEN.

However with experience, we've found the routes that are suitable. By making use of 21MHz, where most of my h.f. forwarding is done, avoiding the 'hidden node' syndrome and overcrowding with the use of autoQSY. AMTOR may work somewhat better over long-haul routes, but messages are liable to corruption. This is not meant as dog-in-the-manger criticism, I'm merely quoting what I have seen. The messages arrive only in capital letters. Nit-picking perhaps, but not very pretty as far as lay-out is concerned. I understand Peter Martinez G3PLX, is working on that one! My main objection though, is the continual switching from transmit to receive. I still feel that the h.f. unattended automatic forwarding is necessary for the next decade or so, hence the need to sort out a bandplan **now**.

I see that the RSGB's Business Strategy Conference has at least admitted 'concern' about h.f. data communications. I am not sure which way to take that, as they state there is a "need for a comprehensive review taking into account bandplanning, mailboxes, nodes and linking".

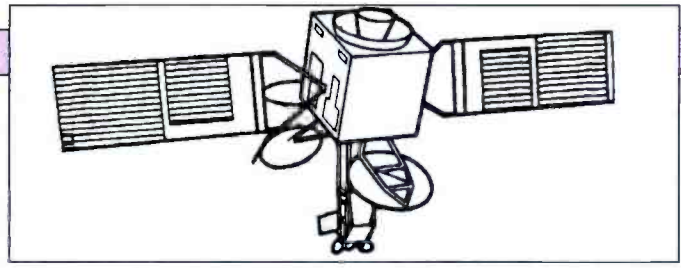
Do they mean there should be none of this on h.f.? Or are they finally admitting that the eight year 'Packet experiment' is here to stay? Perhaps they **did** receive my paper on bandplanning after all!

As usual, your views on this would be appreciated. Bearing in mind that it is **your** mail to the USA which is in jeopardy, your support is needed.

Without h.f. packet, developments in DSP projects for improving link-level performance, would be curtailed. As would research into h.f. digital techniques in general, including overcoming multipath distortion and the use of higher baud-rates, using p.s.k. and development of digital protocols.

But that's it for another month.

Happy packeting de Roger, G3LDI @ GB7LDI, QTHR, tel: (0508) 70278 or FAX messages at (0603) 787534.



Satellite Scene

by Pat Gowen G3IOR

This month, Pat Gowen G3IOR writes about the latest AMSAT-UK Colloquium, provides details of the OSCAR-21/RS-14 satellite RUDAK operation and its f.m. transponder, and of the successful launch of OSCAR-24.

As for the past seven years, the 1992 AMSAT-UK Colloquium, held at the University of Surrey from July 29 to August 2, was a great success. Many thanks are due to the organisation of AMSAT-UK and the University of Surrey staff, who, despite the demands of finalising KITSAT-A, gave up valuable time and laid on excellent arrangements and facilities.

Perhaps due to financial difficulties, fewer visitors came from the UK this year, but overseas delegates were better represented than ever, coming from 24 countries and five continents. Indeed, this event can now be said to be the foremost international gathering of amateur satellite enthusiasts, bringing together planners, builders, experimenters and users of all satellites and all modes.

Four Day Event

The four day event was opened by Professor Martin Sweeting G3YJO and 'Smudge' Lindegard of the RSGB. It commenced with a debate on the use UoSAT-22 and Gateways chaired by Doug Loughmiller KO5I. This was followed by a three hour international meeting between the IARU, RSGB and AMSAT, dealing with the 'politics' of satellites, this hot subject capably chaired by Kees van Dijk PA0QC.

Day Two

Friday July 30, day two, started with a paper on SEDSAT by Eric Cotrell WB1HBU, then one on TECHSAT by Jim Stone 4X1RU, 'Multichannel IBM Packet Interface' by PA0HZP, an update on OSCAR-0 (the Moon) by Ray Soifer W2RS, and then question time. After this came talks on the coming Phase III-D satellite by Dr. Karl Meinzer DJ4ZC and RF Environment Analysis by Dr. Bandi Gschwindt HA5WG.

'Microsats' was a highly humorous talk rendition by Professor Yddor Swelk KD3CG, whose name will be recognised by satellite fans if read backwards! An update on ITAMSAT, KITSAT-A and the UoSAT Educational Programme by G3YJO followed, finishing off with a further collective answer time for written questions.

Saturday's Session

The third day's programme, Saturday's session, was opened by Jeff Ward G0/K8KA and Harold Price NK6K, with AMSAT's President Bill Tynan W3XO welcoming the delegates. Leonid Labutin UA3CR and Peter Guezlow DB2OS explained the OSCAR-21/RS-14 status and that of its RUDAK, then WEBERSAT and it's educational aspects were delivered by Tom King EA2CLS.

An overview of new MuTek equipment was provided by G6GEJ, followed by Viktor Kudielka OE1VKW and DJ4ZC speaking and discussing Phase III-c decay. After lunch, KO5I chaired talks entitled 'A £10 Satellite Tracking System' and 'Satellite DX Tips' by ON1AIG, 'UoSAT Parallel Processor Architecture' by Jay Malhotra, then 'Lost in Space' on GPS by M. Unwin and Yoshikazu Hashida.

Joe Kasser W3/G3ZCZ talked of the 'Susie Project' and satellite telemetry simulation, followed by James Miller G3RUH on the MK-II Phase III Digital Data Demodulator. The session finishing with details of the coming Solar Sail Project.

Final Day

Sunday's session, opened by G0/K8KA, commenced with a discussion on the aspects of 'LEO' (Low Earth Orbiting) satellites versus Phase III orbits, and was followed with a talk on the coming ARSENE satellite by Dr. Bernard Pidoux F6BVP.

I then gave a talk on the use of the Mode K satellite propagational findings for DX, and was followed by Roger Cooke G3LDI speaking on the problems with satellite gateways. B. Lockhart SM0TER spoke next on 'Trackbox', to be followed by question time.

Martin G3YJO chaired the afternoon session, which dealt with PacSat Software by NK6K, 'HUTSAT' and AMSAT Finland by OH7JP, after which came the AMSAT-UK award paper by P. Briggs. A history of OSCAR from 1961 to 1992 was given by W3/G3ZCZ, after which came question time for the session. It all finished at 1700UTC, after an open forum, during which many topics and concerns were discussed.

Valuable Dialogue

During the colloquim, valuable dialogue takes place between designers and users, those with projects and those who build. Also busily chatting away are those who organise funding and launching and the people who formulate the ideas and suggestions that lead to amateur satellites for the future. The social, scientific and educational aspects of such get-togethers are of enormous value. It is here that much of the international understanding is born.

Exciting Information

I shall try to place some of the exciting information from the colloquim into future editions of this column. But it would be quite impossible to publish all the papers and proceedings, even taking an entire issue of *Practical Wireless*!

For those of you who would like to learn of it all, the proceedings are available from AMSAT-UK's Secretary, Ron Broadbent G3AAJ, at 97 Herongate Road, Wanstead Park, London E12 5EQ. While writing you could reserve a place for next years event which will take place at the University of Surrey in the last week of July 1993.

Frequency Modulation

Other than a few specially designated experimental tests by myself and HG5BME some 20 years ago, the use of frequency modulation has been frowned upon by AMSAT. The reason was the mode's poor communications efficiency, its continuous full carrier use demanding high battery drain, and the excessive bandwidth taken up in a very limited downlink.

Can you spot a friend? Here are some of the many delegates assembling for the next talk at the AMSAT-UK Colloquium 1992.

At the colloquium, Viktor Kudielka OE1VKW, showing G3IOR the close plot relationships between his calculations and OSCAR-13's decay from orbit.

In the same radio spectrum as you could get a single normal f.m. transmission, you could comfortably place seven s.s.b. or 30 c.w. QSOs. Now circumstances have changed with modern RS-Satellites such as RS-10/11, 12/13 and 14 (OSCAR-21), as they take their power from the major orbiter which carries them. This is because such satellites are rich in solar cell area and battery storage. For example, the multiple systems transponders and RUDAK comprising A-O-21/RS-14 are permitted to take up to 100W from the main Russian INFORMIR-1 geological research satellite complex.

New Mode

The RUDAK on RS-14, alias OSCAR-21, which has many versatile modes, has been placed these last few months into its f.m. mode. Although actually an analogue to digital to analogue system, a DSP-RISC (speech) processor, it behaves and sounds in operation much like any single channel split band f.m. repeater.

Just like any such conventional repeater, it can carry only one transmission at any one time. As it is covering many thousands of square miles at any one time, the number of potential users are enormous, so, keep your QSOs very brief and then let the next one have their turn.

Uplink And Downlink

The input uplink frequency is 435.016MHz, which Doppler shifts from a need to transmit at 435.007MHz at the aquisition of signal on an overhead pass, through 435.016MHz nominal at the time of closest approach, up to 435.025MHz at loss of signal time. The downlink is on 145.987MHz, ranging from 145.990MHz at AOS, through nominal, down to 145.984 at LOS time.

Station Requirements

Despite the f.m. modes inefficiency, the power requirements are modest at full sensitivity. Stations like G0MWH in Norwich have fully quietened the downlink re-transmission with just 25W to a simple collinear antenna. Mobile stations are also accessing easily when the repeater is not overloaded with 'alligators'.

However, recognising the advantage of the QRO capture effect, some stations are using full OSCAR-13 powers, e.g in excess of 1.5kW e.r.p., in an effort to overcome the many other users more modest transmissions. When this bad behaviour occurs, a -10dB attenuator is automatically switched into the 435MHz receiver input, which virtually takes everyone out. The lesson to be learned is to keep your power down to that minimum level necessary, or you won't work anyone!

Difficult To Determine

As so many stations are transmitting at any one time, constantly changing their beam directions and adjusting their input frequencies, it's difficult to determine the full system behaviour. It does appear however, that the satellite's helix receiver antenna is not earth pointing, and is actually turning its offset lobe with the rotation of the satellite. You'll hear one end of a QSO quite well, and then one minute later that station will drop towards the noise, whilst the other end of the QSO comes up.

When the new mode first appeared, I found that I could not access the satellite, even with 50W and a 13-element crossed Yagi when it was below 15° elevation. Two weeks later I could access it right down to the horizon, but not at high angles of elevation.

David Wright G0MTV of Ripon, North Yorkshire, uses up to 50W to a fully trainable 7-element Yagi to uplink. He is a regular fan of OSCAR-21 f.m., having already worked over 100 stations on the mode. These include KB2MN in north New York State, KB8KVY in Cleveland Ohio and his best DX of all WB0WAO in Paola, Kansas. In some 12 passes, I worked several fellow G stations, EA, EI, DL, F, GM, HA, HB, I, LA, LZ, OH, OK, ON, OZ, PA, SM and SP in European plus Ws, VEs and YI1BGD for other continents.

Voice Message

For those who are not fluent in the Slavonic languages, and have heard the voice message from RUDAK-II on 145.987MHz, it translates to....

"RUDAK-II on the RS-14 satellite is functioning perfectly. Greetings to the people on Earth and on Space station MIR".

No prizes are offered to anyone who recognises the digitised voice. Many of you will recognise it, having heard the same voice from the Soviet Arctic and Antarctic amateur radio expeditions, through the RS amateur satellites, and more recently at the AMSAT-UK Space Colloquium.

Other Systems

As for the other systems carried in RS-14/OSCAR-21, Leonid Labutin UA3CR and Peter Guezlow DB2OS, point out that the RUDAK equipment aboard must only be regarded as a flying test-bed for techniques to be used on PHASE-III-D. There are still many techniques and experiments yet to be performed. These include 4800/9600bps RSM, other modulation formats such as MSK, QPSK, etc., voice and other sounds. There are voice mail, spoken telemetry and bulletins and other DSP/modem experiments, such as SSTV and FAX. Future BBS operations are considered to be unlikely.

Precisely To Plan

The ARIANE V52 launch went precisely to plan at 2345UTC on August 10 to place TOPEX/POSEIDON, S80/T (another UoS satellite similar to KITSAT, but only on commercial frequencies) and KITSAT-A exactly into their pre-arranged orbits.

Successfully Commanded

Jeff Ward K0KA, reports that by 1030UTC the following morning, they successfully commanded the new satellite on from the Korean Advanced Institute of Science and Technology station HL0ENJ. Jeff reports, "The station was packed with reporters, and they weren't disappointed, as KITSAT came up upon the execution of the very first command sequence". The following passes were used to load the OBC186 onboard computer with full communications and housekeeping software, after which attitude determination, control and stabilisation operations began.

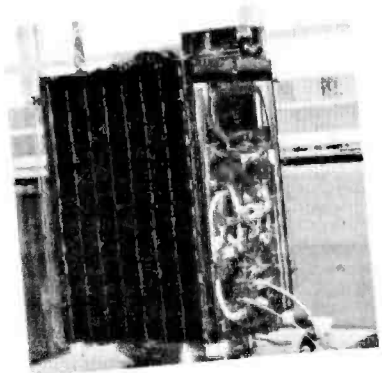
Orbital Inclination

The OSCAR-24's 660 orbital inclination makes its track resemble a more northerly variation of that of the MIR space station. Unlike UO-22, it is not sun-synchronous. So, whereas UO-22 orbits cross in a timing pattern repeating month after month, the new satellite's orbit pattern has about eight passes per day, with acquisitions roughly every 117 minutes. This will drift as a pattern in respect of the time of day it starts and finishes, more slowly than MIR's does, but still quite noticeable over a month or so.

The cycle gives about eight consecutive passes followed by a dead zone. This zone gets earlier daily, taking some 117 days to repeat. Thus (unless you are an owl) this satellite will be more suited to automatic operations rather than attended ones.

Additionally, OSCAR-24 at 1330km altitude is far higher than OSCAR-22, so each pass will be in range for much longer, so allowing far more users to access for longer periods in a wider footprint. Undoubtedly all systems will be up, running and in widespread popular use by the time this information reaches you the readers, so more on OSCAR-24 findings in later issues.

Peter Guezlow DB2OS, Leo Labutin UA3CR, creators of OSCAR-21/RS-14, meet together with Pat Gowen G3IOR at the University of Surrey.



The OSCAR-24, as KITSAT-A prior to launch, under assembly and testing, at the University of Surrey Spacecraft Laboratory.

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RSGB

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Mathematics For The RAE

This month Ray Fautley G3ASG, makes light work of inductive reactance. Feel no fear, for all will soon be revealed!

As usual, I'll give you the answers to the questions I left you with at the end of the last session. But before I do, I have to say that one of the questions printed didn't have a correct answer to choose from the multiple choices.

Question (ii) contained a mis-print, there were two answers labelled '100V', and neither of them was correct. The correct answer for that question was 1000 volts, full marks if you got it right. The answer for questions (i) was 'c' (0.4C charge), and for question (iii) the answer was 'd' (1μF capacitance).

In spite of the mis-print, I'll bet you got them all right. Didn't you?

This Month's Topic

The topic for this month is going to be the reactance of inductances (coils). The reactance of an inductor, or of a capacitor, is a measure of the component's resisting(*) the flow of alternating current (a.c.) through the component. But I shall leave capacitor reactance to a future issue.

Resistance to the flow of continuous direct current (d.c.) through a 'pure' inductor, whatever it's value, is zero Ohms. This means that, theoretically at least, it is a short circuit at d.c.(or zero Herz).

In the last paragraph, the word 'pure' indicates that we are referring to ideal, or perfect, components. 'Pure' inductors, or capacitors, have only the property of inductance (or capacitance). In the real world, inductors and capacitors always have a 'built-in' (usually unwanted) bit of real resistance.

I'm sorry if I seem to be labouring the point, but it is an important one to remember, especially for radio and electronics engineers.

Inductive Reactance

The resisting effect of an inductor varies with frequency, and follows the simple rule:

$X_L = 2\pi fL$ (two times *Pi* times the frequency times the inductance value.)

Where X_L is the reactance measured in Ohms(Ω), 'f' is the frequency at which it's measured and 'L' is the inductance, measured in Henries. Of course π is the good old thing we met in school for measuring areas and circumferences of circles (I shall take its value as 3.141). I hope you noticed that all the units were in basic units.

The drawing of Fig. 1 shows the general change in the reactance of an inductor with frequency. The 'curve' is actually a straight line. So, if at a frequency, 1f, the reactance of a particular inductor is 2Ω, when the frequency rises to 2f, the reactance of the inductor rises to 4Ω. At 3f the reactance is 6Ω, and so on.

As usual, worked examples are the best way to learn, so let's find the reactance of a 10H coil at 100Hz. From the formula for X_L, put the frequency and inductace in:

$X_L = 2\pi fL = 2x3.141x10x100 = 6282\Omega$ (6.282kΩ)

At 200Hz this would rise to 12 564Ω (12.564kΩ).

More Usual Example

Let's take a more usual example at radio frequencies. What is the reactance of a 20μH inductor at 14MHz? Again put some figures into the formula $X_L = 2\pi fL$.

$X_L = 2 \times 3.141 \times (14 \times 10^6) \times (20 \times 10^{-6})$ gives the answer 1758.9Ω (1.76kΩ)

Turn Round

We can turn the equation round to find any part of the equation that we don't know. For instance, at what frequency would a 2mH inductor have an impedance of 5.6KΩ? Let's write into the formula what we know: $5600\Omega = 2x3.141x0.002xf$.

So divide the left-hand side (l.h.s.) by 2x3.141x0.002 (0.012564) leaving f on the right-hand side (r.h.s.). This shows 445 717Hz (445.72kHz rounded up) is equal to f. Thus the answer to the question was 445.72kHz.

Now By Yourselves

As usual, I always try to leave you with a little homework to do while you're waiting for the next issue to come out. Here are a few questions for you to try out.

I'll give you the answers next time.

i) What would be the reactance of a 10H coil at a frequency of 100Hz?

a) 1000Ω b) 10Ω
c) 6282Ω d) 0.01Ω

ii) What would be the reactance of the same 10H coil at 5kHz?

a) 314.1kΩ b) 500Ω
c) 50Ω d) 5kΩ

iii) An r.f. inductor of 2.5μH is to form part of a transmitter at 3.5MHz. What is its reactance at this frequency?

a) 8.75MΩ b) 5.497kΩ
c) 182mΩ d)54.97Ω

iv) For a designed filter to work correctly, a coil need to have a reactance of 44.6Ω at 7.1MHz. What inductance value does it have to be?

a) 100μH b) 1μH
c) 6.28μH d) 159.2μH

That's it for this month. See you next time.

(*) In this month's discussions the words resistance, and resisting, are used to mean 'opposing' or 'against', instead of the electrical term resistance measured in Ohms (Ω). Editor.

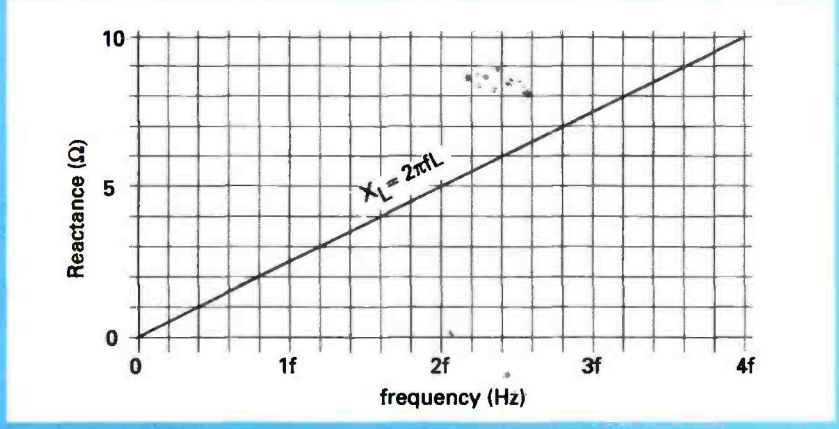

Fig. 1: The reactance of an inductor follows this general straight line. See the text for more details.

Back-Scatter

HF Bands

Reports to
Paul Essery GW3KFE
287 Heol-y-Coleg, Vaynor, Newtown, Powys SY16 1RA

Having cracked an elbow bone, and then bent the horseless carriage, I have been rather less active than usual this time on the bands! That being so, let's cut the cackle and go straight into the news and letters.

The 1.8MHz Band

John G3BDQ was away from Guestling and the 1.8MHz band for part of the period under review, and catching up with chores for much of the rest! Nonetheless, John notes a contact with OZ8ABE on sideband, plus c.w. to UA1NEE, UA3MFW, UA3NCN, RA3APK, UA4YGM, UB4INQ, UB5NAR, UW6HIY, UB5NFO, UL0A (in UL7), UG0BT, OK3TQX, DJ6CB and SV8ZS.

Over now to **Ted G2HKU**, who kept his sideband schedule with ON7BW and on the key raised HB0/DL1FZ/P. As for me, there has been, alas, very little activity on any band, though my callsign was to be heard twice on 1.8MHz.

The 3.5MHz Band

Not a single report this time on the 3.5MHz band - does this mean that the pundits have finally taken over ALL the band?

Slim Again

Slim has been at work again. The D2/DK7PE activity had the same value as a 90p coin, as indeed did that OD5PL heard on 14 and 21MHz in late April and most of May, keying contest-style exchanges. The real OD5PL uses a hand key, and doesn't often operate between 2300—0600z. Be warned!

Licensing is still very difficult in 5X; WF5T was refused permission to operate during his teaching stay in Kampala.

I've also heard that Sierra Leone has banned amateur radio. However, an exception has been made for the US embassy, where 9L1JC is operational and Jerry thinks that the concession will apply also to other embassies and to missionaries. The QSL address for 9L1JC incidentally is 211 Meadowlake Drive, Seguin, TX 78155, USA.

My latest knowledge is that the DXCC backlog has made a slight - very slight - improvement.

Ethiopia is on the air, ET3JR is active and is operated by FD1PJQ, and he'll be there for some three years. At the time of writing he has only verbal permission. QSL via FD1OYK.

The news I have of 4L6HMC, RU6B/RZ4HXX, UU6U and R40Z is that cards were to go to OH7AB. Cards sent there came back marked 'NOT MANAGER'. Later an address in Finland was quoted, but now this one too has been shown to be false. Keep your cards until I see what the next few weeks bring to light.

The 5H3NU station has been plagued by a Slim, who asks for QSLs to F6FNU and claims to be operated by F2JD. The **correct** route for QSLs for 5H3NU and 5H1TTY is by way of I1HAG. Note that the pirate is doubly nasty, in that any money left over from the QSL activity was to be donated to help Fr Camillo's mission in Kipengere.

Now to DXCC; 5X5WR/A are not valid for DXCC, neither are those for 7X5ST/3V. I also hear that the Glorioso activity by DJ6SI and DJ8CR are not acceptable.

The question of Albanian QSLs is looming pretty large. Box 66 Tirana seems to have a lot of holes in it! Therefore, I am now told that we can send cards to HB9BGN; he is NOT the QSL Manager, but every three to four weeks he forwards the cards to the Swissair office in Tirana by private courier. This service applies to the calls ZA1B to ZA1Z. Not, **please note**, to ZA1A, or the Hungarian stations, other foreign stations in Albania, or the stations that have I2MQP as their QSL Manager. Because of these arrangements, QSLs for one station only in an envelope, and please **do** mark the ZA callsign on the outside of the envelope, so HB9BGN knows which is his own mail and which can go on to ZA unopened! Address: ZA1?, c/o Albert Mueller, HB9BGN, CH-8311, Bruetten, Switzerland.

Regarding Z21HS; the most useful address known seems to be the QSL Bureau at Box 2377 Harare.

The 7MHz Band

The 7MHz band is much neglected; **Chris G4LDS** (Chelmsford), aside from addressing his antenna problems, wonders why we are seeing such a spate of stations asking for the last two letters of the callsign and so wasting everyone's time. The only answer we can offer is: fashion. Some people will do anything to be in the fashion! Chris did manage to find RC50 (Chernyobyl) and to hear ZL, J6, LU, CE, CO2 and CU3, before discovering he was well into a new certificate 'Worked All Telephones and Answering Machines!'

Eric G0KRT, and based in Worcester Park, continues to use the Lake DTR7 on c.w. at about 1W output. In the line of two-way QRP contacts (i.e. low power at both ends) there were nine G stations, plus GI4PCY, DL2HCB, DL4KCA, DL7AOJ, ON6WJ/P, PA3FSC and SP3HZY. Others worked included DJ/DK/DL, GM0PQV, F/G3OIH, F6BWF, F9OL/P, FE1NKK, HA6OY, HA8KCK, IK2PUY, ON4VL, ON7EZ, OK2BEK, SP6DAY, YL2UZ, YO5KTB and YT3KD.

The WARC Bands

Mike Birch G0KDZ in Thirsk wasn't going to take time off from grass-cutting until things peaked-up a bit on the WARC bands, but he weakened a bit, enough to find S21ZC, 9D0RR in EP-land, FP/G3TKN, ZL2ACY, ZL3KR, VK2BKH and VK3XU, all on 10MHz.

Conditions on 18MHz, says **Don G3NOF**, have been "strange" at times, but nevertheless he raised AA1BU/KP2, C31HK, CO1RG,CO7JC, CR6END/P, CS6AHU, D44BS, EF92EXPO, EL2W, F6BLQ/D2, HF0POL (S. Shetland), HK0OEP, HZ1AB, J6/F2WJ, JA5AQC, JI7DUD, OH1MA/OH0, P4/YV1DPQ, PJ8AD, PZ1EL, RY0DI, TK/G3OZF/P, TU2QW, TY1IJ, UA0FF in Zone 19, VE8VWI (IOTA NA-173), VE8FS/AM over the North-West Territory, VO1AA, VP8GAV, VP9MN, Ws, XE1L, XX9AW, YN9BJ, YV2BYT, Z21CS, ZD8MS, ZF1HJ, ZF1UK, ZK1RS, ZY0FZO, 4J4GAT, 4J4IR, 4X4FR, 5H0R0A/A (Pemba Is), 5N0HBK, 5R8GW, 9H1/G0NOF, 9D0RR. As for 24MHz, the score here was PA3ERL/5B4, VE1XDX, 4X1MO and 5H0R0A/A.

Short wave listener **Ron Pearce** of Bungay, is perhaps more noted for one-transistor receivers than the 'big stuff', but he writes to tell us he rescued an AR88D from a neighbour's shed, where it had lain for many years. All that Ron had to do to it was to clean out the innards from the dust and spiders, and it went as soon as switched on. Ron mentions 9H1KK, VE1XG, ZA1M, 4X4FR, PJ8D and CU1AC, as all logged on 18MHz.

Turning now to **Vince 9H1IP**, in M'Scala, Malta, we find him on 24MHz knocking off J5UAI, IM0/IK2AEQ, 5H0R0A, 5T5EV and TY1IJ. On 18MHz Vince's tally included J28YC, 4K5ZI (Snake Island), 9A2LH in Croatia, 5H0R0A (Zanzibar Island), 9A2ER, HK5LEX, ZL1BIL and 5T5EV.

Despite health problems, Ted G2HKU got on 18MHz with low power and made it across to LZ2VU with 5W.

Chris G4LDS (Burnham-on-Crouch) has an embargo on outside antenna to contend with. Adding 18 and 24MHz dipoles merely detuned the others, so they had to come out again, but then he was heard on the cordless 'phone and the answering machine. Is there such a thing as a 'Worked all Answering Machines' award, he plaintively enquires!

The 28MHz Band

Let's get the bad news over first!! The 28MHz band hasn't been a lot more use than a sick headache; for example G3NOF found only V51GB and 3X0HNU.

Chris G4LDS came on for a few tests and to sort out his r.f.i. problems, and managed EH92JOV in Barcelona Olympic Village.

John G3BDQ notes just a single contact, namely the one with 5H0R0A/A on Pemba.

Finally for this band, Ted G2HKU who simply comments that he found both 24 and 28MHz pretty dead whenever he was able to take a look.

The 21MHz Band

Even on the 21MHz band there wasn't all that much pay-dirt about. Don G3NOF hooked D2FGC, FY/DK2DZ, IB0Z, IG9/IK7RWE, J6/F2WT, JAs, JD1BFI (Ogasawara), TU2JL, TU2VZ, TR8GG, TY1IJ, UA9M/KC4UG, V5100SWP, VU2SMN, XX9AW, ZW0RW, 3X2XV (Rotuma),

4L6HMC, 5H0ROA, 5H0ROA/A, 7Q7XX, 9D0RR and 9Y1YC.

Short wave listener Ron Pearce tried the de-spidered AR88D on the band and found 9H1EL, TI2CF and HK6PSA.

John tried c.w. at G3BDQ for JA9BOH and V51/DK1II, while sideband accounted for HL2KAT, PY7ZYV, UV6AHF, DU3RCM, JS6FRI, JA4KEV, TU2JL, VU2JJQ and J6/F5ZK.

It was all-c.w. at G2HKU; with normal power Ted made it to ZC4SXW, UX9C, ZF2NE, PP7JR, K2LE, VY6QST, UA9SA, YC2HAX, ZA1HS, PP2AR, LU9CV, while on 5W he keyed with UI8GA, R4AKD, UL2M/UA9SAW, UB4MXQ, AP/WA2WYR, P30ADA and ZD8LII.

On 21MHz, Chris G4LDS found RE92C, while Gotaways included F6BLQ/D2 and XV8TH.

The 14MHz Band

Let's turn the pile t'other way up on the 14MHz band, so G4LDS starts, with 9A2QK, 9A2AA (IOTA EU-136), IT9JOF/P/IH9 (AF-18), YP0A, UB5IFB, ZA1A, ZA1FD (PO Box 1, Elbasan, Albania), R1O (EU66), EH92N, TF/FD1NZO/P, 4L4IR, 9D0RR, EK1SK, UA6JD and SP5GKN.

Normal power connected Ted G2HKU to P30ADA, RY9TI, RY5K, W5FO, WB4TDH, and at 5W 9A2DS, AM25DWX/6 and VU2NBT.

Listener Ron Pearce turned the old AR88D on to this band to find ZS5GRG (Penguin Island) and K2JP.

Finally, Don G3NOF winds things up here, with D2FGC, IB0Z (IOTA EU-45), S21U, S21ZA, VQ9WM, XU2UN, 4S7VK, 9D0RR and 9M2HB.

Finally

That's it for another time! The address is at the top, and to make it simple we'll stick to 'arrive with me at mid-month, each month,' unless some radical difficulty arises, in which case I'll let you know.

Back-Scatter

VHF Up

Reports to
David Butler G4ASR
Yew Tree Cottage
Lower Maescoed, Herefordshire HR2 0HP

In last month's Diamond Jubilee issue of *PW*, I looked back at events of the past 60 years which occurred on the 56MHz and 70MHz bands. This month I'm going to continue the theme with details of t.e.p. tests, meteor scatter and e.m.e. experiments and DX on the 144MHz and 430MHz bands.

And don't forget as you make those long distance trans-equatorial, Sporadic-E, meteor scatter or moonbounce contacts that it's all been done many years ago!

Government Surplus

Immediately following WWII, a scheme existed that enabled radio amateurs to purchase government surplus equipment. Sensitive and stable gear, such as the R208, R1132, R1392 and R1626 receivers and the RF25, RF26 and RF27 converter units, were pressed into service. Along with the release, in 1948-49, of several new v.h.f. allocations, including 144MHz, 430MHz, 1.3GHz, 2.4GHz, 5.7GHz and 10GHz, many UK operators became active on the v.h.f., u.h.f. and microwave bands.

It's impossible for me to mention all the enthusiasts that have made (or still are making) significant contributions to our hobby, and have given inspiration to others over the last sixty years, but my personal 'top-ten' choice would be G2JF, G2AHU, G3BA, G3CCH, G3HBW, G3JVL, G3LTF, G3RPE, G3WDG and G5UM. I'm sorry if you were left out!

Equatorial Experiments

A number of readers may have heard of **Ray Cracknell G2AHU**, because of his role as editor/co-ordinator of the 50MHz Reporting Club (initially formed to provide feed-back relating to the 50MHz permits issued in the UK in the early 1980s). But it is probably for his trans-equatorial propagation (t.e.p.) experiments and as **ZE2JV**, that he is better known.

In 1947, the Southern Rhodesian Government would not allow any permits to be granted for the 50 or 56MHz bands. Operation at ZE2JV was initially confined to reception only, and with the use of a 4-element Yagi, tunable converter (6J6) and a surplus WWII receiver, many British and French television signals were regularly heard.

Following a number of approaches to the licensing authorities, permission was eventually given, in 1956, for operation on the 50MHz band, just in time for the subsequent sunspot maximum in 1957/58. Schedules were quickly arranged, in 1956, with George Barrett ZC4IP (ex-G8IP) and with ZE2JV running 100W input to a pair of 3C24s. Tests were immediately successful over the 6000km path.

At this time however, the Cyprus authorities did not allow transmissions on the 50MHz band and therefore all initial contacts were made via 28/50MHz crossband. Reception with the tunable converter and 4-element Yagi showed a startling difference from the results obtained in 1947 (because of the proliferation of f.m. and TV broadcasting stations).

The thrill of listening first time on the band was described like Keats, "Then felt I like some watcher of the sky when a new planet swims into his ken", with the band 40-75MHz jam-packed with signals.

When ZC4IP returned to England, the nightly tests were re-commenced with 'Chalky' Whiting ZC4WR. The reliability was outstanding and 50MHz signals often lasted from 1500-0300UTC.

Later on, Jean Garat F9BG in Marseilles, became involved with the tests with similar results. When a few permits were issued in Britain and Ireland (during what came to be known as the IGY, the International Geophysical Year), G4LX in Newcastle-on-Tyne, joined in too. He transmitted on 52.400MHz (unfortunately on the same frequency as a video carrier from Paris), but eventually a two-way 50MHz contact was made. Ray recalls that in November 1957, the 50MHz band opened up to North America, and during one afternoon all call areas of the USA, VE3 and XE, were worked with S9 signals on a.m. American stations on Guam and Okinawa were also worked, but Australia and South America proved too difficult.

Now, it is hard to appreciate the sort of reaction these results brought from American officials in the days before satellite communications, but very quickly Ray had visits from well-known names in propagation literature. Five 1kW transmitters were dumped in his back yard and he had a full-blown project on his hands!

Tokyo Suggestion

In 1959, Professor T.Obayashi from Tokyo, was suggesting that t.e.p. took place 'along the exospheric field-aligned ionisations'. This challenged the findings of ZE2JV, but was very well received professionally. Nevertheless, Ray was quite sure that t.e.p. was propagated by the ionosphere, so he took up the challenge and set up propagation time-delay measurements between Southern Rhodesia and ZC4WR in Cyprus.

For reasons already mentioned, the return signal had to be on the 28MHz band, but two-way tests on 28MHz showed no significant difference. The results were published in a scientific paper in May 1960, concluding that there were three modes operative across the equator on 28MHz and 50MHz, namely, 2- hop F2, F type TE and pure TE. These findings were never challenged, and the controversy came to an abrupt end.

The success of the geophysical work during the IGY led to further experimentation during the subsequent sunspot minimum, between 1963-64 (this was known as the IQSY, the International Years of the Quiet Sun).

A novel beacon, ZE1AZC, operating on 50.040MHz, was constructed by Fred Anderson ZS6PW, and consisted of a 50W transmitter built inside a ground-plane antenna. This provided much useful information, but the most interesting was the reception, on several occasions, of the ZE1AZC beacon by BRS 26325, located in Dundee, Scotland.

Many were sceptical, but the results were published and they enabled Ray to predict that t.e.p., plus Sp-E, would still work at the 1986 sunspot minimum, and resulted

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in the A22KZ to G2ADR, GM4DGT and other QSOs in October 1987.

Lost Access

Before the next solar maximum was due in 1972, radio amateurs in Southern Rhodesia (now Zimbabwe) lost access to the 50MHz band, resulting in a migration to higher frequencies. The t.e.p. experiments with 5B4WR continued (note change of callsign), but now on the 144MHz band, and by way of proof there still hangs a QSL card in the shack at G2AHU. It reads, "confirming QSO on 144.118MHz, 10 April 1978 at 1800GMT F1/A1 R2/3 S1/2 T7 flutter fade and echoes". He continued "one of the greatest thrills of my ham career. Very 73 old friend".

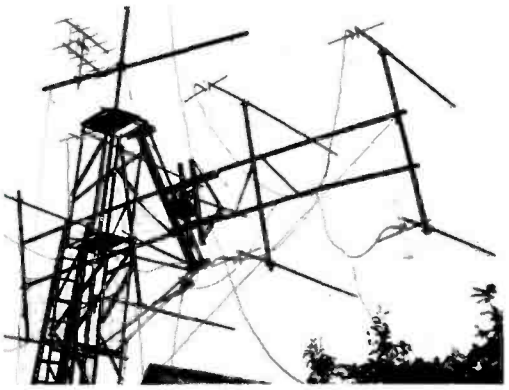

Fig. 1: Early e.m.e. array at G3CCH's QTH.

As a record, it didn't stand for long. Costas SV1DH and George SV1AB took it in turns, then ZS6PW stretched it further south, then ZS6DN and several other ZS6's, until finally ZS3B and I4EAT created the 144MHz DX world record of over 7900km! Readers may be interested to know that tests were also performed, on the 430MHz band, with transmissions from ZE2JV being received by SV1DH and 5B4WR in March and May 1979.

To prove that 144MHz was also being propagated via the F regions of the ionosphere, simultaneous pulsing of the 28MHz and 144MHz transmitters at ZE2JV were recorded at 5B4WR, and transcribed to photographs by ZS6PW.

The transponding method of measuring time delays was not without its problems. An alternative method was used with other stations who could receive standard frequency transmissions. At the station of ZS6PW the nearby ZUO transmission was used, and at SV1DH the Loran C transmission from Lampadusa was picked up.

With both stations referenced to Loran transmissions, ZS6PW transmitted a mimicked version of the Loran C pulse train, and when synchronised, provided SV1DH with a direct reading of the time delay on the 28, 50 and 144MHz bands. When the 144MHz signals got through, there was very little difference in time delay compared to the other frequency bands, and this left no doubt that the ionosphere was the propagating medium.

Early Pioneers

Jack Moseley G2CIW was an early pioneer and has been active on the v.h.f. bands from their release in the 1940s, through to the present day. In 1947, he was active on the 56MHz band, but following the removal of that allocation he moved up to new territories, making his first contact on the 144MHz band in September 1948.

Typical equipment at that time would consist of a v.h.f. down converter feeding into a tunable (war surplus) h.f. receiver, and a separate crystal controlled (normally 8MHz) a.m./c.w. transmitter.

Jack mentions that after a few years the 144MHz band was divided up into geographical zones, each having their own frequency allocation. For example, Scottish counties operated between 144.00-144.2MHz, Wales and the west used 145.65-145.8MHz and operators located in London and south-eastern counties used 144.85-145.25MHz.

The zoning was implemented in order to reduce local QRM, and the procedure of the day was to call CQ and then indicate "tuning low to high" or "high to low". Of course it was quite easy to miss a reply because the other station may have stopped calling. (I can remember all this but I don't want to admit it!).

In June 1950, G2CIW became active on the 430MHz band, but contacts were difficult to come by and most had to be made by arrangement on the 144MHz band. Jack mentions that his only claim to fame on the 430MHz band was in 1963, when he held the European distance record for one week, following a contact with PA0COB!

He reckons it is easier nowadays to work more countries than it was 40 years ago, mainly due to increased activity and, to some extent, better and more sensitive equipment. Jack also notes that c.w. activity has diminished considerably, particularly on the 430MHz band, where the activity on that mode is virtually nil, unless there is an opening.

Another one of our regular *PW* readers, **Ralph Sachs G2CZS**, has provided me with details of his early activities. He remembers listening for the first time on 56MHz, in 1937, when he was a short wave listener BSWL200, but it was not until March 1953, as G2CZS, that he made his first 144MHz QSO.

Later that month, on 22 March 1953, during a foggy evening, there was a tropo opening and Ralph managed to work G5YV in Leeds and G3HXO in Bedford. The a.m. transmitter in use at G2CZS consisted of a crystal oscillator, multiplier and an amplifier using a 6J6 double triode, with the two sections strapped in parallel, running 4W d.c. input.

The converter used four 'acorn' valves, a two-section r.f. stage, mixer and local oscillator feeding into a National NC80X receiver. The antenna consisted of two 2-element beams, made from copper wire, stacked vertically at a height of 6m above ground.

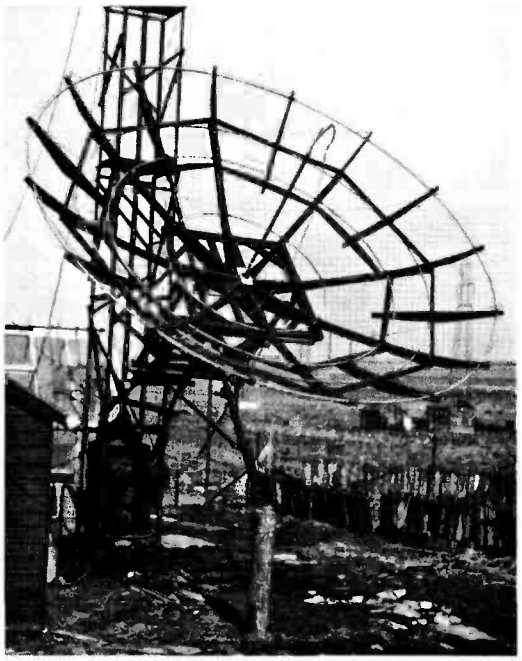

Fig. 2: Dish used by G3CCH to work Puerto Rico on 430MHz.

There were fewer operators on the 144MHz band in 1953, but on July 1, with a new amplifier running 12W input, contacts were made with DL1LB and OZ2FR. The station was later improved with an 829B p.a. running 80W input and three 3-element Yagis stacked vertically, with half-wave spacing at a height of 12m above ground, and a new converter built using a cascode r.f. stage.

Ralph reports that his best tropo opening was in July 1990, when he worked HB9QQ, HB9MY and OK5A, and that he made his first Sp-E contacts in the same month, contacting IS0HQJ and IW0AKA. During June/July of this year, G2CZS was still in the thick of it working IV3DLW, IW8CVV, YU1WP, YZ3TTI and 4N2CD via Sp-E, and DL0DWD, DG8LG, OZ1KSN, OZ4NA, OZ/DB4AQ/P and SM7AED via tropo.

Auroral contacts have also been made, the first with G0EIR in June 1991 and then subsequently with DL, F, GI and PA. Also in 1991, he turned his hand to RS12 satellite operation, 144MHz up/28MHz down, making his first QSO via this mode in July with F6HZF.

Ralph thinks that in the 1950s and earlier, many operators had far less understanding of propagation modes such as Sp-E, aurora and meteor scatter. Of course there were no satellites either, so there has been a considerable advance in knowledge over the years. However, much of it still remains a mystery to him!

Crystal Control

Tom Douglas MBE G3BA, first started transmitting from Edinburgh in 1935, with crystal control and straight sets. (He used the latter when a prisoner of war on the Siam railway, to provide accurate news for those in the p.o.w. camps).

In the 1950s, he operated from Daventry on the v.h.f. bands, giving him an interest which has lasted to the present time. Tom was an early advocate in the use of s.s.b. He gave numerous talks and wrote many articles, in the mid-60s, with the aim of influencing others to use its many advantages for long distance working on the v.h.f. bands.

He was also very well-known for his activity in contests, field days

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and expeditions to Ireland, Scotland, Wales, Belgium and Luxembourg. In August 1967, he took part in the first 144MHz s.s.b. contest to be held in Europe. Guess who won? Tom Douglas G3BA!

Johnny Stace G3CCH, located in Scunthorpe, was one of the many experimenters attracted to the v.h.f. bands after WWII. He recalls that his first 144MHz contact was on 22 May 1951, when he worked G3BPD. At that time he was using a home-made v.h.f. converter into a battery-operated h.f. receiver, and crystal controlled transmitter coupled into a stacked collinear array and that with this system contacts could reliably be made with stations over 250km away. Forty years ago, in 1952, some of the 144MHz tropo contacts made from the QTH of G3CCH included EI2W, GI3BIL, GM3EGW and GM3ANG on the Shetland Islands.

Over the following years, equipment, knowledge and techniques improved considerably and by the early 1960s more esoteric contacts were being made.

On 8 May 1960, the first auroral contact on s.s.b. in the UK took place, when G3CCH worked G3ILD on the 144MHz band. Recordings were made of the QSO and played to a captivated audience at the RSGB v.h.f. Convention later in the month. Remarks made at the time indicated that the signals exhibited a peculiar lack of bass, giving the effect of a 'ghostly' voice.

Incidentally, in the early 1960s, the use of s.s.b. on the v.h.f. bands was very imaginative and G3CCH, G3BA and G3MED were pioneers of this mode of transmission.

New Modes

Many new modes were becoming popular in the 1960s and interest in meteor scatter was high, with G3CCH, G3HBW, G3LTF and G5YV maintaining a pre-eminence in the mode.

At the QTH of G3CCH, the first successful QSO via this mode was made with OE6AP during the Perseids meteor shower on 12 August 1960. His 'machine-gun' Morse transmissions were regularly heard on the 144MHz band, and even 20 years ago, in October 1972, G3CCH had notched up 42 QSOs with TF3EA.

I wonder how many of you have worked Iceland on 144MHz, let alone make 42 contacts! Regular skeds for over 10 years were also kept, with SM7AED making nearly 150 m.s. QSOs, and with SM3BIU making over 40 contacts. Johnny remarks that although there is always a feeling of achievement in working a new country or square, he has derived considerable pleasure in running regular

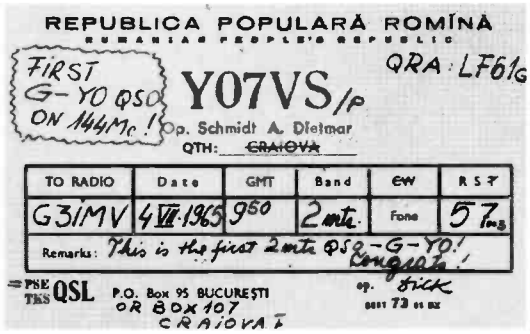


Fig. 3: The first G-YO QSO on 144MHz.

schedules, both on tropo and meteor scatter.

Tropo skeds with GI have been running for nearly 30 years, approaching nearly 800 with GI5SJ and over 200 with GI4XFS! Experiments were also carried out on the 430MHz band, and one of the early e.m.e. arrays at the QTH of G3CCH is shown in the photograph, **Fig. 1**, and consisted of eight 20-turn helices placed on a polar mount.

Moonbounce Records

Another of the v.h.f. pioneers during the early 1960s was **Peter Blair G3LTF**. His first contact on the 144MHz band was made in June 1957, when with a 15W transmitter (TT15 p.a.), CV53 grounded-grid disc seal triode converter and a 5-element Yagi, he worked Bill G2ANT.

Early interests lay in meteor scatter propagation and his first contact via that mode was on 11 August 1961, with Ivo OK2WCG, now incidentally ZS6AXT, well-known on both the 50MHz band and as an e.m.e. operator on the 430MHz and 1.3GHz bands. In fact, ZS6AXT has worked Peter via e.m.e. on both those bands! For early m.s. work, G3LTF used a 417A triode converter, 4X150A amplifier and 10-element Yagi, and a number of firsts were obtained including UR2BU (18 August 1963), UA1DZ (3 May 1964), LZ1DW (6 June 1964) and UP2KAB (12 December 1964). He recalls that during one of his m.s. contacts, in the 1964 Leonids shower, a four minute S9-burst was received from EA4AO.

One of natural progressions from m.s. working is that of e.m.e. and it is in this role that G3LTF is probably better known. Initial operation was on the 430MHz band, using a 2dB n.f. parametric amplifier, with 10GHz pump and GaAs diode, 4CX250B amplifier and a 5m dish (and don't forget that this was nearly 30 years ago!). A number of QSOs were made, including a first with Puerto Rico when, at 2020UTC on 13 June 1964, contact was made on c.w. with KP4BPZ, signal reports being 459 bothways. Of course it was useful to have the Aricebo 330m radio-telescope dish antenna at the far end!

The station of G3CCH also heard the 430MHz signal from KP4BPZ, but unfortunately could not raise him. However, by re-siting the 4m dish, shown in the photograph, **Fig. 2**, the Puerto Rico station was eventually worked one year later, on 24 July 1965.

Meanwhile back at the QTH of G3LTF, e.m.e. contacts continued to be made and records broken. Tests on the 430MHz band were being conducted with the Stanford University station WA6LET, and at 1530UTC on 25 September 1965, contact was finally made and a 430MHz world record of over 9200km created.

Nearly a quarter of a century ago, on 13 April 1968, Peter worked W2NFA for the first UK to USA contact on the 1.3GHz band. Equipment was quite sophisticated, even by today's standards, consisting of a 1.5dB n.f. parametric amplifier, a 250W amplifier with a ring of six 3CX100A5 triodes and a 5m dish.

A few months later, on 11 November 1968, WB6IOM was contacted, to create a world record distance on the 1.3GHz band. Since then, G3LTF has worked 285 separate e.m.e. stations on the 430MHz band, 82 on the 1.3GHz band and five on the 2.3GHz band. A really impressive result!

Hunter Active

John Hunter G3IMV is very active on the v.h.f. and u.h.f. frequencies and at the last count had worked 400 squares on the 50MHz band, nearly 500 squares on 144MHz, 125 on 430MHz and 52 on 1.2GHz, and that's going some!

His first contact on the 144MHz band was on 7 March 1965, when he was using a home-made a.m./c.w. transmitter with a QQV06-40A p.a., modulated by a pair of 807's in class B, a 6CW4 nuvistor converter, Hammarlund SP400 receiver and a 4/4 slot-fed Yagi. Everything was crystal-controlled and, as previously explained, the operating procedure was QLH (low to high), QHL (high to low), QML (middle to low) and QMH. You tended to stay on your own chosen crystal frequency until the DX found you. All very orderly and a lot of patience needed (unlike today!).

Nowadays, G3IMV uses a TS790E, Henry 2002A amplifier and a pair of 17-element Yagis, and prefers DXing on the 144MHz band via tropo, aurora, Sp-E, meteor scatter and moonbounce. John recalls that his first ever contact via Sp-E was particularly pleasing, as it was also the first G-YO contact on the 144MHz band, as the QSL card in **Fig. 3** shows.

Three years ago, in November 1989, G3IMV made his first e.m.e. contact with SM5FRH, and has since worked 87 stations in 27 countries via the moon. Not bad for an o.a.p. (Sri John!)

Transatlantic Tests

Some 13 years ago, in 1979, I was a member of the team consisting of G3SEK, G4ANB, G4ASR, G4DEZ, G4DGU, G8HDR, G8KQB and G8OAC, that made an attempt to contact the Canadian station VE1ASJ over a 4470km path, via extended meteor scatter, on the 144MHz band.

Using an FT221, with a muTek front-end board, 2 x 4CX250B and a pair of 16-element Yagis, we arranged a six hour test, commencing at 2100UTC on 12 August 1979, to coincide with the peak of the Perseids meteor shower. Signals were received in both directions, and although no positive identification was made, it was considered most unlikely that the signals came from any other source than the co-operating stations. It is interesting to note that this is the highest frequency that radio signals have crossed the Atlantic, other than via a satellite.

The signals copied at Predannack Head, on the Cornish coast (IO70), exhibited noticeable de-correlation with spectral spread and Doppler shift being apparent. A maximum burst length of about 750 milliseconds was observed, with typical signal strengths of the order of 0dB signal/noise in a 2.5kHz bandwidth.

Encouraging Results

Full of enthusiasm from the encouraging 1979 results, plans

were made to conquer the extended meteor scatter path during the Perseids shower in 1980. So on August 9, the group consisting of G4AND, G4ASR, G4DEZ, G4DGU, G4JKN, G4GFN, G8AGU, G8KQB, G8MXE and s.w.l. Steve Lampar, assembled on a cliff-top near Hartland Point, North Devon (ID71), to construct the antenna system and to put together the station.

The answer, we believed, was in the antenna system, and at the UK-end we erected a 400m-long, 25m-wide rhombic antenna, mounted at a height of 8m above ground. Calculations showed this to have a gain around 30dBi and a horizontal beamwidth of approximately 5°.

I can still remember the arguments which ensued when a certain team member realised he had misinterpreted magnetic north on his compass after the antenna was set up! The rhombic was left unterminated at the far end, (we couldn't find a resistor large enough to handle the power!), making it bi-directional, but with plenty of forward gain in hand this didn't matter.

Open wire feeder was used to transport the r.f., and the system was matched by the use of a quarter wave resonant line transformer and a 4:1 coaxial balun feeding a length of LDF5-50 heliax cable.

In the operating tent an FT225RD with muTek front-end was used, with a solid-state 100W amplifier driving a pair of 8874 triodes. Schedules were arranged to run continuously for 48 hours during August 11-12, with K1WHS in Maine and VE1ASJ in New Brunswick. But, just just before the operation began, the antenna system at K1WHS was hit by lightning, severely damaging the equipment. As a consequence, the tests were limited to four six-hour skeds, with Andy VE1ASJ who was using a Tempo 6N2 and four 19-element Cushcraft Boomer antennas.

The first test began at 0000UTC on 12 August 1980, using five minute periods of c.w. at the comparatively slow speed of 600 letters per minute on 144.6185MHz, under the callsign G4DGU/P. During the six-hour test, a total of three weak bursts were heard, almost certainly from VE1ASJ, but none were strong enough for absolute identification to be made, and all exhibited the same type of de-correlation observed in 1979.

At the station of VE1ASJ, two good bursts were received and a positive identification of both callsigns being transmitted by G4DGU/P was made. At last, identifiable 144MHz signals had crossed the Atlantic Ocean, a path length of 4470km!

The second six-hour test started at 1200UTC on August 12, but gave no results in either direction. At the commencement of the third sked at 2300UTC, the generator powering the station spluttered to a halt and, despite our best efforts, it couldn't be restarted.

That was the end of our attempts to bridge the Atlantic Ocean via meteor scatter. The record is still waiting to be broken. Why don't you start planning for an attempt in 1993!

Thank You

A big thank you to G2AHU, G2CIW, G2CZS, G3BA, G3CCH, G3IMV and G3LTF for providing valuable material for this month's column.

Enjoyed It?

If you've enjoyed reading this and the previous months column about some of the history of v.h.f., please tell me and maybe I can persuade the editor to give me some extra column inches, then I can give you more details in future. *(Top marks for persistence David! Ed).*

Deadlines

It's back to normal next month, so as usual please send your letters to reach me by the end of the month at the very latest, as I normally write up the column around this time. Don't forget that I can also receive messages via packet radio at my mailbox GB7TCM or at my DX cluster GB7DXC.

Back Scatter

Broadcast Round-up

Reports to Peter Shore via the PW Editorial Office

Despite making use of the Astra satellite to broadcast to Europe, Radio Sweden has announced that it is to buy three new 500kW transmitters from the Swedish-Swiss company ABB to replace 350kW senders at Karlsborg and Hoerby. Meanwhile, ABB has sold three 250kW transmitters to Radio Canada International for its Sackville site.

I mentioned in last month's column, that the Cuban relays of Radio Moscow seem to have stopped. Confirmation came in Joe Adamov's *Mailbag* programme on the station at the end of July, saying that not only the Cuban transmissions have stopped, but also some relays from stations in parts of the former Soviet Union and the former Eastern Bloc countries.

The Voice of America has found a new site in Africa to replace its Liberian transmitting station which it lost during the country's civil war. It's off-shore on the island of Sao Tome, and the plans are for the installation of four short wave transmitters as well as a 600kW medium wave sender serving West Africa.

It will take some time until the VOA's high powered m.f. transmitter can be operational, so as an interim measure a 100kW transmitter will start operations in March 1993. At present, Sao Tome with a population of just 128 000 has a national f.m. and medium wave service (on 945kHz) in Portuguese operating between 0530 and 2300.

Plans for the joint RFE/RL and VoA relay station in Israel's Arava Desert are still dogged by problems. Conservationists are concerned at the effect of the antenna towers and the r.f. signals on migrating birds: the station's proposed site is on a direct migratory route.

Reports from Washington suggest that President Bush is applying pressure on the Israeli government to quash the objections and move ahead with the development.

In its 60th anniversary year, BBC World Service is launching a new glossy programme guide. Called *BBC Worldwide* it will be published monthly and available either on subscription or on news stands in Britain and overseas.

One hundred colour pages will provide in-depth features written by BBC correspondents around the world, and full programme listings for World Service radio and television will be included.

The frequency guide *London Calling*, will continue to be supplied free of charge to the developing world and will be published as the centre section in *BBC Worldwide*.

The first edition will be published in November, available during mid October. For more information, call BBC World Service on 071-257 2211.

European Stations

All times GMT(=UTC)

Further to last month's report, Radio Tirana in Albania has English transmissions:

0230-0300 on 11.825 and 9.58MHz
0330-0400 on 11.825 (variable), 9.58 and 7.17MHz
1430-1500 on 9.76 and 7.155MHz
2200-2230 on 11.825, 9.76 and 1.395MHz

News from the BRT in Brussels: watch out for a relaunch of the station's international service at the end of September. There will be a new name, new jingles and much more, according to Frans Vossen, the station's DX Editor.

But despite much probing for more details, Frans was sworn to secrecy and would not reveal anything more. We'll have a full report in next month's column!

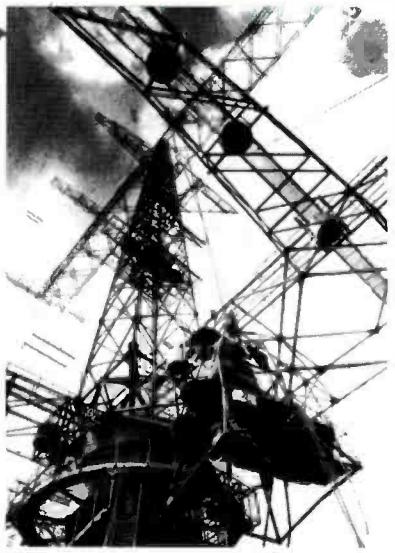
The time changes in Europe at the end of September will affect some broadcasters, including Deutschlandfunk in Cologne, Germany. From Sunday September 27 he daily English programme will be heard at 1915 to 2100 and the German language course called *Deutsch -Warum Nicht? (German - Why Not?)* (heard on Wednesdays and Saturdays) will be at 1900.

The station is currently repeating Part One of the course, and will start to repeat the second part on October 7.

Radio Netherland's English transmission at 1230 to Europe is now on 5.955MHz, replacing the channel of 9.855MHz.

Radio Romania International in Bucharest transmits to Europe in

Back-Scatter



Maintenance underway on Radio Romania International's transmitter.

English:

1300-1400 on 17.85, 17.72, 15.365 and 11.94MHz

1900-2000 and 2100-2200 on 11.94, 9.75, 9.69, 7.145 and 5.955MHz

There are also special transmissions aimed mainly at tourists at 0630 on 15.365, 11.94, 9.665 and 7.225 and at 1530 on 756kHz. A DX programme can be heard on Wednesdays.

The latest schedule from Radio

Radio Romania International pennant.

Ukraine International lists English transmissions:

0000-0100 on 15.57, 15.355, 12.06, 12.04, 12.00, 11.79, 11.52, 9.64, 7.25 and 7.195MHz

2100-2200 on 15.75, 15.135, 12.00, 9.865, 9.60, 7.25 and 5.96MHz

An s.s.b. feeder is noted for the 0000 transmission on 10.344-u.s.b.

African And Middle Eastern Stations

Radio Kuwait's English service is now heard daily from 1730 to 2100 on the single short wave frequency of 13.62MHz.

If you want to keep up to date with news from drought stricken and war ravaged Somalia, there is a daily English news bulletin at 1830, transmitted on short wave on either variable 9.475 or variable 6.968MHz.

Asian And Pacific Stations

Radio Australia in Indonesian is audible on 7.205MHz from around 2200.

The SLBC service in Colombo has been heard between 0000 and 0036 on 7.198.8MHz. This is probably the station's Hindi service. And at around 1300, English can be heard on 15.425MHz.

A new Vietnamese language station called the Voice of Freedom is being transmitted from Moscow, according to reports from a number of sources. It is on the air daily at 1400 for sixty minutes on 15.58MHz, a frequency used until late July by Radio Moscow World Service in English and on 15.425MHz.

The station announces an address of 121069 Levinskiy Moscow 18/257, Russia. There is a telephone number for English speakers: +7 095 431 3782.

North, Central And South American Stations

Radio Canada is relaying the Canadian Forces Network for Peace Keeping Troops in Yugoslavia. It's heard at 1900 for 30 minutes, Monday to Friday in English and French on 5.995, 7.23, 13.65, 15.325, 17.875 and 21.675MHz.

The programme's audio quality is poor, as it seems to be sent on a telephone line to the transmitting stations. Whilst QSLs are not sent for reports, there is a sticker, folder on CFN and an RCI schedule available from the organisation.

Radio Netherland's Media Network carried an interview with the short wave project manager of a new station, WEWN, during July. This new Catholic station, Eternal Word Network, will make use of a transmitting station in a small town located some 20 miles outside Birmingham, Alabama in the United States.

There are four 500kW transmitters and eight curtain arrays. The station, according to Bob German, the project manager, is more than 70% complete, with a target on-air date of Christmas this year, with test transmissions due in October. The station will have a network of remote receivers in different parts of the world to monitor its performance, including a European monitoring post in Vienna.

The station can be contacted at 1500 High Road, Vandiver, Alabama 35175 in the USA.

Readers with access to the Compuserve network can send messages to WEWN on 70413,40.

Another US religious station, WJCR, has been noted in English with religious music and preaching on 7.49 between 0640 and 1200.

Headquarters building of Radio Romania International in Bucharest.

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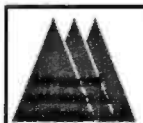

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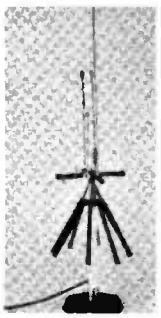

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C412	UHF FM 430MHz mini transceiver	293.75
C168	VHF FM 144MHz miniature handheld transceiver	269.00
C468	UHF FM 430MHz miniature handheld transceiver	279.00
C500ENB	Dual band 144MHz/430MHz transceiver** includding CNB111 nicad battery	335.00

C150/C528 Accessories

CLC151	Carrying case C150 with CNB151 batt.	11.00
CLC152	Carrying case C150 with CNB152 batt.	11.50
CLC528	Carrying case C528 with CNB151 batt.	11.00
CLC521	Carrying case C528 with CNB152 batt.	11.50
CMP111	Speaker microphone	35.25
CMP113	Tie-pin microphone	29.38
CMP115	Speaker microphone (small size)	34.08
CMB111	Mobile bracket	10.58
CMC150K	Mobile charger for CNB150/151/153	14.69
CHP111	Headset with P.T.T. switch	34.00
CNB151	Nicad battery pack (7.2V-700mAH)	42.00
CNB152	Hi-power battery pack (12V-600mAH)	62.00
CBT151	Empty battery case for dry cells	10.75
CSA160E	Desk top rapid charger for C150/C528 (replaces CSA150)	68.15
CWC150	AC charger CNB151 battery	13.25
CWC151	AC charger CNB152 battery	17.50
CTN150	CTCSS tone squelch unit	46.00
CTNS20	CTCSS tone squelch unit	46.00
CTD150	DTMF unit for C500	35.75
CAW150	Power cable for mobile use	6.15
CAX02	Battery contact covers	4.11
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CAX03	Button cover	4.50
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CAW150	Mobile power cable	8.80
CCA160	Charging sleeve	9.50
CTN160	CTCSS module	46.00
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CMP115	Small speaker/mic	34.08
CHP111	Headset boom/mic	34.00
CMP113	Tie-pin mic and earphone	29.38
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CAW562	4m microphone extension cable	17.90
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CTD5680	DTMF touch tone unit	46.00
TA208	Slim-line extension speaker (4-8 OHMS/5W)	13.50

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CLC412	Carrying case	10.75
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CMP113	Tie-pin microphone	29.38
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CNB412	Nicad battery pack - Slim-line 7.2V-400mAH)	42.00
CNB414	Nicad battery pack (12V-600mAH)	62.00
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CKP412	Keypad	25.00
CTD412	DTMF unit	46.00
CTN412	CTCSS tone squelch unit	46.00

C500 Accessories

CLC500	Carrying case C500 with CNB111 battery	11.00
CLC501	Carrying case C500 with CNB120 battery	11.50
CMP111	Speaker microphone	35.25
CMP113	Tie-pin microphone	29.38
CMP115	Speaker microphone (small size)	34.08
CNB111	Nicad battery pack (3.5W-VHF/3.0W-UHF)	42.00
CNB120	Nicad battery pack (5W)	57.50
EBATT	Empty battery case for dry cells	11.00
CSA111	Desk top charger CNB111 and CNB120 battery	62.50
C102/230-1	Plug-in charger CNB111 battery	15.50
CWC20	Plug-in charger CNB120 battery	16.30
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C164/468 Accessories

CLC160	Carry case for use with CNB160	11.75
CLC161	Carry case for use with CNB161	11.75
CLC162	Carry case for use with CNB162/163	11.75
CNB160	Nicad battery pack (6V @ 300ma)	40.00
CNB161	Nicad battery pack (7.2V @ 700ma)	43.00
CNB162	Nicad battery pack (12V @ 600ma)	70.00
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CWC151K	Wall charger for CNB162	17.50
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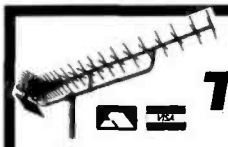

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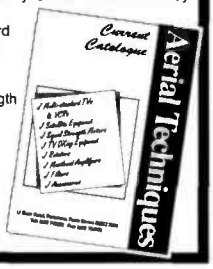

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