IT'S BACK! THE RALLIES GUIDE RETURNS

RadioUser

Radio User REVIEW SPECIAL Radio User

June 2021 £4.99 www.radioenthusiast.co.uk

REVIEW 1

HF RECEIVER

The Belka DX miniature short wave receiver is put through its paces

REVIEW 2

Double the fun

The RFinder B-1 Dual Band DMR 4G/LTE transceiver

REVIEW 3

'Vine' tuning...

Vine Antennas' off-centre AS-OCF-404-HP Fed Dipole

REVIEW 4

The Sandstrøm Internet Bluetooth DAB Radio

How does this relatively unknown brand measure up to the big boys

NEW GEAR

The solar digital radio perfect for daily use

Plus details of all the other new products released this month

Summer Listening | MW-DXing | History of QSL Cards | Scanning Memories
Oliver Lodge | The Princess Victoria Disaster | Vintage Equipment | Yeovilton

PRICE PROMISE – SEEN IT CHEAPER THEN LET US KNOW!

NEW

Icom IC-R8600
Wideband Communications Receiver

- Coverage: 0.01-3000MHz
- Decodes D-STAR, NXDN, dPMR and APCO P25
- Large 4.3 inch TFT colour touch screen display

GENEROUS PART EXCHANGE AVAILABLE

£2499.99

Tecsun S-2000
LW/MW/FM-Stereo/SW (with SSB) and Airband

- 1000 station memories
- Signal Attenuator
- Dual timer alarm
- Wide/narrow filters
- 1000 station memories
- Dual alarm clock function
- MP3: Aux input
- Rotary Antenna: MW/LW

£299.95

Tecsun S8800 GM
SSB Shortwave Radio

- FM, SW, MW, LW • SSB with LSB/USB
- 650 station memories
- Deluxe Gun Metal Tuning knob
- Remote control, Alarm & sleep/timer
- DX/Local antenna gain control
- Built-in battery charging feature
- Supplied with batteries & remote control

£279.95

BEARCAT

UBC-125XLT
500 Channel AM/FM scanner

Easy to use scanner - our most popular for Civil/Military Airband

- 25-960MHz (w/gaps)
- Includes civil/Military Airbands
- Close call RF capture
- Alpha tagging
- CTCSS & DCS squelch modes

£129.95

UBC-75XLT
Popular 'Airshow' scanner

- 25-512MHz (with gaps)
- Modes: AM/FM
- 300 channels
- Close Call

£99.95

EZI-33XLT
Compact handheld - easy to use!

- Covers: 78 MHz-512MHz (w/gaps)
- PMR, Marine, Aircraft, FM, etc.

£64.95

UBC-370CLT
500 channel AM/FM scanner

- Includes VHF FM broadcast radio
- Covers: 25 - 960MHz (w/gaps)
- Listen to PMR, Marine, Air, CB, Amateur

£119.95

HEADPHONES

Yaesu STA77
Lightweight Stereo headphones - as used by our boss!

£79.95

JIM M75

Wide Band pre-amp
Low noise pre-amp with 3 band pass filters

- 24-2150MHz
- Variable gain
- 12V DC or PP3 battery (not supplied)

£89.95

ANTENNAS

Create Log Periodic Antennas - Japan
as used by the 'Professionals'

CLP-5130-1N
21 Element LPA

- 50-1300MHz
- Gain: 10-12dBi

£379.95

CLP-5130-2N
17 Element LPA

- 105-1300MHz
- Gain: 11dBi

£299.95

DIAMOND D-777 Airband Antenna

Fibreglass 1.7m long, this antenna gives High Gain coverage of VHF/UHF Airband

£69.95

Scanmaster HFA
Active Receive Antenna
Covers: 1.8-30MHz

8" long c/w all leads - just needs 12V DC!

£44.95

Sirio SD-3000N Discone
High quality stainless steel, chromed brass & anodised aluminium construction

- 300 MHz-3GHz

£69.95

Scanmaster Desktop
Indoor Discone antenna
25-1300MHz complete with cable and BNC plug

£49.95

Tecsun Receive Loops
AN200
MW passive loop..... **£39.95**

AN48X NEW!
Covers: SW, MW, LW
Active wire loop..... **£39.95**

30 Day Money Back Guarantee

AOR LA-400
Low Noise - hear weak signals in the LW, MW and SW Bands

- Receives 10kHz-500MHz
- 30.5cm diameter Loop
- 20dB built-in Pre-amp

£399.95

Nevada EFW-1 End Fed Wire

High quality receive antenna c/w mounting hardware and 8 metres of coax w/ PL259 plug

- Covers: 2-30MHz
- Kevlar Mil spec. wire
- Length: 20m

£69.95

AIRSPY

NEW

Airspy HF+ Discovery

- Pre-selectors
- 9kHz - 13MHz
- 60MHz - 260MHz
- Use over internet
- 60 x 45 x 10 mm

£199.95

AIRSPY R2
VHF/UHF/SHF Receiver

- 24MHz-1,800MHz
- 10MHz panoramic spectrum
- 3.5 dB NF (42-1002)MHz
- Tracking RF filters

£209.95

AIRSPY Mini

- SDR Dongle
- 24 – 1,800MHz

£119.95

SIRIO Antennas

Quality Antennas from Italy!

WY108-3N
Airband
3 element Beam

- Freq: 108-137MHz
- Gain: 7 dBi
- Boom: 1.4m

£89.95

VHF/UHF Verticals

CX4-68	(68 – 73)MHz 4m 4.15 dBi	**£69.95**
CX440	(440 – 455)MHz pmr 4.15 dBi	**£39.95**
CX455	(455 – 470)MHz pmr 4.15 dBi	**£39.95**
TORNADO 50-60	(50 – 60)MHz 6m 3.5dBi	**£59.95**

HF/VHF/UHF Beams

SY3	3 el (26-28)MHz 10.65 dBi	**£99.95**
SY4	3 el (26-28)MHz 13.15 dBi	**£119.95**
SY50-3	3 el 50MHz 8.5 dBi	**£99.95**
SY50-5	5 el 50MHz 10.5dBi	**£129.95**
SY68-3	3 el 70MHz 7.0 dBi	**£79.95**
WY108-3n	3 el 108-137MHz 3 el. Air Band	**£89.95**
WY140-6n	6 el 144MHz (wide band) 10.5 dBi	**£99.95**
WY400-6n	6 el 432MHz (wide band) 11.0dBi	**£79.95**
WY400-10n	10 el 432MHz (wide band) 14.0dBi	**£119.00**

ICOM

Icom AH-8000
Professional Discone Antenna Suitable for both Transmit and Receive

- Rx: 100-3,300MHz
- Tx: 144, 430, 1200, 2400MHz
- Height: 936mm
- Supplied c/w 15m cable + N connector & Mounting hardware

£240

SPIDERBEAM MASTS

Fibreglass Telescopic Poles

7 metre Mini Pole	£59.95
10 metre mini Pole	£69.95
Mini Carrying Bag for Mini Poles	£14.95
12 metre Heavy Duty	£89.95
18 metre Standard	£199.95
22 metre 'Long John' NEW	£399.95
26 metre Standard	£499.95

Aluminium Telescopic masts

10 metre Standard	£299.95
10 metre Heavy Duty	£325.00
12.5 metre Standard	£329.95
14.5 metre Heavy Duty	£425.00
15 metre standard (2m retracted)	£399.95

SDRplay

NEW

RSPdx
SDR in metal case
Covers: 1kHz-2GHz

Now with Improved:

- Performance below 2MHz
- Plus more!

£194.95

RSP 1A
Wideband Budget SDR

- Covers: 1 kHz - 2GHz
- Software upgradable
- Good dynamic range

£99.95

RSP DUO Dual Tuner SDR

- Covers: 1 kHz - 2GHz
- Software upgradable

£239.95

NEVADA Power Supplies

Quality Power Supplies 2 YEAR WARRANTY!

PSW-30
Switch Mode

- 25-30A supply
- Low noise

2 YEAR WARRANTY

£79.95

PS-40M
Linear

- 40A (max) with meter
- 1.5-15V DC
- Cigar adaptor output

£129.95

PS-08	Linear 8A (max) 13.8V DC	**£34.95**
PS-30M	Linear 30A (max) 3-15V DC	**£99.95**
PSW-50	Switch mode 50A (max) 9-15V DC	**£129.95**
PSW-30	Switch mode 30A (max) 9-15V DC	**£79.95**
PSW-30H	Switch mode 30A (max) 9-15V DC	**£69.95**
PS23-SW1	Switch mode 23A (max) 13.8V DC	**£59.95**
PSW-07	Switch mode 7A (max) 13.8V DC	**£29.95**
PSW-04	Switch mode 5A (max) 13.8V DC	**£24.95**

ULTRA LOW LOSS COAX

Ecoflex 15		
per metre	£7.99	price per 102m drum **£759**
Ecoflex 15 plus		
per metre	£7.99	price per 102m drum **£759**
PL259 connector (Part: 7350)		**£8.95**
N type connector (Part: 7395)		**£9.95**
Ecoflex 10		
per metre	£3.79	price per 102m drum **£359**
Ecoflex 10 Plus		
per metre	£3.79	price per 102m drum **£359**
PL259 connector (part: 7378)		**£5.95**
N type connector (part: 7367)		**£6.50**
Aircell 7		
per metre	£2.99	price per 102m drum **£269**
PL259 connector (part: 7390)		**£2.65**
N type connector (part: 7392)		**£5.25**
Aircell 5		
per metre	£2.75	price per 102m drum **£259**
Other 100M Coax Drums		
Westflex 103.. Semi Air-spaced low loss		**£179.95**
RG-213 (Cabnex).... Low loss good quality		**£99.95**
RG-Mini 8..... Super XX		**£69.95**
RG58/CU..... Mil spec		**£39.95**
Twin Feeders		
450 Ohm..... Twin feeder		**£89.00**
300 Ohm..... Twin feeder		**£76.50**
Nevada Antenna Wire		
Coated flex weave Antenna wire		**£59.95**

New TECSUN Radios

JUST ARRIVED!

Tecsun PL-990x
High Performance SSB Shortwave Radio

£259.95

Considered to be the Tecsun design team's masterpiece! Uses modern DSP technology to improve performance

- Covers: LW, MW, FM, SW (1.711-29.999) MHz
- MP3 player via SD port
- Memories: 3150
- Synchronous detector
- Local, Medium, DX input selector
- Powered by 18650 Lithium battery
- Bluetooth connectivity
- Optional USB mains supply.....£9.95

£89.95

Tecsun PL-330
SSB Shortwave Radio

- FM stereo, LW/MW/FM/SW
- 650 memories
- DSP technology
- Multi-function display
- Lots more info on our web site
- USB - Rechargeable battery

30 Day Money Back Guarantee

AOR AR-5700D
Digital Communications Receiver

- 10 digital modes - TETRA, P25(Phase 1), DMR, Mototrbo, dPMR, NXDN, D-CR, D-STAR, Alinco, Yaesu.
- Covers 9kHz - 3,700MHz
- 900kHz wide IQ output

£4595

30 Day Money Back Guarantee

AOR AR-DV1
100kHz-1300MHz Wide band reception

New Firmware - gives TETRA decoding and more! Decodes virtually ALL popular digital modes: DMR, D-STAR, Yaesu Fusion and lots more!

Supplied with: 4GB SD Card

£1299.95

30 Day Money Back Guarantee

AOR AR-8600 MkII
Communications Receiver

- Frequency: 530kHz-3000MHz no gaps
- Modes: WFM, NFM, SFM, WAM, AM, NAM, USB, LSB, CW
- Memories: 1000 (20 banks)

£649.95

Optional Mains Power supply..... £25.95

AOR

30 Day Money Back Guarantee

AR-DV10
Digital Handheld Scanning Receiver

- 100kHz-1300MHz analogue and digital modes
- TETRA, P25 (Phase 1+2), DMR, Mototrbo, dPMR
- Latest Firmware!

~~£999.95~~
£939.95

ICOM

NEW

R-30
Digital & Analogue Multi Mode Scanner

- With dual watch and dual band recording
- Listen to two signals (analogue + analogue or analogue + digital)
- Decode D-STAR, P25, NXDN and dPMR digital (conventional) modes

£569.95

ICOM

IC-R6E
Pocket sized Wideband Scanner

- Freq: 100kHz-1309.995MHz
- Modes: AM, FM, WFM
- 1300 memories
- High Speed Scan 100 channels/second
- 15 hours receive capability

Optional BC-194
Drop-in charger stand
.....£22.95

£199.95

ALINCO

SAVE £50!

DJ-X11E
All Mode 1200 Channel

- Frequency: 0.1-1300MHz
- AM/FM/WFM/SSB/CW
- 1200 memories
- Twin VFO feature
- IQ output for SDR use
- 1800mAh Li-ion inc

SPECIAL PRICE ~~£349.95~~ £299.95

BEARCAT

BCT-15X
Latest Base Mobile Scanner with 'Close Call'

- 25-1300MHz (with gaps)
- 9000 memories
- AM/FM/WFM
- Band scope
- CTCSS/DCS decoding
- Alpha-numeric tagging feature
- GPS enabled

Supplied with:
- Mains adaptor
- DC Car Power Plug
- Telescopic Antenna
- Mounting Bracket and Hardware

£249.95

BEARCAT

NEW

SDS-100E
Advanced Digital & Analogue Scanner

- Frequency: 25-1300MHz (w/gaps)
- Weather Resistant IPX4

Standard Version (licence required to activate DMR, NXDN) £599.95
Activated Version (DMR, NXDN already activated) £649.95

BEARCAT

NEW

Bearcat SDS-200E
Digital Scanning Receiver

- With DMR, NXDN, and ProVoice monitoring modes
- Covers: 25 - 512MHz, 806 - 960MHz, 1240 - 1300MHz
- Too many features to list here - visit our web site for more details!

£779.99

BEARCAT

UBCD-3600XLT
Digital Scanner with 'Close Call' and Analogue AM/FM

- Receives: 25-1300MHz
- SD card slot

£425

UBCD-3600XLT - NXDN
Same specs as above but with NXDN activated NXDN digital protocol is used by Kenwood & Icom

£479.95

ALBRECHT

Albrecht AE255M
Wideband Base Scanner

- Covers 25-960MHz (w/gaps)
- Step sizes: 5/6.25/8.33/10/12.5/20kHz
- Turbo search (180 steps/sec)
- 300 memories, Clock Display, Skip feature, c/w Mains adaptor, Car adaptor, Antenna, Mounting bracket

£99.95

ALBRECHT

Albrecht AE125H
500 Channel AM/FM Scanner

- 5-960MHz (w/gaps)
- Civil/Military Air bands
- Close Call feature
- Hyper search -300/sec
- CTCSS & DCS
- Supplied c/w: Mini USB lead, 2 x AA 2,300 mAh NiMH Batteries

£129.95

WHISTLER

Whistler Digital Scanners

Whistler TRX-1
£419.95

- Receives 25-1300MHz (with gaps)
- Covers DMR, MotoTRBO - and more!
- Upgradable CPU, DSP, and library
- Store Scan lists
- EZ Scan PC software
- IF/discriminator output
- Record & save to Windows
- Clock & Calendar function
- Spectrum Sweeper

Whistler TRX-2
£479.95

POWEREX

NEW

Powerex C-9000-Pro
Battery Charger Analyser

Advanced unit suitable for all your batteries

- Charge from: 1 to 4 AA or AAA niMH/NicD
- 4 modes: Charge, Discharge, Refresh, Analyse
- Displays: Capacity, Voltage, time & rate

£69.95

Serving our customers for 50 years

follow us on twitter: @NevadaRadio follow us on facebook: www.facebook.com/nevadaradio

- Unit 1
- Fitzherbert Spur
- Farlington
- Portsmouth
- Hampshire
- PO6 1TT

50 YEARS nevada

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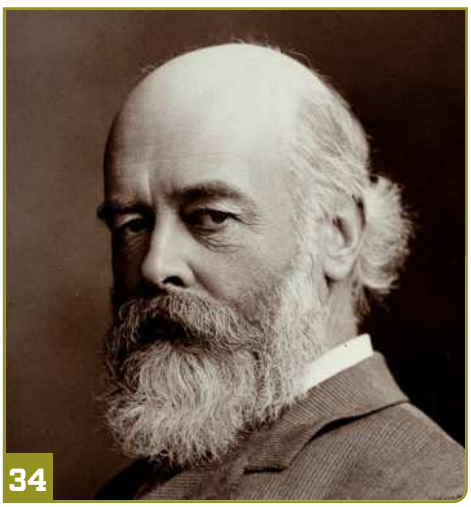
Cover Story



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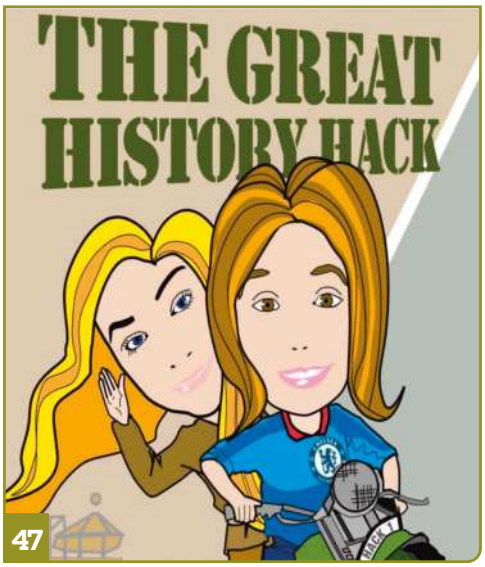
Welcome



A Special Review Issue

Georg Wiessala
wiessala@hotmail.com

Hello and welcome to the June 2021 issue of *RadioUser*. Our *News and Products* pages, and especially our reviews this month – of which there are more than usual – reflect particularly well the many evolving branches of our hobby, as well as the rapid technical development of new receivers and accessories.

In this context, Clint Gouveia takes an in-depth look at the miniature radio on everybody's lips at the moment. In our main review feature, he is putting the Belka DX HF Receiver through its paces, with astonishing results. Moreover, Tim Kirby has tested the new RFinder B-1 dual-band DMR 4G.LTE transceiver/ smartphone; turn to page 40 to see what he has found out about this great multi-purpose device.

What is more, in this month's *Digital Radio* article, Kevin Ryan takes a closer look at the Sandstrøm Internet/ Bluetooth DAB Radio with *Spotify*. And last but by no means least, Keith Rawlings, in his *Aerials Now* contribution, offers his expert opinion of the performance of the Vine Antennas AS-OCF-404-HP off-centre end-fed dipole, from the points of view of both radio amateurs and short wave listeners.

Add to this our regular book reviews, and I hope you will find that there is no shortage of evaluation, testing and assessment this time.

In our other key features, Anne Reed returns to *RadioUser* to share a lifetime's fascination with scanning and airband monitoring, including a look at all the radios she has loved before.

Furthermore, in her first of two features bridging art, international relations and technology, Chrissy Brand investigates QSL cards, those desirable little gems and witnesses of radio history.

In a similar vein, Scott Caldwell diversifies this month, to speculate on the past, present and future of the medium wave DXing hobby, looking at how SDRs are taking it to new heights, even as more MW stations in the UK are, sadly, disappearing.

Finally, since I have always been fascinated by Oliver Lodge, I am including a piece on this outstanding radio pioneer, who was able to reconcile science with spirituality, engineering with the ether.

In our other regular columns in this issue, you can find out about comms at Yeovilton and Gatwick, a treasure-trove of summertime listening tips on international radio, vintage radio and television technology, the Princess Victoria disaster and many other exciting radio-related subjects.

N.B.: From this month onwards, we are once again publishing *Rallies* information. The very latest updates to our listings are always found on the *Radio Enthusiast* website.

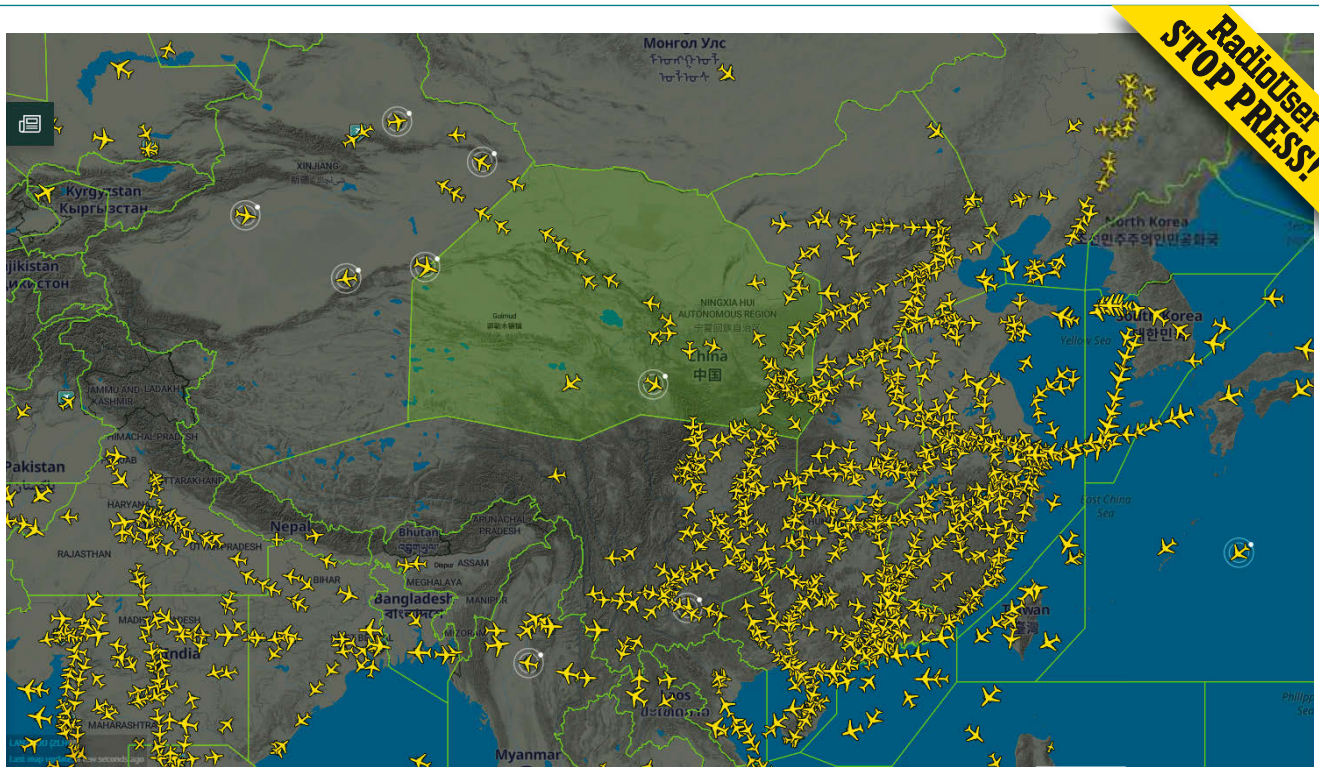
Make sure you check our website regularly and – most importantly – please let me know what you would like to see appear there.

Finally, please note the correction detailed on page 50 of this issue. Take care.

Georg Wiessala
Editor, *Radio User* Magazine
www.radioenthusiast.co.uk

What's New

Have you got something new to tell our readers about? If so, then drop a line to **wiessala@hotmail.com**



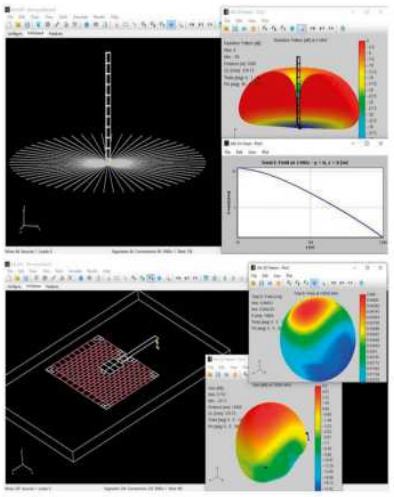
AirNav RadarBox Extended Chinese ADS-B Coverage

Over the past 5 years, RadarBox has seen tremendous growth in ADS-B coverage all over China. They've grown from less than 10 ADS-B tracking units in 2016 to over 200 in 2021. An increase of 2300% in units, over half a decade. A phenomenal growth rate considering China's strict laws and tight regulatory oversight.

As of 2021, coverage in the country is over 90% with almost all airline routes covered by either Ground-based or Satellite-based ADS-B.

https://tinyurl.com/duzcwv4
www.radarbox.com
support@radarbox24.com

AURORAL DUNES: Grandin et al. [2021] present new observations of an auroral phenomenon referred to as 'dunes', which has been photographed by citizen scientists over northern Europe. The features appear as aurorae in terms of their light emission characteristics, but their structure is more banded. The authors suggest that the underlying mechanism for this banded structure is modulation of the atmospheric density by a horizontally propagating atmospheric bore, following a waveguide formed by a temperature inversion detected in the upper mesosphere. Auroral particle excitation of the bore's trailing wave pattern results in the appearance of the dunes. Using a combination of surface and satellite observations, the authors derive wavelength and propagation speed for the dune feature, relating the latter to characteristics of the upper mesosphere.
(SOURCE: Mary Hudson, *AGU Advances*)
https://tinyurl.com/xjkxb9nd



A Major Upgrade for AN-SOF's Modelling Simulation Software

There has been a significant upgrade to the AN-SOF antenna modelling simulation software (AN-SOF 6). Significant because, for example, the program now allows for wires close to (or connected to) ground and radial ground plane with buried wires (see below). There are new preset lists of soil/ground conditions (previously users had to add this information themselves). Other improvements include the following:

- Improved real-ground calculations. Soil conductivity and dielectric constant affect the current distribution (input impedance), as well as the far and near fields.
- Wires very close to the ground are allowed.
- Wires connected to the ground are allowed. Ground connections can be 'perfect' or 'imperfect'.
- Preset list of conductivities and dielectric constants for different soils (good, average, poor, cities, rich soil, fertile land, sandy, freshwater, seawater, ice, and so on)
- Radial wire ground screen with buried radials.
- Dielectric substrate slab of finite size to model microstrip patch antennas in addition to the existing infinite substrate.
- There is also now have a Facebook group AN-SOF Antenna Simulator Group, which offers further information and user guides. The new features put AN-SOF above those packages that use the NEC-2 engine and is a noteworthy upgrade.

(SOURCE: Keith Rawlings)

https://www.antennasimulator.com
keith.g4miu@gmail.com

An Antenna with a Kink

Yes, this was a bit of an 'impulse-purchase', but this Abbree foldable aerial caught my eye. Marketed as a 'tactical' aerial, it is also very tactile. It folds in half and makes sense for situations where other aerials might get damaged, for example when you are out and about. I bought the version with an SMA female connector. My purpose was to take my portable scanner (Uniden UBC125XLT) up the Cumbrian Fells to listen to some activity on the amateur radio bands. The aerial is designed for 144/430MHz. Models include the AR-148, AR-152 and AR-152G. I was impressed at how well the aerial brought in Airband communications, even when folded over. A nice accessory to have for those post-lockdown outdoor explorations.

https://abbree.com

RADIOCENTRE: *Radiocentre* Director of External Affairs Matt Payton is being promoted to the newly created role of Chief Operating Officer. Matt will continue to oversee external affairs and regulation at Radiocentre and will work alongside incoming Chief Executive, Ian Moss, on a range of new responsibilities. These will include supporting the *Radiocentre* Board with membership and governance issues, representing the organisation on cross-industry forums and deputising for the CEO. *Radiocentre's* advertising and research functions are unaffected, with Client Director Lucy Barrett and Planning Director Mark Barber continuing to report directly to the CEO. Matt told RadioToday: *"The team at Radiocentre do a brilliant job on behalf of commercial radio, enabling the industry to speak with one voice to politicians and regulators as well as advertisers. I am delighted to have the opportunity to carry on contributing to this work as Radiocentre COO, as both the organisation and the industry continue to evolve."*

CCrane Solar Radio

The *CCRadio Solar* is a small digital portable radio that is successful as an emergency radio. However, both form and format invite you to use this daily. Placed in a sunny window it is perfect for the morning news. Audio is a surprise, it is accurate, pleasing and it has a 'miser-setting' to conserve battery power in a true emergency. Long-range reception is one of the best in emergency type radios. Reception is good for the size.

The almost brick size depth and unique UV resistant rubber perimeter is concave on the bottom which makes it inherently stable.

The flashlight is above average in brightness and colour because of the selected high quality LED. The hand crank inlaid on the back is the only visible clue that this is an emergency radio. When the battery is fully charged the radio will run about 50 hours or charge your phone from approximately 50% to 100% level.

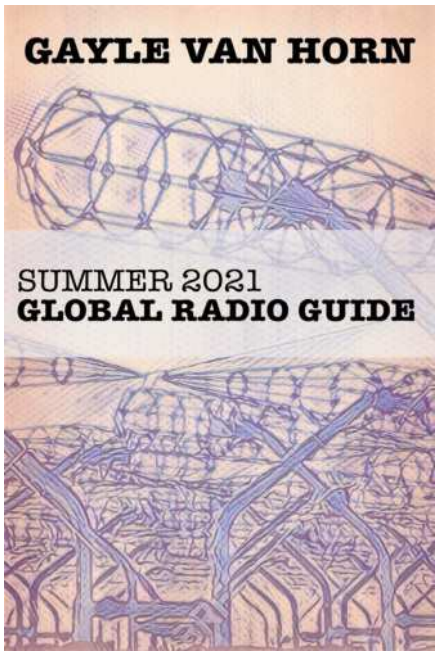
(SOURCES: CCrane | James Careless | *Radio World,* April 2021: 18)

https://ccrane.com/ccradio-solar

AUDIO CONTENT FUND: The Audio Content Fund (ACF) has £1million to distribute over the next 12 months as it enters its third year of operation. The fund, which is financed by the UK Government, has distributed £2.35m since its launch in 2019, having had its budget increased last year during the coronavirus pandemic. The next funding round will open on 17th May, with decisions published in early August. Subsequent funding rounds will be held in September 2021 and January 2022. Each round is expected to distribute around £330,000 to independent production companies, to make broadcast radio content which is often too expensive to produce on a commercial basis. Bids must come with a guarantee of broadcast on Ofcom-licensed radio, and so far content has gone out on more than 300 stations, including some of the biggest commercial radio brands in the UK. Small stations and Community Radio stations should be formed into networks of broadcast partners. Bids for broadcast on community radio must now come with at least five broadcast partners attached, with the guidelines stating that bids would have ideally more than that minimum, to help demonstrate a serious level of interest and contribute to requirements on audience reach. The ACF will then help distribute successful projects to more stations, so they can reach as large an audience as possible.

(SOURCE: Radio Today | ACF)

https://www.audiocontentfund.org.uk



Global Radio Guide (Summer 2021)

This newest edition of the GRG carries on the tradition of those before it with an in-depth, 24-hour station/frequency guide with schedules for selected AM band, long wave, and short wave stations. This unique resource is the only radio publication that lists 'by-the-hour' schedules including all language services, frequencies, and world target areas for over 500 stations worldwide. With the help of the GRG, you can tune in to short wave broadcast stations from hotspots such as China, Cuba, India, Iran, North/South Korea, Taiwan, and many other counties. If you have a shortwave radio receiver, SDR or Internet connection, pair it with this unique radio resource to know when and where to listen to the world. The GRG includes listings of DX radio programs and Internet website addresses for many of the stations in the book. There are also entries for time and frequency stations as well as some of the more "intriguing" transmissions one can find on the shortwave radio bands. Larry Van Horn has also updated his now-famous SDR Buyer's Guide, a must-have compendium, which helps you navigate through the revolutionary world of software-defined radios (SDRs), the digital frontier of the radio hobby. The 16th edition of the Global Radio Guide e-Book (electronic book only, no print edition available) is available worldwide from Amazon and their various international websites at the URL below. The price is US$ 8.99.

www.teakpublishing.com
https://www.amazon.com/dp/B0938DDK5L
https://tinyurl.com/2vpmenpy

COM AP-95M Compact Wireless Access Point

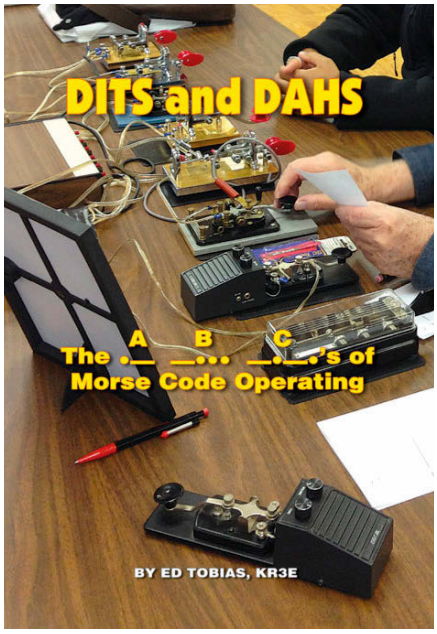
The AP-95M is a compact wireless access point, compatible with high-speed Wi-Fi standards, that creates a 5 GHz and 2.4 GHz dual-band wireless local area network (WLAN) with up to 16 SSIDs, using the Virtual AP (VLAN) function. The AP-95M can be used as a single access point or as part of a larger network. The AP-95M has been developed for Icom's IP Advanced Radio System and general usage. The AP-95M Wireless LAN Access Point has a beamforming function that can send a signal to a specific terminal. The MU-MIMO function enables easy access from each terminal.

Up to eight wireless LAN terminal groups can be configured, which can have different VLAN IDs and SSIDs, in both 5 GHz and 2.4 GHz band. Each virtual AP can have different security settings. An Automatic Power Level Adjustment function and Connecting Terminal Limit function can remove interference and can prevent a reduction in communication speed caused by access concentration. The AP- 95M can automatically set the channel according to the surrounding signal conditions. You can update to the new firmware, or you can initialise using your PC's web browser. The AP-95M is compatible with SNMP and the RS-AP3 access point management tool so that you can easily manage your terminals. The AP-95M complies with the IEEE 802.11ac standard. For further information about this product, please visit the Icom AP-95M product page.

(SOURCE: Icom UK | Ian Lockyer)

https://tinyurl.com/xwsbpbme

sales@icomuk.co.uk



Dits and Dahs

This new guide from our friends at *CQ Communications* may be a great addition to your radio shack. Within its pages you'll find chapters on the secret of becoming a proficient CW operator; where and how to 'practice- practice- practice'; straight key or paddle; paddle keyers, Iambic keying, and bugs; contests, events, DXing; operating QSK; CW filters; signs, signals and procedures; tips on taking CW on the road, and much more. The price to the UK is US$ 29.95.

https://tinyurl.com/8t4s84cf

Radio News

AIR AMBULANCE WEEK: This year's *International Air Ambulance Week* will take place between 6th - 14th September 2021, with a focus on supporting and generating donations for flying medical services around the world. The event covers two weekends, giving amateurs a great chance to get involved and support the occasion. Whilst Amateur Radio Operators / Stations are encouraged to promote the donation causes, it is requested that any donations generated go to the stations chosen local or national cause. Registration will be mandatory, and all stations taking part will be issued a registration number which will be listed on this website.

The registered number needs to be quoted by each station regularly. Included in the list alongside each registered station will be a 'clickable' link, enabling those wishing to donate, to do so directly to the charity of the service they wish to support. The event is primarily intended to help support public donation funded flying medical services, whether part or entirely donation funded, though not restricted entirely to those. The location of the special event station can be anywhere you choose to set it up – club, home or if you can manage the permissions to do it, a public place. No costs will be involved in registering or taking part and a free series of Awards will be available for those who support the event:

• An award for having registered and taken part in the event. • A Bronze award for having logged a minimum of 5 IAW stations. • A Silver award for having logged a minimum of 10 IAW stations. • A Gold award for having logged a minimum of 15 IAW stations. • Awards for SWL will follow the above requirements • More than one award may be claimed.

Claims for the awards will need to be made to the IAW's Award Manager by (Geronwy@gmail.com) including an excerpt from the log as proof of a valid claim. The event's date has been set to coincide with the UK's funding drive week for its helicopter ambulance services. Almost all of these, around 30 in number, are entirely public donation funded. The event is intended to commence on the fourth weekend of September annually and is to be run by the same team which operates the well-established *International Museum Weekends*.

(SOURCES: *ICQ Podcast* / Colin Butler)

https://tinyurl.com/4rpxzznh

BLUE HERITAGE PLAQUE FOR CHOICE FM: A blue heritage plaque has been unveiled in honour of Choice FM, the first and only black radio station with a London wide commercial licence. On March 31st, 1990, the station delivered the first historic broadcast on the famous 96.9FM frequency. To commemorate its history, the Nubian Jak Community Trust organised the unveiling with co-founder and photographer Neil Kenlock, former director Dr Yvonne Thompson CBE and Mayor Councillor Philip Normal at 16-18 Trinity Gardens, Brixton South London – the address that the station launched. During its 23 year tenure, the station helped to champion black music of all genres and break acts from around the world. The station also covered debates on current affairs issues that were not covered by other mainstream stations. Choice FM was awarded several accolades including MOBO and Sony Radio Academy Awards. In 2004, the station was bought by Capital and on the 7th of October 2013, it was rebranded as Capital Xtra.
https://tinyurl.com/562723zn

AUDIO & RADIO EMERGENCY FUND ALLOCATES MORE THAN £77,000: Organisers of the Audio & Radio Emergency Fund (AREF) are closing the initiative at the end of its current funding round after giving out over £77,000. The Radio Academy created the fund in April 2020, to help those in the radio and audio sectors who were facing hardship because of the coronavirus crisis.
Since then, 165 grants of up to £1,000 have been given to those experiencing hardship or needing help to continue working from home. AREF was a joint response to the pandemic from The Radio Academy and AudioUK, with significant funding from the BBC, Audible, The Whickers, Folder Media, ReelWorld and RadioToday. Their support built on the existing *Radio Academy Benevolent Fund* and was supplemented by £20,000 of generous individual donations through the Show's *You're Listening* initiative.
The need for AREF was made clear in the hundreds of applications received and assessed by the AREF funding panel, who were often confronted with the desperate and heart-breaking circumstances facing the industry's freelancers. One successful applicant wrote: *"The moment COVID-19 struck the UK, my employment completely and utterly dried up overnight, leaving me with no income whatsoever, as I am a freelancer."* Another added: *"I cannot begin to explain what this means to my son and I. Thank you all so much for your help in what has just been the most horrible year. This will literally put food on the table."* AREF is currently open for its final round, which closes for applications on 26th April 2021. Any remaining funds will be held in the *Radio Academy's Benevolent Fund* for future needs.
(SOURCE: AREF | Radio Academy)
https://tinyurl.com/wyujxucy

New Warehouse for Moonraker

Moonraker opens a third warehouse, in order to increase its stock levels and range to support the next day solutions it offers to its many customers. Justin Godefroy 2EOJSG Sales Director said, *"With the lockdown continuing to fuel online sales we are just running out of space and with our continual investment in the future with more IT infrastructure including a new website we don't see things slowing for the medium to long term"*. Call Moonraker and book a visit for a tour.

AMPLITUDE MODULATION ARS FORMED: The Amplitude Modulation Amateur Radio Society has been formed. The society aims to promote the use of the original voice mode using vintage, modern and 'home-brew' equipment on all the amateur bands available. The group will also strive to promote the AM mode to national and international societies to ensure the mode is supported for future generations. The initial work to set up this new society has been undertaken by Kevin GW0PUH, Alan G6RBM, Mark MW0RZS, John G3YPZ and Simon MW0NWM. The AMARS is planning to organise a quarterly club newsletter, two annual weekend AM activity events, AM contests and construction events. It also plans to join the RSGB, and other national societies based on where our members live. The first AGM will take place on Wednesday 21st July at 19:00 UTC (20:00 BST) on Zoom.
(SOURCES: AMARS | *ICQ Podcast*)
https://tinyurl.com/2bzxavah
https://am-ars.org

AZIMUTHAL MAP: Use this form (link below) to create an azimuthal map for any location on the globe. You can customize the map in a variety of ways by changing the options in the web form. Especially useful if you have the means to rotate or align your aerial for optimum reception. The map generator is the brainchild of Tom, NS6T:
(SOURCE: Bob Houlston G4PVB, Volunteer Correspondent)
www.tinyurl.com/4yhjnj24

A NEW RETRO SOUND RADIO STATION FOR SOUTH EAST WALES: A new commercial radio station covering South East Wales is launching next week called Retro Sound with a full line up of experienced presenters. Nick Wright will host the breakfast show, with the rest of the schedule populated by Gregg Upwards, Paul Robinson, Chris Moore, Tom Green, Leighton James, Diane Marks, James Amos, Matthew Morrissey, Mark Andrews and many more. CEO Ian Francis told *RadioToday* that Retro Sound is more about the style of radio that they'll make. He says: *"We'll have a personality presentation where the audience can interact with the on-air team in real-time as we won't have any voice-tracked shows, it will all be live. Retro Sound aims to become a part of the communities it serves by getting out and about, attending local events and at some point hosting our own. We are also setting up an old-style action desk service so if a cat goes missing, a car is stolen or a fundraising event is happening, listeners can contact the station and we will publicise it."* *Radio Travel News* will be providing a dedicated custom bulletin service, whilst jingles are provided by *Ignite Jingles*. The service will be online initially but aims to be on DAB by the end of the year. A local sales team is in place and media partnerships are being established. Ian adds: *"We are currently promoting Retro Sound everywhere we can but by far the most reaction is to BEX, our Retro Sound car that is currently touring South East Wales playing an eight min promo on loop via a PA system. Reaction has been so strong that residents from the old Swansea Sound TSA are asking us to expand and include their area. We hope to do this in the future, but with a local service for them."*
(SOURCE: Radio Sound Radio)
https://retrosoundradio.com

OBIT MODE FOR HRH : Radio stations across the UK entered obituary mode following the announcement by the Royal Family regarding the death of The Duke of Edinburgh Prince Philip. Bauer, Global and the BBC commenced their group-wide protocols for such an emergency after the news was released just after midday on Friday 9th April 2021. All BBC local and national stations either handed over or were forcibly cut to, a national announcement at 12.10 pm. Programmes on BBC Radio 1, 1Xtra, Radio 1 Dance, Asian Network, BBC Radio 2, BBC Radio 3, 5 Live Sports Extra and 6 Music were cut off abruptly at 12.10 pm followed by a short silence and a networked announcement voiced by Tom Sandars – continuity announcer for BBC Radio 4 and a newsreader for the BBC World Service. At BBC Radio 2, Vanessa Feltz, sitting in for Jeremy Vine, was mid-way through announcing the text number when she was cut off. BBC Radio 4 faded out a book reading to announce a BBC News Special just before 12.10 pm, whilst Adrian Chiles on 5 Live announced the news himself at 12.07 pm before handing over to the network feed. Things didn't go quite according to plan on the BBC World Service, with the presenter attempting many times to hand over to a special news report resulting in some confusion for listeners. Most BBC stations stayed in network mode till late afternoon Friday […].
https://tinyurl.com/46hdetwy

NEW SOUND FOR SWR1: German station SWR1 has commissioned a brand-new sound from London's *Wisebuddah*. The new *Wisebuddah* package is a complete overhaul of SWR1's previous sound and features close to 50 bespoke compositions – comprising an abundant 30 Transition IDs, along with brand-new Show Openers and a full Information Suite. The SWR1 brand, which has individual stations for each state of Baden-Württemberg and Rheinland-Pfalz (broadcasting from Stuttgart and Mainz respectively), attracts nearly two million listeners per day and plays the greatest pop and rock hits from the last 40 years – with a particular focus on the 80s. Regina Beck, Head of SWR1 Baden-Württemberg & Prof. Roland Welling, Head of SWR1 Rheinland-Pfalz, said: *"The sound design fits like a perfect English tailor-made suit for SWR1. The compositions are modern, contemporary and absolutely coherent! We are thrilled with the creative, professional and uncomplicated collaboration with* Wisebuddah*"*. Wisebuddah's Managing Director, Phil Tozer, said: *"This has been one of the most expansive projects we have ever undertaken, so watching it all fall into place has been really rewarding. The recording landscape has changed significantly since our first meeting back in 2019, so I'm proud of how the entire team has adapted to deliver a comprehensive new sound alongside the super-talented team at SWR1."*
Check out the *Wisebuddah* website featuring this package and many more (including work for BBC Radio 1 (UK), Radio 538 (Netherlands) and Fun Radio (France):
(SOURCES: Wisebuddah [sic] | RadioToday)
https://www.swr.de/swr1/index.html
https://tinyurl.com/m9m5w6ce
www.wisebuddah.com

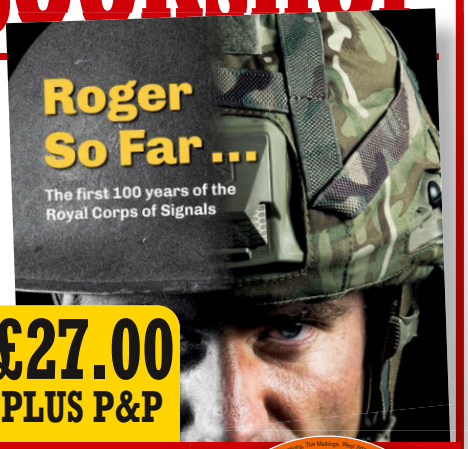
Visit our Book Store at www.radioenthusiast.co.uk

RADIO ENTHUSIAST BOOKSHOP

Roger So Far ...

The first 100 years of the Royal Corps of Signals

As the advantages that from ever more complex equipment became apparent the need for a technical arm of the Army, who specialised in communication systems, became apparent. The Royal Corps of Signals was founded in 1920 and since its founding the Corps has been leading the development of communications; delivering them in a variety of operational theatres.



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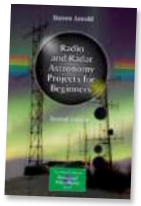
Radio and Radar Astronomy



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David Harris
mydogisfinn@gmail.com

David Harris reviews a regimental history that excels in its depiction of the development of military communications technologies, and he evaluates a new radio presenter autobiography.

Military Communications Technologies and a Diverse Radio Career

Roger So Far

When I first read about his book I was not that excited by the idea of reading a regimental history. However, I was very pleased when the book arrived to find that it was a profusely illustrated, clearly written book. It is not just about the Signal Corps but also includes some very good explanatory articles about radio, telephones, computers, the internet, and so on.

Besides, it can be viewed as a history of British military campaigns over the last 100 years. This is a book that will be of great interest to those who have served in the Armed Forces but also to those with an interest in military history and how the army has adapted to new technologies.

The Corps was not founded until 1920 but the first couple of chapters give a good account of the early history of military signalling, which is the need to pass information and commands effectively between troops and their commanders. Military communications go back to ancient Greece, and to the man who ran the 26 miles from Marathon to Athens bringing news of the battle of Marathon (490BCE, the origin of the idea of a long-distance race). In the 16th Century, beacons were lit on hilltops to spread warnings.

Later still, in the early 19th Century, a system of shutter telegraph stations was established using a semaphore-type code. This enabled a message to pass from London to the naval base of Portsmouth in 15 minutes. Morse code sent over telegraph wires speeded up communications. By 1870, the 'C' Telegraph troop of the *Royal Engineers* was founded as the first dedicated signals unit. By 1900, the telegraph, telephone and radio had revolutionised communications. In the Boer War (1899 -1902), field telephones were used extensively along with the Heliograph (a device to enable signalling by use of the Sun, which was used up until the Second World War, 1939-1945).

But it was the First World War (1914-1918) that revolutionised the need for good communications. In 1914, there were some 6,000 *Royal Engineer* signallers. This had risen to 70,000 by the end of the conflict.

Motorcycle dispatch riders, field telephones and even pigeons were used to communicate between the trenches and Headquarters. In 1915, the Fullerphone was invented by a *Royal Engineers* officer. It enabled telephone signals to be sent without fear of interception by the enemy. By 1917, some women were sent to France to serve as telegraphists and telephonists in the *Women's Army Auxiliary Corps*.

By 1920 it was realised that a specialist Corps was required, and the Signals were formed. They were active in the interwar period in conflicts in Ireland, India and Burma. In 1939, the Corps had grown to 37,000 men and by the end of the Second World War, some 150,000 men were signallers. Amongst their numbers were the comedian Sir Norman Wisdom and the Conservative cabinet member Geoffrey Howe.

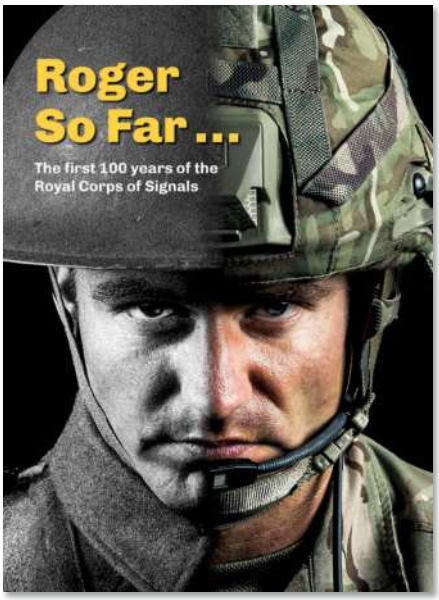
There is a brief mention of SIGINT and the role of Bletchley Park and the decoding of Enigma.

The period from 1945 – 1970 was one of great technological change.

In the First World War, communications had been by Morse code. During the Second World War, AM voice communications were more prevalent, and by the mid-1950s, the VHF Larkspur radio had been introduced for use on vehicles. This slowly replaced the No 18 and No 19 sets which had been widely used in the Second World War. The Signals were always at the forefront of communications technology, and in the mid- 1960s, they began using satellite systems.

The period from 1970 to 1995 embraces the transition from analogue to digital. It also covers the very important and dangerous role the Corps had in Northern Ireland, setting up and maintaining communications networks across the province. Some 16 signallers were killed in action during this period. Initially, the army used commercial Pye and Storno portable radios but by 1980 these were replaced by Clansman radios.

The last 30 years of the *Royal Signals* are characterised by their key role in satellite,



Roger So Far…The First 100 Years of the Royal Corps of Signals
(edited by Nick Kendall-Carpenter)
The History Press, 2020. 288 pp.
Hbk, £30. ISBN 9780750990509
www.thehistorypress.co.uk

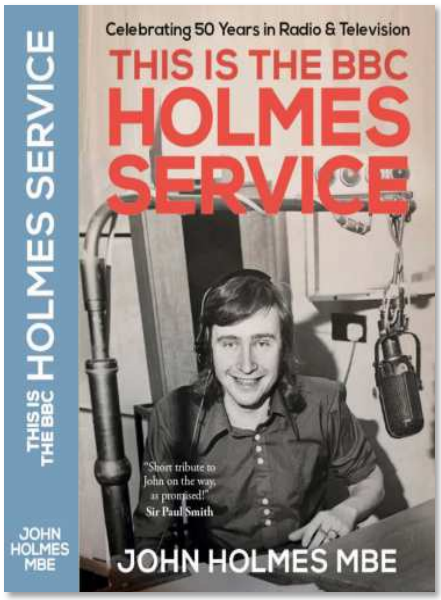
microwave, internet and IT systems, right up to the present date when they are involved with cyber warfare applications.

The book lists over 300 contributors, has a comprehensive bibliography, lists of abbreviations, Glossary and much more. I think it succeeds both as an official history of the Corps but also as a highly readable history of modern warfare. I think this book could be quite inspirational to a young person with an interest in technology.

The Holmes Service

John Holmes (b.1947) was a BBC radio presenter and producer for 50 years. He is best known for his work with BBC Radio Nottingham, but this is much more than a book of purely local interest. John is a fine writer, and he captures many interesting moments from his varied career with the BBC in this autobiography.

John grew up in Leigh-on-Sea, Essex where he developed an early interest in both pop music and jazz. He enjoyed listening to Radio Luxemburg and the many pirate stations that could be heard in the Thames estuary during the mid-1960s. He did well at school and was encouraged to study engineering at university and opts for Mining Engineering at Nottingham. At University he got involved in student drama, saw many bands, plays rugby, regularly went to the theatre and met his wife.



This is the BBC Holmes Service
by John Holmes, MBE
Self-published, 2020.
341 pp. Hbk, £20 (+ postage).
ISBN 9871838539085
www.johnholmes.co.uk

After completing a degree in Mining Engineering he undertook some computer-aided careers guidance, which suggested a career in studio management. Although studying on a scholarship from the National Coal Board he gave up mining and was taken on by the BBC in 1969 as a trainee studio manager in London, thus beginning a 50-year career in broadcasting.

John had got married and made Nottingham his home and was not keen on living in London. He was transferred to BBC Birmingham where he worked on *The Archers* radio soap opera and recorded many bands who performed live sets for the BBC. In 1970 he began work as a studio assistant with BBC Radio Nottingham and presented his first radio programme – a children's request show.

John proved to be a real 'all-rounder', presenting an innovative progressive music show, *Extravaganza*, as well as a Saturday afternoon sports programme. The mid-1970s were a difficult time for BBC local stations, as they were in direct competition with the newly-launched local commercial radio stations. In Nottingham, this was Radio Trent which opened in 1975. Coincidentally, both David Lloyd (author of several radio books) and David Jensen, author of the excellent, *Kid Jensen for the Record* (*Radio User*, May 2021: 14) both worked for Radio Trent.

John was ambitious and got his break in television by presenting a regional pop music programme. He was attached to BBC Birmingham and produced local programmes. At times, he felt that he could have been a national television presenter, and he packed a lot of variety into his career. For example, he worked in London for the television programme, *Inside Information*, but then went back to regional shows.

Overall, John carved out a 20-year career with BBC Radio 4 working in a production capacity on shows such as *Punters, Down Your Way, Any Questions* and *Any Answers*.

He also worked for the BBC Natural History Unit in Bristol.

Eventually, BBC cuts caught up with him, and he was made redundant as a radio *producer*. However, he was re-employed as a *presenter* with BBC Radio Derby, a town which he knew well. John then moved back to BBC Radio Nottingham where he presented a Sunday show for more than 10 years. He returned to regional television and presented many shows in which he showed viewers various walks in the East Midlands area.

In recognition of his career in broadcasting and work for local charities, he was awarded the honorary degree of a *Doctor of Letters* by the University of Nottingham. In 2017 he was awarded an MBE. Finally, in 2019, he completed 50 years of service with the BBC, an achievement few other staff members ever achieved.

I strongly recommend this book to anyone who is contemplating a career in the media, who works for the media or has ever aspired to work in radio. In terms of readability, entertainment value and as an insight into the world of broadcasting it is up there with David Jensen's book and Jeff Zycinski's *Red Light Zone* (*Radio User,* June 2019: 49).

David enjoyed a very full and fulfilling career with the BBC. He remained committed to his family who stayed in Nottingham, and he eventually returned to his adopted home town.

Although the book covers every aspect of his life I would encourage David to write another book, perhaps something on the craft of broadcasting, which is something he has experienced both as a broadcaster and a producer. John had a regular slot on BBC Radio Nottingham on Sundays but had to stop broadcasting during the recent lockdowns.

He is still employed by the BBC as a researcher.

Chrissy Brand
chrissyLB@hotmail.co.uk

SLAVA ON UNSPLASH

1

Planting Flags in Listeners' Hearts

In the first of a two-part mini-series, **Chrissy Brand** delves into the past, present and future of QSL cards, and examines both their design and use in broadcasters' publicity strategies.

The issuing of QSL cards by radio broadcasters commenced about a century ago. Its purpose was to ascertain how well a station signal was getting out to its target audience. Reception reports were requested from listeners for much of the 20th Century because this was the best way for radio station engineering and technical departments to determine whether their signal was reaching audiences. Could transmissions be heard clearly and strongly, did the frequencies used suffer from interference, be it from another station on an adjacent or the same frequency, or electrical interference?

Amateur radio hams started using QSL cards as a means of verification of two-way contact with each other. Amongst the first of the hams to do so was W.E.F. Bill Corsham, 2UV. He used a QSL card in 1922 when operating from Harlesden. In the 1970s CB radio enthusiasts also established this friendly way of interactive connections.

"QSL?" is the Q Code for, "*Do you confirm receipt of my transmission?*" while 'QSL' (without a question mark) means "*I confirm receipt of your transmission.*" Broadcasting stations have followed this method.

In the Beginning

Propagation conditions often carried AM signals beyond the region of the world they were aimed at (Fig. 1). Listeners and radio enthusiasts, DXers ('DX' meaning 'long-distance') reported these interesting anomalies and began to collect QSL cards from whatever stations they could. From national broadcasters in nearby countries to lower-powered domestic radio stations located thousands of miles away.

A station signal reaching the target area and audience was, of course, required to ensure that a station met its brief and mission.

In the case of state-funded broadcasters, this could be to satisfy a government that their messages and world views were disseminated far and wide. For private broadcasters using short wave, they also wished to build audiences and entice advertisers to buy airtime.

Useful Reception Reports

For many decades, engineering departments of radio stations relied on listeners' reception reports. This faded once engineering departments had amassed decades of practical information. They knew pretty much what frequencies worked best for which areas of the world, and international agreements meant stations were less likely to interfere or share frequencies too close by.

Yet it was still a good method of gaining knowledge. Working at the BBC World Service in the 1980s, I was lent a Grundig Yacht Boy by colleagues when on my travels. In return, I had to check the short wave frequencies in the places that I visited.

Listener input is still required, both SINPO Code measurements and views on programme content. Smaller broadcasters using short wave relays, such as *Channel 292* and the *Shortwave Service* need to know how well their signals are reaching audiences, which are much smaller than those of international broadcasters (Fig. 2). Consequently, listener observation is still useful. For example, in January 2021, the BBC Transmission Department asked listeners in India, Nepal, Bhutan, Hong Kong, South-East Asia, and Central Asia to monitor BBC frequencies that were being jammed: 5970, 9410, 12065, 12095 and 15310kHz.

I doubt they received a QSL card or station memento in return, more likely a thank-you e-mail, at best.

Building a Brand

Back in the 'golden age' of short wave, most stations nurtured and rewarded listeners. They set up clubs and encouraged the most dedicated listeners to become 'monitors'. This stimulated regular and reliable reporting, as well as creating loyalty to a station. In turn, a listener may better digest a state broadcaster's government policies on international affairs.

Just how well a new or alternate set of frequencies and broadcast times was being observed in parts of the world was fundamen-

RADIO PRAGUE

2

CHRISSY BRAND

3

Fig. 1: A new worldview will be opened up for you through international broadcasters.
Fig. 2: From Radio Prague's 2020 QSL series of transmitter sites. This is the one at Liblice.
Fig. 3: QSL cards of ancient sites can help to publicise stations and invigorate tourism.
Fig. 4: Radio Sweden QSL cards have covered both transmitter sites and philately.

tal for a station to measure how 'listenable' a certain frequency was. After all, the better and clearer the signal was received, then the greater was the potential for an audience to hear the programme content.

I recall being a member of the Radio Budapest Short Wave Club. It produced a monthly magazine, full of tips and DX information. In return, you sent four reception reports a month. Other stations required many more reports than that from monitors, rewarding reliable monitors with baubles, trinkets and special QSL cards.

Stations such as Radio Cairo, the Voice of Indonesia and many other medium-sized broadcasters needed to ensure their programmes reached listeners, and also to cultivate that audience. These stations were amongst the many to produce QSL cards featuring historic artefacts or buildings, for instance, Radio Tashkent's 2003 Samarkand series (Fig. 3). Statements like this showcase a country's rich history and can lend a certain 'gravitas' to the programme content aired.

Engage and Influence

Many times, for a station's language service to survive, or to avoid financial cuts, it was important to have ways to measure in how far a station was engaging with, and even influencing, its target group.

Although governments usually determined a service's budget and the decision of which languages a broadcaster should transmit in, all radio station departments wanted as many staff as possible, to reduce the workload and to increase the variety and quality of programme output.

This bank of keen listeners became a source of key interaction for many stations. The most loyal listeners became well known to presenters at the station and an on-air and off-air rapport was created. When I worked at the *BBC World Service Information Centre*, we had many listeners who wrote regularly with all kinds of details, and it was easy to develop a kind of 'pen-pal' relationship – albeit on a professional basis – with some.

The late Denis Ironman, a DXer and *RadioUser* reader, told me how he corresponded with and travelled to see staff at Radio Prague in the 1970s. This building of friendships, starting through conventional listener-presenter interactions was by no means uncommon. He gathered many souvenirs and a collection of QSL cards from many stations.

It is important to remember that, even if governments are using state broadcasters as propaganda tools, this agenda is often bypassed and superseded by the emergence of genuine friendships between individuals and broadcasters, DX clubs and station listener clubs.

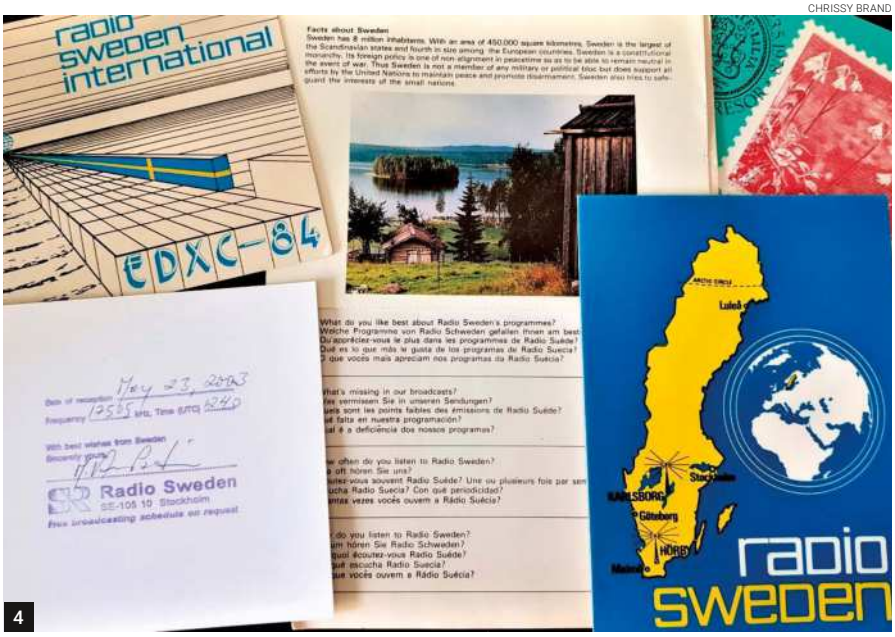
These interactions still occur. Susan Owensby of *The Sound Kitchen* on Radio France International has a good rapport with her worldwide audience in the *RFI Listeners' Club*. Sadly, the programme is now online, rather than on the air, and prizes have replaced QSL cards.

There are similar strong connections on Radio Taiwan International and other stations, from international broadcasters to small scale private broadcasters like Radio Emma Toc. Sending out QSL cards and other souvenirs is a simple way of keeping a listener's loyalty.

Rewards in the shape of QSL cards, pennants, pens, mugs, stickers, drinks coasters, T-shirts, bags and even tapestries was once a commonplace practice; it survives to this day.

The advent of the 'internet age' meant broadcasters could reach wider audiences and promote messages more cost-effectively and efficiently. It may be a less 'romantic' medium, but this is understandable, even though many DXers still correspond regu-

CHRISSY BRAND



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larly with stations they started listening to decades ago.

QSLs and Programme Content

The programme content was – and still is – fundamentally a propaganda weapon for a state broadcaster. It usually reflects, or is at the very least sympathetic to, government foreign policy and its world view.

Although technical details of reception reports and the SINPO code was valuable, as broadcasters evolved, they required better-quality feedback on what audiences thought about programmes. With so many rival broadcasters for a short wave listener to choose from, it was vital to produce more engaging content.

Not much has changed content-wise, in the entire short wave era. 'DXing' and 'Mailbag' programmes remain extremely popular, along with tourist information and culture, from classical and traditional music to the latest pop, rock and dance acts from a given country.

A common complaint from broadcasters has been that too many listeners were DXers who tuned in simply to get a QSL card. This was of use to the engineering and transmission departments but less so for the programme-makers.

Language services required innovative measures to counteract this. In the late 1970s and early 1980s, Radio Sweden changed tack in their QSL policy when they produced a range of do-it-yourself QSLs card. The top half contained an image and Swedish facts on the front and space for a regular reception report on the back. The bottom part asked questions (in five languages) about programming, which you had to complete. You posted back the whole card to the station, whereupon Radio Sweden's QSL department would verify, sign, add a Radio Sweden International sticker and post it back to you. This was the most worthwhile type of listener interaction, as specific questions were asked and could then be better analysed and measured by an audience research department than a selection of random comments could.

The four questions that were asked on this Radio Sweden QSL card were probably those which all broadcasters still seek the answers to: *"What do you like best about our programmes?"; "What's missing in our broadcasts?"; "How often do you listen"*, and *"why do you listen to us?"*

My final QSL card from Radio Sweden came in 2003, consisting of a plain postcard, with information stamped and signed. It was indicative of the station's farewell, to become an online-only service (Fig. 4).

Today, Radio Slovakia International refuses to send a QSL card unless the reception report author has included detailed comments on what they thought of the programme and how what they would like to hear. This has helped shape content, although I fear the audience is not as large as it deserves to be.

Nations as Imagined Communities

Many international broadcasters played their national anthem at the start or end of a broadcast. Perhaps this is the audio equivalent of planting a country's flag on a summit, or in the listener's heart and mind, establishing contact and forging loyalty from a foreigner to the country they were listening to.

This building of relationships is commonplace within all radio stations, even today, with commercial stations forging links with the listener through phone-ins and competitions.

In the 1970s and 1980s, car stickers were a popular 'freebie' that stations, particularly local stations, gave away, creating a vehicle for free advertising. This was also a way for a loyal listener to announce the station they supported, almost like following a particular sporting team.

These days, the equivalent station loyalty is shown by listeners following, and interacting with, their favourite stations on social media and online.

It all helps builds the listener's station affinity with a radio station. This, in turn, increases the likelihood of responding favourably to a commercial station's sponsors and advertisers. In the case of non-commercial state broadcasters, it helps form a positive image of that station, and of the culture the station reflects.

I am certainly not alone in visiting

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- La Voz de Galapagos on short wave: **https://tinyurl.com/5775wdx8**
- Terje Isberg QSL Card Collection: **https://tinyurl.com/hyjsc358**
- Celestino Piatti art: **https://tinyurl.com/3cynhy5r** **www.facebook.com/CelestinoPiatti**
- *Switzerland is Good for You* and NRK: **http://qsl.philcobill.com/blog/?m=201508**

countries based partly on information I garnered from its radio broadcasts.

A model suggested by the BBC Board of Governors in 1946 became typical for the most international broadcasters, *"to present listeners a straightforward, honest news bulletin, a review of [the country] and its institutions, scientific and cultural achievements and sporting events and to elucidate in a varied manner and from as many fields as possible the [country's] way of life."*

In this model, QSL cards became a nice, and eminently collectable, enticement for many.

Nature and Art

Although some of an international station's audience are ex-pats, the majority is made up of numerous nationalities, many of whom commence with little knowledge about the station (and the country) they have tuned to. There are many exotic stations too: for instance, in the 1970s, La Voz de la Galapagos was heard in the Tropical Bands. Their QSL card featured a giant tortoise, a parrot and crabs. This raised the profile of the Ecuadorian-administered islands in the short wave community.

The representation of 'tradition' and 'folklore' is another way to tell a nation's story to a listener. Norway's state broadcaster NRK ran a range of 1980s QSL cards depicting regional costumes. Many other stations follow this route. ABC Radio Australia issued a wide range of QSL cards. These often depicted wildlife, with some 1990s cards showing colourful native birds such as the Forest Kingfisher, Regent Bowerbird and the Blue Wren.

Many QSL cards are works of art in their own way. In-house design teams could produce imagery that projected a radio station, and the country it represented, as being forward-looking and modern. In the early 1960s, Swiss artist Celestino Piatti (1922-2007) was commissioned to design a QSL card for the Swiss Shortwave Service. The graphic design or transmitter towers and wires crisscrossing on a bold colour background, with the Swiss flag, projected a strong visual image.

A QSL card collector would surely have received the message that Switzerland was a thriving and dynamic country. In that era, the Swiss Broadcasting Corporation progressed from black-and-white QSL cards of transmitter sites to some striking QSLs with strong graphic design elements; tying together the power of radio across the airwaves with elements of Swiss life, from the mountains to the cities.

In the 1970s ORF ran a series of QSLs that featured contemporary Austrian art. These are among my favourite personal series of QSL cards.

A series of QSLs card issued by Danish Radio symbolised the Danish National anthem, *Der er et yndigt land ("There is a lovely country")*. The series was first issued in the 1980s and still being sent to listeners in the 2000s.

This Danish Radio QSL series comprised four cards, painted by artist Sofie Bagger, that fitted together in a single image of green hills, apple trees and sunflowers. The QSLs were sent out to listeners but there was no guarantee you would not get a card that you already had. This, of course, was a way to encourage listeners to tune in regularly and contact the station.

Next month, I will have a more in-depth look at QSL cards issued by current-day broadcasters and free radio stations, investigate QSLs and conflict, and appreciate those QSL cards issued for commemorative and sporting events.

Medium Wave DXing – Does it Have a Future?

Scott Caldwell surveys the current state of the Medium Wave DXing hobby, looking at how the disappearance of some stations can enhance other aspects of the hobby, with the aid of the new breed of SDR receivers.

Scott Caldwell
Scottandrew.caldwell@yahoo.co.uk

The world is continuously evolving to meet demanding political, economic, environmental, and technological changes and respond to the humanitarian crisis of the global COVID 19 pandemic. This raises the following question: Is there still a place in modern society for traditional Medium Wave DXing?

In recent times, the hobby has attempted to evolve to meet these new dynamics.

This has been reflected in the growing popularisation of e-QSL cards, replacing the 'traditional' hard-copy varieties that arrive via the post office. This benefits both the Dxer and the station in obtaining real-time QSL cards and reception reports that are deemed vital for station engineering auditing.

Previously, the hobby was based around high-end equipment, which prohibited younger listeners from pursuing the magic of DXing. But the market is now more accessible to DXers with a more limited budget.

Therefore, a simple Tecsun AN200 indoor loop antenna (Fig. 1) can achieve quite remarkable results, given advantageous atmospheric conditions; it comes with a modest retail price of £39.95, for instance from Waters and Stanton/Nevada.

https://tinyurl.com/4kc6ps5t

There are two benchmark stations to aim for in the United Kingdom: 590kHz VOCM (St Johns, Newfoundland; Fig. 2) and 1130kHz WBBR (New York) are both audible after 9 pm in the winter DX season.

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Amongst the more high-end aerial alternatives, you will, of course, find the excellent Wellbrook ALA1530 (Fig. 3) loop antenna, which currently retails at £252 for the model *ALA 1530 Aluminium*.

Plus, there is the slightly more exotic Reuter series of magnetic indoor loops, for example, the Reuter RLA-3, which I have used, on and off, more recently (Fig. 4)

This aerial provides excellent results across the Long, Medium, and Short-Wave bands.

https://tinyurl.com/uc9bazsf

Band Dynamics and Spanish Armadas

It is often argued that the poor sound quality is a fundamental reason why many European nations (France and Germany, for example) have systematically terminated their Medium Wave broadcasting. The dynamics of the band are vastly different during daytime and night-time. In Europe, the Medium Wave is relatively free from co-channel interference during daylight hours. However, at night-time, it is a very different band with the frequencies dominated by a 'Spanish Armada' of broadcast stations – most noticeably by RNE, COPE, and SER Radio, broadcasting from multiple transmitter sites.

It has been suggested that the Medium Wave spectrum would benefit from a Single Frequency Network (SFN), offering the following advantages:

Systematic reduction in co-channel interference;

More frequencies to allocate to new stations: community, regional, and/or national broadcasters (it is estimated that 80% of frequencies are unsuitable for regional broadcasting); and

Ease of use for listeners wishing to receive the best quality of signal relative to their geographical location.

European broadcasters have also argued that financial viability plays a major role in determining the future of Medium Wave. It is reported that shutting down the *France Inter* Medium Wave service, for example, has saved a remarkable figure of US$1.5 million in operating costs.

The Dutch public service broadcaster NPO reports that terminating their Medium Wave services has generated a saving of US $1.3 million over a fiscal year. NPO also claims that its listener demographics are changing fast, as younger listeners do not own a receiver that has medium wave functionality.

Transatlantic DX with an SDR

In terms of monitoring Stateside signals, you might wish to compile, over time, a longer-term log. This can offer a basis for comparison of the changing dynamics of the medium wave broadcast band.

In recent years, the remarkable possibilities of Software-Defined Radio (SDR, Fig. 5) have been instrumental in shaping the future of MW Dxing. I was initially very sceptical about owning and operating an SDR, questioning, like many others, whether this was still an 'acceptable' form of the hobby. For me, there is still a magical feeling to physically tuning a traditional communication receiver to a weak station.

However, the recording functionality and coverage of modern SDRs is truly amazing, allowing the DXer to monitor a large slice of the bandwidth cake over some time. This will significantly expand the scope and enjoyment of the hobby because you are simply hearing many more stations.

Moreover, contemporary SDRs, such as the SDRplay, ELAD and AirSpy range

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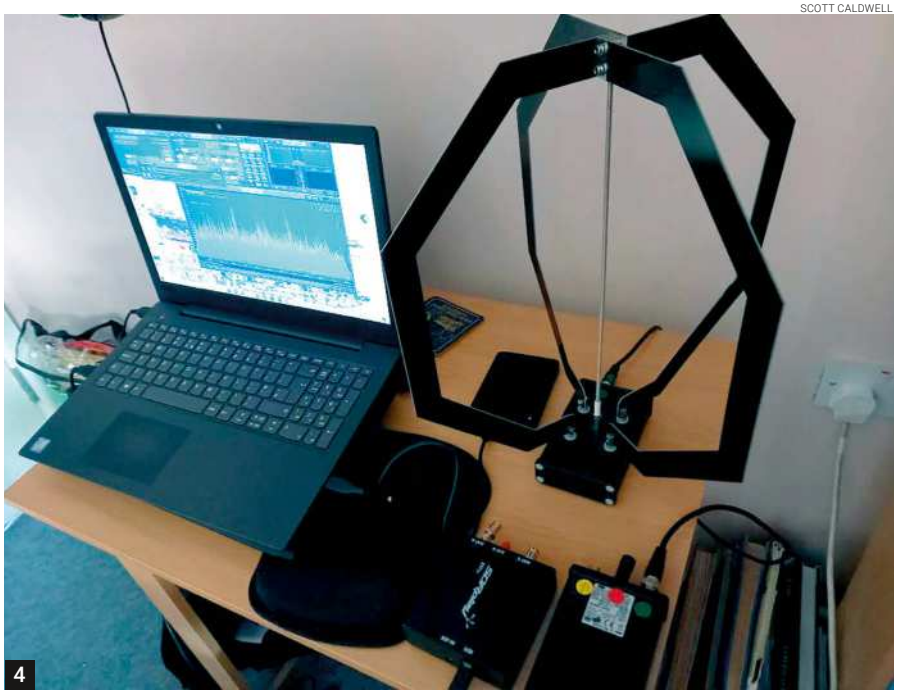

Fig. 1: The Tecsun AN200 Indoor Loop Aerial.
Fig. 2: Transatlantic MW DX signal path from Newfoundland to the UK.
Fig. 3: The author's trusted Wellbrook ALA 1500 loop. Fig. 4: Using the Reuter RLA-3 crossed-dipole magnetic indoor loop for MW DXing.
Fig. 5: The SDRplay *SDRuno* recording feature is a vital feature for this area of the hobby.
Fig. 6: The *Premier Networks Programme Clock*.

of radios, and many others besides, are equipped with a truly remarkable bandwidth coverage, allowing the DXer to listen to wreak stations. Table 1 shows a typical example of the current specifications of some better-known, hobby-level (mid-range) Software-Defined Receivers.

The Dynamics of the Medium Wave Band

The recent closure of broadcast stations on the MW spectrum is very disappointing. The BBC policy of reducing its MW output has been defended as follows by Kieran Clifton, the Director of BBC Distribution & Business Development: *"The BBC is committed to a digital future for radio, and in the past few years we have funded local DSB expansion, made all local radio stations available on digital terrestrial TV (Freeview) and we have transformed our online and mobile offering with BBC Sounds.*

"Together with FM (which has recently been expanded for Radio Wales), these ways of receiving our stations now make up the great majority of listening, and as a result, continuing to transmit these services on Medium Wave would no longer represent good value for money".

Some older UK listeners are outraged that MW is being slowly eradicated from the BBC's regional services.

A pilot shutdown of some BBC radio stations led to over 600 letters of complaints. Unfortunately, it failed to make the BBC change its stance; on the contrary, its shutdown has gathered pace in recent months.

However, developments like this one do make room for some interesting opportunities to receive more distant MW stations that occupy the same frequency, thus reducing the co-channel interference that has been such a definite characteristic of MW DX in Europe.

A similar change in the dynamics of the Medium Wave broadcast band has also been encountered in the US. WFME (Family Radio), New York has recently ceased broadcasting on 1560kHz, opening up the frequency for the reception of stations that were previously inaudible in the United Kingdom.

In this context, some domestic DXers have reported the reception of KGOW (Bellaire) on 1560kHz. These are stations that were previously rarely heard, due to the adjusted broadcasts of WFME.

What is more, a number of US stations are required by the Federal Communications Commission (FCC) to reduce their broadcasting output power at night-time (Table 2), in order to systematically reduce the problem of overcrowding of the spectrum.

The FCC regulates the parameters of their operating licence. To manage the output power of each station, the FCC issues a Table of Approximate Local Monthly Sunset Times.

These times determine the operating times a station should broadcast on until

it reduces its power and/or adjusts its directional transmission antennas. In early spring the transmitters will be tethered to sunset times, but they will still operate under full daytime power, owing to the nominal sunset times issued by the FCC that consolidate sunset times from the middle of spring.

https://www.fcc.gov

This offers European DXers a unique opportunity to hear American daytime stations, within a limited window of opportunity.

Expanding the Hobby

Against this background, experienced and knowledgeable DXers are promoting the adaptation of the hobby to all levels of ability and equipment.

You do not need a sophisticated receiver or antenna to catch North American DX stations, and several stations offer good reception opportunities in the UK, subject to advantageous receptions conditions.

The Internet is a great source of information and practical tips for the DXer. Recently I was struggling to obtain an identification of a weak North American station that was broadcasting the Coast-to-Coast programme To enhance the likelihood of an identification I managed to download a *Coast-to-Coast Programme Clock* (Fig. 6).

https://tinyurl.com/5d3u58ae

This useful app indicates when local identifications can be received in breaks from the nationwide content. Unfortunately, the weak station faded out beforehand, leaving one very frustrated DXer.

Furthermore, the X-Band (1610-1710kHz) offers the European DXer many exciting opportunities. Here, North American stations can be copied without much co-channel interference from European broadcasters (except the various Dutch pirate stations).

My observations so far suggest that the X-Band offer the best reception quality during early spring.

A relatively easy station to catch is WPTX on 1690kHz, when conditions are advantageous.

https://tinyurl.com/w6ap3jh7

Medium Wave Resources and the Future

Many practical resources are available to both the novice and seasoned MW DXer (see box at the end of this article). For example, the *Medium Wave Circle* continues in its yearly growth and its quest to promote the fascinating hobby of Medium Wave DXing.

Its publication – the *Medium Wave News* has increased in size to accommodate an impressive 36 pages of DX logs supplied from its global membership base.

The British DX Club (BDXC) is another source of information as regards all variations of DXing across the radio spectrum.

In conclusion, Medium Wave DXing offers an intriguing – and often challenging – way to stay in contact with isolated communities. This is never more important than right now, given the devastating impact of social distancing and lockdown in response to the global Covid-19 pandemic.

In the 1950s advertising campaigns and media reports proclaimed that the medium of radio broadcasting had been wounded by the technological advent of television. However, over 50 years later, radio still provides a reliable service in terms of quality programming and commercialisation.

In one of my future columns, I will look at DRM as a possible alternative to Medium Wave broadcasting.

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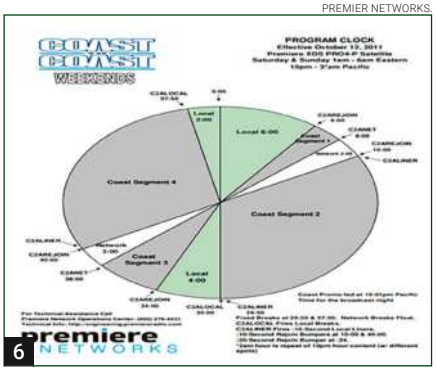
PREMIER NETWORKS



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SDR Receiver	Specifications	Retail Price
Airspy HF+ and HF+ Discovery	HF frequency spectrum coverage 9 kHz to 31 MHz. VHF coverage 60 MHz and 260 MHz. USB Power Supply. Sensitivity -112dBM. No drivers required. Plug-and-play on Windows Vista, 7, 8, 8.1, and 10.	£199.95
SDR Play/RSP Duo	The frequency spectrum encompasses 1 kHz to 2 GHz.	£235.95
SDR Play RSP dx	Covers the entire RF spectrum from 1 kHz to 2 GHz.	£190.00

Table 1: Some SDR Receivers on the Market Today.

kHz	callsign	City	State	Power	QRM	UTC
780	WXME	Monticello	ME	5kW	WBBM	2200
1160	WSKW	Skowhegan	ME	10kW	WYLL	2200
1280	WHTP	Gardiner	ME	5kW	CFMB	2200
1090	WILD	Boston	MA	4.8kW	WBAL	2215
1100	WTWN	Wells River	VT	5kW	WTAM	2215
1110	WMVX	Salem	NH	5kW	WBT	2215

Table 2: North American Daytime Stations (Q2/2021; courtesy Steve Whit of *Medium Wave News*).

Resources

- Hard-Core DX: **https://tinyurl.com/9p3pcd6**
- Introduction to MW DXing (NZDXL): **https://tinyurl.com/2df76xvk**
- Medium Wave Circle (MW News | e-MWN): **http://www.mwcircle.org**
- Medium Wave List: **https://tinyurl.com/ytnkrypf**
- Medium Wave.de: **http://www.mediumwave.de/**
- Radio Enthusiast: **https://tinyurl.com/hv3mce7f**
- Radio World: **https://tinyurl.com/4rdafktt**
- SWLing Post: **https://tinyurl.com/59ybxd26**
- UK MW Transmitters: **http://www.mediumwaveradio.com/uk.php**
- Ydun's Medium Wave Info: **https://mediumwave.info/news**

Radio News

BBC RADIO 1 *RELAX:* A new service has appeared on BBC Sounds: *Radio 1 Relax* is playing soothing noises, including wind and rain. The BBC says *Radio 1 Relax* reflects its commitment to supporting audiences to manage their mental wellbeing following the launch of *BBC Headroom* in 2021. Featuring everything from 'sleepscapes', sounds stimulating an ASMR (Autonomous Sensory Meridian Response) to tips and mixes, the new stream offers something new and distinctly different for those looking for moments of calm in their day-to-day routines. *Radio 1 Relax* is the BBC's second curated stream for *BBC Sounds* and follows the launch of *Radio 1 Dance* in October 2020.
Both new streams are designed to give young audiences even more flexibility to listen to their favourite BBC content outside of the more traditional linear schedules.
(SOURCES: BBC1 | RadioToday)
https://tinyurl.com/yk7mm9nn
https://www.bionics.co.uk

COMMUNITY RADIO MAY SPLIT : Community radio stations may now offer split services within their coverage area on any relay transmitters they might operate. Following lobbying from the *UK Community Radio Network*, Ofcom has informed the stations in the network they may now offer separate advertising and identification to distinct communities within their broadcast areas. East Sussex-based Seahaven FM will be one of the first stations taking advantage of this new agreement with its recent installation of a 2nd transmission site in Eastbourne […]. The *UK Community Radio Network* has nearly 100 Ofcom licensed community stations as members. Station managers meet twice monthly to discuss the sector and represent these stations to industry organisations, the regulator Ofcom, and other stakeholders.
(SOURCE: Ofcom | UK CRN | | Industry Press)
https://tinyurl.com/28mk7724
https://tinyurl.com/4nxpd2c7

DECODING 433 MHZ WITH RTL_433: The *rtl_433* software program is a generic sensor decoder, and it will translate and display a variety of environmental data. Despite its name, the frequency can be defined in the setup. Sensors can be found on the frequencies of 315, 433, 868, and 915MHz, depending on your location. In the UK, 433.92 is the most popular, and so this is a very good place to start.
(SOURCES: MØTAZ; via Bob Houlston G4PVB)
https://m0taz.co.uk/2019/09/rtl-sdr-fun

European Private Shortwave Stations

June 2021

Only legal stations are included. Most stations use 100 to 3,000W of power.
D = Germany, DNK = Denmark, FIN = Finland, NL = Netherlands, NOR = Norway, Irr. = irregular, F.pl.: future plan, min. = minutes, Mo = Monday, Tu = Tuesday, We = Wednesday, Th = Thursday, Fr = Friday, Sa = Saturday, Su = Sunday.

kHz	Country	Name	Transmittersite	Schedule(UTC)
3920	NL	RadioPiepzender	Zwolle	Weekends(1600-2400)
3955	D	RadioChannel292	RohrbachWaal	24/7
3975	D	ShortwaveRadio	Winsen	Daily1500-2200
3985	D	Shortwaveservice	Kall-Krekel	Daily1400-2200
3995	D	HCJB	Weenermoor	24/7
4900	NL	MikeRadio	Heerde	Alternative to4900
5800	NL	MikeRadio	Heerde	Irr.– weekends0600-2400
5880	NL	RadioPiepzender	Zwolle	
5895	NOR	RadioNorthernStar	Bergen	Daily0329-2210
5920	D	HCJB	Weenermoor	Daily0600-1600
5930	DNK	WorldMusicRadio	Bramming	24/7
5940	NL	RadioPiepzender	Zwolle	
5970	DNK	Radio208	Hvidovre	24/7
5980	DNK	RadioOZ-Viola	Hillerød	We2100-2200,Sa-Su1100-1300
5980	FIN	ScandinavienWeekendRadio	Virrat	1stSaofthemonth(not inMay)
6005	D	Shortwaveservice	Kall-Krekel	Daily0800-1600
6005	NL	RadioDeltaInternational	Elburg	Testing
6020	NL	RadioDeltaInternational	Elburg	Sa0900-1300&Su0600-1700
6055	DNK	RadioOZ-Viola	Hillerød	F.pl.:Alternative to5980
6070	D	RadioChannel292	RohrbachWaal	24/7
6085	D	Shortwaveservice	Kall-Krekel	Daily0700-1700(RadioMiAmigo Int'l)
6115	D	Radio SE-TA2	Hartenstein	Inactive
6140	NL	Radio Onda,Belgium	Borculo, NL	Weekendsonly.F.pl.:Daily0630-1900
6150	D	Europa24	Datteln	Daily0800-1600
6160	D	ShortwaveRadio	Winsen	Daily1000-1600
6170	FIN	ScandinavianWeekendRadio	Virrat	1stSaofthemonth(not inMay)
7365	D	HCJB	Weenermoor	0800-1300
9670	D	RadioChannel292	RohrbachWaal	24/7
11690	FIN	ScandinavianWeekendRadio	Virrat	1stSaofthemonth (not inMay)
11720	FIN	ScandinavianWeekendRadio	Virrat	1stSaofthemonth (not inMay)
15505	NL	RadioPiepzender	Zwolle	Irr.- weekends
15790	DNK	WorldMusicRadio	Randers	Sa-Su0700-2000+irr.atothertimes
25800	DNK	WorldMusicRadio	Mårslet,Aarhus	F.pl.:24/7fromlateMayorJune2021

This list is compiled by Stig Hartvig Nielsen (**shn@wmr.dk**) each first day of the month – and is based on details supplied by the various radio stations, the stations websites and HFCC registrations. The list is not copyrighted and may be published everywhere. Next list will be published on June 1st 2021.

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The Belka DX HF Receiver

Clint Gouveia M0OXF
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Clint Gouveia M0OXF reviews Alex Buevsky's much-talked-about Belka DX miniature receiver, investigating this portable unit's key features and functions, and its performance on the short waves.

The history of radio technology is littered with attempts to miniaturize short wave receivers. From the 1950s onwards, with the introduction of semiconductors, this became much easier, of course.

However, it was not until 1988, through the introduction of the Sony ICF-SW1, that a properly capable short wave receiver could fit in your shirt pocket.

Further reductions in size – the best of which were, once again, from Sony – duly arrived in 1993 with the ICF-SW100, and then, in 1999, the equally good ICF-SW07. Market forces driving the scaled production of these types of receivers have diminished considerably with the reduction in broadcasting on short wave.

However, several low-volume manufacturers are developing products in this space for us hard-core radio enthusiasts.

In this context, two of these were developed in Belarus by Alex Buevsky who is a radio amateur (EU1ME). The first of these was the rather successful *Belka DSP* miniature receiver.

Later, this was followed up with the new *Belka DX*

As an aside, both of them were named, it seems, after Belka (Белка, literally, 'Squirrel'), the first Soviet Space dog to return alive. https://tinyurl.com/563jk47f

Basic Specifications

The first point to note with this receiver is the lack of LW and MW bands. The frequency range of this radio starts at 1.5MHz and extends to 31MHz. As many of my *Oxford Shortwave Log* subscribers will know, I am a big fan of LW and MW. Therefore this is a serious omission, but not a deal-breaker. https://tinyurl.com/3yt3cu6p

At least the end of the MW band is still available, as is the X-Band which extends from 1.6 to 1.7MHz and in which I have copied many DX stations over the past 5 years or so.

The unit consumes a tiny 0.25mW of power when using headphones. On this basis, the battery has sufficient charge capacity to last for 24 hours of continuous use.

Image rejection is very good at around 70dB, and whilst I do not have a figure for ultimate sensitivity, I can confirm the Belka DX to be a very sensitive receiver, based on several excellent catches on short wave.

More on that later.

Fig. 1: Bandwidth-selection on the Belka DX.
Fig. 2: The (SSB) high cut-off frequencies available.
Fig. 3: The small tuning dial.
Fig. 4: The internal speaker.
Fig. 5: A highly portable piece of radio kit.

The receiver measures 84 x 50 x 20mm and weighs only 95 grams.

First Impressions

There is not much in the box – the receiver, a telescopic antenna terminated with a BNC connector, all wrapped in bubble wrap. No instructions, but no matter, these are available as a PDF file:
https://tinyurl.com/mj44tmv9

The first thing that strikes you is the size of the Belka DX. It is tiny – as noted above – and about the size of two boxes of matches. The case is made of metal and finished very well in black, with what looks like a high-quality powder coating.

Controls are few; there is a tuning knob on the side of the unit. This also operates as a multi-function knob when accessing the menu system. You will find a BNC connector for attaching the supplied telescopic or another external antenna, a standard 3.5mm headphone socket and an IQ output socket for viewing a signal spectrum via SDR software such as *SDRuno* for example.

The unit also offers a USB socket with a charge indication LED for charging the built-in battery. My review unit came with a built-in speaker, the audio of which is directed out of the back of the unit.

Operating the Belka DX

Switch-on requires you to press and hold the *PWR* button. You are then presented with a display that shows the frequency with a resolution of 1Hz, although the maximum tuning step resolution is 10Hz.

Pressing in and holding the tuning knob displays the various available tuning steps: 10, 20, 50, and 100Hz, and 1, 5, 10 and 50KHz. You scroll through the various tuning step options by rotating the tuning knob. The only other indications on the small LCD are battery charge level, signal strength (with a graded scale from 0 to 90, and the current receive mode.

Adjusting the volume requires a quick press of the *VOL* button, while, once again, rotating the tuning know. Another quick press of the 'VOL' knob then displays the *Sensitivity* setting, which can be adjusted with the tuning knob from a low to high setting.

Presumably, this is essentially an RF gain adjustment, and it does work very well.

Reception Parameters

Pressing the *MOD* button reveals the various reception modes: CWU (where the carrier frequency is displayed in the same way as an SSB signal would be), LSB, USB, AM1, AM2 (which appears to be a pseudo-synchronous detection-type receive mode that sounds quite harsh), and NFM.

Pressing the *MOD* button again displays the audio bandwidth 'high' cut-off frequency; another press shows the 'low' cut-off frequency. There are various high cut-off bandwidth selections: 2k, 2.4k, 2.7k, 3k, 3.5k, and 4k. Similarly, the low cut-off frequencies available are 50, 75,100, 150, 200, and 300Hz.

This is a very flexible signal demodulation

set-up for such a relatively simple and cheap radio.

Pressing the *MEM* button allows the user to 'write' the current frequency, demodulation type and sensitivity into the memory. There are 32 memories, and any one of them can be selected/recalled by pressing *MEM*, rotating the tuning knob and then pressing *VOL*.

This system reminds me a little of how a completely different radio operated – the Eton E1.

At certain frequencies, the display of the radio can cause noise, but this can be resolved by switching off the display by pressing and holding the *MOD* button for 2 seconds.

There are various power-on and timer options available in using this radio, which I won't go into.

However, I am very happy to report that the backlight can be set to remain on permanently via a menu accessed by pressing and holding the *PWR* button.

Reception with the Telescopic Aerial

I don't often use a short wave portable with the built-in telescopic because even just 20 feet of wire can seriously improve reception.

However, as a test of basic sensitivity, I compared reception on the supplied telescopic aerial with one of the best portables on the market today – the Tecsun PL-880. The PL-880 has been my go-to radio when travelling for the past couple of years and provided an excellent calibration point for the Belka DX.

Table 1 summarises stations copied on both radios with their respective telescopic aerials, with additional comments added. Whilst using both receivers with their respective telescopic aerials, I was unable to find a signal that could be copied with audio on the PL-880 and could not be heard on the Belka DX.

The reverse was also true; I was not able to find a signal that could be copied on the Belka DX, that was not also received on the Tecsun. However, in many cases, signals on the Belka were either equally as strong, or stronger than on the Tecsun. This is an excellent result for the Belka considering the PL-880 has long been regarded as one of the best short wave portables on the market.

Reception with a Wellbrook ALA1530

For medium wave X-band and short wave DXing, I attached the Belka to one of my Wellbrook ALA1530 magnetic loop antennas, located outside in the garden. With this configuration, the Belka DX demonstrated superb sensitivity. Coupled with what appears to be a very robust front end, it coped with the Wellbook loop very admirably.

I did not experience any overloading or Intermodulation Products (IMP, i.e. distortions).

I have to say that this was a very positive surprise. Portables, at the best of times, are often prone to overload because they are simply not designed to be used with large antenna systems/ strong input signals.

The Belka DX shone here. In terms of 'catches' on short wave, I would have to say it is as good as just about any other radio in my collection. Table 2 shows some examples of how this diminutive radio performed.

Bear in mind that some of these stations are *extremely hard to copy and rarely reported* in Europe

Station	Frequency/ kHz	Comments
Shannon VOLMET	3413	Stronger, clearer signal on the Belka DX
S30 'The Pip', Rostov-na-Donu	3756	Equally strong signal
S32 'The Squeaky Wheel' Rostov-na-Donu	3828	Stronger, clearer signal on the Belka DX
Shannon VOLMET	5505	Stronger, clearer signal on the Belka DX
Radio Taiwan International, Kostinbrod	5900	Equally very strong signal
Voice of Turkey, Emirler	5945	Equally very strong signal
Voice of the Islamic Republic of Iran, Sirjan	7325	Equally strong signal
Helliniki Radiophonia, Avlis	9420	Equally strong signal
Deutsche Welle, Pinheira	9830	Equally strong signal
Radio Thailand, Udon Thani	9920	Equally very strong signal
Radio Exterior de España	11940	Stronger signal on the PL-880
Radio Pilipinas, Tinang	12120	Weak, but copyable signal on both

Table 1: Signals copied on both the Belka DX and the Tecsun PL-880.

- Radio Tarma 4775.04 kHz, Tarma, Peru **https://youtu.be/Bs7fMj6v2MU**
- Radio Aparecida 6135.14 kHz Aparecida, Brazil **https://youtu.be/UuZOBVHUgn4**
- Rádio Clube do Pará 4885.03 kHz, Brazil **https://youtu.be/AmIB_sNcvJM**
- Radio Mosoj Chaski 3310 kHz Bolivia **https://youtu.be/Zuk7i9nO444**
- Radio Mali 9635 kHz Bamako **https://youtu.be/BUm6ORxeu8A**
- Voice of Korea (DPRK) 6170 kHz **https://youtu.be/vPo0o4Li-k4**
- Voice of Korea (KCBS) 7570 kHz **https://youtu.be/typcMhI58N4**
- Transatlantic MW DX: WGIT Puerto Rico 1660 kHz **https://tinyurl.com/2pc9fw8m**

Table 2: Short Wave Reception with the Belka DX.

Conclusion

The Belka DX is a steal priced at around €150. I keep on about *performance as a function of price*, and here I go again; this little radio is up there with the best. Sensitivity is equal to some of the best portables ever manufactured and it is probably the most compact, high-performance portable ever.

It certainly represents the most compact radio I have ever used. That makes it perfect for travelling, of course – just slip it into your backpack with a reel of wire and away you go.

However, there is a downside. The menu system, although excellent, is rather tiresome after a while. Having to continually depress the tuning/multi-function knob just to skip bands by changing the tuning rate does get old rather quickly.

For me, another annoying feature is having to press a button to adjust the audio volume. This is very reminiscent of my Degen DE1103, which I eventually sold because I could not get on with its ergonomics.

No such fate for the Belka DX, it's just too good for that.

However, if and when I start travelling for work again or take vacations I will certainly take the Belka with me. But I will also be bringing the PL-880 or another portable for those DXing sessions when I want to DX with a complete set of front panel controls.

The only thing left to say is that I wholeheartedly recommend this little radio to anyone – you won't be disappointed – you will be amazed.

UNIDEN

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WaveHawks, Nomads & Airmasters: Some Scanning Memories

Anne Reed pays homage to the wonderful hobby of airband listening and reviews some of the scanners and aerials she has loved and owned, before describing her current setup – and a new shack.

My interest in all types of scanners started many years before I was taking my Amateur Radio Exam. I discovered that looking at scanners helped me to understand how a range of aspects in radio worked and how communications procedures unfolded. Hence, communications on 2m, and the marine and air bands, are still my favourites to this day, and one of my abiding joys is putting a magnetic mount aerial on the car and operating 2 meters with a range of aerials.

Over the years, I have acquired many base station and handheld scanners from the top brands, such as Sony, Uniden and Yupiteru. I still remember my very first scanner: It was a Uniden Bearcat UBC175XL (Fig. 1). It went up to 512 MHz with 16 channels. However, seeing the attractive wood veneer was very nice; the next models were nearly all made of plastic.
https://tinyurl.com/73xh39z2

From the Uniden 'Bearcat' range, I also owned the UBC200 XLT handheld (Fig. 2).
https://tinyurl.com/ynvj9xc5

The Tandy / Radio Shack shops were then, naturally, one of my greatest temptations. The firm's trade name was, of course, 'Realistic'. I feel certain that most of you remember the Realistic scanners: The Realistic Pro-43, for example, with coverage from 68 to 1,000MHz and switchable AM/FM, was a real bonus in those early days. However, not content with handhelds I also acquired the base model Realistic Pro-2032 (Fig. 3) which offered some very good sensitivity.
https://tinyurl.com/pu8rsmew

In addition to this, my treasured AOR AR-2002 (Fig. 4) went up to 1,300MHz in coverage and included the SSB mode. For many years, this radio ruled supreme on my desk. I also owned a Black Jaguar BJ200. However, I found that this receiver suffered from some limitations in terms of its batteries.
https://tinyurl.com/yn523a8a
https://tinyurl.com/rntuvm8a

Aviation and Aerials

As a life-long aviation enthusiast, I noticed the manufacture of the Signal Communications models R-532 and R-535 with great interest (Fig. 5). These radios were dedicated to airband. With them, I would frequently be able to 'plot' the path of *Concorde* from Heathrow to Shanwick before it crossed the Atlantic. However, I found that the buttons on the front were sometimes not too easy to operate. Moreover, to this day, I have the small Signal Communications R537 (Fig. 6) with two dedicated crystals.
https://tinyurl.com/p26p7ru9

I have also tried out the famous Sony Air 7 and ICF-Pro 80 models. The latter had a rather unsatisfactory converter to screw into the aerial socket.
https://tinyurl.com/y93uzckh
https://tinyurl.com/trfyu9t8

In terms of aerials, I tend to use those which have been purposely designed and built for this band. I have had a Revco *Nomad* aerial, which could be easily fitted to a curtain rail.
https://tinyurl.com/3p7nfj79

Much later, I was the proud owner of a Watson W-881 *Super Gainer*, which yielded far better results than many other rubber-duck types.
https://tinyurl.com/2z5aemdt

Last but not least, one of my perennial favourites has been the CHELCOM *Airmaster* (117-137 and 224-400MHz) airband antenna (see: *Monitoring Times*, August 1998: 86; Fig. 7).
https://tinyurl.com/4a6t7wra

2. THE RIGPIX DATABASE 3. THE RIGPIX DATABASE 4. THE RIGPIX DATABASE 5. GEORG WIESSALA 6. THE RIGPIX DATABASE 7. ANNE READ

Quite a Collection

Returning to my past scanners, I loved my Sony ICF-SC 1PC *WaveHawk* 300-channel scanner (Fig. 8), which Jeff Waters, of Waters and Stanton, was kind enough to bring back for me from one of his American visits. At the time, importing this model was not allowed into this country for some odd reason. The software for it, alas, was only *Windows 95*. This probably shows my age.

https://tinyurl.com/ft6xdumt

It has become a struggle to get my Laptop 7 or IO to accept this scanner.

Therefore, if anyone has any advice on this, I would be very grateful to receive it. You can write to me at the e-mail address at the head of this column.

A Win Industries Ltd. (Japan) 108 did once also join my family of scanners. Later, Yupiteru got me interested, in particular the MVT- 7100 model, which offered SSB functionality. To date, I have owned two units of this model, and they still sell on eBay.

With aviation continuing to be a special interest, I also operated the Yupiteru VT-125 and VT-225 (Fig. 9). variants. For base station use, I preferred the Yupiteru MVT-8000 (Fig. 10).

https://www.javiation.co.uk/vt.html
https://tinyurl.com/4hspx9j7

Therefore, you might say that I bought, sold and traded in rather a lot of scanners over the years.

Fig.1: The Uniden Bearcat UBC175XL. Fig. 2: The Uniden Bearcat UBC200 XLT handheld. Fig. 3: The sensitive Realistic PRO-2032. Fig. 4: The very popular AOR AR-2002. Fig. 5: The Signal Communications R-532 and R-535 models – still much sought-after. Fig. 6: The Signal Communications R537. Fig. 7: The CHELCOM Airmaster 117-137MHz. Fig. 8: The Sony ICF-SC 1 PC WaveHawk Scanner. Fig. 9: The Yupiteru VT-225. Fig. 10: The Yupiteru MVT-8000 base station scanner. Fig. 11: *Scanning Secrets*, by Mark Francis and Bill Laver. Fig. 12: The author's 'Woman-Cave' / Radio Shed. Fig. 13: The shed – and an antenna currently in use.

In the Present

Presently, I still have my Realistic Pro-26 (20-9506) and GRE PSR-295, which I do not want to party with.

https://tinyurl.com/fh2zw23s
http://www.rigpix.com/gre/psr295.htm

The latter, of course, had the new 8.33kHz steps for airband.

http://www.javiation.co.uk/833.html

In addition to these, my Uniden Bearcat UBC75XLT and UBC360XLT (now: UBC370XLT) are still in regular use here.

https://tinyurl.com/5a73yjtt

I was a loyal customer and friend of Jeff Stanton and Mark Francis of Waters and Stanton at Hockley for about 30 years. Back then, Mark Francis and Bill Laver wrote a book called *Scanning Secrets*. I was privileged to have received the very first copy of this – personally signed by Mark (Fig 11.).

Mark would often send me a new scanner handheld to try, as he knew I would give it a very fair test.

I still miss Mark Francis and Jeff Stanton. I also used to attend the Longleat Radio Rallies, so that I could see them both, as I never got to their Hockley premises.

8. THE RIGPIX DATABASE 9. THE RIGPIX DATABASE 10. THE RIGPIX DATABASE 11. PICCLICK.UK 12. ANNE REED 13. ANNE REED

Over the years, as you might guess, several scanners were traded in. On one occasion, some items had been collected, which – I suddenly realised – should not have let go. So I rang Frank, who at that time was in *Goods Inwards*, and I said, "Have you unpacked my parcel?". Thankfully, he said "*no*", so I asked for it to be returned. The moral here is too much haste can be very expensive.

A Woman's Shack

During the recent lockdown, I have finally managed to acquire a decent shed (Fig. 13). This was a momentous event for me, and it was duly reported in the *Members' News* section of *Ragchew* – the newsletter of the Gloucester Amateur Radio & Electronics Society (GARES)!

https://tinyurl.com/pcupmeap
http://www.g4aym.org.uk

I am now looking forward to operating from it when the weather warms up just a bit more. Before we moved to our present address in Up Hatherley, I had a very nice 8' by 8' summer house with verandah and, being equipped with mains power, I was able to operate from it using a dual-band Watson antenna.

Sadly, we had to leave the summer house behind when we moved, so it was just a case of dismantling the antenna which was re-erected on a 16' pole by GP Aerials on the back of our bungalow. As the garden here is a lot smaller, and my husband Sydney's greenhouse and garden frames had been installed, there was no allocated space for me!

After waiting patiently for seven years, space was finally cleared for a 6' by 4' pent-roofed shed which was ordered from Waltons of Newark and arrived on 25th November 2020. I arranged for an installer to assemble it, and I am now engaged in using an aerial fixed to my tripod support and adjacent to the shed (Fig. 12).

At present, there is no heating or lighting, so I am planning to use my heavy-duty battery to power the various rigs I plan to use. Watch this space.

In conclusion, you could say that radio – in all its aspects, and specifically in terms of amateur radio and scanning – is well and truly 'in my blood'! I have always loved the hobby. Besides, being licensed as a radio amateur has enhanced it and, on many occasions, taken my knowledge, passion and interest a big step further. AR

Every Second Counts

David Smith
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David Smith reports on improvements in HF monitoring, revisits the origins of weather forecasting and compiles an ATC profile of Yeovilton.

HF Propagation Improvements

PanAm Radio's Paul Allen wrote to thank me for including his station in April's column (*RadioUser*, April 2021: 38/9). He commented further: *"As you know, we are on HF every day, and I wanted you to know we are seeing a definite improvement in HF conditions as (solar)cycle 25 kicks into gear and is now making a difference. My opinion, after 50 years in this business, is that your readers should be really enjoying airband monitoring on HF in another six to nine months, as propagation continues to improve."*

[Look out for an article by Paul in one of the forthcoming issues of RadioUser *– **Ed**.]*

The Dawn of Weather Forecasting

On 1 August 1861, *The Times* newspaper published the world's first public weather forecast. It read: *"General weather probable during the next two days -North - Moderate westerly wind, fine. West - moderate south-westerly, fine. South - fresh westerly, fine."* This was, perhaps, somewhat vague, but ground-breaking, nevertheless. It was the work of Robert Fitzroy who, 30 years earlier had served as the captain of *HMS Beagle*, carrying Charles Darwin on a survey of South America.

While his more famous passenger was discovering evolution, Fitzroy was studying weather patterns around Cape Horn and Tierra del Fuego, predicting atmospheric changes and taking barometer and hygrometer readings. Admiral Fitzroy was subsequently appointed *'Meteorological Statist to the Board of Trade'*, collating wind data from ships' logs to plot the safest routes across the Atlantic.

He might have continued with this mundane task, had it not been for an unexpected storm in October 1859. The *Royal Charter*, a sail and steamship returning to Liverpool from Australia, was wrecked on the rocky coast of Anglesey by hurricane-force winds in the Irish Sea.

More than 400 people perished, and the cargo was lost.

Spurred by this disaster, Fitzroy pointed out that the new science of telegraphy would enable approaching weather systems to be reported before they arrived. If these could be collated and a warning issued in good time, such shipwrecks might be avoided in future. Early in 1841, he established the first storm warning system using barometer readings from around the country sent in by telegraph. He plotted them on a weather chart at the first sign of a looming storm and telegraphed warnings to coastal stations, where beacons were hoisted to alert shipping.

Fitzroy coined a new name for his anticipatory weather reports. *"Prophecies and predictions they are not"*, he wrote. *"The term forecast is strictly applicable to such an opinion as it is the result of scientific combination and calculation"*. In the 1850s, more than 1,000 people a year died off the British coast, but that number dropped by a third, as a result of his storm warnings.

However, his forecasts in *The Times*

were not always accurate. He was brutally mocked whenever they proved wrong, and people found their outdoor events or seaside holidays ruined by unforeseen weather.

Under acute media pressure, Fitzroy became despondent and took his own life in 1865 at the age of 59.

The father of weather forecasting has gained belated recognition.

The Met Office he founded stands on Fitzroy Road in Exeter; and in 2002, to end its confliction with Sea Area names of the French and Spanish services, the *Finisterre* zone on the *BBC Shipping Forecast* was renamed *Fitzroy* in his honour.

High-Intensity Runway Operations at Gatwick: (HIRO - pronounced 'Hero')

Before the pandemic, which has left all London airports pale shadows of their former selves, the world's most efficient single runway at London Gatwick had achieved the seemingly impossible declared capacity of 55 movements an hour at peak periods.

The *Drive for 55* programme involved implementing many different procedures and system developments, both on the ground and in the air. Stabilising arrivals spacing on final approach was one improvement that produced a major increase in runway throughput. This provided much greater accuracy and predictability for launching a departure between two arrivals while minimising the risk of an arrival going around.

Gatwick controllers occasionally achieved 60 movements an hour on its single runway. This became another ambitious target to aim for, but the challenge for the airport was to find ways to deliver this rate consistently whenever needed, day in-day out.

Over the last few years, Gatwick has been working on a major research effort to figure out how much more runway capacity can realistically be achieved. A rate of 60 movements an hour has never been reached at a commercial airport consistently, so ensuring it can be achieved regularly is a significant and complex project.

The airport's team has narrowed down the requirements to just two key tasks that Gatwick needs to undertake, in order to achieve its ambitious objective.

The first one involves integrating the latest technologies into a single operating system to achieve greater operational precision in the spacing and sequencing of aircraft. This builds upon some of the capabilities implemented during the *Drive for 55* programme, including spacing tools for both departures and arrivals.

The second job is far more radical and requires new tools and techniques to reduce the workload of the controllers to enable them to handle more aircraft: Currently, when Gatwick Tower requests the arrival spacing from London Terminal Control, it typically requests six or 5.5-mile spacing. This distance gives the airport enough time between two arrivals to safely allow a departure. However, this system is not as efficient as it could be because, for example, it does not allow Gatwick to request a 5.75-mile separation. It is either a six or 5.5-mile spacing. Translated into time, that means adding an extra six seconds of 'buffer' to the spacing between the two arrivals. Adding all the six-second buffers up over the course of a day is equivalent to at least three more movements in an hour.

Operating at the equivalent of one aircraft per minute means that every second really does count. To achieve the required movement level, Time Based Separation (TBS) will be employed on approach, as opposed to the current system which measures the separation between aircraft by distance.

TBS has already been proven at London Heathrow. Gatwick plans to adapt this work so that it fits in with the airport's mixed-mode operation on a single runway, rather than the two at Heathrow used separately for arrivals and departures.

The plan is now on hold, of course, and it remains to be seen how long it will be before these measures can be put into effect.

This month's photograph is of London Gatwick Control Tower.

RAF ATC Profiles 3: Yeovilton

ICAO Code: EGDY IATA Code: YEO

Frequencies	**(MHz)**
Yeovil Approach/Radar	234.300
	127.350
Yeovil Director	240.575
Yeovil Talkdown	247.400
	397.050
	123.300
Yeovil Tower	376.300
	120.800
Yeovil Ground	362.850
	122.100
Yeovil Ops	3.942

(HF Emergency and Ops Normal transmissions for station-based aircraft only)

ATIS	
Yeovil Information	244.550
Navaids	ILS/DME Runway 26
	TACAN VLN 111.00
Runways	08 (2,293 x 45m)
	26 (2,293 x 45m)
	04 (1,464 x 45m)
	22 (1,464 x 45m)

NOTES (A-Z)

Helicopter Operations
Intense helicopter activity can be expected at all times. Station-based helicopters have special arrival and departure points and procedures at this aerodrome, which are laid down in local orders.

Lower Airspace Radar Service (LARS)
Yeovilton-based aircraft may operate H24. A Lower Airspace Radar Service (LARS) is normally available between 0830-1700 Mon-Thu, and 0830-1400 Fri. Outside of these hours, when the aerodrome is open, a MATZ (Military Aerodrome Traffic Zone) service will normally be provided. Transiting aircraft are to blind-call Yeovil Radar before crossing the MATZ outside published hours.

Visiting Civil Aircraft
Strictly by arrangement 24 hours before from Yeovil Ops.

Warnings
Instrument Approach Procedures for this aerodrome are established outside controlled airspace.
Recreational flying and gliding take place outside of published hours.
Police/SAR/Air Ambulance are approved to transit the ATZ outside published hours.
Police/SAR/Air Ambulance should call Yeovil Tower 120.8MHz, which is monitored when activity is taking place.

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ICOM

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IC-R8600 is a super wideband communication receiver that covers the radio spectrum from 10 kHz to 3 GHz. It also has the capability to decode selected digital communication signals including, D-STAR, NXDN, dPMR and P25 ..... **£2499.95**

Accessories

BC-194 drop in charger for IC-R6 ..... **£21.95**
CP-18E cigar lighter cable **£24.95**
CS-R6 cloning software for IC-R6 ..... **£34.99**
SP-27 clear acoustic earpiece **£24.95**
BC-223 rapid charger for IC-R30 ..... **£59.95**
BP-287 hi capacity 3280 mAh replacement battery for IC-R30 ..... **£74.95**
BP-293 dry cell case (3x AA) for IC-R30 ..... **£34.99**
CS-R30 programming software for IC-R30 ..... **£59.95**
LC-189 soft case for IC-R30 ..... **£24.95**
CS-R8600 software for IC-R8600 ..... **£69.95**
RS-R8600 remote control software for IC-R8600 ..... **£99.95**
RC-28 remote control system for IC-R8600 ..... **£279.95**
SP-38 desk top speaker for IC-R8600 ..... **£149.95**
SP-39AD external speaker with DC power supply for IC-R8600 ..... **£199.99**
AH-8000 100-3300 MHz professional discone receiving antenna **£209.95**

bhi Noise Cancellation Products

bhi design & manufacture a range of DSP noise cancelling products that remove unwanted background noise & interference from noisy voice & radio communication channels to leave clear speech. Aimed at a number of different radio related & voice communication markets, our products incorporate unique Digital Signal Processing technology to enable clear communications from within noisy environments.

NES10-2 MK4 Noise Eliminating Speaker replaces the MK3 version and removes unwanted background noise, hiss, hash, QRM, QRN, computer hash, plasma TV interference, white noise etc from speech, so that you can hear more clearly and listen stress free. Works across all radio bands and is also suitable for shortwave listening and for use in radio base stations. **£119.95**

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Uniden is the best known manufacturer of scanner radios in the world. Under its renowned "Bearcat" brand name, Uniden scanners are at the cutting edge of design and technology. Their high-end scanner radios, while complex, are used by radio hobbyists, media, businesses and at all levels of government and there lower end versions are beautifully designed and easy-to-use

PRE-LOADED UBC-125 DELUXE AIR BAND KIT WITH ACCESSORIES JUST £219.95

Handheld

EZI-33XLT PLUS as above but includes rechargeable NiMH batteries and USB charging cable **£74.95**
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SDS-100E Advanced 25-1300 MHz Digital & Analogue scanner **£589.95**
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UCB-355CLT 25-960 MHz 300 channel analogue scanner **£89.99**
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Based in Japan, Diamond Antenna manufactures a wide range of antennas and accessories for both hobby radio and commercial use. They are well known products that meet the highest standards in quality.

Scanner Antennas

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D-130M is a Discone antenna with wide frequency coverage on receive 25 to 1300MHz and covers 6m (20W) and 2m (200W) when used with a transmitter. This model is supplied with 15m RG58A/U and 2 x PL259 plugs **£129.95**

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The Whistlers Scanners are USA designed and built to last – The TRX-1 & TRX-2 are our best-selling digital versions with sales 10-1 against any other brand. We have worked with Whistler to customise a UK band plan for these scanners! This ensures the radios cover UK bands in the correct steps and the correct mode. When a user does a service scan it will search in the correct steps for the selected band ensuring maximum received stations.

Handheld

WS1010 25-512MHz 200 channel analogue scanner **£89.95**
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Accessories

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MRW-TRX3 Triple hand held replacement antenna pack to increase performance **£39.95**
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LEATHER CASE for TRX-1 £29.95

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Live Flight Tracking

FlightAware has revolutionized the world of USB SDR ADS-B Receivers with the FlightAware Pro Stick and Pro Stick Plus, high-performance USB R820T2 software defined radios (SDR) with a built-in RF amp for maximum ADS-B/MLAT performance. The first of its kind, FlightAware's Pro Stick is compatible with PiAware or any other device that supports USB RTLSDR receivers, and is less expensive than any other RTLSDR USB receiver in the world. The Pro Stick Plus adds a built-in 1090 MHz bandpass filter for increased performance and range of reception in areas with moderate RF noise as is typically experienced in most urban areas.

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Flightaware Prostick **£24.95**
FlightAware ADSB 1090MHz Band-pass SMA Filter **£17.99**

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Airspy is a line of super popular Software-Defined Radio (SDR) receivers developed to achieve high performance at an affordable price using innovative combinations of DSP and RF techniques. The goal is to satisfy the most demanding telecommunications professionals and radio enthusiasts while being a serious alternative to both cost sensitive and higher end receivers. Airspy Radios feature world class reception quality and ease of use thanks to the tight integration with the de facto standard free SDR# software for signal acquisition, analysis and demodulation.

HF+ Discovery 0.5kHz – 31MHz VHF 60-260MHz SDR receiver **£199.95**
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NEW YouLOOP indoor HF Antenna 0.5-52MHz **£29.99**

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Tecsun is a world famous manufacturer of AM,FM and shortwave radios. They offer a great range of portable options from just £44.95

Portable

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PL-310ET is a portable multi band radio covering FM 76-108 AM 522-1620 kHz SW 2300-21950 kHz LW 153-513 kHz **£49.99**
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£199.99
This month only just
£99.95!

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DISCONE 25-13000MHz Discone antenna Length: 100cm Connection: SO239 ..... **£39.95**
ROYAL DISCONE 2000 25-2000MHz Stainless Steel Discone Length: 155cm Connection: N-Type **£59.95**
HF DISCONE 0.05-2000MHz Length: 185cm Connection: SO239 ..... **£69.95**

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D777 Civil & Military GRP receiving antenna Freq: 120/300MHz Gain: 3.4/5.5dBi Length: 1.7m Connection: SO239 ..... **£54.95**
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MINI-1300 0.1-1300MHz Handheld Antenna Analyser

Instantly check and tune any antenna from 0.1-1300MHz with this rugged easy-to-use complete antenna test unit No more lugging bulky, expensive test equipment to remote antenna sites and hard-to-get-places **£199.95**

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This is a great complete starting kit for listening to SDR receivers. The loop covers all HF and the desktop discone covers 25MHz and up. All cables included **£79.95**

SDRplay

The people behind SDRplay are a small group of engineers based in the UK with strong connections to the UK Wireless Chip Industry. They have both software and hardware expertise and the RSP was designed by them here in the UK.

RSPDUO is a dual-tuner wideband full featured 14-bit SDR which covers the entire RF spectrum from 1kHz to 2GHz giving 10MHz of spectrum visibility **£239.99**
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AOR, LTD is a renowned Japanese communications equipment manufacturer established in 1978, headquartered in Tokyo, Japan, serves the monitoring enthusiasts, communication professionals, amateur radio operators and electronics industries throughout the world

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Mobile/Base

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DA-5000 700-3000 MHz professional compact discone antenna **£269.95**
LA-400 10kHz – 500 MHz Magnetic receiving loop **£399.95**

MOONRAKER

MICRO CB

This is a fantastic beginners radio, compact and with only the basic functions needed for simple two way communication ..... ~~£49.95~~ **£39.95**

MINOR II PLUS CB

A high quality CB rig covering all standard CB frequencies. The Minor II Plus 80 Channel (works on both 12v and 24v) whilst traditional in appearance, has a wealth of modern features typically only found in more expensive rigs. Included with the radio is DC lead with fitted cigarette plug, perfect for connecting straight to the car or van, as well as a command microphone featuring Auto Squelch on/off and Up/Down channel selection buttons. The radio features RF gain and squelch controls, as well as a quick access channel 9/19 knob. Also supplied with the kit is a mounting bracket, with thumb screws, as well as a microphone hanging bracket. **£59.99**

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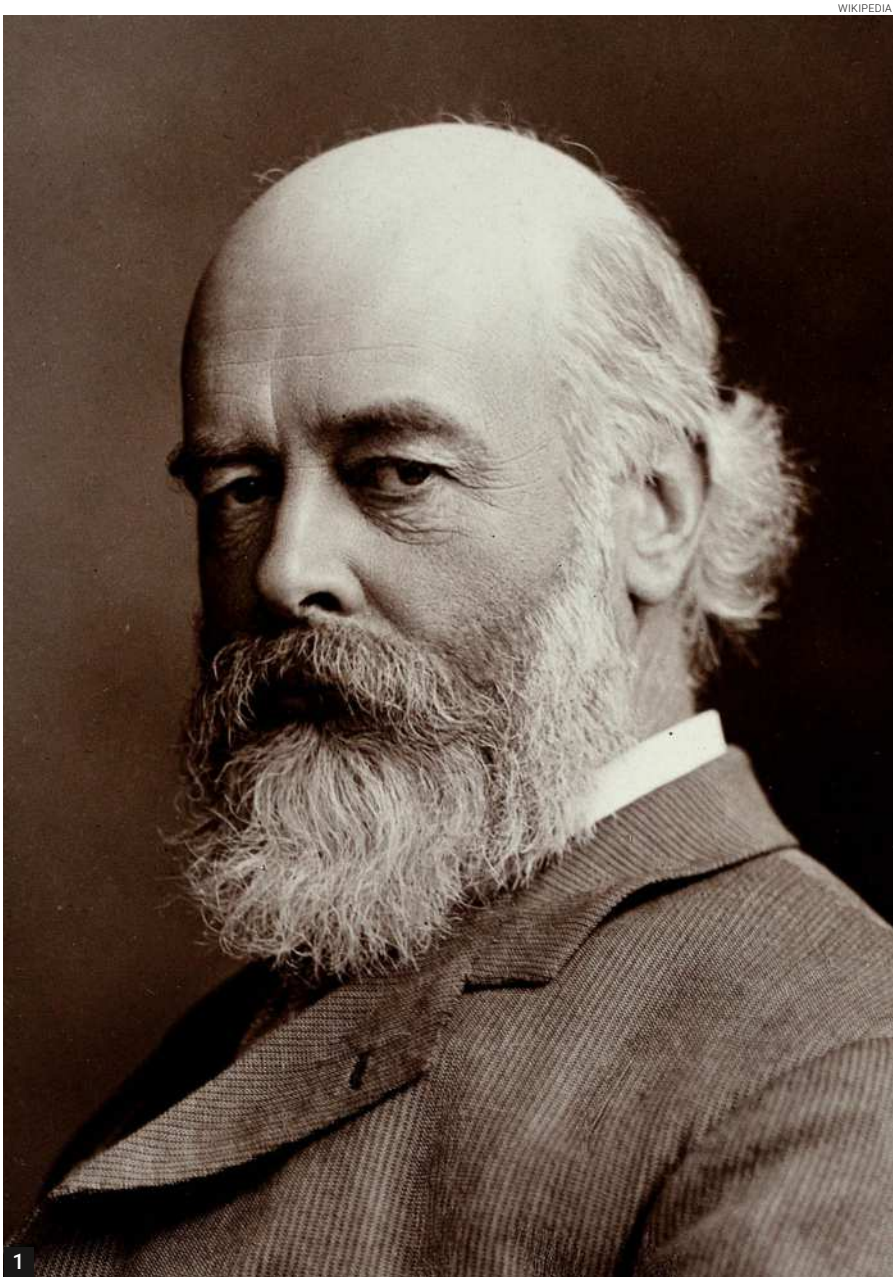

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A Foot in Both Worlds: Sir Oliver Joseph Lodge, FRS

The editor **Georg Wiessala** looks at the life and work of the former President of the Radio Society of Great Britain Oliver Lodge (1851-1940), who combined teaching and scientific discovery with spiritualism.

Georg Wiessala
wiessala@hotmail.com

"The Universe seems to me to be a great reservoir of life and mind. The Unseen Universe is a great reality. This is the region to which we really belong, and to which we shall one day return."
(Oliver Lodge, *My Philosophy* [1933]).

Alasdair Pinkerton has a way with words when it comes to radio. In his wonderful and wide-ranging book (*Radio*, 2019: 51), he makes the following point: "*The early history of radio is mired in controversy, accusations of intellectual theft and dishonesty, patent infringements, disputed court rulings, spurious science, enormous egos, self-publicity and disputed legacies. It is a history animated by the basest of human instincts, ambition, and greed, but also by undisputed genius and the triumph of the human imagination. While this story recalls some of the most eminent names in science during the late nineteenth and early twentieth centuries, including James Clerk Maxwell, Heinrich Rudolf Hertz, and Guglielmo Marconi, it has also failed to remember – even silenced – the contributions made by rather less well-known names such as Reginald Fessenden, Oliver Lodge, Jagadish Chandra Bose, and Nikola Tesla, as well as dozens of others besides.*"

It appears that, from the latter group, Oliver Lodge (Figs. 1 and 2) is best characterized by borrowing Goethe's phrase *Zwei Seelen wohnen, ach! in meiner Brust* […] (*two souls, alas, dwell in my bosom*; Faust 1, v 1112 – 1117). Not that Lodge has made, to my knowledge, any *Faustian Pacts* with the Devil; however, he appears to have been a man of apparent contradictions.

On the one hand, he consistently promoted a 'disinterested' approach to science for science's sake; and, on the other hand, he was deeply interested in applying science to useful real-world issues.

In addition to this, he was a great science communicator and popularizer (Lightman, in Mussell and Gooday, 2021: Ch. 6), even in the pages of *Past Years*, his 1931 autobiography.

He was, perhaps, the Carl Sagan of his day.

What becomes clear is that Lodge went both behind the scenes of the latest scientific discoveries of his time and behind the veil of the thriving spiritualist ('psychic') movement of his era. He managed,

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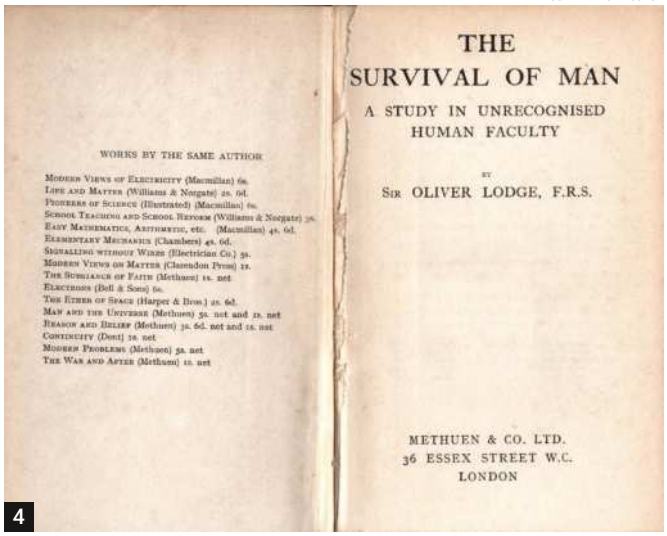

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Fig. 1: Oliver Lodge (1851-1940).
Fig. 2: The *Victoria Monument* in Liverpool.
Fig. 3: Mussell and Gooday's new biography.
Fig. 4: Lodge's *The Survival of Man* (1911) and other publications (left-hand side).
Fig. 5: A republication of Lodge's key text, *Modern Views of Electricity*. This makes a key text on electromagnetic research more accessible.

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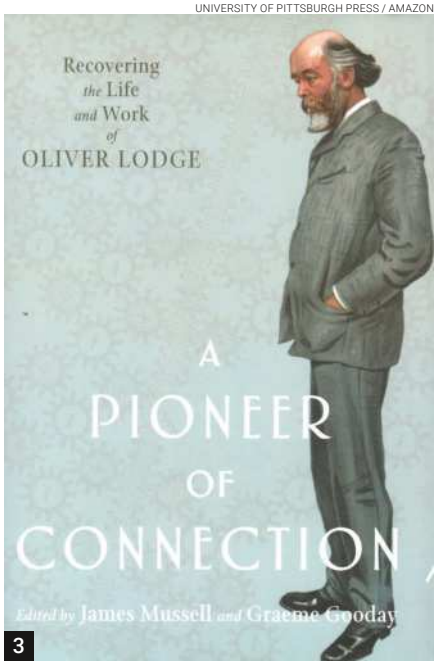

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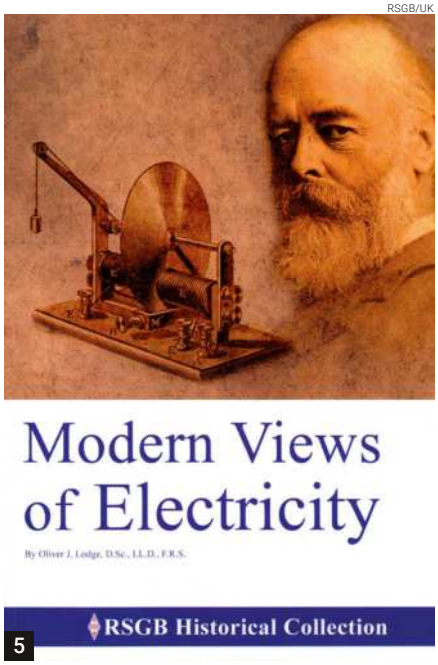

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as Mussell and Gooday point out (2021: 5, Fig. 3) to 'reconcile both within a recognizable Christian framework', in which *cosmic evolution* was nothing less than the prime process of *God's creation*.

Importantly, many contemporary sources seem to agree that Lodge could communicate and expose deep and difficult ideas clearly and transparently; something that, as a lecturer, I can wholeheartedly appreciate.

Life and Times

There were two kinds of electrical experimenters ('natural philosophers') in the past: those with plenty of enthusiasm and little business *nous*, and those who were showmen first and natural philosophers second.

Lodge, like Tesla, sat at the source of this 'confluence of electricity and spectacle' (Morus, 2019: 97). He has been said to have enjoyed showing off his work with plants, moving-coil loudspeakers, lightning protection, Leyden jars and other apparatus. The reason lies in the appetites of a curious public at the time.

But science, for him, seems to have had strong connections to both the 'everyday' and the 'numinous'.

Oliver Lodge was a willing student of the work of Michael Faraday (1791-1867), Joseph Henry (1797-1878), James Clerk Maxwell (1831-1879) and Heinrich Hertz (1857-1894), amongst other luminaries.

Most of these pioneers embodied, to various degrees, the idea of science as a 'show' (*The Spectrum Monitor*, December 2020: 18). Indeed, the 'performative' aspect of electrical discoveries was part-and-parcel of science since at least the times of Galvani's (1737-1798) frogs and Mary Shelley's (1797-1851) *Frankenstein* (*TSM*, April 2018; Levy, 2018).

Publicly demonstrating electrical science was key to the Victorian natural philosophers' sense of identity, it helped to cement their authority over a subject, and it fulfilled a need of the public at the time.

In adopting these strategies, Oliver Lodge only followed his illustrious predecessors, like Humphrey Davy (1778-1829) and Faraday. Lodge excelled at using this 'language of display', producing and maintaining what has been termed a 'shared self-consciousness' with his 'public' (Morus, 2010: 806-816).

And the Victorians – of this there is no doubt – loved the 'experimental' culture of their era. This in itself could shape a scientist's path through life, as both a researcher and teacher.

A Lifespan of Achievement

The more traditional biographies of Lodge continue to segment his life into four phases: early life (1851-1880), his time at University College Liverpool (1881-1900, Fig. 2) and Birmingham University (1900-1919), and his long 'retirement' in the *Interbellum* (1919-1940). From the time of

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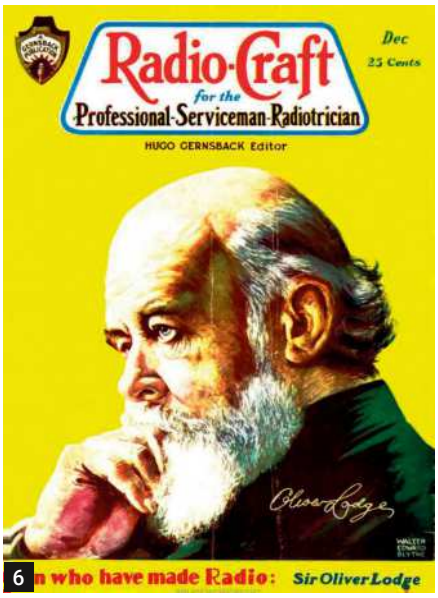

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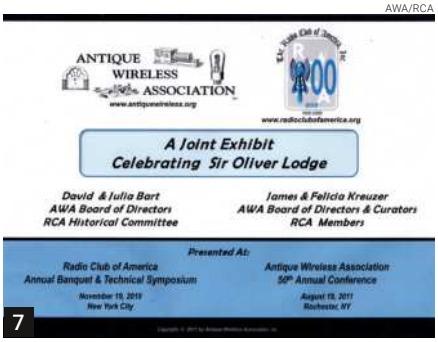
AWA/RCA



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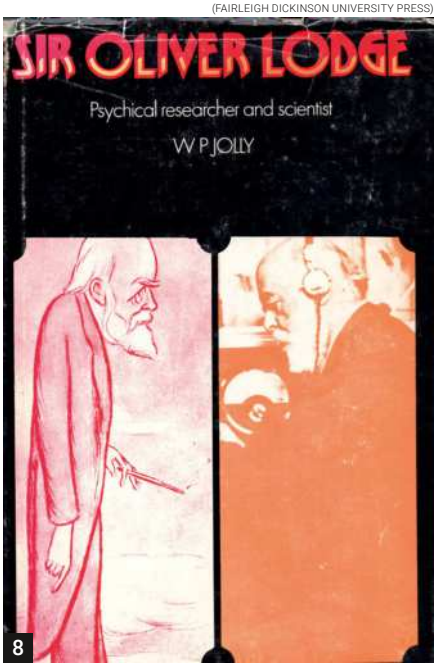

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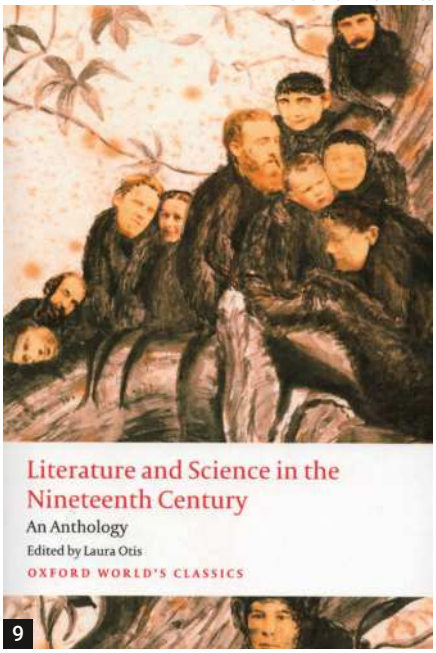

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Fig. 5: *Radio-Craft Magazine*, of December 1929 featured Oliver Lodge.
Fig. 6: Presentation cover of the *Joint Exhibit Celebrating Sir Oliver Lodge* (AWA/RCA, 2010/11).
Fig. 7: W.P. Jolly's biography, *Sir Oliver Lodge: Psychical Researcher and Scientist*, is hard to find but rewards the effort.
Fig. 8: In this unique anthology, Laura Otis provides much-needed background to the period.

his youth, an abiding interest in astronomy stands out. In his 'prime', during his Liverpool Professorial years, he worked mainly on current-paths, Leyden jars, electrolysis, coherers, inductance, and lightning conductors – work that can be seen as 'precursory' to wireless telegraphy and radio communication (Wilson, 1995: 7). Moreover, Lodge was very active on the lecturing circuit, as well as in his core research.

It is in this middle period of his career, that he discovered spiritualism, for example, in the shape of 'though-transference', leading to an entire book (*The Survival of* Man [1911], Fig. 4). This small volume makes for fascinating biographical background reading, even today.

However, in this world, Lodge's work confirmed Maxwell's theories on electromagnetic waves. From his time in Birmingham, there is no denying that – quite aside from academic achievement – the death of Lode's youngest son Raymond – who was killed on the Western Front in World War I – left an indelible impression on him; witness his touching book on this period (*Raymond*). However, Lodge also shaped wider University life, through his commitments to a liberal approach to higher education, and scientific rigour and the experimental method.

During the 1880s, Lodge, the clay-merchant's son from Staffordshire, was actively searching for electromagnetic waves – only to be pipped at the post by Heinrich Hertz of the *Technische Hochschule* in the German city of Karslruhe. Hertz had detected electromagnetic waves *not just in wires*, but in *free space* too, and who swiftly published his findings in 1888.

It is said that Lodge was disappointed but did not wallow in his grief if there was any. Lodge 'acknowledged that Hertz's experiments were beautifully done and that they demonstrated the existence of waves in the field, rather than just in conductors, more clearly than his own (Hunt, in Mussell and Gooday, 2020: 71).

Instead, he transmitted a wireless signal, at a landmark meeting of the *British Association for the Advancement of Science* (BAAS) in Oxford on 14th August 1894 – one year *after* Tesla, and one year *before* Marconi (RCA 2010/11: 11).

When German radio hero Heinrich Hertz had come to London previously (1890) to collect the *Rumford Medal* awarded to him by the *Royal Society*, he and Lodge dined together at the *Langham Hotel;* and eight years later (1898), Lodge was to collect the same award by the *Royal Society*, for his contributions on the relationship between 'matter' and 'ether' (aka: '*aether*').

Major Discoveries and Demonstrations

Some argue (Forbes and Mahon, 2014: 250-52) that Lodge was, perhaps, more at home in the world of lecturing and practical experimentation, rather than in the realms of higher mathematics. The extent of Lodge's mathematical skills, and his alleged preference for 'models', are still debated (Stanley, in Mussell and Gooday, 2021: Ch. 5). In any case, Lodge seems to have been undeterred and set out to detect electromagnetic waves.

He eventually found them when observing discharges from Leyden jars and their effects, thus confirming James Clerk Maxwell's ideas.

Significantly, Lodge demonstrated wireless telegraphy *in public*, in another pioneering lecture at the *Royal Institution* in London on 1st June 1894. He used his 'Hertz-Receiver', *in memoriam* of Hertz, who had gone 'silent-key', as it were, on 1st January 1894. For the annual gathering, on 1st August 1894, at the *British Association for the Advancement of Science* in the same year, Lodge demonstrated his improved coherer and showed

Petrus van Musschenbroek	(1692-1761)	Capacitator ('Leyden Jar')
Jean-Antoine Nollet (Abbé Nollet)	(1700-1770)	Osmosis
Benjamin Franklin	(1706-1790)	Positive and Negative Electric Charge
Charles Augustus Coulomb	(1736-1806)	Electrostatic force of attraction and repulsion.
Luigi Galvani	(1737-1798)	Animal Electricity, Medical Electricity
Alessandro Volta	(1745-1827)	Electric Battery (Voltaic Pile)
Hans Christian Ørsted	(1777-1851)	Electromagnetism
Michael Faraday	(1791-1867)	Mutual Induction, Electric Motor, Magnetic Field
Joseph Henry	(1797-1878)	Induction, Electro-Magnets
Heinrich Rühmkorff	(1803-1877)	Induction Coils (The Rühmkorff-Coil)
Heinrich Geissler	(1814-1879)	Gas Discharge Tube
Mahlon Loomis	(1826-1886)	Aerial Telegraph (Radio Transmission)
James Clerk Maxwell	(1831-1879)	Theory of Radio Waves
Édouart Branly	(1844-1940)	Radio Conductor/ Coherer
Oliver Lodge	(1851-1940)	Electromagnetic Waves, Science Education
Joseph John Thomson	(1856-1940)	Electron
Nikola Tesla	(1856-1943)	AC Motor, Tesla Coil, Radio Transmission
Heinrich Hertz	(1857-1894)	Radio Transmission
Jagadish Chandra Bose	(1858-1937)	Microwave Radiation, Semiconductors, Crystal Detector
Alexander Popov	(1859-1906)	Radio Transmission
Reginald Fessenden	(1866-1932)	Radio, voice transmission, sonar
Guglielmo Marconi	(1874-1937)	Radio Transmission
Ernst Alexanderson	(1878-1975)	Alexanderson Alternator/ VLF Transmitter

Table 1: A timeline of some selected key radio pioneers.

that he was able to transmit Morse code wirelessly to another room (Jolly, 1974: Ch. 8; RCA/AWA 2010/11: 13).
https://tinyurl.com/jc4ca7nn

In doing so, he not only followed in the footsteps of Édouard Branly (1844-1940) and Hertz. But he also expanded on the work of the Welsh-American inventor David Edward Hughes (1831-1900). Hughes invented the printing telegraph, as well as an early kind of microphone.

As is well known, Lodge clashed with Marconi, when it came to secure his intellectual property rights to wireless telegraphy in a dispute with the Marconi Company. Lodge sued in 1910 and settled for £15,000 and a consultancy appointment in Marconi's company (AWA/RAC 2010/11: 35; Pinkerton, 2019: 69-72).

Nonetheless, there is much of the work of Oliver Lodge that pre-figured the findings of Marconi, who would appear on the scene in London in 1896, and who transmitted wireless signals across *La Manche* to France, just three years later – a feat that left Tesla famously underwhelmed.

By the way, Marconi's transmitter was the one outlined by Lodge in 1893, and which Marconi, the 'Dreamer of Electric Dreams' had used in his own popular presentations and lectures of the time (Morus, 2019: 135/6).

Beyond the Luminiferous Ether

During the *Chicago Exhibition* in the mid-1890s, when Nikola Tesla worked on his oscillating transformer and appeared at the *Institution of Electrical Engineers* for his lecture in January 1892, scientists were still hammering out a possible electrical future: Goldsmith (2018: 28) reminds us that, *"up until around 1900, electromagnetic waves were thought to be just like any other physical wave, but that the medium they passed through was very hard to detect";* they were thought to be 'vibrations', inside this 'luminiferous ether.

The term 'ether' ('*aether*') denotes a wave-bearing medium that fills all space. It is, perhaps, best interpreted as a 'conjectural function' (a 'model'), employed to explain variously, gravity, magnetism, and

Resources

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- Oliver Lodge: 'The 1894 Lecture that was to Change the World' (BBC: *Shock and Awe: The Story of Electricity*): **https://tinyurl.com/rt9ztk9h**

electrical attraction. Pinkerton summarizes (2019: 187) that, in the time before Maxwell, *"many late Victorian scholars, scientists and public figures were persuaded of [sic] the continuation and evolution of the human spirit, even after physical, bodily death."*

The 'Spiritualism' movement thrived at that time, and major establishment figures such as Lodge or his friend, Arthur Conan Doyle (1859-1930) – the creator of such *über-rational* characters as *Professor Challenger* and *Sherlock Holmes* – were convinced. Both Conan Doyle and Lodge had lost sons in World War I.

Lodge himself joined the *Society for Psychical Research* in 1884, and he became its President in 1901.

The spirit lives on, as it were, in today's 'ghost-radios' and supernatural shows. Much speculation was based on the presence of a 'fourth state of matter', or 'ether', which, according to Lodge, electricity was a 'mode' or 'manifestation' of. Consequently, he furnished many mechanisms to his version of ether-theory. The great man's thoughts on the ether were most eloquently expressed in his book *Modern Views of Electricity* in the same year (recently re-published - sadly without any comments - by the Radio Society of Great Britain [RSGB] in the UK, Fig. 5). **https://tinyurl.com/2c8wyzjt**

Oliver Lodge was as certain that the 'ether' existed, as he was certain of the air he breathed, and he was convinced that it was an imperceptible, yet universal, superadded, feature (Morus, 2019: 129).

This is the point at which, it is said, Lodge differed most from his contemporaries and peers. Imogen Clarke summarises this most eloquently (in Russell and Gooday, 2021: 121): *"While Lodge did not reject relativity theory outright, he interpreted it within a worldview of physics that firmly placed the ether in its centre";* and: *"For Lodge, the ether was a fundamental and central part of modern physics, for his contemporaries, it was (at their most generous) a topic for debate."*

A Lasting Legacy

Oliver Lodge was famously shown on the cover of the December 1929 issue of *Radio-Craft Magazine* (ed. Hugo Gernsback, Fig. 6). The issue included a perceptive tribute to the great man's work, under the byline *"Men who have made radio"*, describing the medium of radio as *"the annihilator of space and unifier of nations."* (on US radio magazines, see also: Ken Reitz, in *RadioUser* July 2020: 34). **https://tinyurl.com/y4j9x34t**

Oliver Lodge was certainly a driving force in making this happen, and the Professor was nothing if not prolific.

This is evident in the resources and materials assembled by the US Antique Wireless Association (AWA) and the Radio Club of America (RCA), for their *Joint Exhibit Celebrating Sir Oliver Lodge*, presented at the *RCA Annual Banquet and Technical Symposium* on 19th November 2010 in New York City, and again at the *AWA 50th Anniversary Conference* on 19th August 2011 in Rochester, NY (AWA/RCA 2010/11, Fig. 7). Leafing through the carefully curated materials here, one cannot help but be struck by the diversity of the exhibits, publications, bookplates, books, photographs, and artefacts on display then, including a pamphlet and drawings from Lodge's landmark lecture at the *Royal Institution* in London on 1st June 1894,

Against this background of a rich portfolio of activities, it is not surprising that Oliver Lodge became a pioneer of wireless telegraphy, through what was known then as the *Lodge-Muirhead System of Wireless Telegraphy* (*Scientific American*, 18th April 1903, Vol. LXXXVIII, No. 16; *Nature*, Vol. LXVIII, No. 1759; AWA/RAC 2010/1: 47-56).

On top of this, Lodge invented electric spark ignition (the *Lodge-Igniter*), an early form of a spark plug. However - and perhaps most significantly for the history of radio - he improved the 'coherer' (a radio wave detector) invented by Édouart Branly (1844-1940). Lodge added a 'trembler' to it, to shake off clumped filings (to 'self-decohere'), thus increasing the device's overall sensitivity and function (AWA/RCA 2010/11: 18/9; 54). Last but not least, OL received the 'syntonic' (or 'tuning') patent from the US Patent Office in 1898, and he invented a 'bellowing-telephone' loudspeaker, which is very similar to the modern, paper cone speaker (RCA/AWA, 2010/1). The great man was the author of more than 40 books, among them, his first one, *Elementary Mechanics*, came out when he was just 26 years old. **https://tinyurl.com/y6gnzkls**

Many of his other titles surrounded subjects like the afterlife, the 'ether', relativity, and electromagnetic theory. It is well-known that many of Lodge's works figured highly on the young Marconi's reading list (Pinkerton, 2019: 53). And the physicists Heinrich Hertz and Max Planck expressed interest in Lodge's unorthodox investigations into mediumship and telepathy.

I began this short overview with a quotation, so I will finish with one as well: I feel that the words of an early Lodge biographer still reverberate today. W. P. Jolly finished his 1974 book stating that (1974: 38), *"Where success can be measured, he was successful. In science, his ideas are incorporated in millions of pieces of equipment working all over the world, and beyond it, in space. His University flourished. His books were read by millions and his lectures attended by hundreds of thousands. Some things, which were 'imponderables' when he first studied them are now, like wireless waves, commonplace […]. He hoped that the spiritual imponderables would, too, be shown to have an understandable reality. He died, contented, and confident that this was so."*

The magazine and book covers shown in Figs. 6, 8 and 9 will, I hope, make you want to learn much more about the great man. They also allude to the much wider questions and problems connected to 'electricity' at this period in time.

This includes the wider issue of how diverse writers in particular, and society at large, reacted to the investigation of the phenomena, *both physical and supernatural,* which Oliver Lodge examined.

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- Science Museum London (Group Collection): **https://tinyurl.com/399v3trj**

Radio News

RADIO ACADEMY HAS A NEW HEAD: The Radio Academy has appointed Sam Bailey (right) as its new Managing Director, effective immediately. Sam, who is a former Trustee of the Academy, and was Chair of the ARIAS in 2020, will be responsible for the day-to-day running of the charity, and the continued development of its programming, membership schemes and events. He will report to The Radio Academy Chair, Helen Thomas, and work closely with Deputy Chair Nick Pitts and the board of Trustees. Sam was previously a Commissioning Executive at BBC Radio 1, the last in several roles he held over a 14-year career at the BBC. For the last two years, Sam has been the Managing Director of the Audio Content Fund, a role he will continue alongside his Radio Academy responsibilities. The Radio Academy has not had a permanent MD since Sean Childerley left in August 2019 after just nine months in the role […].
(SOURCE: Radio Academy | Radio Today)
https://tinyurl.com/uf7p9ra6

MORE RETRO-RADIO: More Radio is launching a new spin-off station playing music from the 70s, 80s and 90s called More Radio Retro. More's parent company, *Total Sense Media* (previously known as *Media Sound Holdings*), says a recent increase in listeners to its main service has inspired it to launch the extra station. More Radio Retro will be on DAB in Sussex from June and former BBC Radio 1 presenter Jenni Costello has been hired to present the breakfast show. More Radio was created in 2016 following the merging of Arrow FM, Bright FM, Sovereign FM and Splash FM. Founder and CEO Allan Moulds told *RadioToday*: *"More Radio has seen some excellent growth over the last few years, and we hope that this new brand extension will broaden our appeal even further."* Programme Controller Pete McIntosh added: *"This has been a really exciting project to work on. As someone who grew up in the 80s and 90s, it is has been a lot of fun rediscovering some of the amazing songs I remember listening to when growing up. More Radio Retro will be unashamedly pop – playing a wide selection of upbeat, singalong tunes from artists that defined their generation, as well as shining a light on some rarely-heard forgotten classics."* *Total Sense Media Limited* also owns Isle of Wight Radio, Sussex Living and *The Beacon* magazine. Greatest Hits Radio Sussex, which launched last year in place of Spirit FM, also plays music from the 70s, 80s, and 90s. It is available on 96.6 MHz, 102.3 MHz, and 106.6 MHz FM.
(SOURCE: More Radio | RadioToday)
https://tinyurl.com/ys3s68uv

RADIO EXE AND LOCAL DEMOCRACY: *Radio Exe* is one of 18 news organisations in the UK that will employ journalists to cover 'local democracy', providing content to other media companies who qualify to receive it. The *Local Democracy Reporting Service (LDRS)* has been running for three years. Until now it has been operated in Devon by *Reach*, publishers of local papers such as the Western Morning News, Express and Echo, and Herald Express, and websites such as Devon Live. From the 1st of July, the three-year contract passes to Radio Exe. An increase in the number of reporters in Devon from that date will mean greater coverage of local councils and public sector organisations such as the health service, police and fire service. Most of the reporters across the scheme will continue to be employed by large newspaper groups such as *Reach, JPI Media* and *Newsquest*, although eight new companies, including Radio Exe, have been successful this time around, marking the first time the contracts have been re-advertised. Although *Reach* has lost the Devon contract to Radio Exe, it has increased the number of LDRS reporters across the country from 64.5 to 75 and continues to be the largest employer of such journalists. In a statement, the BBC said: *"The Local Democracy Reporting Service is part of the Local News Partnerships, a strategic agreement with the News Media Association which sees the BBC fund journalists cover the work of local councils and other local public bodies. LDRs provide vital scrutiny of decisions made on the public's behalf, with more than 200,000 stories delivered since the launch of the service in January 2018. The journalism they produce is made available for free to the BBC and more than 1,000 individual news titles or outlets across the country."* Exeter's MP, Ben Bradshaw, first mooted what was then called top-slicing of the licence fee to fund other providers of local news when he was secretary of state for culture, media and sport in the last Labour government. That idea was picked up by the current broadcast minister John Wittingdale when he held that post. *Radio Exe's* MD Paul Nero said: "Radio Exe *has always had a strong commitment to high-quality local news provision, and we're thrilled that the BBC has entrusted us with this important journalistic endeavour. It's a thoroughly commendable scheme and we're proud to be custodians of it in Devon for the next three years. We'd also like to thank* Reach *for the classy way they have begun the handover process and we'll ensure they receive the kind of excellent content they and the other LDRS partners across Devon deserve."*
The winners of the other contacts have not been made public as yet.
(SOURCES: BBC | Radio Exe | RadioToday)
https://tinyurl.com/2d394uxp

RADIO EXECUTIVES PUBLISH LEADERSHIP BOOK: The former Chief Executive and Content Directors of UKRD, William Rogers and Dave Coull, and ex-GWR senior manager, Jonathan Bradley, have come together to publish a book. Between them, they have gathered their business experience to write a new book on leadership, *The No Normal Leader*. The book – published this month and available through *Amazon* in paperback, or via Kindle – takes a swipe at the concept of the 'new normal' and sets out a leadership philosophy based on maximum readiness and cultural engagement. Dave Coull, who worked with William Rogers as Content Director at UKRD before it was acquired by Bauer in 2019, said that he had found the whole process of working collaboratively on a book hugely beneficial.
(Sources: Amazon | RadioToday | media.info)
https://tinyurl.com/w79s65nf
ttps://tinyurl.com/chaumzrx

Tim Kirby
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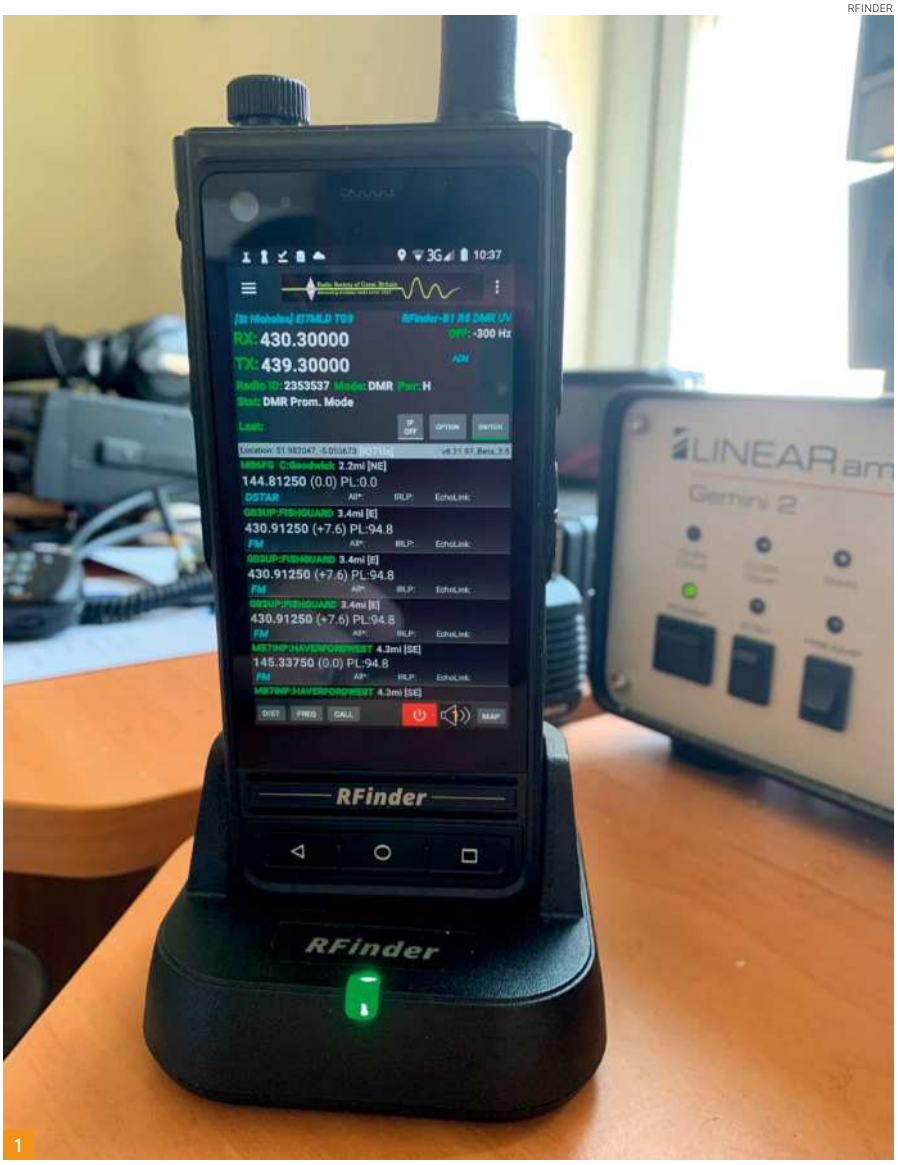
Tim Kirby reviews the RFinder B-1 dual-band DMR 4G/LTE transceiver/ smartphone combo, looking at the setup and key functions of this new hybrid radio device, and previewing some new features under development at the moment.

RFINDER



1

The RFinder B-1 Dual Band DMR 4G/LTE Transceiver

I have recently had the opportunity to use one of the RFinder B-1 transceivers at some length, both in my shack and outdoors (Figs. 1 and 2). This device can be briefly described as a dual-band (144/432MHz) amateur bands transceiver capable of both FM and DMR transmissions. It has an innovative approach to DMR, which I will cover shortly.

Additionally, the B-1 is an Android smartphone (it runs Android 8.1), capable of making phone calls, sending messages and, crucially, running Android apps, which may be installed from the *Google Play* store, or anywhere else you can install the appropriate APK files from.

I have had the opportunity to use a couple of phone/transceiver units before. Although they have been interesting, they have been a huge compromise in functionality as a phone and as a transceiver. The B-1 does better on this score.

With power levels of 5 and 1W on 144/432MHz, you can make some very reasonable contacts.

As a phone, it works well too.

The version of Android on the B-1 is not the newest, by any means.

However, it is adequate and up-to-date enough to run any of the applications that I have tried to date.

The first thing to be aware of is the price: At £999.95, the B-1 represents a very significant investment.

On the other hand, there is a lot you can do with it and a lot of fun to be had. It will be up to you to decide whether it is worth the money for what you want to do with it.

Unboxing and Setup

Unpacking the B-1 – it arrives nicely packaged – the first impression is of a fairly sizable unit (Fig. 2). Not a problem if you are treating the unit as a handheld, perhaps, but maybe worth thinking about a little more if you are treating the unit more like a phone, especially by the time the set has the dual-band 2m/70cm antenna on it.

Clipping the battery in is fairly straightforward but be careful with the battery clip; some users have experienced issues with them snapping (RFinder have replaced them, without charge, as I understand it, and later production models have stronger clips that do not exhibit the problem).

Switch the rig on and you will see a message to say that if the battery is not properly fixed on, the set will not be watertight. Initially, I thought that this meant I had done something wrong.

It did not; this always appears as a warning for you to check. From there, the phone boots into a familiar Android home screen. I quickly connected up my Google account to the set and was able to install apps as I wished from the Play Store.

Pre-installed on the phone were three

Fig.1: The RFinder B-1 dual-band DMR 4G/LTE Transceiver / Smartphone.
Fig. 2: Outdoor use of the RFinder B-1.
Fig. 3: The RFinder B-1 and my Yaesu FT-2D.
Fig. 4: A Swiss-Army-Knife type of radio/ phone?

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RFinder apps; *Ham*, *IMEI* and *Pro*. As a radio amateur, you will want the *Ham* app. Although it is preinstalled, depending on how long your unit has been sat on the shelf at the retailer, it might be out of date, so just to be certain, delete the Ham app and reinstall it from the *Play Store*. After that, it should update automatically. The B-1 is also capable of updating its firmware over the air (FOTA) and again, if your unit has been sat on the shelf for some time, this will be worth doing and be aware that, if several upgrades are required, this may take some time.

When you start up the *Ham* app, you will need to register for an RFinder account. There is a month's free trial, and after that, it is $12.99 a year.

You might be wondering why you pay nearly £1000 for a radio, and then some more. This is a fair question.

The subscription provides you updates to the repeater directory, which is automatically downloaded onto the B-1.

The good thing about the repeater directory is that the B-1 uses its GPS to determine where it is and thus, the nearest repeaters to you. This is a very powerful feature, especially if you travel a lot or operate portable. Better still, in the case of DMR repeaters, the B-1 can download a list of talk groups, so you can just select the talkgroup you require from a list.

Features and Memory Management

The repeater directory is comprehensive and increasingly accurate. However, as user feedback incrementally refines it, you can manually program channels and store them into memories. You can also back up your memories into the 'Cloud', for added security (this is recommended before performing a firmware update, for example). In the case of DMR, manual programming allows you to select frequencies, timeslot, colour code and talkgroup.

There is also a 'promiscuous' mode. This allows you to listen to ANY DMR traffic on the selected timeslot, rather than a single talkgroup. Very useful if you do not know which talkgroups are carried on a repeater.

If you use the B-1 through a digital radio hotspot, as opposed to a repeater, you will probably find that you need to set a small offset frequency (300Hz seems the optimum) to get the best audio quality). It does not seem to be necessary to have the offset on a 'regular' repeater. Unfortunately, at present, the offset is not saved into memory, so you will have to apply it manually when you need it. It is but the work of seconds.

Squelch on the B-1 can be quite 'tight' and if you do not set it at its lowest level, the B-1 can give the impression of being a little insensitive. In fact, on both DMR and FM, sensitivity was reasonably similar to other devices I have in the shack, although perhaps just slightly less sensitive than an Anytone AT-878 for DMR and a Yaesu FT-2DE on FM (Fig. 3).

Battery life is fair. Perhaps because the large colour screen needs a bit of power, I found that, if I was monitoring a channel and having some occasional RF contacts through the day, the battery would need charging in the late afternoon.

When at home, I leave the B-1 in its charging cradle, monitoring and just pull it out when I want to make a contact.

Unfortunately, at the time of writing, the B-1 does not support the *scanning* of memory channels.

This is quite an omission, but Bob Greenberg W2CYK, the man behind RFinder says that they are working on it, although you will only be able to scan FM channels in a bank, or DMR channels in a bank, but not switch from one to another, as it would be too slow switching from one mode to another.

Bob is an enthusiastic innovator, and it is always a pleasure to speak with him. He provides the vast majority of support for the RFinder products and is proactive about customer service and uses social media channels to good effect. This is the

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positive side of dealing with a small company. The negative side, of course, is that if Bob gets busy, then responses may not be quite so quick.

The B-1 as a Smartphone

There is room for two SIM cards in the B-1. I only used one, a data-only SIM, but you could use a data/voice SIM if you wished to use the B-1 as your phone as well. I think the B-1 is a little large to use as a 'regular' mobile phone, but that will depend on your use case.

The B-1 will not work on 5G networks but works well on 4G and 3G networks. I used the review model on the O2 carrier without any problems. Of course, you can also connect the B-1 to Wi-Fi which works well around the house.

With this being an Android smartphone, you can, of course, run other Android apps on the device. *Zello*, for 'Network Radio' works well because the B-1 has two PTT buttons, you can use one for 2m/70cm and the second for *Zello*. Audio quality as you would expect from *Zello* was very good on both receive and transmit.

I also tried the *Echolink* application which worked very well. For some reason, the audio quality on *Echolink* was slightly 'woolly' on transmit. Not disastrous by any means, but not quite as good as I had hoped. Given that *Zello* was alright and *Echolink* was not, it could be something in the *Echolink* app causing the issue.

Bob Greenberg has been planning to incorporate Radio over IP (RoIP) functionality into the B-1, and work has been ongoing for some time. At the time of writing this, I have been able to test a Beta version, which works well. By the time you read this, the new functionality should have been released in the form of updates to the app and the ROM on the unit.

RoIP and Brandmeister

This will allow a B-1 user to connect to the *Brandmeister* DMR network through the mobile Internet or Wi-Fi, even if there is no DMR repeater or hotspot available. Tests with the Beta release suggest that this will work very well, and I am excited about using it more fully.

The B-1's native RoIP functionality allows you to connect to *Brandmeister* DMR, but for the other digital voices modes, you can install the *DroidStar* app onto the device. This will allow you to do the same thing, in a separate app. You can connect to D-STAR, DMR, YSF, NXDN, M17 networks through the app.

The downside is that the received and transmitted audio is not of very high quality, because – unlike the native RoIP functionality – *DroidStar* uses a *software codec*, whereas the native RFinder app uses a hardware solution. *DroidStar* is certainly suitable for monitoring or a quick QSO. This functionality is very enjoyable, and I liked the ability to listen to a DMR talkgroup, without a hotspot or repeater available.

Other Android apps you might consider running include *APRSDroid*. This allows you to monitor APRS traffic, send messages, and so on. Note that at present, this

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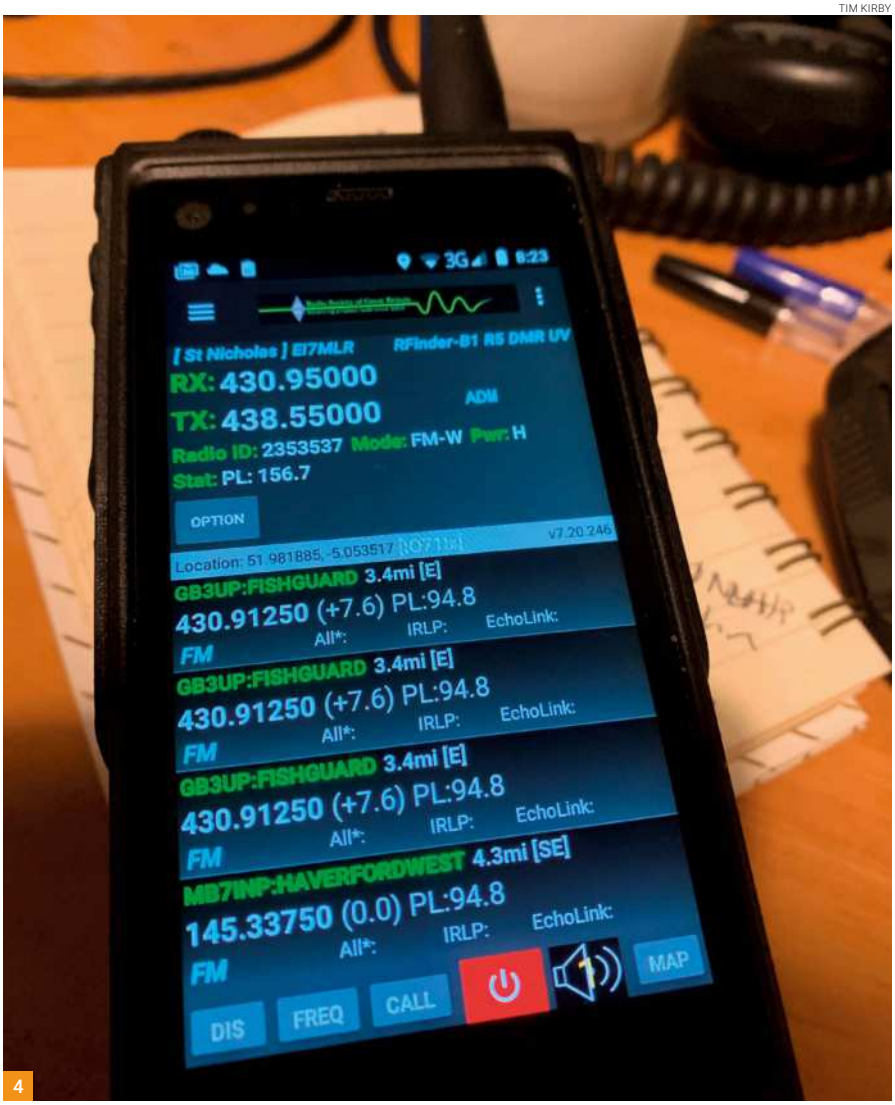

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all takes place through the Internet and APRS-IS servers. Bob Greenberg has plans to enable the B-1 to talk to *APRSDroid* so that it can send and receive APRS messages over the air.

You could also try SSTV applications, for example, to try and decode SSTV transmissions from the International Space Station (ISS), decoding audio off air from the B-1 radio using the smartphone's microphone.

It will not yield the greatest results, but it ought to work! There are also apps to indicate your locator (grid) square and all sorts of possibilities.

Overall Conclusion

To sum up, the RFinder B-1 is not without its quirks. There are a few software bugs that have yet to be ironed out. For example, occasionally, the RFinder app seems to stop talking to the radio, so you may think that you have changed frequency to another channel, when, in fact, you have not.

These issues are, in my opinion, 'show-stoppers'; there is nothing you cannot work around.

Having said that, if you are someone who likes things 'just so', then the B-1 may not be for you.

By contrast, if you like 'experimenting', and have a reasonable grasp of Android, as well as DMR/FM radio, you will love the B-1. A real positive for the B-1 – and a unique feature in this market – is the ability for the radio to operate on DMR *without a codeplug*.

I have found, using the B-1 over an extended period, that I use it often, as a 'Swiss-army-knife' kind of device, capable of doing many different things (Fig. 4). The price point at just under £1,000 means that the radio is not going to be a 'casual' purchase for anyone. However, I do hope I have given you sufficient information to determine whether or not the B-1 would be a good and enjoyable addition to your station.

Radio News

MODERNISING A GLOBAL MAGNETIC PARTNERSHIP: For 30 years, INTERMAGNET, a worldwide network of ground-based observatories, has aided advances in navigation, precision drilling for oil and gas, and mitigating space weather impact on technology. INTERMAGNET supports free data exchange between nations and the creation of geomagnetic data products by scientists and others.

It also advises institutes on establishing new magnetic observatories and on upgrading and maintaining existing facilities. The program has now been operating for more than 30 years and, as of 2019, provides access to geomagnetic data from 129 magnetic observatories around the world […].

(SOURCE: EoS Science News | EoS Buzz 09/04/21 | Love, J. J., and A. Chulliat (2013), 'An International Network of Magnetic Observatories'; Eos Trans. AGU, 94(42): 373–374).

https://doi.org/10.1002/2013EO420001
https://tinyurl.com/2et49ya4

RADIO AND THE RETAIL BOUNCE-BACK: Radiocentre reports that Entertainment, Leisure, and Retail sectors in the UK are gradually reopening their doors to the public following lengthy closures due to lockdown. But how can they ensure that their customers will return as a result? Research from Radiocentre, the industry body for commercial radio, highlights the importance of re-connecting with consumers using radio to bounce back post lockdown. According to the recent Radiocentre research, entertainment and leisure brands can benefit from radio's ability to reach 40% of people while they are relaxing, as this is when people are more likely to be open to messages about how to spend their free time.

Radio can significantly boost awareness, brand relevance and consideration for entertainment and leisure brands. Additionally, Retail brands that are opening up their doors to the public again can also use radio to engage with consumers in the right place at the right time. The medium can reach people in shopping mode or before the point of purchase while they are travelling to the shops. Radio can also help to build a bond between the retail brand and consumer, as the average retail radio campaign boosts brand trust by 23%.

(SOURCE: RadioWorks Group | Radiocentre Newsletter)

https://radioworks.co.uk
https://tinyurl.com/sbdfm5yj

Kevin Ryan
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Kevin Ryan reviews the Sandstrøm Internet Bluetooth DAB radio with Spotify Connect, looking at the radio's setup and operation, main and auxiliary features and key functions of this versatile receiver.

1

The Sandstrøm Internet Bluetooth DAB Radio

Where do you look if you want to buy a DAB+ radio? I suppose many of us start online or browse a familiar local store. High street retailers tend to have their favourite brands that sell well.

For example, John Lewis has its own range but also stocks Roberts, Sony, Pure, Ruark and Revo; Argos mainly stocks Bush and Roberts. Supermarkets also stock selected models aimed at impulse buying; some are labelled as their proprietary brands.

By searching more widely, you can find other digital radio models from less well-known manufacturers, often at a bargain price, such as *Daewoo, JVC, Philips, Nedis* and *Groov-e,* to name but a few.

Of course, it is a bit of a gamble trying out a relatively unknown brand. From my own experience, the real risk comes from the build quality, usually in the form of a flimsy case, or knobs and switches that do not last very long. Recently, I took the plunge and purchased a hybrid radio branded as 'Sandstrøm' (SL-IBTB18, Fig. 1). I was mainly drawn to the 'retro' styling and some of the technical features that I judge to be important.

The radio's manual can be accessed online at this URL:
https://tinyurl.com/tn39cx5v

The Sandstrøm Brand

I feel pretty sure that this is Curry's 'own label', like *LOGIK* and *Matsui* in the past. Quoting the Currys' website, *"Sandstrøm products deliver style and performance in all situations - blending simple, understated Scandinavian style with performance and function".*

The radio is marketed as an 'Internet Bluetooth DAB Radio with Spotify-Connect'. Therefore, it tunes DAB/DAB+ and FM and has both wireless/Wi-Fi (2.4 and 5GHz bands) and wired connections. The receiver is finished in a leather effect with a carrying strap on the top that does not look like it could be easily removed.

There are some variations on this radio that you can decode from the middle letters in the model number. My radio is an SL-*IBTB*18 making it an Internet (I), Bluetooth (BT) radio in brown (B), and there is also a cream version (C making it SL-*IBTC*18). The 'I' versions are mains powered but also have a built-in lithium battery. The battery is not accessible – you would have to take the radio apart to get to it.

I don't know what the '18' means, other than (possibly) the year it was first sold.

The other variant is an SL-*DBTB*18 making it a DAB+ only (D), Bluetooth (BT) in brown (B). This model runs on mains (or replaceable AA battery) power. This is the physically smaller radio and looks very similar to the internet version at first glance, so take care before making a purchase.

Out of the Box

I bought my radio online from Currys. It came with a mains adapter and instruction manual. The adapter is rated at 15V/2.4A. I think it is probably this powerful to keep the charge time of the internal battery down to around 5 hours. The charging process stops automatically, and the manual recommends disconnecting the radio from the mains at this point to achieve a better battery life. A full charge should give a use time of 6 hours. The radio has a USB port whose only function is to charge mobile devices.

Design and Layout

The front panel has a central 'porthole' with a colour display in the middle, speakers on either side and control buttons spaced around the porthole (Fig. 2). There are two multifunction buttons: one for volume/standby/mute and the other is tune/scroll/select. There are 10 presets for DAB stations, split in a 1 to 5+ way, allowing easy access to four favourite stations. The colour display screen is 70 mm wide x 50 mm high, making it slightly bigger than many other DAB+ radios where the screen is typically about 57 mm wide x 47 mm high.

Fig. 1: The Sandstrøm is a smart-looking digital radio that supports DAB+ and accesses the *Frontier Silicon* portal.
Fig. 2: The Sandstrøm receiver boasts a clear display with function buttons arranged in a circle around it.
Fig. 3: The *Info* push button cycles through these pieces of information. *LBC News* uses all of them, except *DLPlus*.
Fig. 4: The *Frontier Silicon* portal is arranged as an expanding 'accordion-type menu.

Setting Up

I charged the radio for the recommended five hours and started the setup on battery power. It did not take long for the power indicator bar to drop a segment making me think that a slightly longer charge time would be better. I found out that there is no low battery warning, and the radio just shuts down suddenly. I think I got four hours of total use from that initial charge.

The radio uses a *Frontier Silicon* module and likes to run the *Setup Wizard* to connect to the internet. First of all, there is a privacy message, which you can exit using the *Select* button. If you have not set up a device like this before, the manual provides detailed instructions on setting the time and connecting to your internet router or access point. Therefore, I will not cover this in any detail here.

I opted to use the radio's Ethernet/wired network and to set the time update to be from a DAB signal. You need to press and hold the *Standby* button for a few seconds to turn on the radio. If the radio is using *mains* power, switching it off will put the radio in standby mode unless you switch it off fully at the mains socket. In *battery* mode, the radio just switches off completely.

Basic Reception

The radio has a seven-segment antenna on the usual screw attachment for DAB radios. I prefer an F-type connector. However, this can be difficult to replace the antenna if the F-type socket is recessed. I look for this feature because I usually connect receivers to my DAB antennas using F-type connectors.

Selecting 'DAB' for the first time puts the radio into scan mode. I think I have shared with you before that my study/radio room is on the north side of my house – in line with the Oxford transmitter – while the south side faces London and Hannington. The radio found and stored 120 DAB stations, but many of them were too weak to produce a signal for decoding.

The weaker stations will have a question mark before the name in the station list. The radio has an option in the DAB menu to only list *Valid Stations*. Using this option to sort the list instead of by *Ensemble* (multiplex) or (station) *Name* will remove the weaker stations.

Improving Reception

In my test, four multiplexes came through strongly enough to listen to in comfort. Not surprisingly, the strongest was my local Berkshire multiplex; then the BBC and D1 national multiplexes, followed by the Oxfordshire local multiplex. The SDL National multiplex can be the weakest of three national ones, but I tried three things to improve reception using the signal error/strength built into the radio.

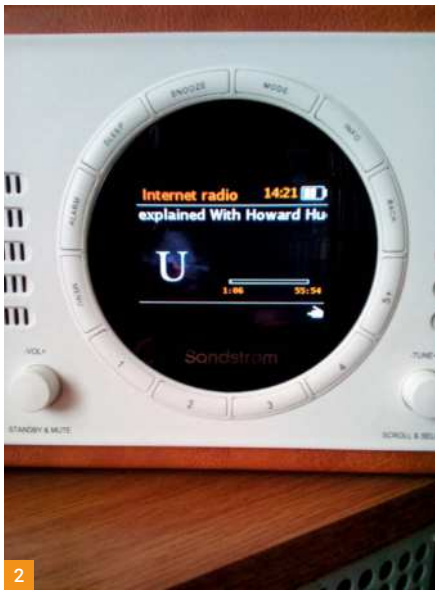
First of all, users can access the multiplex by using the *Manual Tune* (channel 11A for SDL) option and selecting a station on the multiplex, such as talkRADIO. Check that the antenna is fully extended and then try a different angle from the vertical. Usually, the best angle is 45° from the vertical, so that the antenna looks like a 'backslash' (/). Angling the other way, as a 'forward-slash' (\), did not work. In my case, the signal error now dropped from 30+ to 5 (much better) and the number of signal strength bars doubled. Interestingly, moving closer to the window made things worse, probably because the radio was then much closer to my PCs. Experimenting a bit might give you several more stations to listen to, but this involves a lot of trial and error.

Station Scanning

The DAB menu has options for a (full) *Scan, Manual Tune* and *Dynamic Range Control (DRC)*. The *Scan* option searches for stations from channel 5A to 13F, and the *Manual Tune* lists all the channels in the same range; plus, you can scan/rescan a single channel. This option is handy when there is an enhanced propagation ('lift') which might bring in stations from outside your area. An easy way to find the channels in use in your area is to tune in to a service. As you then press the *Info* button, the radio cycles through the available information (Fig. 3). The DLS (Dynamic Label Segment) is usually just a static display. However, some stations, like talkSPORT, use a scrolling DLS to provide a few screens of information.

The Radio in Use

The twin speakers give the radio a mellow sound, which I liked. I spent a couple of pleasant hours listening to Boom Radio UK on DAB. The radio can be used in a basic



2

way by learning how to switch it on and off, selecting the radio modes, adjusting the volume and setting how the clock is updated. After that, I find the Sleep Timer (settings only from 15 minutes to 60 minutes) very useful because I tend to fall asleep with the radio on. Readers might use the radio's twin-alarm function that can be a buzzer or a radio station from DAB, FM or the Internet, including the last station you listened to or one of the presets. Finally, the settings controlling the switch-off time, backlight and 'inactivity-standby' (up to 6 hours) might also be useful settings to get familiar with.

Internet Radio Functions

As I mentioned, the Internet radio mode uses the *Frontier Silicon* radio portal. You can happily use the radio without creating an account on the portal and store 10 stations in the preset buttons. Having an account on the portal provides storage for unlimited favourites and a much easier-to-use search facility.

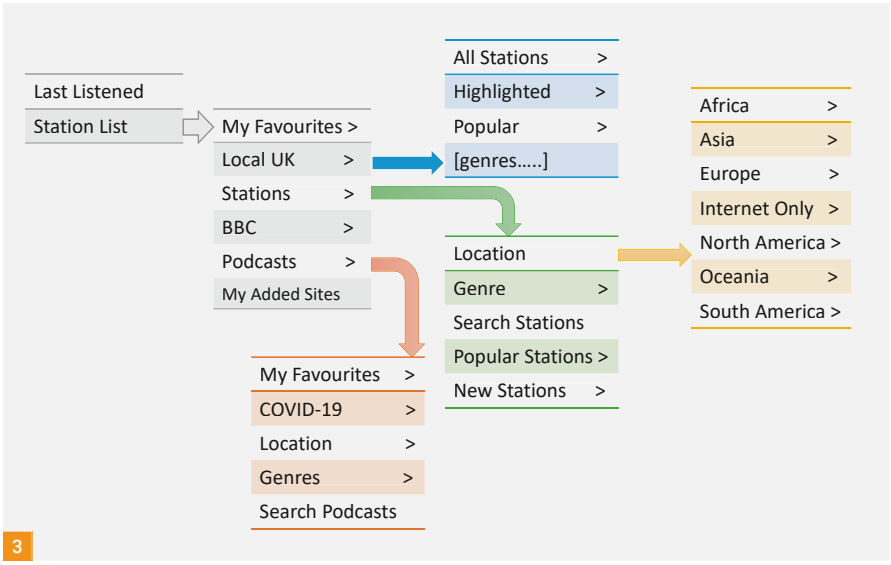
The one the radio offers can be a bit tedious to use, but you will get used to it. The menu for the radio starts with *Last Listened* and *Station List*, and it quickly expands down many branches (Fig. 4).

The diagram shows that a station may well be found in different branches, and *Frontier Silicon* is always happy to deal with possible errors.

Frontier Smart Portal

With an account on the website, you can browse available stations and podcasts and link up your radio to your favourites.
https://smartradio.frontier-nuvola.net

ALL PICTURES: KEVIN RYAN



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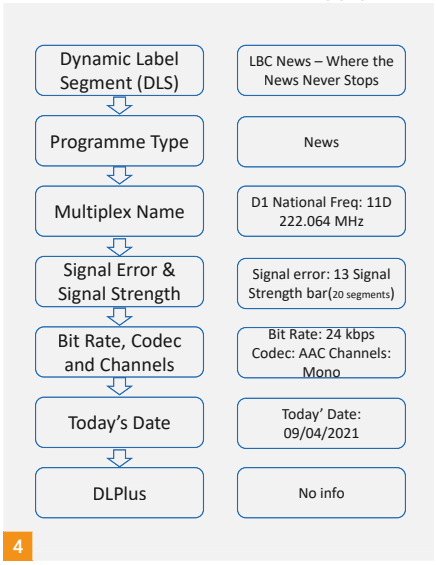

4

Radio stations use audio-encoding other than MP3 and AAC. I discovered the HLS audio (HTTPS Live Streaming) format used by both the English Services of Radio Jordan and the Arabic service of Radio Oman. The portal tells you if the stream is incompatible; if you use the radio for your searches, incompatible stations are not listed. The stream did not play on either my Windows 7 PC or my iPad Mini.

Other Features

The radio accepts audio from external sources using either Bluetooth, Spotify or by physically connecting a device to the Aux In socket. The manual tells you clearly how to set up these options. The radio also has a headphone socket and a 'pinhole-type' reset button, in case it becomes unresponsive.

UNDOK

The radio works with the *UNDOK* app. You can use this to control your radio from the comfort of your armchair, as it were. The app found the radio without me having to do anything, but both devices needed to be connected to your local router or hotspot. The app is pretty powerful and stable. However, it did lose connection with the *My Favourites* internet station list, although the *Frontier Smart Services Status* option on the app reported server issues at that time. The *UNDOK* app is available on both Apple and Android.

Other Features

The radio has twin speakers in a relatively large enclosure, and I found the audio very pleasant to listen to. You can shape the audio a bit more by using the *Audio Equalizer* in the System Settings menu. The radio connects to several audio sources; unlike the *Majority Pembroke*, for example, you cannot connect a drive to the USB to play music or connect to audio stored on a PC. However, to me these are ancillary features; they do not detract from an excellent digital radio.

Future DAB Receivers

The Sandstrøm is a nice digital radio, and it is a variation on a theme. Much work is being done on the next generation of digital radio at the moment, and this development work might well change future digital radio designs.

I watched the radio-related presentations during the Asia-Pacific Broadcasting Union (ABU) April 2021 conference. These included several talks on DAB and DRM.

https://tinyurl.com/munmmh8s

The conference has a mainly technical angle and offers lots of details on such issues as specifications, design concepts and technical trials. Nevertheless, I have picked out some of the ideas that radio listeners might soon find in the radios in shops and on the car dashboard.

ETSI, the European Standards Agency, issued an update to the receiver specification for DAB/DAB+ for both domestic and car radios. Many pages are devoted to the technical tests that a receiver has to meet on sensitivity and interference and implementing the Emergency Warning System. The main change is that receivers in Europe must now support all the different alphabets especially those in the EU.

They must also feature FM/RDS, and car radios must offer the *Service Following* feature. Here, the radio retunes to different transmitters to maintain the same audio. The same changes were made in the various DRM specifications including a simplification of the main standard.

https://www.etsi.org

WorldDAB issued a set of guidelines on what they call *Aftermarket Devices* This is the case where a DAB receiver is retrofitted to an older car that probably has an AM/FM radio. The guidelines are more or less adopting the ETSI receiver specification while providing some tips on the type of antenna to use.

The Pure *Highway* model is one of the best examples of what such a device looks like.

https://tinyurl.com/42swzavm

Will Radios Change?

The idea of a 'smart' radio, linking together DAB, FM and the internet is shaping the future design of radios in vehicles, with high resolution and large screens displaying lots of information like weather maps.

Domestic receivers are lagging behind this design wave, and my only official *SmartRadio* has the common tiny screen. One or two manufacturers increased the size slightly, but will we soon see a new generation of devices with screens the size of a smartphone or a 7" tablet? I think it is more likely that most manufacturers will opt for a solution that involves an app on your mobile phone.

One of the unique selling points (USPs) of smart radios is what designers call *cross-platform support*. Simply put, whatever you start listening to in the car you should be able to continue in the home without any loss of content and vice versa. Of course, to do this you need a working internet connection both in your car and in-home. That scenario presently seems a long way off...

Chrissy Brand
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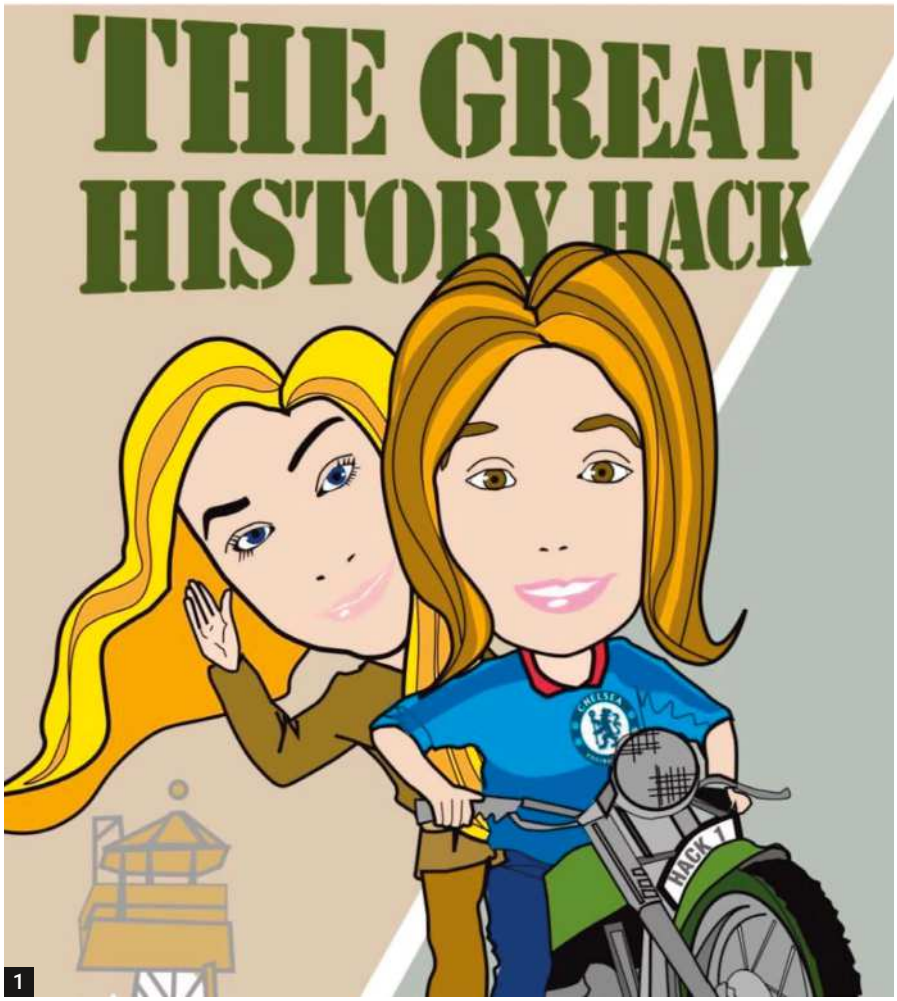
HISTORY HACK



1

Summertime, and the Listening is Easy

Chrissy Brand looks at radio stations all over the globe, selects some media programmes and suggests global radio highlights to listen out for in the month ahead.

The short wave schedules changed as the northern hemisphere moved the clocks to summertime. There is still a large enough community of short wave broadcasters for this to require a major logistical operation.

Meetings are held to allocate frequencies, and the DX clubs and specialists around the world reproduce the new schedules to share with their members and listeners.

It is something that many of us probably take for granted, but it is quite an achievement, repeated every six months so that short wave frequencies can be allocated to make the best of propagation conditions.

The body that allocates the frequencies, the High-Frequency Coordination Conference (HFCC), has met online since Covid-19 took a hold on the world.

The hope is to reconvene in person in Sofia, Bulgaria, this August, to discuss the B21 schedules.

You can see lists of the current season's frequencies, and the broadcasting organisations who have registered frequencies (which does not necessarily mean they are using them) at the HFCC website. See who is doing what, from the Abu Dhabi Media Company to Yemen Radio & Television.

http://hfcc.org/data/a21

In Australia, Bob Padula published links to some of the A21 schedules online at his *Mount Evelyn DX Report* website. Whilst some international broadcasters remain strong and vocal on short wave, the former German giant, Deutsche Welle, does not. As Bob wrote, "*A mere shadow of its former self, DW has the shortest schedule list I have ever seen from them, showing just Amharic and Hausa languages. At least they show the transmitter sites!*"

To be fair, Deutsche Welle provides fantastic, thought-provoking and professional radio and TV services, in languages including English. However, this is accessible online, rather than on the traditional airwaves.

Bob has published many other interesting articles about DXing on his blog, it is well worth reading.

https://tinyurl.com/h59xwenu

Other DX clubs and websites also publish detailed schedules, of course. Personally, I find the *BDXC Broadcasts In English* guide to be the most useful accompaniment on my summer travels. The A5 paper version is ideal to put in a bag with your radio and to make up as you see fit.

The PDF version is also a useful resource, especially as you can perform searches on it. Using paper and electronic versions together can offer me the best of both worlds!

www.bdxc.org.uk/bie.html

Online, amongst the many schedule tools you can find, try the *Shortwave AM* website, with its drop-down menu of broadcasters, languages, times and frequencies, projected onto a world map.

www.shortwave.am

Programme Picks

Producing a daily podcast is quite an undertaking when you already have another job and family responsibilities, but two

Fig. 1: Alex and Alina present *The History Hack* programme. Fig. 2: Power 87, free radio from Cork in the Irish Republic.
Fig. 3: A plethora of quality programmes and podcasts discuss radio.
Fig. 4: The *ICQ / Amateur Radio Podcast* has clocked up over 340 episodes.

POWER 87

2

KELLY SIKKEMA ON UNSPLASH

3

brilliant women, Alex and Alina have kept *The History Hack* going for over 400 days. Once a month, presentations duties are handed over to two guys, Marcus and Zack. The programme also goes by the name of *The Great History Hack* (Fig. 1). The professionalism and programme content is of a very high standard and would not be out of place on stations like NPR, ABC or CBC.

This podcast offers a daily look at historical events and themes, which is usually fascinating and rarely dull. Episode 405, *Down the Pub,* debated the worst family in history. Episode 396 explored the history of colours, discovering ultramarine and indigo's origins, and how colour used to denote wealth.

Episode 403, *Pole Position*, examined Poland in World War II. Anuradha Bhattacharjee spoke about Polish refugees in India in the Second World War. Well, known FM DXer Tim Bucknall also appeared on the show, talking about the work of the Kresy Siberia Foundation. The Foundation was established in order to inspire, promote and support research, remembrance and recognition of Polish citizens' struggles in the Eastern Borderlands and in exile during World War II (1939-1945).

https://historyhack.podbean.com

Tim's FM logs in Congleton Cheshire are always impressive and he made the most of some reasonable tropospheric openings in March, picking up FM signals from South East Radio in Mount Leinster, the Republic of Ireland, on 95.6MHz, some 311 km from his base and France Musique, 454km away in Lille, on 98.6MHz.

It was thanks to Tim that, last year, I started listening to Power 87, a free radio station based in Cork (Fig. 2). This was after Tim had logged it on 87.5MHz. With American-style jingles, and a mix of upbeat pop, dance rap and hip-hop tunes, Power 87 brings some sunshine even on the greyest days.

https://power87.com

Our Suffolk correspondent, Graham Smith, noted that Radio Algérie Internationale broadcasts on 891kHz and 531kHz. He wrote, "*The news is in Arabic, but the other programmes are sometimes in English, French or Spanish. I rather like the station: it broadcasts a lot of talk programmes, whereas on 891kHz you previously heard music.*"

www.radioalgerie.dz/rai/en

There was further information on Radio Algérie at *Ydun's Medium Wave Info* website, which is always a place to check regularly for all the latest medium wave news.

https://tinyurl.com/8yjzstbc

Graham heard the Firedrake jammer again, after 0100 UTC on about 7580kHz, and stated, *"You may remember that China used to jam stations using a recording of the Firedrake opera, although now it usually uses the station CNR1. However, the night after I heard the Firedrake jammer, CNR1 was back, so it was probably a one-off broadcast."*

Graham also heard a station with a weak signal on 5780kHz, "*audible mostly by day, and playing music from the time before rock and roll.*" This was Harmony Radio, which temporarily closed in February for relocation. Graham was amongst those to hear Caroline Flashback on 576kHz. The station is heard on DAB in Norwich and Cambridge but the 567kHz signal is presumably being relayed by a free radio enthusiast.

The many loyal Radio Caroline fans must be in a mellow mood these days, with Radio Caroline long since licensed and successful on 648kHz. There is also one weekend a month where Radio Caroline North is on 1368kHz, in partnership with Manx Radio.

Two other observations from Graham

Date	Time (UTC)	Station	Programme	Podcast	URL/ Stream/ Frequency
Monday, Wednesday, Friday	2200 to 2230	Radio Exterior de España	English Service	https://tinyurl.com/dm6h2hv2	www.rtve.es/radio/radio-exterior and 11670, 15520 kHz
Tuesday	1000 to 1100	Sheffield Live	Radioactive, radio, film, book reviews	https://tinyurl.com/svweczz7	https://web.sheffieldlive.org and 93.2 MHz
Wednesday	0500 to 1000	Radio Jamaica	Life & Love Unleashed with Caleen Diedrick	https://tinyurl.com/3nj8kcty	http://rjr94fm.com/live.php
Friday	2000 to 2200	Groove City Radio, Glasgow	TFI Friday, house and groove with Cazmac	Tune In, Alexa, Sonos et al	https://tinyurl.com/axmhcwee and 88.6MHz
Saturday	2000 to 2300	Newstalk ZB, New Zealand	The Sunday Session with Francesca Rudkin	https://tinyurl.com/tnacydwd	www.newstalkzb.co.nz/podcasts
Saturday Sunday	0850 to 0900 0050 to 0100 0750 to 0800 1750 to 1800	BBC World Service	Over to You, talk back to the BBCWS and challenge programme-makers	BBC Sounds App	https://tinyurl.com/zvd3jvaw and DAB, short wave

Table 1. My top listening recommendations for the month ahead in international radio.

are that Czech station Radio Dechovka stopped broadcasting on 1233kHz but remains on 792kHz. Bulgarian station BNR Horizont plays some interesting music and can be heard at night on 576kHz.

You're Fired!

With two new right-wing television channels being set up in the UK – *GB News* and Rupert Murdoch's *News UK TV* – we may see an increase in bigotry against ethnic minority and other marginalised groups.

I am sure we would all agree that casual sexism or racism needs to be challenged. There is a minority of radio presenters around the world who disagree, so it is refreshing when they are pulled up for it.

Australian radio host of many decades, Jeremy Cordeaux, was fired from station FiveAA when he overstepped the bounds of public decency in March. Brittany Higgins was allegedly raped by a colleague at Australia's Parliament House and Cordeaux' response was to state, "*But I just ask myself why the prime minister doesn't call it out for what it is, she was a silly girl who got drunk.*"

https://tinyurl.com/3fxcjsav

Another shocking example of what a radio presenter thought was acceptable occurred in Buffalo, New York, in March. Radio Ink was amongst many online outlets to cover the story. "*Rob Lederman was quickly fired from hosting the 97 Rock morning show in Buffalo after he compared toaster settings to the tone of Black women's skin on the air. Lederman said he may get into trouble for saying what he said, then described how he likens his toaster settings to women he finds to be attractive. He then mentions the names of Serena Williams and Halle Berry.*"

https://tinyurl.com/79w33f8y

ICQ PODCAST

A1 Condition

What a difference a letter makes: One *A1 Radio* website will lead you to vintage radios in the USA. Another *A1 Radio* website belongs to a Cambridgeshire internet radio station. They are at opposite ends of the radio fields, but I am glad to know about both.

In the US, *Mike's Restored Radios Collections* is a website that was last updated in 2008. However, it is still out there for those interested and includes wooden radios such as a mid-1930's Berkshire and a 1940's Silverstone. The Bakelite era is represented by several radios that I had little knowledge of, like a 1946 Northern Rainbow 5000 and a Stewart Warner A51T3 from 1947.

A1 Radio has been on the air (well, technically, they have been *online*) since 2011. With a 24-hour a day schedule, A1 Radio has a wide range of presenters and shows. As well as using *"the highest possible audio quality for home listeners and those on mobile devices"*, the station also caters for "*listeners on limited data*."

There are opportunities for people to take up presenting roles at the station, regardless of experience. Could this be an exciting new direction for you?

I enjoyed the *Trance Special* programme with DJ Steve Franklin, but the music heard on the station is very much down to each presenter's tastes.

Smartie's 90s, 00s and Now sees Nikki Smart reliving her younger years, with requests and memories. Meanwhile, Dave Francis hosts a two-hour extravaganza called *Music Becomes Eclectic*, blending, "*relaxing, thoughtful and just plainly outstanding music*." This could be anything from 1930's Blues to contemporary artists, creating, *"the perfect medium to transport the listener into a world where only the very best music from the very best artists will be heard and maybe the occasional film clip."*

www.a1radio.com
www.a1radio.co.uk

Media Programmes Revisited

Last year I wrote about six media programmes to be heard on the air (*RadioUser*, September 2020: 24). As you would expect, countless other programmes discuss radio broadcasting, so I thought it was a good time to investigate a few more.

In the USA, the *Radio Ink* podcast started slowly, with its first episode last summer. But it sprang into life again in March, with two new episodes. One looked at the radio recovery of 2021 and *Clubhouse*, the invitation-only, audio-chat iPhone app. Another consisted of an interview with WCMF (a classic rock station in Rochester, New York) presenter Dave Kane, retiring after forty years.

Radio Ink is a reputable producer of news in print and online about the radio scene, mostly from a North American angle. In the podcast, editor Ed Ryan interviews successful radio station owners, managers and on-air hosts.

https://tinyurl.com/23mpp9h2

In the UK, Paul Kerensa hosts a regular programme that delves into the history of some of radio's forgotten pioneers. *The*

British Broadcasting Century has so far educated listeners with a re-enactment of parliamentary broadcasting coverage from 1922; a programme on Gertrude Donisthorpe, who was one of the world's first female broadcasters and arguably Britain's first DJ. The first episode came out a year ago and looked at pioneers from Morse to Marconi.

https://bbcentury.podbean.com

The *See Radio Differently* podcast started in 2017 and looks at issues from a UK perspective. Although it has been dormant since last September, there are over sixty episodes to work your way through. The first episode had a chat with the voice of the *X Factor* Peter Dickson and dissected voice recognition technology with *Radioplayer* MD Michael Hill.

In the most recent episodes reported from last September's *Tuning In, Back to Business* conference, Author Ian Leslie spoke about the role curiosity and conflict can play in boosting organisational performance. Financial expert and broadcaster Susannah Streeter provided an economic overview of the advertising sector.

https://tinyurl.com/j4639syy

The *Sound Off Podcast* is a series based in Winnipeg (Canada). It consists of interviews and discussions about broadcasting, podcasting and new media. It is hosted by Matt Cundill, a 20-year veteran of the radio industry, who now works with broadcasters and podcasters to increase their respective audiences.

www.soundoffpodcast.com

At WRMI, Jeff White presents *Viva Miami!,* a programme in English and Spanish. DX tips and letters are included, along with international travel and information about Florida. It can be heard on 9955kHz throughout the week, and also live on the WRMI website. AWR *Wavescan* and Glenn Hauser's *World of Radio* are two other DX and media programmes that are also broadcast on WRMI.

www.wrmi.net
http://wrmi.listen.creek.fm/stream
ww.facebook.com/wrmiradio

The ICQ Amateur Radio Podcast has been around for a few years. The UK based operation, backed by donations, offers a programme every fortnight, covering news, technical issues and the hobby in general, alongside listeners from around the world (Fig. 4). Episode 344, *The Joy of VHF and Above,* included *RadioUser* contributor Tim Kirby (GW4VXE).

www.icqpodcast.com

Radio News

MARITIME RADIO'S SECOND BIRTHDAY: Maritime Radio is marking its second birthday on 20th April by holding a 25-hour radio show. Starting at 11 pm on Monday 19th, the non-stop broadcast will see all the Maritime crew taking part in presenting right through until midnight the following night. The station says there will be prizes to be won, as well as some surprise outside broadcasts throughout. Duncan Martin, Maritime Radio's Managing Director, said: *"Two years have flown by! We're so proud of what we have been able to achieve, bringing real local radio to thousands of listeners in Greenwich and across southeast London and northwest Kent. I hope everyone will tune in to listen to what is going to be a brilliant celebration of our second birthday. The Maritime crew live locally and all work hard to broadcast our programmes and local news from Shooters Hill to the places and people we know. This last year has been very testing, as it has for everyone, but we were able to keep broadcasting and providing local news and information to our 30,000+ listeners throughout, from home, and the studios. We hope to welcome even more listeners to the station as a result of this celebration."* Maritime Radio is a local radio station for Greenwich, south east London and northwest Kent on 96.5FM.
(SOURCE: Maritime Radio)

https://tinyurl.com/y625344s

10 MORE STATIONS DISAPPEAR: Ten more local BBC radio stations are turning off their Medium Wave transmitters for good this year: BBC Essex, BBC Radio Cambridgeshire, BBC Radio Devon, BBC Radio Leeds, BBC Radio Sheffield, BBC Hereford & Worcester, BBC Radio Stoke, BBC Radio Lancashire, BBC Radio Ulster, and BBC Radio Foyle will be on FM and digital-only in May and June 2021. Besides, BBC Radio Wales and BBC Radio Gloucestershire will reduce AM coverage. The BBC's intention to close MW transmitters was first announced ten years ago in 2011. In 2018 the corporation commenced with these and continued them in 2020 across Scotland, Wales, and England.
(SOURCE: ICQ / Colin Butler).

https://tinyurl.com/569wzsyk

RADIO-BASED LEARNING GETS ITS DAY IN THE SUN IN MALI: Persistent insecurity in central and northern Mali has helped fuel a protracted humanitarian crisis, disrupting access to education, health and other services, and displacing more than 300,000 people – more than half of them children. Covid-19 has compounded the problem. Before the pandemic, direct threats and attacks on education had forced the closure of around 1,300 schools in central and northern regions. But pandemic-related measures shuttered schools across the country for most of 2020, leaving many of the most vulnerable young people unable to access education. UNICEF has been distributing solar-powered radios in conflict-affected areas to vulnerable households and listening groups, in which as many as 15 young people can make use of the same radio. The devices provide an educational lifeline for those who might otherwise be cut off from classes and complement the efforts of temporary learning spaces that have been established at sites for internally displaced persons to ensure that children can continue to learn in safety. :
(SOURCE: UNESCO | UNICEF)

https://tinyurl.com/3e9aa8wj

RADIOUSER, MAY 2021 (TABLE OF CONTENTS): While the item on *European Private Short Wave Radio Stations* did appear on page 17 (as advertised) the *Feedback & Corrections* section was published on page 59. I am sorry for the confusion, and my thanks go to reader Rob Browning G4UMW, for pointing this out. In Tony Smith's article on *Special Wartime Radios* (pp. 38/9), the pictures of the two soldiers were reversed. The image in Table 2 belongs with Table 1, and vice versa. Apologies to our readers and the author.

LOW-POWER AM RADIO AND VACCINATIONS: In the March 2021 issue of Radio World, the regular newsletter on the technology of radio broadcasting, you can read articles and comment on how low-power AM radio provides doctors, nurses and volunteers with a helping hand in the current round of Covid-19 vaccinations. Other content revolves around such topics as transmitters and modulation measuring devices.

https://tinyurl.com/m5aeu6bk

Wireless Telephony, Graphic Design 2.0, & the BBC TV Symbol

Keith Hamer
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Garry Smith
Garry405625.gs@gmail.com

Keith Hamer and Garry Smith delve into the early days of radio, expand their coverage of TV graphic design, and offer the official reason why BBC national radio stations have disappeared from the popular TuneIn app.

In wireless telephony during the early 1920s, it was realised that – to reproduce the notes of music and the voice (frequencies from 30 up to 10,000 per second) – the Hertzian waves employed had to be of sufficiently high frequency to give many high-frequency oscillations to each low frequency, and that they must be 'continuous' and not 'damped'. If the waves were damped, the 'spark' note would be superimposed on the telephony.

The quality of reproduction would be so bad as to be unrecognisable.

Fig. 1 shows a 'spark-gap' ('damped') transmitter. The spark was generated inside the small box shown in the centre of the picture. A 'continuous' (undamped') transmitter is shown in Fig. 2.

It was the difficulty of producing continuous waves of sufficiently high frequency that held back the progress of wireless telephony for several years. The problem was partly solved by the Danish engineer, Valdemar Poulsen (1869-1942; Fig. 3). In 1902, Poulsen developed the *Singing Arc* of William Duddell (1872-1917) to produce continuous waves. However, it was not until the thermionic valve gave a much more simple and reliable method that wireless telephony was in any way commercialised. A prototype thermionic valve, invented by John Ambrose Fleming (1849-1945) in October 1904, is shown in Fig. 4.

The arc method was employed for wireless telegraphy for many years. However, even for this purpose, it was gradually ousted by the thermionic triode. It had several inherent disadvantages, the foremost of which was the difficulty of confining the oscillations generated to the one desired frequency. Oscillations of double and treble the frequency were generated, and unless special precautions were taken, these were radiated and caused interference to other stations.

Several other methods of producing continuous waves were devised, particularly those which employed an alternator to generate the high-frequency oscillations directly. In 1903, Reginald Fessenden (1866-1932) produced the first machine of this type (cf. *The Spectrum Monitor*, September 2018; Caldwell, S. (2020) 'Reginald Aubrey Fessenden: The First Voice of Radio'; *Radio User*, May 2015: 50-53).

Others, such as Ernst Alexanderson (1878-1975) and Rudolf Goldschmidt (1876-1950) also produced machines of various types for the same purpose.

https://antiqueradios.com/superhet

However, the high initial cost and the limitations in frequency did not allow these machines to come into general use for wireless telephony.

Transatlantic Tests

The first transatlantic radiotelephony tests were made in October 1915 by the *American Telephone and Telegraph Company* and the *International Western Electric Company*. However, it was during the First World War (1914-1918) that significant progress was made in the design and manufacture of thermionic valves, and circuits suitable for use with them.

Broadcasting itself may date from the early part of 1920, when a 'wireless concert' was given at the Marconi Works, Chelmsford, and was received at distances up to 1,500 or even 2,000 miles. In February 1922, an experimental station of the Marconi Company at Writtle, Essex, under the direction of Captain P. P. Eckersley, began a series of weekly broadcast concerts which created such interest that the Postmaster-General was asked to provide a regular broadcasting service. This was done by the formation of the *British Broadcasting Company* in November 1922. In the same year, regular programmes were broadcast from the London Station from November 14th. In the United States, broadcasting services had already been in existence for two years at this time.


1


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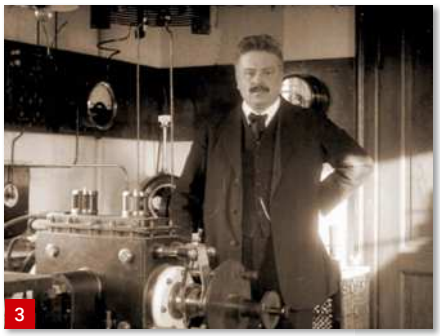
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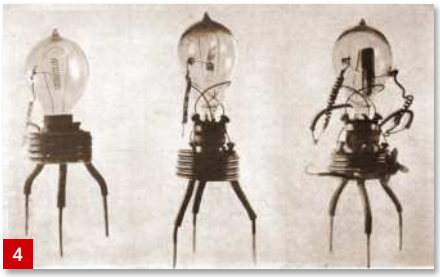
4

By 1927, no one claimed that finality had, by any means, been reached in overall broadcast reproduction. However, the available scientific knowledge was such that if it had all been applied to the construction of broadcast transmitters and

5

The Dunham Advertisement of 1927

"The Dunham '*All-Wave' Tuner* increases Range and Tone and adds another valve to your receiver. Covering wavelengths from 150 to 2,000, the 'ALL-WAVE' Tuner is simple to operate and has one-hole fixing. Enthused over by Wireless Journals, this amazing instrument finally dispenses with coils and their accompanying complications. Complete with full instructions and Blueprint. Price 9/6. Another brilliant star in the firmament of Dunham achievements is the C.S.D. 51 D. A three-valve set of exceptional attributes, this set has everything enclosed in a handsome cabinet that is fitted with lock and key. Valves are protected by 'windows' from accidental damage. The cabinet itself is a beautifully decorated piece of furniture worthy of the most exclusive home and is secured for 35/6 deposit and 25/- monthly, complete with valves, all batteries, and loud-speaker. As the set has no variable coil holders the expensive litter of interchangeable coils is entirely done away with. Loud-speaker range almost without limit. Complete set, all batteries, valves and cabinet loud-speaker, 21 guineas. Marconi royalty paid. For those who wish to construct a wireless set de Luxe, we issue full instructions that include five pictorial diagrams, drilling sheet and advice on earth and aerial systems. Every constructional detail is clearly explained and with the assistance of the diagrams amateurs will find pleasurable and profitable occupation in building this first-class set. Full instructions sent post free for 2/9. C.S. Dunham (Late Radio Engineer to Marconi Sc. Inst. Co.). Member of the B.B.C. since its inauguration. ELM WORKS, ELM PARK, BRIXTON HILL, LONDON, S.W.2. WRITE NOW FOR FULL PARTICULARS."

*[N.B. spelling has been left to reflect the practices of the period; italicization has been dispensed with here – **Ed**.].*

THE KEITH HAMER+GARRY SMITH ARCHIVE COLLECTION.


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Fig. 1: A spark-gap ('damped') transmitter. Fig. 2: Valdemar Poulsen's continuous (undamped) transmitter. Fig. 3: The Danish engineer, Valdemar Poulsen. Fig. 4: A (prototype) thermionic valve, invented by John Ambrose Fleming in October 1904. Fig. 5: The Dunham three-valve *'All-Wave'* 51D Tuner, advertised in 1927. Fig. 6: Abram Games with his animated working model using piano wire, brass and flashing lights, commissioned by the BBC in 1953.
Fig. 7: The BBC 'Bat's-Wings' Identification Symbol.

receivers, then the resultant loudspeaker reproduction would have been a true picture of the original. The term 'transmitter' in 1927 was taken to include the microphone, and the expression 'receiver' to embrace the loudspeaker, with their associated amplifiers in each case. By the mid-1920s, broadcasting organisations existed in all European countries and many other parts of the world. Those in Germany and the USA were particularly active. Experimental interchanges of programmes between the UK and America had already taken place. A short wave wireless link across the Atlantic was used for relaying the American programmes within the United Kingdom.

Vintage Wireless Equipment

This month's trawl through vintage copies of dog-eared newspapers and magazines has unearthed the three-valve *Dunham "All-Wave" 51D Tuner* (Fig. 5). Table 1 contains the full description of the equipment originally featured in a Dunham advertisement, dated 1927.

These days, just the handsome furniture-quality cabinet, lock and key would probably fetch more than the original all-inclusive price of 21 guineas!

Graphic Design Pioneers

In the May column (*RadioUser*, May 2021: 49-51), we discussed the early career of Abram Games (1914-1996), in particular, his eye-catching war-time posters. This month, we focus on his iconic 1953 animated on-screen BBC Identification Symbol and complaints about a certain coffee-making machine.

BBC Television Symbol

Abram Games detested the term 'logo', which was often a misnomer. He designed numerous emblems, symbols and corporate identities. He once said: *"Corporate identity is only a matter of use. The condensing of a company's ethos into one ubiquitous symbol that triggers an association means that even a black hole would mean something, eventually."*

In 1953, he was commissioned by the BBC to design the first animated on-screen TV identification symbol (the BBC's official designation). To that end, he constructed a working model using piano wire, brass and flashing lights (Fig. 6).

The symbol, accompanied by a piece of soothing harp music, was radiated between programmes. The viewing public fondly gave it various nicknames including the *Cock-eyed Wonder*, the *Roving Eye* (and even *The Thing*), but is best remembered today by the sobriquet, *The BBC Bat's Wings Identification Symbol* (Fig. 7).

In 1950, he complained to the *Cona Coffee Company* that their coffee maker, designed by James Napier in 1840, was clumsy to use. He was challenged to re-design it. After learning the art of metal molding and casting methods, he designed the elegant *Cona Rex*. This was exhibited at the 1951 Festival of Britain. It was made from surplus aluminium taken from redundant warplanes, and heat-resistant glass.

In 1962, he produced an improved version, using new and modern materials. It was called the *Table Model Cona*.

Always being fascinated with engineering from a very early age, in 1953, he decided to re-design the famous Gestetner duplicating machine; the authors spent many years using one to produce their first technical magazine.

Spurred on with his achievement, he went on to design his own copying processes. His final invention was a pocket-sized, disposable copying system that required no electricity.

Abram Games, OBE, RDI, died in London on August 27th, 1996, aged 82. The *Royal Designer for Industry (RDI)* is an honour awarded annually by the *Royal Society of Arts* (RSA) to designers of all disciplines who have, quote, *"achieved sustained design excellence, work of aesthetic value and significant benefit to society"*. The RDI is the highest accolade for designers in the UK. Only 200 designers can hold this prestigious title.

BBC: Tuned Out of TuneIn!

The BBC has removed all its national radio stations from the *TuneIn* application on smartphones, tablets and other Internet radio devices. There was initially some confusion as to whether podcasts would continue.

Consequently, thousands of listeners to all BBC national radio networks are potentially being denied their favourite programmes, even though they are paying for the channels through the combined radio and television licence.

The stations have not disappeared for technical or financial reasons – rather, the BBC decided to stop broadcasting via *TuneIn* 'live', because *TuneIn* refused to allow the BBC to spy on listeners' tuning habits. You can find a statement on this matter by the director of *BBC Distribution & Business Development*, Kieran Clifton, at this URL:

https://tinyurl.com/2w75nar6

Despite the BBC reassuring listeners that *"older internet radio devices that are powered by TuneIn will remain unaffected by this change"*, this is not always true. However, *Google Home* does not rely on *TuneIn,* and listeners should still be able to access 'live' radio using their voice, according to the BBC.

Many licence fee payers find it unacceptable that the BBC national radio stations can no longer be received on domestic Internet radios, tablets and smartphones within the UK, especially when listeners abroad *can* receive all the BBC radio stations.

DX-TV & FM News

The latest DX news, plus details of changes to broadcast television and radio services, is available online via the *Radio Enthusiast* website:

www.radioenthusiast.co.uk

Stay Tuned!

Please send archive photographs, information, news or suggestions for future topics via the E-mail addresses shown at the top of this column. Unfortunately, we cannot undertake to answer e-mails relating to technical issues, or provide general advice on suitable equipment.

Rallies & Events

Due to the Coronavirus situation, the Rallies calendar remains dynamic at the moment, and there will be more cancellations and postponements. All information published here reflects the situation up to and including 12th May 2021. Readers are advised to check carefully with the organisers of any rally or event, before setting out for a visit. The Radio Enthusiast website will have updates, please check here regularly: www.radioenthusiast.co.uk
To get your rally or event onto this list, please, e-mail full details as early as possible, to: wiessala@hotmail.com

4 July
DARTMOOR RADIO RALLY (NEW VENUE): The Yelverton War Memorial Hall, Meavy Lane, Yelverton, Devon PL20 6AL. Open 10 am. Admission: £2,50. (FP | TS | BB | R)
Roger: Tel: 07854 088 882
https://tinyurl.com/5hvrts7
2e0rph@gmail.com

11 July
EAST SUFFOLK WIRELESS REVIVAL (FDARS IPSWICH RALLY): Kirton Recreation Ground, Back Road, Kirton IP10 0PW (just off the A14). Opens at 9.30 am. Admission: £2. Trade tables from £10. GB4SWR HF Station. (BB | CBS | CR | RSGB | SIG | TS)
Kevin Ayriss, G8MXV
Tel: 07710 046846
www.eswr.org.uk

11 July
MCMICHAEL RADIO RALLY AND CAR BOOT SALE: Reading Rugby Football Club, Sonning Lane, Sonning on Thames, Reading RG4 6ST.
https://mcmichaelrally.radarc.org

25 July
FINNINGLEY ARS CAR BOOT BRING-AND-BUY: Outdoor only. Near J2, M18 Doncaster; starts at 10:00 am.
www.g0ghk.com/cbr21
kevin.g3aaf@gmail.com
martin.m0hom@gmail.com

1 August
WILTSHIRE RADIO AND CAR BOOT SALE: Kington Langley Village Hall and Playing Field, Kington Langley, Wiltshire SN15 5NJ. 9 am to 1 pm. Traders welcome.
Chairman@Chippenhamradio.club

1 August
THE 31ST KLARC GREAT EASTERN RADIO RALLY: Gaywood Community Centre (off Gayton Rd.), King's Lynn PE30 4EL (NGR – TF638 203). 9 am to 3 pm. Admission £3.
Ted G4OZG Tel: 01553 768 701
(Mob: 0794 683 8656)
http://www.klarc.org.uk/Home.php
Rally.klarc@gmail.com

21-22 August
BATC CONVENTION FOR AMATEUR TV 2021: Midland Air Museum, Rowley Road, Coventry CV3 4FR. AGC is Sunday afternoon. Test facilities available for 5.6GHz/Portsdown/Minitiouner/Ryde/power amplifiers/preamps). (L [streamed])
http://www.midlandairmuseum.co.uk

29 August
MILTON KEYNES ARS ANNUAL BANK HOLIDAY SUMMER RALLY: Irish Centre, Pavilion Manor Field, Milton Keynes MK2 2HX. 10 am to 3 pm.
rally@mkars.org.uk
https://www.mkars.org.uk

29 August
TORBAY ANNUAL COMMUNICATIONS FAIR: Newton Abbot Racecourse, Devon TQ12 3AF. 10 am (9 am D). Admission: £2. (BB | CR | FP | RSGB)
Pete: G4VTO Tel: 01803 864 528
Mike: G1TUU Tel: 01803 557 941
rally@tars.org.uk

30 August
(Bank Holiday Monday)
HUNTINGDONSHIRE ARS ANNUAL BANK HOLIDAY MONDAY RALLY: Ernulf Academy, St Neots PE19 2SH. Open 7 am (traders), 9 am (public). Stalls available. (FP | BB | CR)
Malcolm M0OLG:
Tel: 01480 214 282
www.hunts-hams.co.uk
events@hunts-hams.co.uk

5 September
TELFORD HAMFEST: Harper Adams University Campus TF10 8NB
www.telfordhamfest.org.uk

12 September
CAISTER LIFEBOAT RALLY: Caister Lifeboat Station, Tan Lane, Caister-on-Sea, Norfolk NR30 5DJ 9.30 am (8 am for sellers); easy parking; access via car park in Beach Road. Raffle. The museum will be open. (CR | TI [22])
Zane M1BFI Tel: 0771 121 4790)

12 September
EXETER RADIO AND ELECTRONICS RALLY: America Hall, De la Rue Way, Pinhoe, Exeter EX4 8PW.
Pete G3ZVI
Tel: 07714 198 374
g3zvi@yahoo.co.uk

19 September
CAMBRIDGE REPEATER GROUP RALLY: Foxton Village Hall, Harman Road, Foxton, Cambridge CB22 6RN. Open 9.30 am (7.30 traders). Admission £3. (BB | CR | RSGB)
Lawrence M0LCM
Tel: 07994 197 2724
rally2021@cambridgerepeaters.net
www.cambridgerepeaters.net

24-25 September
NATIONAL HAMFEST: Newark and Nottinghamshire Showground, Lincoln Road, Winthorpe, Newark, NG24 2NY. (Decision due in June 2021)
https://www.nationalhamfest.org.uk

BB Bring & Buy **CBS** Card Boot Sale **CR** Catering / Refreshments **D** Disabled visitors **FP** Free Parking **L** Lectures **RSGB** (RSGB) Book Stall **SIG** Special-Interest Groups **TI** Talk-In (Channel) **TS** Trade Stalls

26 September
WESTON SUPER MARE RADIO SOCIETY 6TH RADIO & ELECTRONICS RALLY: The Campus Community Centre, Worle, BS24 7DX. Opens 10 am (visitors [D: 9.30]) and 7 am (traders).
Dave G4CXQ Tel: 07871 034 206. g4cxq@btinternet.com

3 October
THE 48TH WELSH RADIO RALLY: Rougemont School, Llantarnam Hall, Malpas, Newport NP20 6QB. Opens 10.30 am (D: 9.30); Admission: £3. (BB | CR | L | RSGB | TS | SIG)
Rob Evans MW0CVT Tel: 01495 220 455. mw0cvt@sky.com

16 October
ESSEX CW BOOT CAMP: 3rd Witham Scout & Guide HQ, Rear of Spring Lodge Community Centre, Powers Hall End, Witham, Essex CM8 2HE. Open 8.30 am (registration). 9 am (public). Finish 4.30 pm. £10 with free soup/ drinks/ cakes. (CR | FP)
Andy G0IBN Tel: 0745 342 6087). g0ibn1@yahoo.com

17 October
HORNSEA AMATEUR RADIO RALLY: Driffield Show Ground, Driffield YO25 3AE. Open 10 am. Admission: £2 (under 14s free). Raffle. (BB | CR | CBS | FP)
Les 2E0LBJ Tel: 01377 252 393 lbjpinkney1@hotmail.com

17 October
HACK GREEN RADIO SURPLUS HANGAR SALE: Hack Green Secret Nuclear Bunker, Nantwich CW5 8AL.
www.facebook.com/HGsecretbunker/

7 November
HOLSWORTHY RADIO RALLY: Holsworthy Leisure Centre, Well Park, Western Road, Holsworthy, Devon, EX22 6DH. Open 10 am. Traders. (BB | CR | D)
Howard M0MYB m0omc@m0omc.co.uk

General Information

- DX Zone: UK Amateur Radio Clubs: **https://tinyurl.com/r8r39jj4**
- ICOM UK: Amateur Radio Clubs: **https://tinyurl.com/sc6tah7v**
- RSGB Club Finder: **https://rsgb.org/main/clubs/club-finder**
- UK Radio Rallies: **www.g4rga.org.uk/All.html**

Selected Clubs & Events

- Andover Radio Amateur Club **www.arac.org.uk/events.html**
- ASRA **https://asrarally.com**
- Bishop Auckland Amateur Radio Club **https://www.barac.org.uk**
- Callington ARS **www.callingtonradiosociety.org.uk**
- CDXC Convention **www.cdxc.org.uk/event-4213351**
- Cornish Radio Amateur Club **http://gx4crc.com**
- Dartmoor Radio Club **https://dartmoorradioclub.uk**
- Dover ARC 'Hamzilla' **http://hamzilla.uk**
- Durham District ARS **https://g4euz.com/club**
- Exeter ARS **https://www.exeterars.co.uk**
- Felixstowe & District ARS **www.eswr.org.uk**
- Finningley ARS **http://g0ghk.com**
- Flight Refuelling ARS (FRARS) **https://www.frars.co.uk**
- GMDX Convention **https://tinyurl.com/vkumdjj6**
- Leicester Radio Society **https://www.g3lrs.org.uk**
- Lothians Radio Society **https://tinyurl.com/2fvu866x**
- Moray Firth ARS **www.mfars.club**
- Newbury & District ARS (NADARS) **www.nadars.org.uk/rally.asp**
- Reading DX Meetings **http://bdxc.org.uk/diary.html**
- Rochdale & District **https://g0roc.co.uk**
- Rugby Amateur Transmitting Society **https://tinyurl.com/2bez8eey**
- South Normanton, Alfreton & District ARC **https://www.snadarc.com**
- Spalding DARS **https://sdars.org.uk**
- Stirling & District ARS **https://gm6nx.com**
- Stockport Radio Society **https://www.g8srs.co.uk**
- West London Radio & Electronics Fair **www.radiofairs.co.uk**
- West Manchester ARS (Red Rose Rallies) **www.wmrc.co.uk/rallies.htm**
- West of England ARSs **https://westrally.weebly.com**
- Wythall Radio Club **www.wythallradioclub.co.uk/2021**
- Yeovil ARC **https://tinyurl.com/x3a4hkpz**
- York Radio Club **www.yorkradioclub.uk**

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In next month's RadioUser

- Review: Shaman CB Aerials
- PanAm Radio
- Art & History of QSL Cards (Part II)
- Building-Project: A Short Wave ATU
- Listening to Jupiter's Radio Emissions.

Plus all your favourite regular features and columns

The July issue is on sale on the 24th June 2021

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Keith Rawlings
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The Vine Antennas AS-OCF-404-HP

Keith Rawlings appraises the new Vine Antennas AS-OCF-404-HP off-centre Fed Dipole, looking at its construction, ease of use and performance, from the points of view of both radio amateurs and SWLs.

This month I am very pleased to be able to bring to you a review of the Vine AS-OCF-404-HP off-centre Fed Dipole (OCFD) for HF/6/4m (Fig. 1).

https://www.hamradio-shop.co.uk
https://tinyurl.com/df4rhxp4

This aerial is primarily intended for use on the amateur bands. It covers the 40, 20, 15, 10, 6, and 4m bands (without a matching unit), and the 30, 17, and 12m bands with one.

It uses a Balun (balancing transformer, an acronym for *bal*anced-*un*balanced) that matches not only the main element but also incorporates a 75Ω port to match a 4m element. Capable of handling up to 1kW of Peak Envelope Power PEP), it is 69 ft (21.03 m) long.

With these specifications, it should be compatible with most HF transceivers.

An OCFD Explained

A conventional dipole is fed at the centre; when using coaxial cable, it is essentially a single band aerial, although it can present a good match on its third harmonic. A 1:1 Balun is generally used at the feed point to prevent radiation from coax cable if this is used as a feeder. It is generally accepted that the OCFD works by taking a half wavelength of wire and moving the feed-point away from the centre to a position where the impedance is equal, or nearly equal, on a multiple of harmonics of the fundamental frequency.

This point is found at one-third of the length of the wire.

There are variations to the design but if we make an OCFD for the 40m band using 66ft of wire and put the feed point at 33% (25ft) from one end, then we will get harmonic points on the 20, 15, 10, and 6m amateur bands (a classical 'Windom' type).

The impedance at this 1/3 point will be around 200/300Ω. Rather than bringing an open-wire feeder back to a balanced AMU, a 4:1 Balun is used to give a match to 50Ω coaxial cable.

Quite often, 10ft of 50Ω coax is connected to the BALUN with the other end connected to a 1:1 common-mode choke. This length of cable hangs down and provides some vertical radiation.

This arrangement, referred to as the 'Carolina Windom', was developed by three radio amateurs, Wilkie WY4R, Lambert WA4LVB, and Wright W4UEB. Their design improved on the original single-feed-line Windom, bringing the feed arrangements up to modern thinking to provide an aerial that worked well for local and long-distance contacts (Fig. 2).

Description

The 404 (Fig. 1) arrived from Lamco in a cardboard box and with a two-page leaflet, containing a description of the aerial and assembly instructions. The aerial consists of a weather-proof plastic box, which houses the BALUN, and the two main wire elements, pre-fitted to the box. They have large plastic insulators connected to each end. The strain on these wires is taken by carabiner clips attached to an eye bolt on the top of the box.

Moreover, there are two pieces of what looks like hard-drawn copper for the 4m elements pre-fitted to the box, and also some plastic spacers used to suspend the 4m element from the main wires.

I was pleased to note that the main element wires were plastic-coated and not made from open Flex Weave, which I am not a great fan of. The RF connection was by an SO239 plug.

Overall, the construction quality of the 404 was good, and the assembly was straightforward enough.

Fig.1: The *Vine Antennas Vine 404* Aerial.
Fig.2: Simulated SWR plot of a 40m OCFD over 'perfect' ground (bottom); 'Carolina Windom' (middle); conventional Windom (top).
Fig. 3: Three e-QSL cards, from contacts made.
Fig. 4: Analyser sweeps of the 404 at 20ft.
Fig. 5: A common-mode choke.
Fig. 6: The 404 re-suspended without support, for taking photos.
Fig. 7: *AN-SOF* sample DXF file.

I laid out the two main wires to their full length and clipped the 4m element to the spacers – and that was that. It just remained to get the whole up in the air. This was easy enough as the 404 is surprisingly light. I attached an SO239-to-BNC adaptor to match the feeder I was going to use. This was a run of about 25ft of RG58, fitted with BNC plugs on each end. This cable dropped vertically for about 12ft.

I noted that the 404 has the BALUN placed at 12ft from the end, probably to improve matching on 15m.

On the Amateur Bands

Unfortunately, the months of January and February are not the best of time to experiment with aerials, especially as we had near flood conditions one minute and snow the next. Due to this, I was not able to get the 404 up at anything like a decent height. I was limited to a lightweight pole of some 20ft, from which to suspend the BALUN. The short element of the 404 was fitted to a hook I have on a soffit running under the roof.

The BALUN was supported on the pole, and the long element was run across the garden to a tree branch about 9ft off the ground. To compound problems, my local noise levels since lock-down began have risen to atrocious levels.

Normally, this is not an issue, as I have free access to land that I can use as a test range.

However, due to the lock-down at this time, I knew the landowner had restricted access to his land. Therefore, all my tests were carried out at home this time, which was a challenge.

I initially made a Voltage Standing Wave Ratio (VSWR) sweep of the 404.

The results are shown in Fig. 4.

Resonant points on HF can be seen at 6.7, 14.3, 20.5, and 28.5 MHz.

Due to the height of the aerial at the time of measurement, I concluded that this is OK; the resonant frequency should rise as the height of the aerial is increased.

Resonances at 52 and 72MHz were slightly high in frequency but still well below the accepted 2:1 SWR limit of most gear. As is stated, a tuner would be needed on 30, 17, and 12 meters.

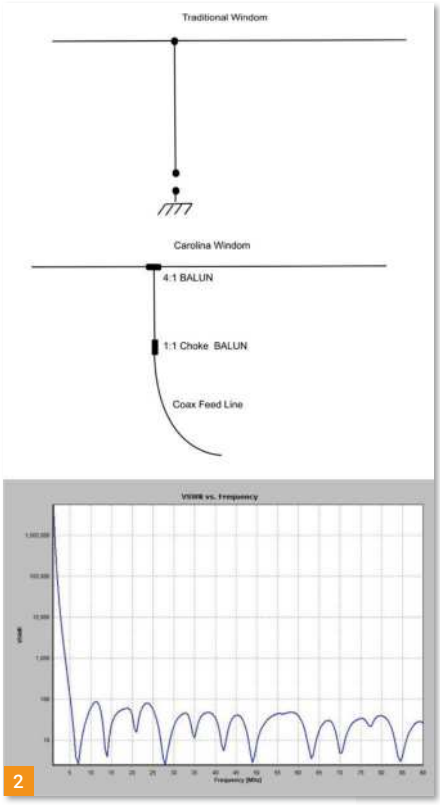


FIG. 1: LAMCO. ALL OTHERS: KEITH RAWLINGS

My only radio with a built-in antenna system tuning unit is my venerable FT990. I found that it had no difficulty tuning the 404 on any of the HF bands, and it even matched the 404 on 160 and 80m.

I also used an FT857D with a Yaesu FC707 ATU and experienced no difficulty in matching the 404 on 80m and above. I made a fair number of contacts with Europe and western Russia on 20m, using between 50 to 100W on both my FT990 and FT857D. Out of necessity, the stations worked were strong signals – otherwise, I would never have heard them above the noise.

Therefore, during the daytime, the 404 gave excellent results with UK and EU contacts on 40m. I even managed to work 9K60OD Kuwait, which was especially pleasing. I even had a couple of 'Inter-G' contacts (working stations within the British Isles) on 80m. With a matching unit, the 404 could also be pressed into service on this band.

However, I made no contacts above 20m. If there were any stations on, I could not hear them under the noise. I put out a few calls on 6m FM but received no reply. My only radio for 4m is a reprogrammed ex PMR box fitted to my *Land Rover Defender* which is out of action at the moment.

I suffered some RF feedback on 40 and 20m, and when using powers above 50W. This announced itself by a 'clicking' noise in a pair of PC speakers that were turned off, and also by my unmodulated signal floating out from the FT990 SP6 external speaker.

The same was true with the 857 because this was also connected to the SP6. I added a common mode choke to the feeder, a couple of feet before it entered the FC707 tuner, and this cured the problem. The choke was wound using five turns of RG174 over an FT140-43 core. It was mounted in a waterproof box (Fig. 5).

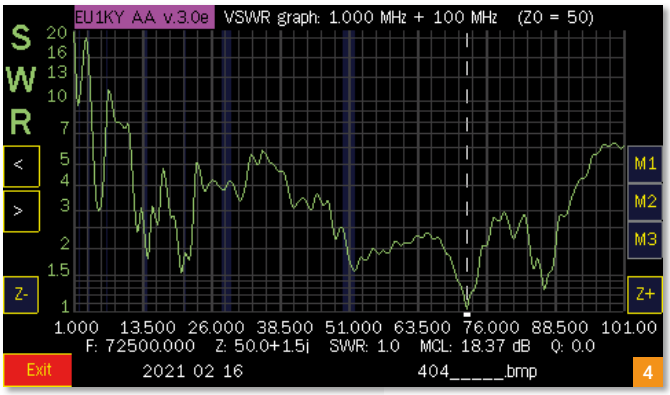
For the SWL

The 404 (Fig. 6) is designed to have its harmonic spots on the amateur bands, and this is where it will work best. To use the 404 on my transmitting set-up, I had to remove my doublet to get it out of the way in case they should inter-react. Because of this, I was unable, at present, to make a direct one-for-one comparison.

I did, however, have a short SWL end-fed set up, from a design under evaluation, and I was able to undertake some reception comparisons with this, although by no means in terms of 'apples-for-apples'.

I found that, on the HF bands, the 404 doubles up as a very good receiving aerial, returning consistently better results than the short end-fed it was being compared to.

Below around 2MHz, results were similar. On the MW band, signals on the end-fed were



2-4 S-points better. On HF, the *overall* noise levels on the 404 aerial were a good couple of S-points lower.

Conclusions

Despite the restricted conditions during the time of my testing, the 404 came out of it very well. It ideally needs to be mounted higher than I was able to manage. The aerial is well constructed. I found it simple to assemble and put up, taking about 30 minutes from start to operating.

Being lightweight, it does not need excessively elaborate support and, if needed to do so, it would be possible to 'bend' it into a small garden, with minor performance penalties to be excepted.

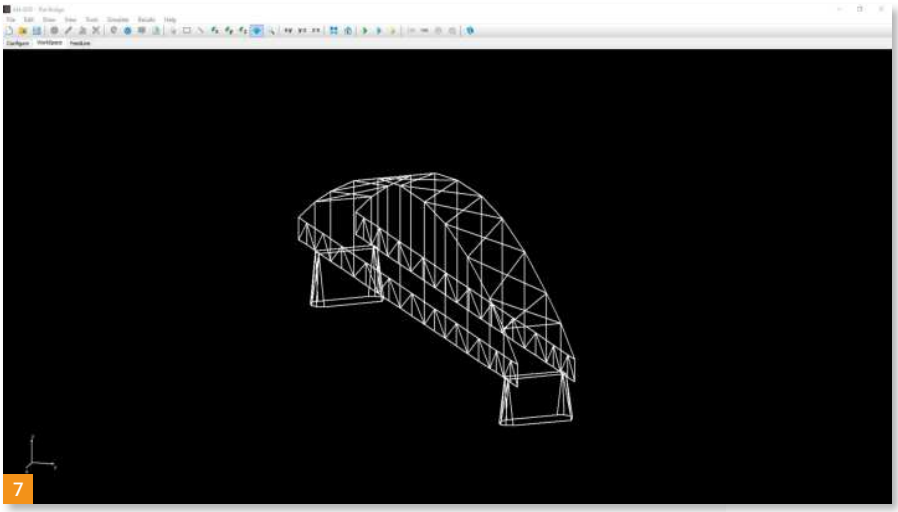
To take the strain off of the dipole elements, especially if a heavy feeder is used (RG213), the BALUN case needs to be suspended from an insulated pole; insulated because the feeder can form part of the radiating mechanism. As it stood, the SWR returned from the 404 here was not good enough for use without a tuner on many of the bands. However, I do not regard this as an issue with the design.

At the height I had erected the aerial, the proximity of the short end to my house, and the fact that it sloped towards the ground at the far end, would de-tune most aerials, being more noticeable the lower the frequency in use. This will always be the case, especially with 'pre tuned' HF aerials in different environments.

Users may find that a choke fitted on the feeder is beneficial, for the prevention of RF on the coax shield getting back into the shack. I was unable to test with more than 100W but see no reason to doubt the claimed 1kW PEP capacity of the aerial.

In short, the 404 enabled me to make many contacts. For licensed amateurs, it forms a useful multi-band radiator on all bands from 40 to 4m capable of providing long-distance, as well as local contacts.

It also doubles up as a respectable HF aerial for the SWL whose main interest is in the HF amateur bands, but who also needs something for general-purpose listening as well.



The Vine Antennas AS-OCF-404-HP presently costs £159.95.

My sincere thanks to the team at Lamco for the loan of the review model.

*[to which I would like to add my warm thanks too – **Ed**.]*.

https://tinyurl.com/4jwuz629

AN-SOF Simulation Software

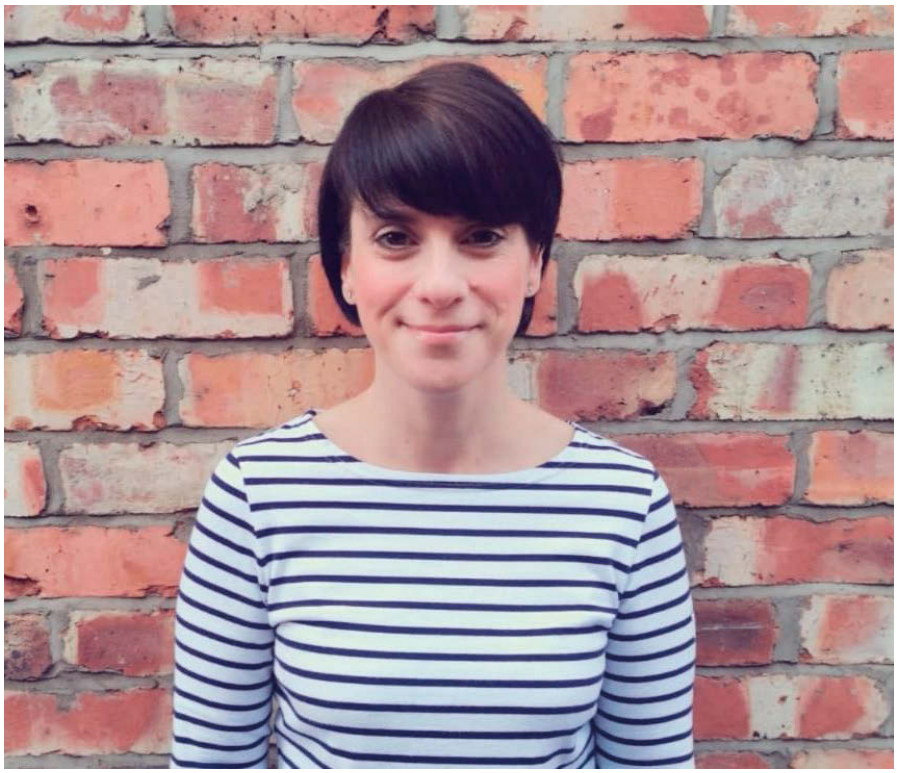
Just as I was finishing this month's copy, I had a notification of yet another update for the AN-SOF aerial simulation software suite. This latest update adds significant functionality because DXF files can now be imported into the simulator. This format (DXF) is used by packages such as *AutoCad* and other CAD software. Therefore, this should make it easier to add complex structures into AN-SOF.

I have not yet had a chance to fully try the new version, but it should make adding structures like buildings, masts and vehicles much easier (Fig. 7).

In this context, the improved computation of antennas over real ground, and an addition of a radial wire ground screen builder, are some of the features, which have been promised for the immediate future.

Radio News

RADIOWORKS GROUP EXPANDS MEDIA TEAM: RadioWorks Group, the leading radio and digital audio advertising specialists, has appointed Helen Haslam (Right) as Business Director. Helen brings a wealth of experience to the business having previously worked for some of the UK's top commercial radio businesses and media agencies, including Bauer Media, Communicorp, Guardian Media Group's GMG Radio and more recently Wavemaker North in Manchester. Helen will work alongside our team of audio specialists to help grow the business and further strengthen existing relationships.
(SOURCE: RadioWorks)
https://tinyurl.com/6kbrzc7j



FREE CLOCK: Coping with the 24 hour UTC/GMT especially now we are on daylight saving time here in the UK can be problematic when completing a log of hobby radio activity. Below is a handy free clock that sits on your PC desktop and displays digital time format. Here in the UK, I set my PC to Reykjavik Time Zone so that I am always looking at UTC/GMT. No daylight saving in Iceland.
(SOURCE: Bob Houlston G4PVB)
www.tinyurl.com/handyfreeclock

RAOTA NEWS: The summer 2021 issue of the quarterly magazine of the Radio Amateurs Old Timers' Association (RAOTA) (OTNews) has been sent to the printer and copies will be received by members shortly. The Radio Amateur Old Timers' Association (RAOTA) aims to maintain the traditions and spirit of amateur radio. Although we are interested in the history and traditions of amateur radio we are equally interested in the future of our hobby and have plenty of members using the latest equipment and modes of transmission. Some seem to think that to join RAOTA you need to have been licensed for 25 years to become a member, but you don't. Anyone with an active interest in amateur radio is welcome to become a member. There is no need to hold (or be qualified to hold) an amateur radio licence. We have several SWL in our ranks.
Contact: RAOTA Membership Secretary, 65 Montgomery Street, Hove, East Sussex, BN3 5BE
www.raota.org

REVERSE BEACON NETWORK: Welcome to the Reverse Beacon Network. The RBN is a great new idea. Instead of beacons actively transmitting signals, the RBN is a network of stations listening to the bands and reporting what stations they hear, when and how well. SWLs may find it useful to track stations they have received previously. RBN activity of G4PVB: Simply change my callsign to yours or another via the link below.
(SOURCE: Bob Houlston G4PVB)
https://rbn.telegraphy.de/activity/G4PVB

RSGB ELECTION RESULTS 2021: The RSGB election results were announced at the AGM on Saturday 24 April 2021: Stewart Bryant, G3YSX has been elected as President of the Society and will serve until the 2023 AGM. We congratulate him and welcome him as RSGB President. Dave Wilson, M0OBW has been elected as a Director of the Society and will serve until the 2024 AGM. Congratulations to him and many thanks to those Directors who have stood down or reached the end of their term during the year. Paul Devlin, G1SMP and David Hills, G6PYF have been endorsed as nominated Directors of the Society and will serve until the 2024 AGM. Congratulations to them both. In Region 6, Liz Cabban, GW0ETU and in Region 12, David De La Haye, M0MBD were elected unopposed, and their appointments start after the AGM. There were no valid nominations for Region 2. Congratulations to Liz and David.
(SOURCE: RSGB | ICQ/Amateur Radio Podcast)
www.rsgb.org

SATELLITE DATA TO MAP AIR POLLUTION AND IMPROVE HEALTH: NASA scientists will be teaming up with epidemiologists in the agency's first health-focused mission. With satellite data, they will find out how air pollution affects health in cities around the world. For epidemiologists, studying air pollution, there's only so much to learn at ground level. So they've been taking advantage of aerosol data from NASA satellites to link health outcomes with local air pollution. But only recently have NASA and epidemiologists teamed up to start the space agency's first mission focused on health. *NASA's Multi-Angle Imager for Aerosols (MAIA)* mission, scheduled for launch in 2022, will combine the expertise of planetary scientists and epidemiologists to answer a question that, before now, has been largely impossible at a large scale: What kind of air pollutant particles is most harmful to human health? Of the different types of air pollutants, particulate matter (PM), especially particles smaller than 2.5 micrometres (PM2.5), poses some of the most severe health risks. These particles, which primarily form from combustion sources like fossil fuel use and wildfires, vary in composition but are small enough to pass from the lungs into the bloodstream. In the short term, high PM2.5 levels in the air exacerbate respiratory diseases, whereas long-term exposure can even lead to premature death from heart and lung conditions. Scientists are predicting that climate change could worsen PM2.5 concentrations in some regions, though concentrations could decrease where emission sources are reduced. But even exposures below what regulators consider dangerous are associated with poor health outcomes, like increased mortality in older adults.
(SOURCE: EoS; Rocheleau, J., at URL below)
https://doi.org/10.1029/2021EO157069

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WWW.DOWN&DROMORE.ORG

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Remote Distress: What to Do

Robert Connolly Looks at what to do when you hear a distress call from another part of the world, remembers the Princess Victoria disaster and reflects on the recent blockage of the Suez Canal.

Over the years, I have read several reports of lives being saved at sea by people from a different country, or even from a different continent. Sometimes this has been down to a casualty being away on holiday and using their smartphone to contact a relation or friend to alert them that they are in serious difficulties and unable to contact maritime rescue services in the area that they were on holiday in.

However, there have also been cases, where a listener received a distress call being transmitted from a different part of the world and as a result instigated a subsequent rescue.

Regular marine MF/HF listeners will be aware that receiving voice radio transmissions from ships at great distances away is rare, although not impossible. This is due to the lower power used by ship radios, compared with the high transmitter power that coast stations use. Listeners will also know that propagation conditions for the MF and HF marine frequencies can change allowing reception of voice radio transmissions from stations much closer to sea level and over much greater distances.

I experienced such a situation when listening to the US Coastguard rescue frequency of 5686kHz one night.
https://www.uscg.mil

I was receiving signals relating to the recovery of an injured yachtsman in the Atlantic well off the Miami coast. While I missed the initial transmissions I quickly learned that the mission involved a helicopter, along with a fixed-wing aircraft that was providing top cover.

The aircraft relayed communications from the rescue helicopter to the mission control centre. In this case, I was able to hear the helicopter reporting that it had just completed winching the casualty on board and was at 100 feet. Its mission control centre reported it was unable to hear the helicopter, and the top-cover aircraft had to relay. Nevertheless, I could listen to the helicopter on the far side of the Atlantic.

Halfway Around the Globe

Imagine that you are listening to one of the MF/HF distress frequencies and you hear a vessel issuing a Mayday call giving its position thousands of miles away from your location, for example, in the South Atlantic off Brazil. Your location is in the British Isles, so what would you do? Would you carry on listening and assume that some coast station that you were unable to hear would respond to the call or would you contact the UK Coastguard and advise them of the details that you have received?

I believe it is always best to err on the side of caution. In a *Mayday* situation, there is a high risk that lives may be lost. While the casualty may well be outside the area of responsibility of the UK Coastguard, the latter can very quickly contact the nearest Maritime Rescue Coordination Centre (MRCC) to the casualty's location, for them to commence a Search and Rescue (SAR) operation.
https://tinyurl.com/79ksfam9

If you are a reader living outside the UK a similar procedure of contacting your national coastguard will apply. Certainly, you could search the internet or other sources, to contact the nearest MRCC by e-mail or telephone, but this would take time. With a Mayday call, lives are possibly at stake, so every second counts.

If an MRCC receives several calls for the same tasking, this is not a bad thing; at least any casualty may stand a chance of survival. If, on the other hand, you did nothing, I think that you would feel annoyed with yourself, especially if you came across a subsequent press report that the casualty was eventually found deceased due to nobody responding to their distress call.

The MV Princess Victoria Incident

On 31st January 1953, a severe windstorm was sweeping across Europe. On that fateful day, the car ferry *MV Princess Victoria* (Fig. 1) departed the port of Stranraer on the west coast of Scotland at 0745 for its regular passage to Larne in Northern Ireland. It was carrying 128 passengers and 51 crew, despite a Gale Warning being in force. The passage from Stranraer begins with transiting Loch Ryan, a sheltered inlet on the west coast of Scotland. The force of the wind was not apparent until the ship entered the open sea to head towards Larne,

Fig. 1: The vessel *MV Princess Victoria*.
Fig. 2: The harbour in Annalong, Co. Down.

ROBERT CONNOLLY

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where huge waves caused damage to the stern doors allowing water to enter the car deck. The stern doors were severely damaged, and any attempt to return to the shelter of the loch failed. The *Princess Victoria* was only equipped with wireless telegraphy equipment.

Two hours after leaving Stranraer, at 09.46, the wireless operator issued a call to *Portpatrick Radio*, located just a few miles south of Loch Ryan: *"Hove-to off mouth of Loch Ryan. Vessel not under command. Urgent assistance of tugs required"*.

The ship was listing to starboard, and this was increasing with shifting cargo and seawater pouring into the car deck. At 10:32, an SOS. message was transmitted, and the order *Abandon Ship* was given at 14:00.

The *Princess Victoria* was still reporting her position as 5 miles north-west of Corsewall Point (the entrance to Loch Ryan), but her engines were still turning; at a speed of 5 knots, they were, in fact, gradually drawing the vessel closer to Northern Ireland, well away from her reported position.

Portpatrick and Malin Head Radio stations made several attempts to determine the exact position of the ship through Radio Direction Finding (RDF) but to no avail.

Listening In

Meanwhile, back at home, my father, who had been a former Royal Navy wireless telegraphist and was now a primary school teacher, had begun his regular weekend morning routine, spending some time tuning through the short wave bands listening to local radio amateurs, ships and international broadcast stations on his McMichael receiver. He had just received the SOS transmission from the *Princess Victoria* and began logging every transmission he received concerning this impending disaster.

Search and Rescue operations for the ship were hampered by several other rescues that were ongoing off the northwest coast of Scotland. At 13:08, the ship broadcast that her engines had stopped.

The final Morse code message at 13:58 reported the ship "*on her beam end*", 5 miles east of the Copeland Islands, close to the entrance of Belfast Lough. Two minutes later the order was given to abandon ship.

The ship's radio officer remained at his post until the very end. On hearing the final wireless call, several merchant vessels sheltering in Belfast Lough put to sea to assist. Despite arriving before the lifeboats, the merchant ships were unable to rescue the survivors in lifeboats, as the fierce waves were in danger of dashing *Princess Victoria's* lifeboats against the sides of the larger ships.

All they could do was to provide shelter from the worst of the seas until the *Donaghadee* lifeboat arrived and was able to bring survivors on board.

By the end of the day, there were only 44 survivors, all men. All the women and children on board perished.

With 133 lives lost, this was the worst loss of civilian life since the end of World War II (1939-1945).

A Board of Enquiry: Personal Connections

Later in the 1950s, a formal Board of Enquiry was set up to investigate the causes of the sinking. The enquiry appealed for anyone with any information on the incident to submit it. Therefore, my father duly sent in his logs of received communications; I believe that one, or possibly two, radio amateurs who had also monitored the wireless communications did the same.

These would have been used in conjunction with the communication logs from Portpatrick and Malin Head radio stations and other vessels involved in the rescue operation. As you can see from the above, responsible amateur monitoring of marine MF/HF frequencies can, on rare occasions, place the listener into a situation where a life may be saved, or additional information be given to an official enquiry after a serious incident.

Back in my father's day, a Board of Enquiry would have been set up to investigate a vessel sinking and would be grateful for all available information regarding the incident, professional or members of the general public. These days such incidents in the British Isles are investigated by a dedicated marine investigation team: This was the Marine Accident Investigation Branch (MAIB, for the UK) or the Marine Casualty Investigation Board (MCIB) in the case of Ireland.
https://tinyurl.com/4wf3ry2p
https://www.mcib.ie

Casual Listening in Emergencies

Although marine VHF offers extensive coverage and usage, there is still a small possibility of the casual listener playing a vital role if a distress call is heard on CH 16 (156.800 MHz). Some small day craft or windsurfers will only have a low powered handheld marine transceiver with them to raise a distress call if the situation requires.

Therefore, if you hear a distress call on CH16 note the details and listen carefully to see if it receives an acknowledgement. In most cases, the Coastguard will hear the call too. However, given the short range of many handheld marine transceivers, it may miss it, especially if it is in a radio 'black-spot'.

Another vessel might acknowledge receipt of the distress call; but if no acknowledgement is heard then pass the information on to the coastguard by telephone. While on this topic, if you happen to see a flare being fired at sea, contact the Coastguard immediately, especially if it is a red flare or orange smoke.

These are distress signals and as such require to be fully investigated by the Coastguard and lifeboats.

Your Staycation Safety

While on the subject of distress calls, we are entering the busy summer period for the coastguard and RNLI. This year, 'staycations' are likely to be more popular than ever, due to Covid-19 travel restrictions, with many more families heading to our coastal resorts. With this in mind, do not block access to the local lifeboat and coastguard rescue stations – delays can cost lives.

There may also be a seasonal increase in people using drones for various purposes, and it may seem like a good idea to launch your drone to capture air images of coastal rescues. However, you should avoid doing this. If a Coastguard rescue helicopter is tasked to a search and rescue location, it will be operating at a low level, with the crew having a high onboard workload. The last thing they need is to see a drone operating in their task area. As they will have no idea what the drone is going to do, they will have to abort the task to move to a safe location for the protection of the aircraft and its crew. In the worst-case scenario, the net result could be the fatality of a casualty, due to the rescue helicopter not being able to safely operate in its assigned area.

A Suez Blockage

As I was writing this column in late April 2021, the Suez Canal had been featuring in the news reports, after a large container ship grounded across the canal during a sandstorm. This incident closed the canal in both directions and causing a large backlog of ships before it could be freed, after a week.

The Suez Canal has a historic link with Northern Ireland. In the late 18th Century, Napoleon Bonaparte (1769-1821) contemplated the construction of a north-south canal to connect the Mediterranean with the Red Sea. The plan was abandoned because of the erroneous assumption that the Red Sea was 8.5 m (28 ft) higher than the Mediterranean.

In 1830, General Francis Chesney (1789-1872) submitted his well-known report to the British government that stated that there was no difference in elevation, and that a 'Suez-Canal' was feasible. However, the report received no further attention.

Based on Chesney's measurements in 1854 and 1856, Ferdinand de Lesseps (1805-1894) obtained a concession to create a company to construct a canal open to ships of all nations.

At the opening of the Suez Canal on 17 November 1869, de Lesseps referred to Chesney as 'the Father of the Suez Canal'. General Francis Chesney and his family lived just over a mile away from my childhood home and had produced his original plans for the canal there. As and when cruising returns, some of you will maybe at some point consider taking a cruise that transits either the Suez or Panama canals. You may also consider bringing a scanner to monitor marine frequencies used during a cruise (usual precautions apply). To this end, Table 1 contains the VHF channels used by both canals.

Finally, this month's second photo (Fig. 2) is of the small, picturesque harbour located at the foot of the Mourne Mountains in Annalong, Co. Down, Northern Ireland.

Until next time "*Fair Winds*".

Channel	Freq (MHz)	Usage
Suez Canal		
Port Said		
CH 12	156.600	Port Said 1 (outside harbour)
CH 13	156.650	Port Said 2 (inside harbour)
CH 16	156.800	Port Said Management calling
CH 70	156.525	Port Said DSC
CH 73	156.675	Port Said Measurement division
Port Tewfik		
Ch 14	156.700	Port Tewfik
CH 16	156.800	Port Tewfik Management calling
CH 70	156.525	Port Tewfik DSC
CH 74	156.725	Port Tewfik Measurement division
Inside Canal		
CH 8	156.400	Working
CH 10	156.500	Working
CH 16	156.800	Calling
CH 68	156.425	Working
CH 70	156.525	DSC
Panama Canal		
CH 12	156.600	Cristobal and Balboa port traffic
CH 13	156.650	Working
CH 16	156.800	Calling

Table 1: VHF Frequencies in Use around the Suez and Panama Canals.

Further Reading

- BBC NI: **https://tinyurl.com/42p9bet8**
- Belfast Telegraph: **https://tinyurl.com/8bhvn866**
- Britain's Trail of Disaster (YouTube): **https://tinyurl.com/48chsjur**
- Cameron, S. (2002) *Death in the North Channel* […]; Colourpoint Books
- De Lesseps, F. (2011) *History of the Suez Canal* (Cambridge UP; French)
- Karabell, Z. (2003) Parting the Desert: The Creation of the Suez Canal (John Murray)
- Loss of the Princess Victoria: **https://tinyurl.com/vz8b48jj**
- NI Ferry Site: **https://tinyurl.com/28t6uz46**
- S.C.O.T.S.: **https://tinyurl.com/an8s4as6.**

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RECEIVERS

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A Receive-only Version of the famous FDM-DUO!

10kHz-54MHz Direct Conversion SDR Receiver.

SDR receiver that offers the possibility to operate stand-alone like traditional radio or attached to a Personal Computer discovering the possibilities offered by the SDR technologies. After the great success of the FDM-DUO transceiver the manufacturer now offers the "R" as a receiver – as to be expected by Elad in a sleek Italian design and equipped with top-notch technology.

- Frequency range: RX 9kHz to 54MHz direct sampling receiver + VHF undersampling reception
- 10 selectable and customisable filter pre-selectors
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- Clocking source Si5338 drived by 10MHz TCXO or External reference input
- CAT USB interface with FTDI controller
- Fully managed by FDM-SW2 software included

ML&S: £759.95

Elad Companion Speaker SP1 for FDM-Duo. £134.95

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Advanced digital communications.

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Simultaneously monitor 2 separate 2MHz bands of spectrum between 1kHz and 2GHz. 3 software selectable antenna inputs, & clocking features ideally suited to industrial, scientific, Ham & educational applications. Windows 10.

FUNcube Dongle Pro+

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A Coherent RTL-SDR with 4x Channels.

For direction finding, passive radar, beam forming, or just as four RTL-SDRs!

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HackRF One from Great Scott Gadgets is a Software Defined Radio peripheral capable of transmission or reception of radio signals from 1MHz to 6GHz.

ML&S: £219.95

DIGITAL & ANALOGUE

UNIDEN UBCD3600XLT

New digital TruckTracker V Professional Scanner Receiver. 25-1300MHz wideband frequencies.

The TruckTracker V operation allows this scanner to scan APCO 25 Phase 1 and Phase 2, DMR, Motorola, EDACS, LTR Trucked Systems as well as conventional analog and P25 digital channels.

ML&S: £479.95

UNIDEN UBC-370CLT

Base Scanner with watch, alarm clock & FM broadcast radio.

ML&S: £129.95

ICOM IC-R6E

The 100 Ch/Sec Wideband Signal "Search Machine"

Communications handheld receiver. While retaining basic features of its popular predecessor the IC-R5, the IC-R6 contains many improvements including 100 channel per second scanning speed, 1,300 memory channels, 15 hours of continuous receive capability, optional drop-in charger stand and voice control squelch.

ML&S: £199.95

WHISTLER TRX-1 DIGITAL SCANNER

The Whistler TRX-1 Handheld Scanner is a multi-system adaptive digital trunking scanner with Motorola P25 Phase I, X2-TDMA, Phase II and DMR making it capable of monitoring unencrypted channels/systems.

ML&S: £419.95

AR-DV10

The ULTIMATE all mode digital handheld scanning receiver.

Latest firmware! 100kHz-1300MHz Analogue & Digital Modes.

ML&S: £969.95

ICOM IC-R30 SCANNER

The Icom IC-R30 has extremely wide coverage and supports all of the usual analogue modes (FM, AM, SSB, CW) as well a a few digital modes including NXDN, P25, DPMR and DSTAR. A worthy upgrade over the older IC-R20.

ML&S: £569.95

SF Screen Protectors

For Yaesu, Kenwood and Icom. *Maintain the value of your radios with professional screen protectors. No more scratched displays, the screen protectors last for years and protect reliably even at daily use.* ***ONLY £7.95***

ANTENNAS

AOR SA7000

Super wide band base aerial system.

The SA7000 is an ultra-wide range external receiving aerial with a useable frequency coverage of 30 kHz to 2 GHz - short wave / VHF / UHF. The aerial is designed for areas where space is a problem or when an "unobtrusive" installation is essential.

ML&S: £209.95

AOR LA400

10kHz-500MHz, Receive only Magnetic Loop

Since the invention of this revolutionary concept by KOLSTER in 1915, loop antennas, especially of the active type, have also been widely used by the military in the 70s, before becoming very popular among hobby listeners.

ML&S: £419.95

Diamond D-777

VHF/UHF air band receiving antenna, *not for transmitting. 3.4dB on VHF (120MHz) and 5.5dB UHF (300MHz) with an approximate length of 1.7 metres. The antenna is constructed from fibre glass materials and it is pre-tuned and fully weatherproofed. Mounting components are included. It's fitted with an SO239 connector, so can be connected to a PL-259 without the need of an adaptor. Tuned to receive 108-137.975MHz civilian air band, 225-400MHz military air band.*

RRP: £83.94 ML&S ONLY: £66.95

Diamond D-130M

Super Discone 25-1.3GHz
The D-130M Super Discone Antenna is an ultra-wideband antenna covering amateur radio, commercial 2-way, cellular, air traffic control and various utility frequency bands. Rust-free stainless steel is employed in major component parts making the antenna rust resistant and durable with 15m cable included with PL-259s.

ML&S ONLY: £124.95

MyDEL Smart Wire Kit

The MyDEL Smart Wire Kit antenna pack includes; 132ft of high quality flex-weave wire, 2x 3 metres of nylon guy rope and 2x heavy duty dog bone insulators.

ML&S ONLY: £44.95

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The Battle of Britain
IN COLOUR

"Praise where due. This is the best magazine available which I have read - I am very impressed. I thoroughly enjoyed reading each chapter and it was written in such an easy style. It covered every aspect and I was saddened when I reached the end."

This 164-page special collector's edition commemorates the 80th Anniversary of the momentous Battle of Britain, making it the perfect gift for any aviation or Battle of Britain enthusiast.


THE BATTLE OF BRITAIN IN COLOUR

The Battle Looms

The Battle of Britain was one of the most iconic battles of the Second World War, embedding itself indelibly into the nation's consciousness. Earlier, the Battle of France could easily have spelled defeat before the air battles got underway in July 1940.

After the outbreak of war in September 1939, there followed eight months of what became known as the 'Phoney War'. However, it was clear that large-scale fighting would ultimately follow, and a British Expeditionary Force was sent to France before the end of that year. As part of that BEF, a large Air Component was supplemented by an Advanced Air Striking Force. In total, these air forces amounted to 25 squadrons, six of which were Hawker Hurricane-equipped fighter squadrons. The remainder of the RAF force in France comprised largely light bombers and Army Co-Operation squadrons. Eventually, however, the 'Stukoj' became the 'Blitzkrieg'.

On 10 May 1940, German forces launched their all-out assault on France and the Low Countries and what followed in Belgium, the Netherlands etc. was the complete collapse of those countries under the overwhelming might of German military power. Across France, German forces rolled inexorably onwards towards the English Channel and while the French and British tried desperately to stem the advance, so the situation became ever more hopeless.

Predicted Catastrophe

When the fighting had broken out in earnest on 10 May 1940, aircraft of the Air Component were in almost constant combat, and losses had to continually be made good from squadrons based in Britain. The Commander-in-Chief of RAF Fighter Command, Air Chief Marshal Hugh Dowding, had already stated as early as September 1939, that if he was expected to defend Britain's skies, then he would need 52 fighter squadrons. At that time, he had only 32 under his command and was told it would be impossible to produce the number he required. However, efforts would be made to provide him with a further eight.

During the fighting in France, increasing numbers of fighter squadrons were sent across the Channel, urged on by desperate appeals from the French Prime Minister, Paul Reynaud. Dowding saw his resources 'slipping away like

BACKGROUND TO BATTLE

THE RAF FIGHTER PILOT

THE RAF FIGHTER PILOT