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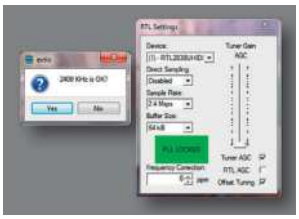
The pioneering work of Farmers' Voice Radio

DIGITAL **DAB Aerials & the Qt-DAB Decoder**

Reports including the popular DAB decoding software suite QT-DAB



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Digital Communications Receiver

- 10 digital Modes
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DUAL PURPOSE Ideal as a stand-alone communications receiver or QRP Transceiver

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- Transceiver: HF Ham bands
- Power: 5W
- Modes: AM/CW/SSB

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Professional Communications Receiver

- 10kHz-3.0GHz Super Wideband
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BCT-15X
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- Alpha-numeric tagging feature
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Easy to use scanner - our most popular for Civil/Military Airband

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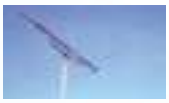
ANTENNAS

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



CLP-5130-1N
21 Element LPA
- 50-1300MHz
- Gain: 10-12dBi

£445.95

CLP-5130-2N
17 Element LPA
- 105-1300MHz
- Gain: 11dBi

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DIAMOND D-777 Airband Antenna

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

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Active Receive Antenna
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- 300 MHz-3GHz

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Covers 117-140MHz

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Double Discone..... £59.95
B1300-N... 25 -1300MHz..... £39.95
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Scanmaster Desktop
Indoor Discone antenna
25-1300MHz complete with cable and BNC plug

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Tecsun Receive Loops

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MW passive loop..... **£39.95**

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

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High quality receive antenna c/w mounting hardware and 8 metres of coax w/ PL259 plug
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- Kevlar Mil spec. wire
- Length: 20m

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- Use over internet
- 60 x 45 x 10 mm

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- 10MHz panoramic spectrum
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- SDR Dongle
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RSPdx
SDR in metal case
Covers: 1kHz-2GHz

Now with Improved:
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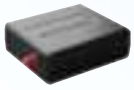
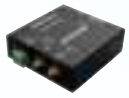
- Plus more!

£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

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Quality Antennas from Italy!

WY108-3N
Airband
3 element Beam
- Freq: 108-137MHz
- Gain: 7 dBi
- Boom: 1.4m

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VHF/UHF Verticals
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CX440..... (440 – 455)MHz pmr 4.15 dBi..... **£29.95**
CX455..... (455 – 470)MHz pmr 4.15 dBi..... **£29.95**
TORNADO 50-60...(50 – 60)MHz 6m 3.5dBi..... **£59.95**

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SY3..... 3 el (26-28)MHz 10.65 dBi..... **£99.95**
SY4..... 3 el (26-28)MHz 13.15 dBi..... **£129.95**
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..... **£74.95**
WY108-3n..3 el 108-137MHz 3 el. Air Band..... **£89.95**
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WY400-6n..6 el 432MHz (wide band) 11.0dBi.... **£89.95**
WY400-10n 10 el 432MHz (wide band) 14.0dBi. **£109.95**

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Quality Power Supplies 2 YEAR WARRANTY!

PSW-30
Switch Mode
- 25-30A supply
- Low noise

2 YEAR WARRANTY

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

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PS-30M..... Linear 30A (max) 3-15V DC..... **£119.95**
PSW-50..... Switch mode 50A (max) 9-15V DC.. **£129.95**
PSW-30..... Switch mode 30A (max) 9-15V DC.... **£89.95**
PSW-30H.... Switch mode 30A (max) 9-15V DC.... **£69.95**
PS23-SW1... Switch mode 23A (max) 13.8V DC.... **£69.95**
PSW-07..... Switch mode 7A (max) 13.8V DC..... **£29.95**
PSW-04..... Switch mode 5A (max) 13.8V DC..... **£26.95**

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

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7 metre Mini Pole..... £59.95
10 metre mini Pole..... £69.95
Mini Carrying Bag for Mini Poles..... £14.95
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22 metre 'Long John' NEW..... £399.95
26 metre Standard..... £499.95

Aluminium Telescopic masts
10 metre Standard..... £399.95
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12.5 metre Standard..... £549.95
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15 metre standard (2m retracted)..... £599.95

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per metre..... £8.29 price per 102m drum..... **£829**
Ecoflex 15 plus
per metre..... £8.95 price per 102m drum..... **£889**
PL259 connector (Part: 7350)..... **£8.95**
N type connector (Part: 7395)..... **£10.95**
Ecoflex 10
per metre..... £4.75 price per 102m drum..... **£430**
Ecoflex 10 plus
per metre..... £4.30 price per 102m drum..... **£429**
PL259 connector (part: 7378)..... **£5.95**
N type connector (part: 7367)..... **£6.50**
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per metre..... £2.99 price per 102m drum..... **£279**
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N type connector (part: 7392)..... **£6.95**
Aircell 5
per metre..... £2.75 price per 102m drum..... **£259**
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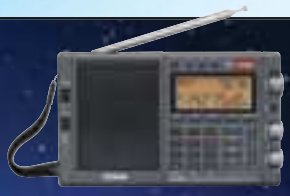
FLAGSHIP RADIO with Bluetooth

- Covers: LW, MW, Shortwave, FM (64-108 MHz)
- All mode reception incl. SSB
- Local, medium, DX selector
- ATS: Auto search and storage
- SD slot with 16Gb card supplied
- 3150 memories in 25 pages.
- USB sound card function
- Two channel Stereo speakers
- Batteries: Uses 2 x 18650 batteries, charging one as a spare, whilst running on the other

£329.95



Tecsun PL-990x

Top Of the range Portable radio

- 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

£259.95

Tecsun S-2000

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

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

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TECSUN® World Radios

Tecsun PL-330

SSB Shortwave Radio

- FM stereo, LW/MW/FM/SW
- 650 memories
- DSP technology

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Tecsun PL-380

Multi-band Radio

- FM/LW/MW/FM/SW
- ETM (Easy tuning mode)
- 550 memories

£54.95

NEW

Tecsun PL-368

Multi Band with SSB

- Covers: LW, MW, SW, FM
- DSP technology

£79.95

ALINCO

Alinco DJ-X11E

Pocket sized Multi Mode Scanner

- All modes AM/FM/WFM/CW/SSB
- 0.5MHz-1,300MHz
- 1,200 channels
- Twin VFO with dual receive
- IQ output for SDR
- Supplied with desktop charger, Li-ion battery, Belt clip

£349.95

ALINCO

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

£229.95

XIEGU

NEW

XIEGU GNR-1

Digital Audio Noise Filter

- Improve reception
- Reduce background noise
- Improve signal to noise ratio
- Makes voices more clear and intelligible

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FLASH SALE

Hy-Gain AR-500X

- Lightweight Antenna Rotator
- With Infra-Red remote control
- 12 memories built in.
- Digital Direction indicator

SAVE £50

RRP £229.95 **Sale price £179.95**

WHISTLER Digital Scanners

Whistler TRX-1E

- 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

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WHISTLER Digital Scanners

Whistler TRX-2E

- 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

£479.95

WHISTLER Digital Scanners

Whistler WS1065

Desktop Scanner with cutting edge technology

Trunked radio systems include Motorola analogue, EDACS,LTR, Digital APCO

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- 1,800 memories

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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

ALBRECHT

Albrecht AE355M

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

£139.95

ALBRECHT

Albrecht AE75H

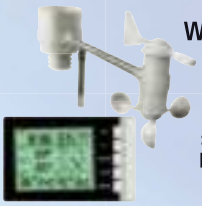
300 Channel AM/FM Scanner

EASY TO USE!

- Airband/Marine/Amateur
- 25-512MHz (w/gaps)
- Close Call
- CTCSS & DCS
- Supplied c/w: Mini USB lead, 2 x AA 2,300 mAh NiMH Batteries

£119.95

WATSON



Watson W8682 Mk II

Wireless Weather station with LCD monitor

- Indoor/Outdoor Temperature
- Wind Speed & Direction
- Self-emptying Rain Gauge
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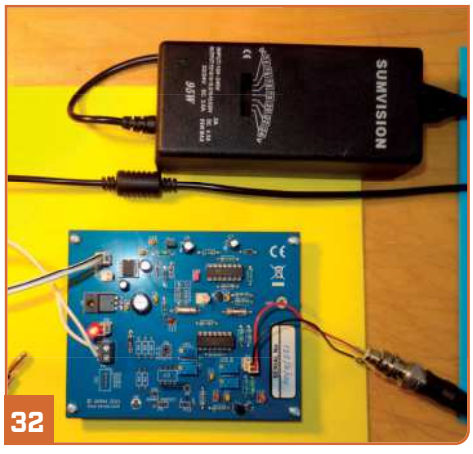

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Welcome

News Hunter, Signal Monitor or World Music Fan?

Georg Wiessala
wiessala@hotmail.com

Hello and a warm welcome to the November edition of *RadioUser*. As the days get shorter and the DXing, hopefully, better, I am dusting off my AOR AR7030 to start listening out for new and exciting programmes and signals from far away. When I am after reception *quality*, rather than *distance* achieved, I tend to connect the SDRplay *RSPduo* more often at this time of year; and in case I just want to listen to some hiss-free global music, learn a language better or scan US airports, my Roberts *Stream 107* internet radio comes into play.

I suppose I adapt my listening to what I am after each new day – what type of listener are you? News Hunter, Signal Monitor or Music Fan? Or something else altogether?

Anyway, I would like to think that this magazine caters for all types of radiophile habits and hobbies.

For the case of HF broadcasting, you might begin with Scott Caldwell's column if you wish.

In any case, with the Festive Season inexorably approaching, we have made sure that there is an extra portion this time on new radios and accessories, as well as the updated lists of frequencies, books, events and radio stories that you have come to expect from us.

Your appetite may well have been whetted at Newark if you have made the journey this year. Many radio friends I know have been and got themselves new kit, gear or even equipment.

In our main features this month, there is a low-key, low-frequency, theme, with my last article on time measurement and radio signals, plus a review of a new VLF receiver from our busy friends at the UK Radio Astronomy Association (UKRAA). Talking of reviews, Kevin Ryan has one too, on the *Qt-DAB* decoder software. Speaking of reviews, David Smith examines more of the *FlightRadar24* flight tracking app, and Tim Kirby takes a look at the new *iPhone 14*, on account of its emergency satellite comms function. Finally, Keith Rawlings checks out what's new in the ever-popular *AN-SOF V.7.50* program.

Take a look at Christina Longden's section on the *Farmers' Radio Academy*, and Christina Brand's piece set in a local French radio bistro, and you will see there is an idea about 'empowerment' through radio here too, this month, complemented by Chrissy's second column on world music on the radio.

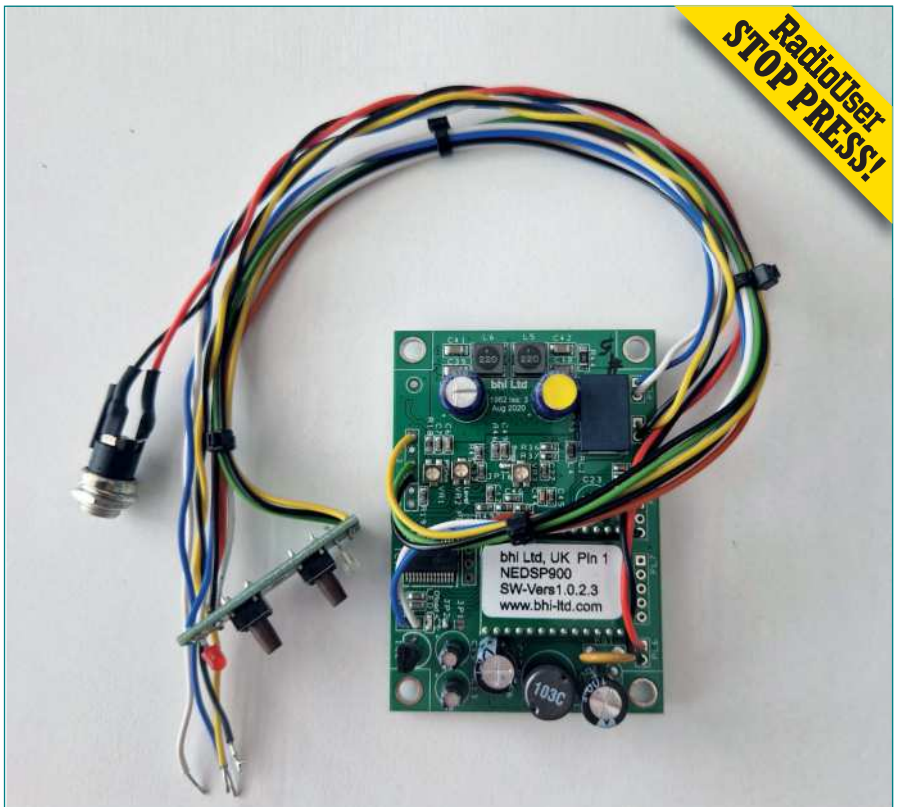
Last, but certainly not least, in our regulars, you can learn about such issues as Short Wave stations in Europe and Australia, maritime signalling old and new, a new book about two historical telegraphy stations, quite scary seasonal audio fare, and radio amateurs who may have run into trouble in the past.

Enjoy this issue of *RadioUser*.

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

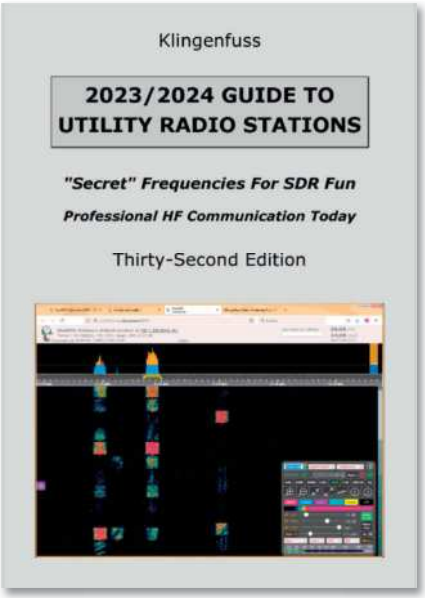
Radio Currents

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



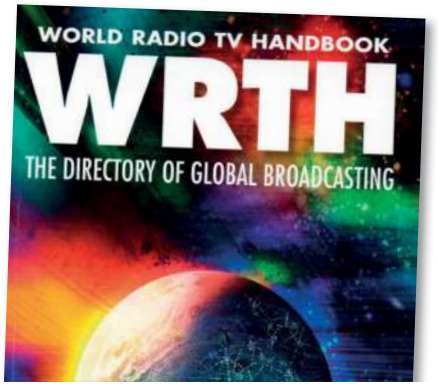
bhi Amplified DSP Noise Cancelling Module

The new **bhi** NEDSP1962-KBD amplified DSP noise cancelling module replaces the obsolete NEDSP1062-KBD and can be retrofitted into many amateur radio extension speakers or older-style radios. The NEDSP1962-KBD incorporates DSP technology that identifies speech in noisy voice signals and removes the noise to leave clear speech. The module provides up to 40dB of noise reduction over 8 filter levels and up to 65dB of tone reduction. The module comes pre-wired; it can be easily fitted into existing equipment, with all functions being controlled by a simple keyboard switch assembly. The NEDSP1962-KBD has the latest bhi DSP noise cancelling technology making the processed audio clearer and more intelligible. The module has an onboard 5W Class D-type audio amplifier, which is very efficient, so any heat is dissipated through the PCB layout. The module is simply wired inside your extension speaker between the audio input and loudspeaker. It is powered from a suitable 10-18V DC power supply, and when the module is switched off, the audio bypass feature routes the signal directly through to the loudspeaker. The pre-wired switch assembly controls all the functions with two pushbuttons and two LEDs, which indicate the filter level and audio input overload. The NEDSP1962-KBD is supplied as a pre-wired assembly with a 2.1 mm power socket, audio (input and output) wires, keyboard switch assembly, and a full mounting kit, including professional labels and a user manual.
(Order code: NEDSP1962-KBD).
(SOURCE: Graham Somerville | bhi)
https://bhi-ltd.com



New from Klingenfuss

Jörg Klingenfuss and his brilliant team are now working on some very exciting new publications and products, for example:
• 2023/2024 Guide to Utility Radio Stations
• 2023 Shortwave Frequency Guide
• 2023 Super Frequency List on CD
• 2023 Frequency Database for the Perseus SDR.
These will be published on the **10th of December 2022**. Keep your eye on the website.
(SOURCE: Jörg Klingenfuss)
https://www.klingenfuss.org/homepage.htm



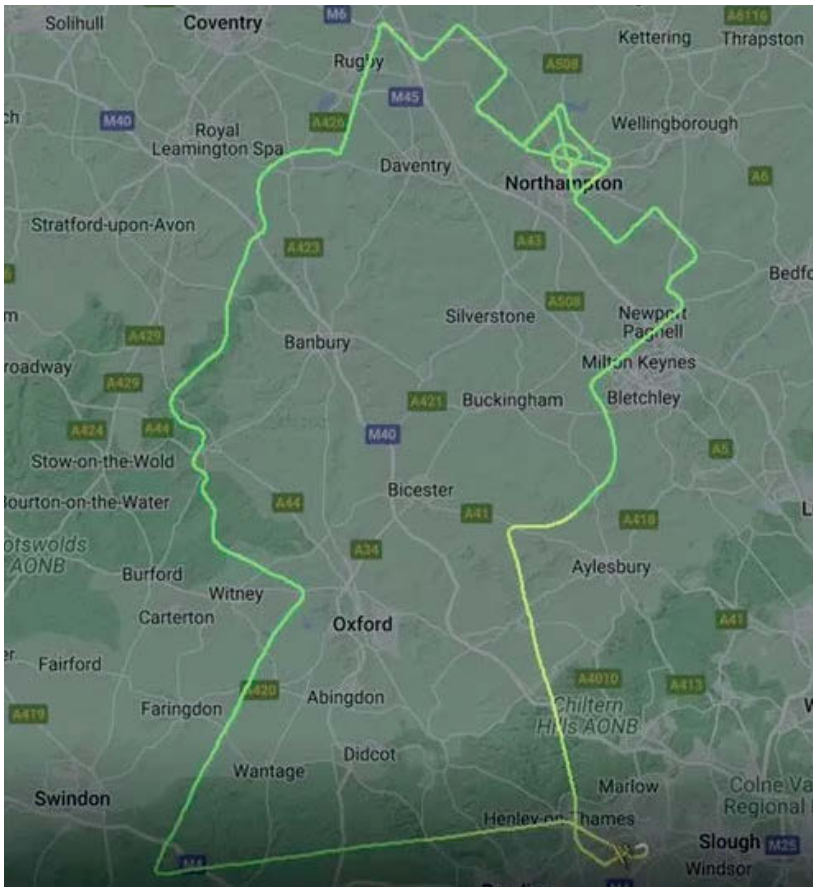
WRTH Reader Survey

The new owners of the **World Radio TV Handbook** who like your input as readers. Please click on this link and share your opinions with them!
(SOURCE: WRTH | Industry Press)
https://s.surveyplanet.com/o4mnp2q9

Nevada: Albrecht AM/FM CB radio

The new **Albrecht AE-6120** is a compact radio built into a strong diecast casing to ensure it can withstand the toughest of environments. The radio is Multi-Region, and programmable for use in the UK or throughout Europe. It features Vox hands-free operation, a microphone with up/down controls, an automatic squelch and a socket for an external speaker. The radio sells for £59.95.
(SOURCE: Nevada | Mike Devereux)
https://www.nevadaradio.co.uk

QUEEN'S PROFILE CREATED BY PILOT'S 250-MILE TRIBUTE FLIGHT: A pilot has flown more than 250 nautical miles to create an outline of the Queen's profile on a map. **Amal Larhlid** from London flew a Piper PA-28 for two hours in her tribute, to raise money for *Hospice UK*. The voyage, tracked on *FlightRadar*, formed a portrait 65 miles (105km) tall and 39 miles (63km) wide. The crown stretches from Newport Pagnell to Rugby, with a jewel in the centre directly over Northampton. Ms Larhlid wrote on her fundraising page: *"She was an inspiration to many generations, devoting herself to service for 70 years."* She said that she believed *"in the power of remembrance and appreciation in times like these"* and wanted to make the flight to pay her respects to the late monarch: *"She will always be in our hearts, and so will our loved ones who left us too,"* she added. Ms Larhlid planned her route by converting a portrait of the Queen into a format recognised by a flight planning programme called *ForeFlight*. She also had a manual backup of the route made using landmarks and flew multiple practice flights to get the feel for the required track and turns. Parts of the flight path took her through restricted air space and she had to stay in touch with air traffic control throughout.
She told *Flightradar24* she had to stay *"laser-focused on the track" but the challenge was 'great fun'"*. She added the hardest part of the flight had been creating the crown due to the tight turns.
(SOURCE: BBC News | via Mike Edwards | FlightRadar 24)
https://tinyurl.com/yss2kmy3



Digiface Ravenna Interface

The **Digiface Ravenna** is a 256-Channel 192kHz External USB Audio Interface of interest to both radio station engineers and serious radio and VLF hobbyists. It is RME's latest addition to the portable *Digiface* Series solution. Based on the design of the popular *Digiface Dante*, the *Digiface Ravenna* now features a RAVENNA module developed by *DirectOut* and allows for up to 128 RAVENNA channels as well as 64 MADI channels via a single USB 3.0 connection.
(SOURCE: RME | derek@synthax.com)
https://www.rme-usa.com

New Emergency Radios Test

In addition to providing access to AM/FM/SW/Weather (USA) broadcasts, and backup power during unforeseen circumstances, these rugged radios can be useful in everyday life. The publishers of the **RADIOWORLD Newsletter** asked Nicole Adams - a wilderness enthusiast who enjoys camping, backpacking, hiking and canoeing (she has scaled Mount Kilimanjaro) to rank several emergency radios for outdoor use. The radios were by **Sangean, Kaito, RunnigSnail, CCRadio**, and **Eton**. You can read the findings here:
(SOURCE: *RADIOWORLD SmartBrief*, September 2022)
https://tinyurl.com/4ec4mhzt

RFinder P10

You probably know how much you can do these days with an Android Tablet. Browsing the web, watching a movie with Netflix or Amazon, reading your e-mails using its Wi-Fi or 4G cellular connection. Now, imagine that experience with the new **RFinder P10** that features a full **4W FM/DMR 2m/70cm Transceiver**! The RFinder P10 is fully capable of DMRoIP, which means that even without a DMR repeater, you will still be able to connect to your favourite DMR network (e.g. *Brandmeister*, TGIF) using the smartphone network. Additionally, *DMRoIP NetRoam* (a specialized feature that allows your device to roam from network to network while using DMRoIP) is included in this Deluxe Edition. Compatible with most worldwide mobile phone providers, including *Verizon, AT&T, T-Mobile, Google FI*, and so on. It is also FCC approved for Public Safety VHF/UHF frequencies. And because the RFinder has a constantly updated database of worldwide repeaters, *EchoLink* nodes, and DMR talk groups, you never have to memorize anything. You just search the station or repeater you want to connect, and the RFinder P10 will change all the settings for you, either using DMR or conventional analogue FM. The RFinder P10 is so advanced that it allows you to see on a map all the available DMR/EchoLink/ Conventional repeaters nearby. Just click on your selected station, and your radio settings are changed.
(SOURCE: Network Radios USA | RFinder).
https://network-radios.com/
https://tinyurl.com/mrxph2rb

New DRM Receivers

This year's ***IBC DRM Virtual Event***, held on 6th September 2022, was very well received by many participants worldwide. The much-awaited session on DRM receivers allowed the listeners and viewers to learn about new, hot-off-the-press, receiver products and solutions in this sector. A new cost-effective DRM solution developed by CML Microsystems in conjunction with Cambridge Consultants in the UK is just one example. Their product is a multi-band broadcast DRM receiver module that makes it quick and easy for manufacturers to build DRM radio sets. The module supports DRM and analogue reception in the AM and VHF bands.

Applicable IP royalties are included in the module price. The module also supports a remote-controlled mode and thus can serve as the basis for full-featured DRM radio sets. The module is scheduled to be available to industry partners from Q1 2023. Gospell from China presented their entire range of well-established and full-featured DRM receivers consisting of desktop and pocket radios, with support for EWF and *Journaline* text service. In addition, Gospell unveiled their new car radio for easy integration, the Stereo Digital Radio Receiver GR-520.

All models provide DRM reception across all DRM broadcast bands. The Swiss company Starwaves announced three upcoming DRM receiver solutions: A complete and full-featured DRM and analogue AM/FM receiver module available to receiver manufacturers, with automotive-grade tuning and fast scanning across all DRM frequency bands and support for an EWF (Emergency Warning Functionality) and the *Journaline* text service. The first consumer receiver model built on this DRM module will be the W2401 desktop radio priced at €79. An even more advanced receiver at 99€ will in addition feature a built-in Wi-Fi hotspot for web browser access to the DRM content. All Starwaves receivers can be enhanced with DAB+ functionality if required by a local market […]. Starwaves also offers the *DRM SoftRadio App* for Android phones and tablets, which upgrades any device by connecting an analogue RF SDR dongle to a full-featured DRM receiver.

Other companies from India, such as OptM and Inntot, as well as the South Korean manufacturer RF2Digital, contributed to the pre-IBC DRM virtual event with videos presenting their solutions for DRM use in desktop radios, mobile phones and in cars. CML Microsystems/ Cambridge Consultants, Gospell, Starwaves and Fraunhofer IIS will also be present in Amsterdam during the IBC expo on the 10th of September, together with other key DRM members, such as the BBC, *Encompass, Nautel,* and *RFMondial*. IBC visitors participating in the two DRM sessions at the Fraunhofer IIS booth and the Nautel booth will experience live demonstrations of the new DRM receivers and modules. Selected news from the presentation on September 6th including from the DRM receiver section is available as a free download at the URL below:

(SOURCES: DRM Consortium | SWLing Post USA | RADIOWORLD)

https://tinyurl.com/35jwrj4d
https://tinyurl.com/avwjup4b
https://s.drm.org/KJr9
https://tinyurl.com/fptac49

New Products for Radio Stations

The latest version of the most interesting (USA) ***RADIOWORLD*** *Autumn/ Fall Radio Product Planner* can be accessed at the URL below. Be amazed at the breadth of new radio gear available to broadcasters today.

(Source: RADIOWORLD)

https://tinyurl.com/5n8mzmy9
https://tinyurl.com/2vpeevx9

OWAIN WYN EVANS NAMED AS REPLACEMENT FOR BBC RADIO 2 *EARLY BREAKFAST:*

NWT Presenter **Owain Wyn Evans** has been announced as the new Early Breakfast show host at BBC Radio 2, replacing Vanessa Feltz. The BBC News theme tune drumming star will host the show from the BBC Cymru Wales broadcast centre in Cardiff from January 2023. This is the first Radio 2 weekday programme to move out of London and the tender opens today for production companies to pitch for the show. Owain says: *"When I asked my parents for a pair of turntables and a mixing desk from a DJ shop in Llanelli when I was 13 I never allowed myself to dream that one day I'd have my own show on Radio 2! I can't wait to help kick start the day on Early Breakfast live from Cardiff.* ***'Bore da dahlings'****, as we say in Wales!"*

(SOURCES: BBC Radio 2 | RadioToday)

RadioUser STOP PRESS!

Moonraker: Anytone 10-m Mobile Transceiver

The upgraded Anytone AT-5555 PLUS V3 10-m Mobile Transceiver now has the new RX noise reduction option ('NRC'). With a completely new designed PCB board, the Anytone AT-5555 PLUS is one of the market's most modern and up-to-date 10-metre radios. The new menu functions were described as follows:

New Menu Functions

- VOX | CTCSS/DCS codes
- RX Compander and Noise gate
- RX noise reduction (extra PCB inside the radio)
- • Program cable connector on the backside of the radio
- Extra ventilation holes on the top and bottom cover

This Amateur radio HF mobile transceiver covers the 28MHz frequency band reserved for Amateur Radio communication. Frequency range 28.000-29.700 kHz, adjustable frequency steps (10Hz, 100Hz, 1kHz or 10kHz). Adjustable TX RF power; 12W max AM/CW, 40W max FM/SSB. Multiple clarifier operating modes. Flexible menu functions and PC programming software to fit the radio to each operator's demand. The large, backlit, amber LCD with a digital S/RF meter shows a full 7-digit frequency readout, plus a 2-digit LED display. *RF Gain, RF Power, Clarifier, Dual Watch, Scan, TOT, NB/ANL, LOCK, LCD Off, +10KHz,* and *SQ/ASQ* functions. High-quality dynamic microphone with UP/DN frequency and AQ controls. DC Voltage display function. SWR protection and power-supplied voltage protection. The software allows programming of frequency range limits, frequency channels, Mic Gain limits, factory reset function, CW sidetone frequency and volume, RB holding time, and much more:

Overall Key Features

- Backlit LCD Display (amber colour) with 7-digit frequency readout
- 2-Digit Channel Number readout
- 6 Frequency Bands, 60 Channels (programmable) in each band
- RF Power max 12W AM/CW, 40W FM, 40W SSB
- Digital S/RF Meter, RG Gain control, RF Power control
- Scan/SC List, Dual Watch, EMG, RB, NB/ANL, LOCK, LCD Off, TOT, HI-Cut
- Dynamic Microphone with UP/DOWN/AQ (Auto Squelch) controls
- Quick UP/Quick DOWN frequency selection
- PA (Public Address) circuit
- S/SQL (manual or automatic Squelch control).

Some Technical Specifications:

- Frequency Range 28.000 - 29.700 MHz HF 10-m Band AM/FM/SSB/CW
- Frequency Range 25.615 - 30.105MHz (AT-5555EX version only)
- Antenna Connector UHF SO239
- Temperature Range -15/+50 °C
- Input Voltage 13.8V (15.9V max / 11.7V min) - 9A max at 40W SSB PEP
- Radio is fully PC programmable (with optional PC Interface Cable)
- Dimensions: 28cm x 25cm x 6cm; weight: 2.8kg

Available from stock at Moonraker, for £169.95, plus P&P. (SOURCE: Moonraker).

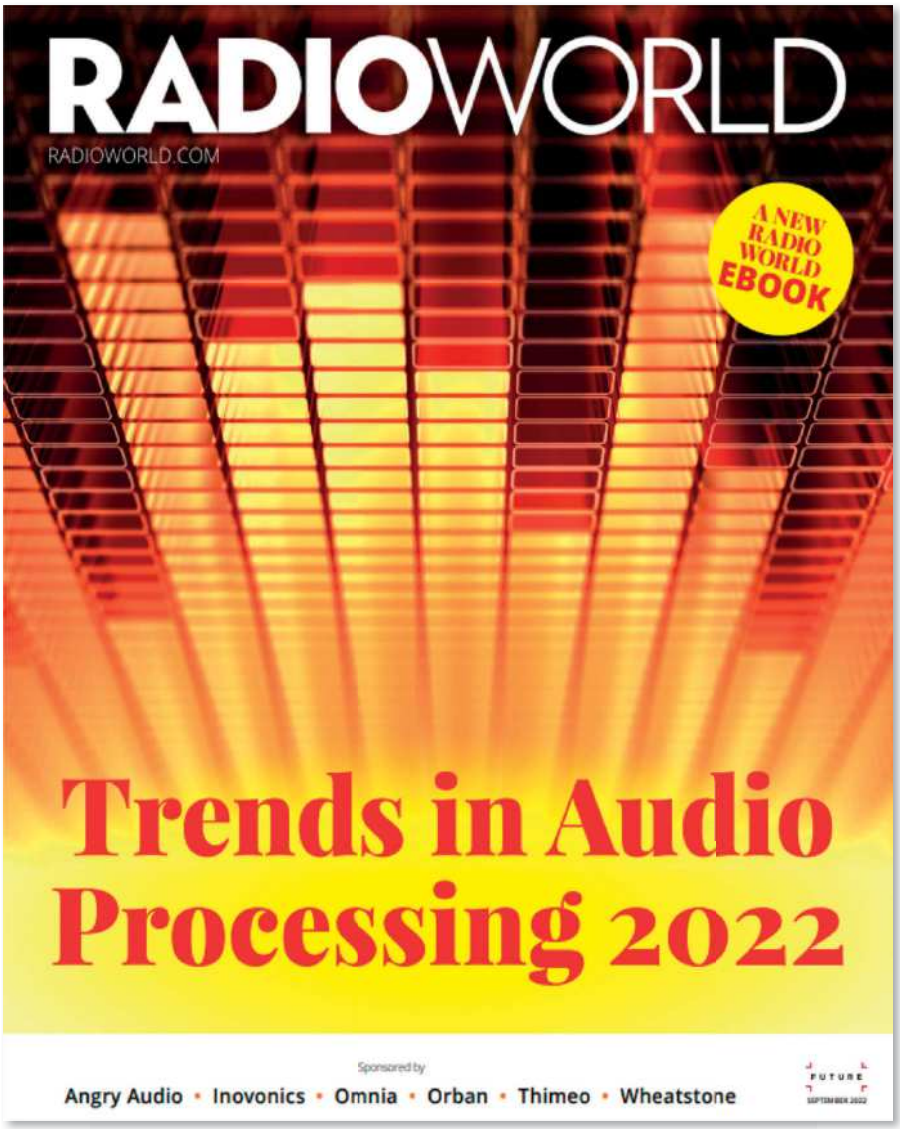
https://tinyurl.com/3yb6mcjt

TRENDS IN AUDIO PROCESSING 2022: This new **Radioworld eBook** explores the evolving world of on-air and online audio processing for radio broadcasters and streamers. Radioworld talked to power users and consultants like Alan Jurison, Gary Kline, Jason Ornellas, David Bialik, Daniel Hyatt, and Chris Tarr about their processing approach for OTA, streaming and other channels. They also asked sponsoring manufacturers to weigh in, gathering insights from Frank Foti of Telos Alliance, Jeff Keith of Wheatstone, Bob Orban of Orban Labs, Cornelius Gould of Angry Audio, and Hans van Zutphen of Thimeo Audio Technology.

If loudness was the goal in years past, what characterizes on-air processing at most successful radio stations today? What are the implications of the cloud for on-air processing products?

How do the trends toward centralization, 'regionalisation' and 'virtualisation' affect processing decisions? What other distribution channels require audio processing attention in 2022 beyond the OTA signal? And what best practices should the station know about when processing for streaming?

(Source: RADIOWORLD)



BBC RADIO 4 REITH LECTURES 2022: The **Radio 4 Reith Lectures** will be delivered by four speakers to mark the BBC's centenary year. Each one will explore one of the themes from Franklin D Roosevelt's famous 1941 Four Freedoms speech: freedom of speech, freedom of worship, freedom from want, and freedom from fear.

The series of lectures will be recorded in London, Glasgow, Wales, and Washington DC, in late October and November.

They will be broadcast on Radio 4 and the WS towards the end of the year, and they will be available on *BBC Sounds*. Mohit Bakaya, Controller of Radio 4, said: *"Freedom is one of the defining values of our age. It is the fault line drawn in so many of our contemporary debates about the nature of society and the kind of world we want to live in. However, there are different types of freedom and, in this BBC centenary year, I wanted to seek out four perspectives on this complex idea based on FDRs famous Four Freedoms speech – a speech made in 1941 at such a precarious moment for the world. I'm delighted that these four brilliant thinkers have agreed to explore freedom as it relates to their area of passion and knowledge."* The *Reith Lectures* were inaugurated in 1948 by the BBC to mark the historic contribution made to public service broadcasting by Sir John (later Lord) Reith, the corporation's first Director-General. The lectures will be chaired by presenter, journalist and author, Anita Anand.

(SOURCES: BBC | RadioToday)

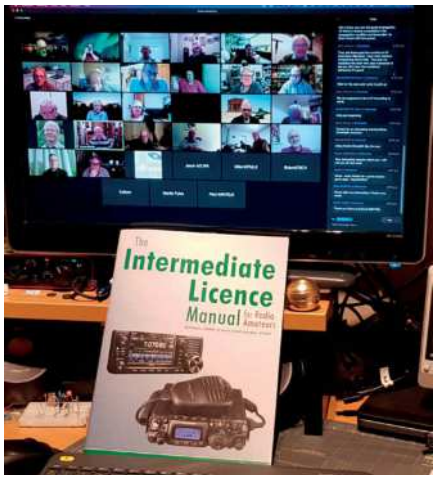
BBC RADIO 1 REUNION CELEBRATES 55 YEARS: Former **BBC Radio 1** DJs and producers attended a special lunch yesterday in London's West End to celebrate the 55th Birthday of the station. Radio 1 was launched at 7 am on 30 September 1967 by Tony Blackburn with those now famous words: *"Good morning everyone, and welcome to the exciting new sound of Radio 1."* The star-studded lunch was organised by Shaun Tilley, creator and presenter of the BBC's My Radio 1 series, which was also celebrating its 5th year. Among those who attended were two members of the station's original team of DJs, Tony Blackburn and Pete Drummond. Other names who were there included Johnnie Walker, Gary Davies, Paul Gambaccini, David Kid Jensen, Mike Read, Adrian John, Pat Sharp, Paul McKenna, Chris Moyles, Andy Peebles, Smiley Miley, Adrian Juste, and Peter Powell. Adrian and Peter will feature in a special hour-long edition of My Radio 1 being broadcast on BBC Radio this December. Following the broadcast,

each episode is released as a podcast. Shaun told On The Radio: *"With the network's 55th Birthday approaching on the 30th of September, we realised our first edition of the My Radio 1 series also went out on that date exactly 5 years ago. So it seemed the perfect opportunity to arrange a special get-together to celebrate both anniversaries and to thank all those DJs and producers who've played such a pivotal role in the making and ongoing success of the series."* – How many of those in the photo can you name?

(SOURCES: BBC Radio 1 | ontheradio)

BATH-BASED DISTANCE LEARNING 2023:
The Bath Based Distance Learning (BBDL) team has now helped over a thousand students to pass UK amateur radio exams, with pass rates consistently above the national average. The next **BBDL Intermediate Course** will run from January to May 2023. Students will receive weekly work packages, via a 'virtual' classroom. There will be weekly online tutorials and revision quizzes. Students will also have access to one of the BBDL remote tutors who will provide feedback and additional guidance when required. There will be lots of practical exercises to bring the theory to life. Students will be expected to do the exercises at home and report their results.

At the end of the course, there will be several mock exams. There will be no charge for the training but students will need to provide their own textbook, scientific calculator, electronic parts and tool kit. Students will also have to arrange their exams at the end of the course, but advice will be provided at the appropriate time. As part of the application process, there will be some pre-course work to ensure students can use our online learning systems and to be sure they are ready to study in January. Another BBDL course for the Full Licence will follow the Intermediate course, running from August to December.



A further announcement will be made when that course is ready for enrolment. However, we are encouraging all those who intend to study for the Full Licence and passed the Intermediate exam before September 2019 to join our Intermediate course. This will provide good revision and bridge the gaps created by syllabus changes in 2019 and 2022. To receive course application details, please e-mail BBDL Team Leader, Steve, G0FUW (***g0fuw@bbdl.org.uk***). The deadline for completed course applications is Wednesday 7th of December.

(SOURCE: Steve, G0FUW)
g0fuw@bbdl.org.uk

Global Communications in a Time of Innovation

David Harris
mydogisfinn@gmail.com

David Harris evaluates a new title by Paul Hawkins and Paul Reyland, who expertly recount the life, times and impact of two crucial wireless telegraphy stations near Chelmsford in Essex.

In 2017, Paul Hawkins published *Point to Point. A History of International Telecommunications during the Radio Years* (*Radio User*, June 2018: 29). Now, together with a former BT colleague of his, he has followed this up by writing a detailed account of the life and workings of the Brentwood and Ongar radio stations.

Both these stations were located near Chelmsford. This was the town where Marconi established his headquarters (*RadioUser*, August 2022: 60-62). Brentwood opened as a receiving station in 1921 and closed in 1967. Ongar also opened in 1921 but carried on as a transmitting station until 1985.

The period between 1900 and 1920 is often seen as one of enhanced experimentation and innovation. Marconi had developed a ship-to-shore wireless telegraphy (w/t) service and a point-to-point w/t service.

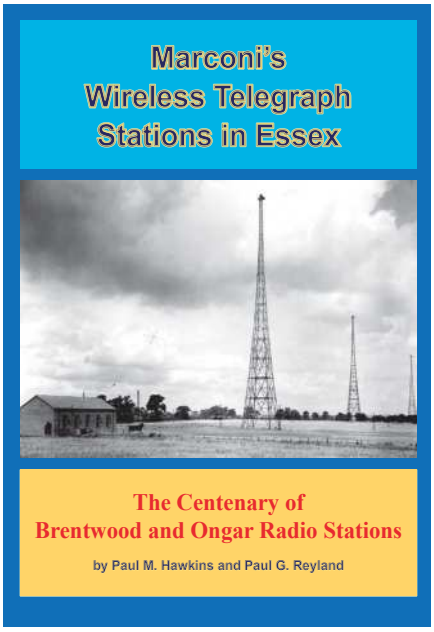
The latter was in direct competition with cable companies, which were seen as expensive and lacking in innovation. Initially, his trans-Atlantic radio stations were installed on the West Coast of Ireland and on Canada's East Coast at Nova Scotia (See also: *RadioUser*, October 2022: 16-18, on Poldhu).

After 1918, valve technology came into more widespread use. This meant that radio stations did not need to be in such remote locations. Marconi initially received a licence from the British Post Office to run a w/t service carrying telegrams between London, Paris, Berne, and Madrid.

The London office was connected to the Essex stations by landline. Telegrams were sent using high-speed Morse code, with the text being keyed onto tape. This was then automatically transmitted, decoded and printed out at the receiving end.

Initially, services were on Long Wave using 750-foot-long aerials hung from 300-foot tall masts. Transmitter power varied between 3 and 14kW, and each station had its own power plant with diesel generators to ensure an adequate supply of electricity.

However, Long Wave involved huge aerial systems, and Marconi began experimenting with Short Wave as early as 1915. In 1924, a Short Wave w/t service was adopted for communications between London and countries of the British Empire. The new service used beam aerials which enable the signal to be concentrated into a 30º beam using 20kW transmitters.



Marconi's Wireless Telegraph Stations in Essex - The Centenary of Brentwood and Ongar Radio Stations
by Paul Hawkins and Paul Reyland
New Generation Publishing. 2022.
130 pp. Pbk. £8.99
ISBN 9781803693828
www.newgeneration-publishing.com

The first transmission from Ongar went out on 10.929MHz. By that time, the Government had secured a monopoly of communications of the Empire; however, Marconi built all the equipment. In 1929, a new company, *Imperial & International Communications*, was established; it had a monopoly on cable and radio communications. A few years later, in 1934, it changed its name to *Cable and Wireless*. It was nationalised after the Second World War (1939-1945) and sold off in 1981.

In the 1930s, *Cable and Wireless* expanded by opening a radio relay station on the south Atlantic island of Ascension. It had already installed a cable relay station there, in 1899; and from 1922 to 1964, the island was managed by the local *Cable & Wireless* representative.

The Brentford and Ongar stations continued to be busy as the demand for international communicators flourished. In 1938, there were 33 staff at Brentwood and 53 at Ongar. In one of the appendixes at the rear of this book, the reader will find listings of the staff, including technicians, riggers, engineers, clerks, and general labourers. Each station operated 24 hours a day and was completely self-contained with canteens and some accommodation for staff. Other C& W stations included; Bodmin, Bridgewater, Caernarfon, Dorchester, Grimsby, and Skegness.

During the Second World War, all civilian traffic ceased, and the stations were used for government communications. They were very important in areas where cable links had been cut, such as to Russia, Scandinavia, Malta and Aden. After 1945, the stations came under the control of the Post Office and gradually high-speed Morse communications were replaced by teleprinters.

By the early 1960s, satellite communications began; however, demand for radio services continued until the early 1980s, by which time everywhere in the world could be reached by cable or satellite.

In 1967, the Brentwood station finally closed; more automation was introduced at Ongar, which stayed open until 1985, mainly for maritime communications. In 1984, Post Office telecoms were privatised; and in 2000, BT finally shut down its long-distance maritime communications service.

The story of the rise and fall of this service was told by Larry Bennett in his two excellent books: *Portishead Radio* (*RadioUser*, August 2020: 16) and *All Ships, All Ships* (*RadioUser*, December 2021: 18).

Marconi's Wireless Stations offers an impressive 26 pages of appendixes, a comprehensive bibliography, index, maps, and some detailed plans of the buildings.

If you enjoyed *Point to Point* or *Portishead Radio*, then you will find plenty of interest in this well-researched, richly-illustrated and clearly-written book.

Scott Caldwell
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BBC WORLD SERVICE

1

Seasonal Joy on Medium and Short Wave

Scott Caldwell investigates Medium Wave listening as the dark nights are slowly drawing in and focuses on the declining number of UK stations. Short Wave broadcasting is also catered for with a new Australian station.

The recent perceived 'decline' of Medium Wave (MW) listening in the UK is still a controversial topic amongst DXers, many of whom have mixed feelings regarding the closure of local stations that are powerful and dominate the bands. The very latest figures from RAJAR make interesting reading and they are discussed in detail in the *Medium Wave News* section (below). But do they support the view, often expressed by the mainstream media, that Medium Wave listening is a thing of the past?

BBC e-QSLs, and Short Wave from Australia

The *BBC World Service (WS)* is now issuing QSL cards in electronic format. The process is very simple and requires the listener to complete their reception report online. The system then generates an 'e-QSL card', based on the site of transmission (Fig. 1). The report is on a standardised form that is available online:
https://eqsl.tools.bbc.co.uk

In other news, a new Short Wave station from the Bendigo area of Victoria has been reported on 4835kHz, with the identification of *Shortwave Australia*. It broadcasts to the inland and the islands in tribute to Radio Australia. At present, the station is operating on 5KW, i.e. with relatively low power. Listeners have also reported receiving broadcasts from Shortwave Australia on 2310kHz. The programming content is an eclectic mix of old and new music.

The licence holder for Shortwave Australia is David Stuart who stated: *"I have wanted to do something like this for a while, and I finally got hold of the old Alice Springs frequencies. It is a long story but won't bother you here with it but they have gone through a couple of owners since they were discontinued by the ABC and by mutual agreement the ownership, has passed onto me. At the moment, that station is just in the 'proof-of-performance' stage and will have more development.*

"Programming will be mostly music but stuff that is not heard a lot on the normal stations and I will try to have a lot of variety, but I know you 'cannot please everybody all the time.' Also [...] some technical talks and things. The idea is to have it all automated so I do not become a slave to it and load programmes and just keep an occasional ear on it but have the option to go live if I want but who knows how it will evolve".

To facilitate the logistics involved in setting up the new station, Stuart has recently relocated to a 60-acre farm with plenty of room for antennas and no neighbours to worry about. The dipoles for 4835kHz are positioned east-west at 60ft and north-south at 30ft. The 2310kHz transmission is served by an east-west dipole at 60ft. The station is purely a hobby for Stuart, and there is currently no commercial involvement.

*[How refreshing! – **Ed.**].*

Medium Wave News

Regular reader and correspondent Graham Smith (Bury St Edmunds, Suffolk) has reminded us about the latest RAJAR listening report and the accompanying, very useful, 'infographic'.
https://tinyurl.com/5xetvfcx

RAJAR was established in 1992 and stands for 'Radio Joint Audience Research'. This is the official body for measuring radio audiences in the United Kingdom. It is jointly administered by the BBC and *Radiocentre*, on behalf of the commercial sector. RAJAR collects information on behalf of over 300 BBC and Ofcom-licenced commercial stations. Their research methodology is based on a continuous diary survey (continuous operation except during the Christmas holiday season). A continuous research methodology is a well-developed approach that has been adopted worldwide. The fieldwork that underpins the report is conducted by a dedicated team of research contractors, usually *Ipsos* and *Mori*.

In 2021, RAJAR began experimenting with new methodologies, underpinned by a broader group of data sources, which includes *panellist* and *MediaCell*. It seems that this approach is designed to reduce the level of face-to-face interaction. Their report concluded that 49 million adults (88% of the UK population aged over 15 years old) tuned into their selected radio station each week of the second quarter of 2022 (April, May, and June). The total average number of weekly hours listened to has been estimated at 998 million. More detailed information is available on the RAJAR website:
www.rajar.co.uk

Fig. 1: An 'e-QSL Card' to be issued by the *BBC World Service* (BBC WS). Fig. 2: RAJAR data 2022: The various radio listening modes examined. Fig. 3: The logo of *Greatest Hits Radio (GHR)* from Swansea. Fig. 4: One of several 'incarnations' of the editor's AOR AR7030 HF Receiver (Table 3) with 'high-vis dots'. Fig. 5: A rarely-seen vintage treat for broadcast Listeners: The Lowe HF 250.

The 'traditional' reception, i.e. via MW and FM radios still accounted for 32% share (Fig. 2). Despite the number of stations leaving MW, there is still a great range of broadcasts to listen to on the band.

This begs the question of whether the perceived decline of Medium Wave and FM broadcasting has been exaggerated by the media who seek a story and wish to see budgets spent on innovative technology.

My recent band scan of the local Medium Wave band clearly shows that there are still many stations to hear, even after the termination of BBC local radio broadcasts (Table 1).

By contrast, Greatest Hits Radio (GHR) in Swansea (Fig. 3) has been playing a recorded loop regarding its subsequent return to DAB broadcasting. It has now been switched off since August 1st (Dave Kenny – British DX Club). This supports the view that soon national MW will, indeed, be a thing of the past as broadcasters seek more cost-effective solutions. What do you think is the future of MW broadcasting?

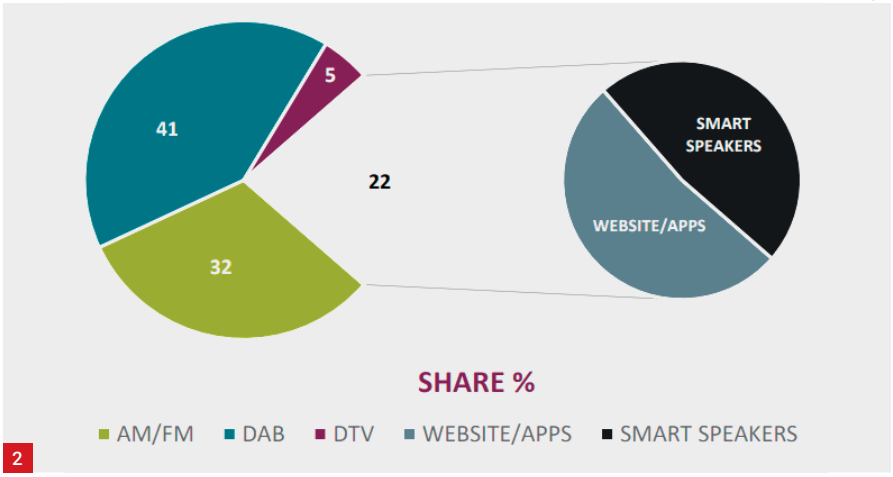
Arrivederci Roma

It has been reported that RAI has ceased broadcasting on Medium Wave (Table 2). The last transmission on the famous frequency of 900kHz from Siziazo, Milan was on September 12th, marking the end of an era. The 50KW transmitter will be demolished. RAI is now focusing on DAB+ technology which is regarded as being more energy-efficient than Medium Wave broadcasting. I used the Milan frequency to assess the propagation condition as the signal was usually very strong during the Northern Hemisphere DX season. This decision to cease Medium Wave broadcasting in Italy also includes Radio Trieste A, which focuses on programming for the Slovene National community in Italy. Switzerland is now planning to follow suit and turn off its Medium Wave broadcasting network in 2024.

The Great AOR 7030

The AOR 7030 (Fig. 4; Table 3) is a highly regarded receiver which was produced during the late 1990s, under the direction of the talented designer John Thorpe. Many older DXers will also remember

RAJAR



2

Frequency	Station	Location	SINPO	Power (KW)	UTC	Date	DXer
603	Smooth Radio	Littlebourne	33222	0.4	02:22	12/09	SC
648	Radio Caroline	Oxford	33333	25	06:01	30/08	SC
810	BBC Radio Scotland	Burghead/ Westerglen	44444	100	06:10	30/08	SC
828	Smooth Radio	Bournemouth	22222	0.3	02:27	09/08	SC
828	BBC Asian Network	Sedgley	43333	0.2	06:14	30/08	SC
837	BBC Asian Network	Leicester	33333	0.5	06:07	09/08	SC
837	BBC Radio Cumbria	Carlisle	33333	1	06:04	09/08	SC
855	Sunshine Radio	Ludlow	33333	0.2	05:00	09/08	SC
945	Smooth Radio	Bexhill	33333	0.7	02:18	09/08	SC
945	Gold	Derby	33333	0.2	05:23	09/08	SC
1152	Smooth Radio	Various	33222	n/a	01:01	30/08	SC
1161	Tay 2	Dundee	33222	1.4	01:00	30/08	SC
1170	Greatest Hits Radio	Stoke	33222	0.2	05:59	29/08	SC
1260	Smooth Radio	Wrexham	33333	0.6	06:01	29/08	SC
1278	Greatest Hits Radio	Bradford	43333	0.4	06:05	29/08	SC
1296	Radio XL	Birmingham	43333	10	05:02	09/08	SC
1359	Smooth Radio	Cardiff	32222	?	00:57	20/08	SC
1386	Radio Clatterbridge	Wirral	33333	0.001	04:01	20/08	SC
1431	Smooth Radio	Southend	43333	0.35	04:14	20/08	SC
1458	Gold	Manchester	55554	5	03:59	09/08	SC
1548	Gold	London	44444	98	04:46	09/08	SC
1557	Gold	Northampton	33333	0.8	04:59	09/08	SC
1557	Smooth Radio	Southampton	33333	0.5	03:15	18/08	SC

Table 1: Medium Wave: Local / DX.

Thorpe's significant contribution to the Lowe HF series of communication receivers that dominated the market in the late 1980s (*RadioUser* September 2022, cover page; pp. 12-14).

A disagreement between the Lowe company and Thorpe led to him joining AOR as an independent designer. Unfortunately, the Lowe HF*350* was never developed, due to this disagreement. However, at least there was the dependable HF250 (Fig. 5), which is still one of my preferred communication receivers.

The AOR 7030 was manufactured at Belper, Derbyshire. Many characteristics from the Lowe HF models were subsequently

GHR SWANSEA

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applied to the AOR 7030. Most noticeably are its robust construction and its minimal front panel controls. However, several AOR AR 7030 features appear hidden from the casual listener. Perhaps, the most noticeable ones were the auto-tuning synchronous detection, onboard filter calibration and measurement,

CLOSURE OF RAI MEDIUM WAVE STATIONS

Frequency	Location
657 kHz	Pisa
900 kHz	Milan
936 kHz	Venice
999 kHz	Turin
1062 kHz	Ancona, Cagliari, Catania
1107 kHz	Rome
1116 kHz	Palermo
1431 kHz	Foggia
1449 kHz	Belluno

Table 2: The RAI Stations closed on Medium Wave.

AOR 7030 Specifications

Frequency Coverage	0.0010-32.0000 MHz
Modes	CW/ LSB/ USB/ AM/ AM-S/ FM
Power Consumption	30mA Standby
500mA Standard	
1000mA Maximum	
Antenna Socket	SO 239Ω
Wire Grip 600Ω	
Audio Output	3.5 mm Headphone Jack
3.5 mm External Speaker 8-pin DIN Line Output 6	
Dimensions	238 (w) x 93 (H) x 227 (D) mm Overall Size
Memory	100 Regular Slots
Display	10Hz Frequency Resolution
70-Segment Signal Meter Bar	

Table 3: The AOR 7030: Key Specifications.

automatic RF attenuation for managing strong signals, and an alphanumeric display for many functions.

An American Target

The AOR corporation initially targeted the North American market for its flagship model. The manual is relatively easy to read, and it lacks many of the British 'colloquialisms' found in other UK equipment manuals. When reading the manual, you may initially believe that it was written by a US author in the first place.

Nowadays, a good example of an AOR 7030 may retail second-hand for around £599. This price reflects additional components like the keypad, instruction manual, PSU, and (maybe) a much sought-after dust cover.

[The editor's radio dust cover was custom-made by the commendable people at Prism Embroidery - Ed.].

https://tinyurl.com/huwsme42

The AOR 7030 was famously awarded 5 stars by both the *Passport to World Band Radio* and the *World Radio and Television Handbook (WRTH)*. The WRTH provided the following insightful conclusion on the AOR 7030's unparalleled capabilities: "*The AR7030 is a state-of-the-art HF receiver, whose specification puts that of almost everything else on the market to shame. If our sample is typical - and there is no reason to suppose it was not - some aspects of its performance almost certainly exceed the ability of the average test laboratory to measure and establish them. So much about this receiver is utterly right. Sheer performance allied to the extreme versatility and excellent build quality, the AOR 7030 remains one of the world's most desirable receivers. A word of praise is also in order, for the truly excellent manual.*"

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GEORG WIESSALA

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The New World Radio and Television Handbook (WRTH)

It has been widely reported that the publishing rights for the World Radio and Television Handbook (WRTH) will be transferred to Radio Data Centre GmbH (RDC), based in Freising, Germany. The WRTH will also be available in a digital format (as a web app) as RDC look to secure a sustainable future for the publication. The RDC team describes itself as the 'cartographers of the global radio landscape'. Günter Lorenz, founder and CEO of RDC remarked: "*The directory is an indispensable reference for interested radio listeners, avid DXers and all those who move professionally in the world of radio. We are pleased that it will also be available online as a web app from December 2022'.* RDC was established in 2012, to provide professional data delivery broadcast to radio-related businesses and industries. You can register your interest via this portal:

https://tinyurl.com/mpurtvnp

The title was previously published by *WRTH Publications* under Nicholas Hardyman. The company recently announced that it could no longer sustain the book's future due to the vast amount of research and verification work involved.

Preventing DXing Downtime

With the advent of darker nights and the harsher winter weather, remember to check your outdoor antennas! The routine servicing of cables, connectors, and supporting brackets will prevent DXing downtime!

European Private Shortwave Stations

October 9th 2022

Only **legal** stations are included. Most stations use low power, but a few use several kW. Note that UTC is used here, not CET, nor CEST! Abbreviations used: D = Germany, DNK = Denmark, FIN = Finland, NL = Netherlands, NOR = Norway F.pl.: future plan, Int'l = International, Irr. = irregular, LT = Local time, 24/7 = twenty-four hours a day, seven days a week Mo = Monday, Tu = Tuesday, We = Wednesday, Th = Thursday, Fr = Friday, Sa = Saturday, Su = Sunday.

kHz	Country	Name	Transmitter site	Schedule (UTC)
3955	D	Radio Channel 292	Rohrbach Waal	Daily 0600-2000 & 2100-0500
3975	D	Shortwave Radio	Winsen	
3985	D	Shortwaveservice	Kall-Krekel	Daily 1600-1900 (Radio Slovakia Int'l a.o.)
3995	D	HCJB	Weenermoor	24/7
5895	NOR	The Sea / Radio Northern Star	Bergen	Silent
5920	D	HCJB	Weenermoor	24/7
5930	DNK	World Music Radio	Bramming	Sa 0700 - Su 1800 (times are approx.)
5940	NL	Radio Piepzender	Zwolle	Irr.
5955	NL	Sunlite	Westdorpe	Daily 0400-1500
5970	DNK	Radio208	Hvidovre	24/7
5980	DNK	Radio OZ-Viola	Hillerød	We 2100-2200
5980	FIN	Scandinavian Weekend Radio	Virrat	First Sa of the month
6005	D	Shortwaveservice	Kall-Krekel	Daily 1000-1500 (Radio Slovakia Int'l)
6005	NL	Radio Delta International	Elburg	Irr. (Fr or Sa 2100-0300)
6020	NL	Radio Delta International	Elburg	Irr. (Su 0600-1500)
6055	DNK	Radio OZ-Viola	Hillerød	Sa-Su 1100-1300
6070	D	Radio Channel 292	Rohrbach Waal	24/7
6085	D	Shortwaveservice	Kall-Krekel	Daily 0700-1700 (Radio MiAmigo Int'l)
6115	D	Radio SE-TA 2	Gera	Irr. Su: 1000-1100
6130	NL	Radio Europe	Alphen a/d Rijn	24/7
6140	NL	Radio Onda, Belgium	Borculo, NL	Irr. (weekends only)
6150	D	Europa 24	Datteln	
6160	D	Shortwave Radio	Winsen	
6170	FIN	Scandinavian Weekend Radio	Virrat	First Sa of the month
6185	NL	Radio Piepzender	Zwolle	Irr.
7260	NL	RockPower	Nijmegen	Irr. mornings (approx. 0800-1200)
7270	NL	RockPower	Nijmegen	Irr. afternoons (approx. 1200-1600)
7365	D	HCJB	Weenermoor	24/7
7425	NL	Radio Piepzender	Zwolle	Irr.
7445	NL	Radio Piepzender	Zwolle	Irr. (0800-1800)
9670	D	Radio Channel 292	Rohrbach Waal	24/7
11690	FIN	Scandinavian Weekend Radio	Virrat	First Sa of the month
11720	FIN	Scandinavian Weekend Radio	Virrat	First Sa of the month
15700	DNK	World Music Radio	Randers	Sa-Su 0700-2000
15785	D	BitExpress	Erlangen	24/7 DRM-modulation ('Funklust')
25800	DNK	World Music Radio	Mårslet, Aarhus	24/7

Radio News

BAUER LAUNCHES PREMIUM SUBSCRIPTION RADIO SERVICES IN FINLAND: Bauer Media Audio has launched premium subscription radio services in Finland. Subscribers will gain access to all 13 of Bauer Media Audio Finland's national radio brands and its two online stations, including *Radio Nova, Iskelmä, Radio City, NRJ, Radio Nostalgia, KISS*, and more.

These stations will broadcast in a 24/7 'no ad-breaks, uninterrupted listening environment; this follows on from similar launches in Denmark, the UK, and Norway.

Speaking on the launch, Tobias Nielsen, Director of Premium Projects, Bauer Media Audio commented *"We've been delighted with the audience reception to our Premium launches in the UK, Denmark and Norway, and we're excited to expand to another market. RadioPlay Premium will allow Finnish listeners to get even more from their favourite radio brands, reinforcing Bauer Media Audio Finland's position as the commercial radio market leader. We believe that Premium will play an important part in the future audio landscape and are proud to be at the leading edge of this innovation as Global Audio Pioneers."* Radio Nova Premium, Iskelmä Premium, Radio City Premium, NRJ Premium, Radio Nostalgia Premium, Radio Pooki Premium, Suomirock Premium, Kasari Premium, Basso Premium, Suomiräp Premium, TOP51 Premium, Radio Classic Premium, Radio Pori Premium, Ysäri Premium, and *KISS Premium* are available across web, app and all supported smart speakers including *Sonos* for a three-month free trial, followed by monthly subscription fees.

(SOURCE: RadioToday admin@radiotoday.co.uk)

https://tinyurl.com/ycyn99s7

MOST-TRACKED RAF FLIGHT – EDINBURGH TO NORTHOLT: The Royal Air Force flight carrying HM Queen Elizabeth II's coffin from Edinburgh to RAF Northolt near London set an all-time flight tracking record on *Flightradar24*, with 5 million people following along. 4.79 million people viewed the flight across the *Flightradar24* web and mobile app services, and a further 296,000 followed the flight via a *YouTube* live stream.

(SOURCE: BBC | via David Smith *Flightradar 24*)

https://tinyurl.com/2s4y9tat
https://tinyurl.com/4pjx7e3m
https://tinyurl.com/2p9x973j

NETSANET HAILU

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Christina Longden
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Learning Networks: Farmers' Voice Radio Re-visited

Christina Longden makes a welcome return to RadioUser, to update readers on the activities of the Lorna Young Foundation (LYF), including the ground-breaking Farmers' Voice Radio Academy.

Regular readers might remember that a few years ago, *RadioUser* featured a small charity – the Lorna Young Foundation (LYF) – and how it had harnessed the power of radio to support some of the world's poorest farming communities (*RadioUser*, January 2019: 66 and May 2020: 16).

Their pioneering initiative, *Farmers' Voice Radio*, on which we reported then, has now made massive strides in transforming the lives of millions of farmers and rural communities across Africa and Latin America (Fig. 1).

The Need for Radio

Named after the late fair trade pioneer, Lorna Young (1952-1996) the charity was established to empower the world's smallholder farmers and producers of commodity crops enjoyed by the Global North, such as coffee, tea, rice, nuts, cocoa, and shea butter.

Even before the COVID-19 pandemic and the current cost of living crisis, smallholder farmers were under increasing pressure from a combination of climate change, unsustainable land management practices and global market volatility. Isolation, poor infrastructure, low levels of literacy and gender inequality have meant that many people in these rural communities lack access to the skills, tools and information they need to overcome these challenges and make their farming successful.

However, as *RadioUser* readers are already aware, FM radio continues to be the most trusted, affordable and accessible communications medium across many parts of the world - and nowhere more so than in the rural areas of impoverished nations, where radio reaches thousands simultaneously with the same message. And because there is no reliance on the written word, radio is particularly important for farmers who often have low levels of literacy and who cannot access mobile technology or afford to pay for data.

Radio is the mainstay of the domestic front and is therefore of huge importance to those with no access to traditional agricultural training techniques, such as farmer 'field schools'.

However, women are frequently excluded from such training and knowledge, despite making a significant contribution to the production of food and export commodities.

Farmers' Voice Radio: Riding the Waves

With generations of experience, farmers in the Global South themselves, are

SHANI HARUNA

Fig. 1: Akatame is a Farmers' Voice Radio listener and coffee farmer from Jimma, Ethiopia. Mrs A often listens to radio programmes that focus on sustainable and quality coffee production.
Fig. 2: Zeinab is a shea nut collector in northern Ghana, who regularly listens to *Farmers' Voice Radio* programmes broadcast in the local language; these focus on empowering shea nut collectors and shea butter producers.

more knowledgeable than anyone else about their local growing conditions and the issues they are facing. However, they lack the means and opportunities to pool knowledge with their peers and apply it to new challenges - such as climate change and shifting market interests.

In this context, *Farmers' Voice Radio* has been harnessing traditional technology, but is using it in innovative and more participatory ways; for example:

- Farmers are central throughout all stages of production and broadcasting.
- Farmers guide the selection of discussion topics that address their biggest challenges; generating content and submitting feedback and questions that influence the next set of radio programmes.
- Radio station staff meet with groups of farmers in a community setting regularly, as well as with local experts and produce supply chain partners. They then record the radio programmes.
- The programmes are broadcast in the local language and often incorporate other important to know social and health messaging for rural farming communities.

The programming content varies widely, but most shows cover issues such as sustainable land management, value addition, climate change preparation and emergency responses, market access, farmer cooperation and women's empowerment.

COVID-19 has also featured strongly over the past two years, with programmes empowering even the most remote farmers with context-appropriate information about how to keep themselves and their peers safe.

Radio Projects in Nine Countries

Farmers' Voice Radio has now successfully set up radio projects in 9 countries across Africa and Latin America, leading to 2 million smallholder farmers gaining vital new knowledge and improving their agricultural practices. The very first set of radio broadcasts took place in Kenya, and the stakeholders involved decided to call the programme 'Farmers Gold'.

A broad audience of 4.5 million was achieved, resulting in 705 more farmers joining a local co-operative (50% of them women) and 70,000 new disease-resistance coffee trees being planted during the first few weeks of broadcasting, leading to much higher and more successful yields (Fig. 2).

Ugandan Farmers' Voice Radio

Mount Elgon in Uganda is a beautiful region, well known for its quality coffee and blessed with rich and fertile soils. However, the thousands of coffee farmers living on the mountain slopes are increasingly experiencing climate change, which is causing rising temperatures, accompanied by an increase in pests and disease and ever more frequent extreme weather events. Sudden heavy storms, coupled with deforestation driven by poverty, have led to regular landslides that can destroy entire coffee crops and with them families' homes and livelihoods.

The *Mount Elgon Agro-Forestry Communities Cooperative Enterprise* has a membership of over 3,000 farmers spread out across the region.

The cooperative was keen to use *Farmers' Voice Radio* to reach farmers in the area with messages about sustainable coffee production practices, which can increase coffee quality - delivering higher prices to farmers – as well as making farms more resilient to the impacts of climate change.

The stakeholders involved decided to call their *Farmers' Voice Radio* programme *'The Joy of Coffee'* and it was broadcast in two different local languages to coffee farmers across Eastern Uganda between November 2020 and August 2021. Weekly programmes were recorded with three groups of farmers in different locations and were broadcast via two local radio stations, reaching an estimated 250,000 farmers.

New Practices

Feedback and surveys were gathered, showing that many of these listeners adopted new practices *as a direct result of listening to the programmes*; changing the way that farmers fermented and dried their coffee cherries to improve the quality, introducing methods to control soil erosion

JENIPHER'S COFFI

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on their farms and making their own organic compost. The cooperative also attracted over 220 new members due to the increased awareness of its services.

One listener, Simon, said: "*The program has changed my life! Locally we have been growing this coffee as if it's not a cash crop. We could just leave it to grow on its own without maintenance and just go to harvest. …. I used to dig the coffee throughout, no slashing, and consequently during a rainy season the soil could get washed away. Now I do proper pruning and my coffee looks very healthy. Last season I got some improved yields, but next season [I] am expecting a very good yield.*"

Women's Empowerment

But perhaps the most important impact of Farmers' Voice Radio has been on women. Although females often carry out a lot of the important labour activities in coffee production, coffee is generally perceived to be a 'man's crop', and women have little involvement in the marketing side, nor any control over the proceeds of the sale.

Due to their domestic duties and often lower levels of education, women are also unable to access training opportunities. For the women involved in making the radio programmes, therefore, it is usually the first time they have publicly had their voices and opinions heard - a hugely transformative experience. Justine said: *"In the past, we would dig with our husbands, and they take everything. But after this programme and hearing voices of our fellow women being broadcast, we got empowered and we are also now actively involved in different stages in coffee production"* (Figs. 3 and 4).

Post Pandemic – Launching Farmers' Voice Radio Academy

The Mount Elgon Farmers' Voice Radio programmes were set up at the height of the COVID-19 outbreak when lockdown restrictions were at their peak. With no international travel permitted, the Farmers' Voice Radio team were forced to rethink their approach to delivering training and support to local partners.

The team needed to operate within a low connectivity environment and decided to set up the *Farmers' Voice Radio Academy*. This approach embraces a free online learning network that included group training sessions, individual coaching, a resource hub with downloadable guides and tools, a community of practice for peer support and an opportunity for participants to apply for a small start-up grant.

Between March and June 2022, 16 individuals representing 13 organisations from seven countries (Kenya, Uganda, Malawi, South Africa, Zambia, Ghana and India) participated in the inaugural Farmers' Voice Radio Academy. All participants were staff or volunteers of radio stations, NGOs, community-based organisations or farmer associations, and many were also farmers themselves, with a deep personal understanding of the challenges facing the rural communities they work with.

Despite the inevitable internet connectivity challenges and pressures of fitting training around fieldwork, 12 of the 16 participants completed the training

Fig. 3: Coffee farmers and Farmers' Voice Radio listeners in Mount Elgon, Uganda showing the coffee they have harvested.
Fig. 4: A Mount Elgon coffee farmer being interviewed for the Farmers' Voice Radio programme in Uganda.

programme and 11 graduated with a fully developed and costed Farmers' Voice Radio programme concept that they plan to implement in their communities.

Two of the strongest concepts received small grants to get their programmes underway. One of these was the community radio station, Vox FM in Tana River, Kenya, which will use Farmers' Voice Radio to enhance peaceful coexistence between crop and pastoralist farmers in the region and to support the economic empowerment of community members. Fatma Mzee, Operations Director of Vox FM, said: *"After going through the Farmers' Radio Academy, as a journalist, I feel capacitated and the need to have the programme run at our radio station to foster change in the way our community does its farming activities. Better practices will in turn lead to better yields and market access..."*

The next Farmers' Voice Radio Academy course will start in early 2023 and will focus on radio stations and farmers' organisations that seek to improve their engagement with coffee, tea and cocoa producers.

Although the crops differ from one another, the issues that these farmers face are similar, so the Academy approach will enable participants to share their experiences and build an active and effective community of practice.

The Future of Farmers' Voice Radio Academy

The *Farmers' Voice Radio Academy* approach has not only been transforming the lives of the farmers themselves but has deeply impressed the companies who process and sell these commodities. Linda Lisser, the Responsible Sourcing Manager at Ringtons (Tea) commented:

"One of the greatest advantages of the [Farmers' Voice Radio] programme is the ease with which it can be adapted to a variety of contexts, scales and budgets and still have a substantial impact. Once the smallholder group, extension officers and radio presenters have received training, they take ownership of the radio programmes."

Over the next year, the Lorna Young Foundation aims to continue to support the lives of vulnerable smallholder farmers. Through the *Farmers' Voice Radio Academy*, the charity plans to train 20 more radio stations and farmer organisations, reaching another three million smallholders with its radio programmes.

MEACCE AND OPEN GATE

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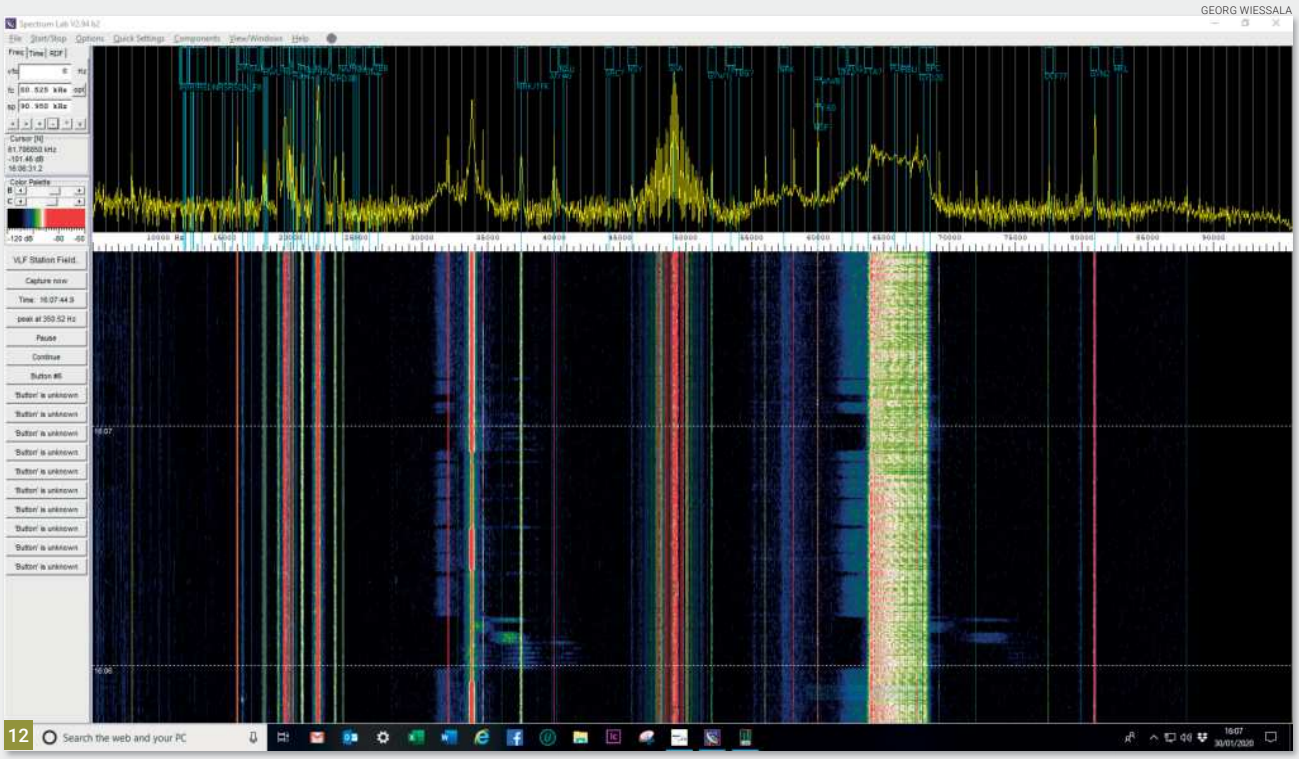
The **Lorna Young Foundation** is a small charity and very much relies on the generosity of a few grant providers and donors. The Foundation would be thrilled if fellow radio enthusiasts would like to get involved and contribute to their ground-breaking work. Donations can be made via **https://tinyurl.com/3jb92kcz**



Time-Measurement and Radio (Part III)

In the final part of his short series on time and radio, the editor finds active time signals and stations, explains what you can get from receiving those transmissions and recommends some suitable radios, accessories, and mainly aerials.

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In addition to making use of some of the methods described earlier in this series (*RadioUser*, September 2022: 24-29 and October 2022: 24-28) you may simply wish to just use a sound card (192kHz) as a VLF Receiver to access SFTS stations on the lower frequencies - and the higher ones for that matter.

Among many VLF hobbyists and experimenters, the *U-PHORIA UMC202HD* model seems to be the preferred choice. Feed the output into a piece of software such as *Spectrum* Lab and marvel at the many signals (some of them from time signals beacons) seen across the VLF frequency sector (Fig. 12).

Aerials for Time Signals Stations

If you want to take a look at a truly huge VLF aerial (actually an aerial tuning inductor coil), you can visit the Science Museum in London. Find the (permanent) *Information Age* exhibit, to come face-to-face with the 'Rugby-Monster'. This impressive construction was once part of the **GBR** transmitter (Hancock, 2017: 110/111).

Only very few of us have room for something as large as this (Fig. 13).

https://tinyurl.com/2p99tc6b

On a smaller scale, you might just connect a long wire to your sound card or radio, but this is prone to noise and interference from the environment.

Therefore, many radio amateurs are coupling tuning loops to ferrites as secondary radiators. Others are recommending drums of a simple wire, connected serially, as a VLF antenna.

If you do this, you ought to ensure you have as many turns of the wire as possible (most experts recommend at least 400). Since VLF waves are *vertically polarised*, you need to be certain that the axis of your drum is *parallel to the ground*. In terms of aerials capturing the *magnetic* component of an electromagnetic wave, there are quite a few excellent models to choose from, if (like me) you are *not* a home-brewer.

Ferrite bar aerials, as you may recall, represent a special variety of loop aerials. Ferrites stand out by their compact and varying sizes and their *permeability*, i.e. their ability to take in and focus magnetic field lines.

In my humble view, amongst the top ranges to try out are those by two German companies, *BAZ* and *Grahn*. From the range of their products, those especially suitable for SFTS stations are listed below.

Fig. 12: VLF signals can be made visible with *Spectrum Lab*. Fig. 13: The so-called 'Rugby-Monster'. Fig. 14: The BAZ VLF S1-N (*Spherics*) Power Ferrite Module (15-70kHz by // C: 20pF – 1.8 nF) - Made for 'Nature-Radio'. Fig. 15: A BAZ Power Ferrite Module for European SFTS stations MSF60, HBG 75 (decommissioned) and DCF 77.5. Fig. 16: The small (and capable) custom-made ADDX-AT-2BNC antenna. Fig. 17: The *Reuter Elektronik* RLA 3A Indoor Crossed Magnetic Loop aerial with AOR AR7030.

Both firms also make customised and high-performance aerials (*Hochleistungsantennen*), which will often be a great solution, depending on what signals you are interested in. These are 1,050 mm long, have up to 55 ferrite bars inside, and are in widespread use in the demanding context of electronics laboratories.

Some of the aforementioned aerials have been tested comprehensively for radio magazines and books (e.g. Friese, 2007: 37ff.). For hobby (or even 'semi-professional', 'prosumer') use, take a look at the following range:

- BAZ VLF S1-N (Spherics) Power Ferrite Module (15-70kHz by // C: 20pF – 1.8 nF) (Fig. 14).
- BAZ Power Ferrite Module for SFTS stations MSF60 | HBG 75 | DCF 77.5 (Fig. 15).
- BAZ LFM/**ZZ**1-N (For Standard Frequency and Time Signals [SFTS] Stations' 'ZZ' stand for '*Zeitzeichen*' [German: Time Signal']).
- BAZ LFM/5-50 (5-50kHz) ferrite module.
- BAZ LFM 50/300 (50-300kHz) module.

https://tinyurl.com/2vmjx9wa

- Grahn VLF-2 Ferrite Bar ('Alexanderson'; 10-300kHz).
- Grahn LW-1 (30-150kHz) and Grahn LW-3 (75-400kHz).
- Grahn 'Nautic' (100-600kHz; limited use).
- Grahn MW2-3 (switchable: 400-1800 and 850-4000kHz).
- Grahn Base Unit GS-5 (For all Grahn Loops and Ferrite Bar aerials).

https://tinyurl.com/rptemdcx

Of excellent performance and value – but very hard to find these days – is the ADDX-AT-2BNC (Fig. 16). It was manufactured by my fellow countryman, the late Charlie H. Hardt. It came with a custom-made amplifier module and could be switched to either 50-120kHz or 90-300kHz. You can still, occasionally, find it online.

In addition to these, many radio hobbyists I know swear by earth rods used as antennas, as is evident in the numerous contemporary *Facebook Groups* on this topic.

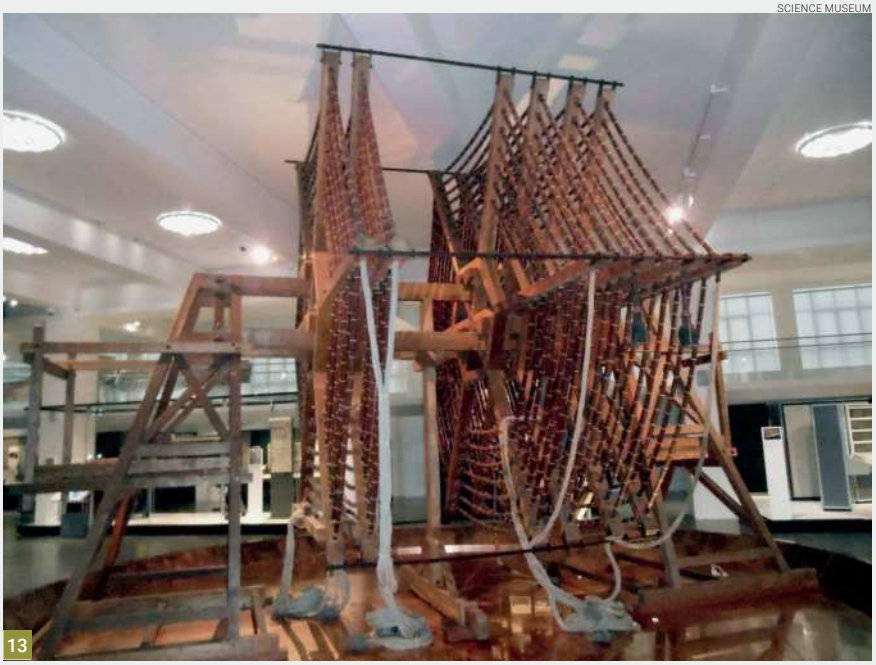
And, at the very top-end (of general VLF antennas), you can find the *Aaronia MDF* and *MagnoTRACKER* series; but you will need very deep pockets here.

https://tinyurl.com/2p8ph4h9

In the USA, *LF Engineering*, I am told, is a popular choice for these radio experimenters and citizen-scientists – especially in terms of their application and further customisation.

https://www.lfengineering.com

SCIENCE MUSEUM



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BAZ

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GEORG WIESSALA

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ADDX

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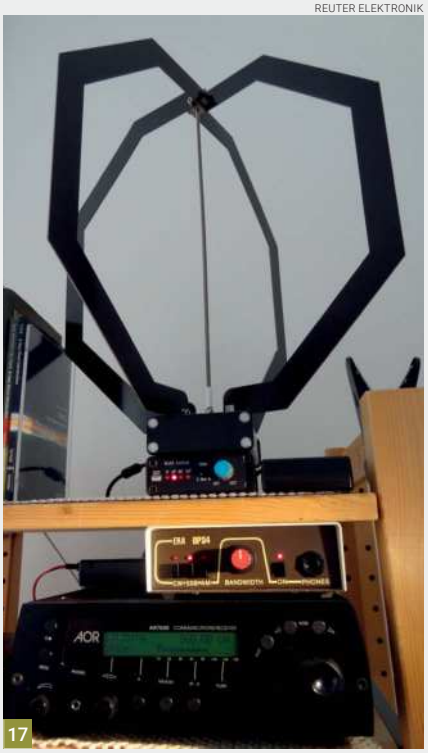
REUTER ELEKTRONIK



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REUTER ELEKTRONIK

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CCW

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Fig. 18: The *Reuter Elektronik* RFA1A Active Ferrite Antenna & RWS4 Aerial/ Remote Control Unit. Fig. 19: The Cross Country Wireless (CCW) LAA++ Aerial. Fig. 20: The handy Bonito Galvanic Antenna Isolator GI 1000 *can* be useful. Fig. 21: A switchable ferrite bar (for 60 and 77.5kHz) from Italian maker '*Paolo*' (via eBay). Fig.22: The practical MSF600USB Radio Clock, from *Meinberg Elektronik*. Fig.23: Brett Oliver's *Arduino DCF77 Analyzer Mark II*.

Other aerials and accessories I have successfully used for the reception of SFTS stations in recent months include some unusual wave-catchers. Some of them are *not* specially made for receiving time signal stations – or even just for the VLF band – but they have shown surprisingly good results in the shack.

The *RLA 3A and RLA 4E Indoor Crossed Magnetic Loop* aerials (with their control units) by *Reuter Electronics* (*RadioUser*, May 2020: 18; December 2021: 40; Fig. 17).

https://reuter-elektronik.com

The Reuter *RFA1A Active Ferrite Antenna & RWS4 Remote Control Unit* (used for 198kHz; *RadioUser*, April 2022: 28; Fig. 18).

The *Cross Country Wireless (CCW) LAA++* Loop Antenna Amplifier (from 50kHz; *RadioUser*, April 2022: 49; Fig. 19)

https://tinyurl.com/538vzvdu

If you are using an active antenna and an SDR, you might find the *Bonito Galvanic Antenna Isolator GI 1000* (50kHz to 1,000MHz) of some use, some of the time (Fig. 20; stylus is for size comparison).

https://www.bonito.net/hamradio/en

The photograph in Fig. 21 shows a switchable ferrite bar (for 60 and 77.5kHz) made in Italy and available, occasionally, on eBay (from seller: *'Paolo Corti'*).

If your receiver requires a *VLF Converter*, there are a few to choose from (or 'home-brew'). Take a look at this model, from *Elettrofficina* in Italy, transposing 0-500kHz to 28,000kHz.

https://shop.elettrofficina.com/it
https://tinyurl.com/ycy73usy

Datong used to do a good one too.

And for a bit more accuracy, the *MSF600USB Radio Clock*, from *Meinberg Electronics*, delivers the Cumbrian (UK) time signal on 60kHz straight to your computer (Fig. 22).

https://tinyurl.com/ycxr3ntd

A Slice of Eternity – The Longplayer

As I finish this article, my (FM, DAB and) Internet Radio (Roberts *Stream 107*) plays a most unusual station: *Longplayer* is a 'time-signal' of an entirely different order, indeed.

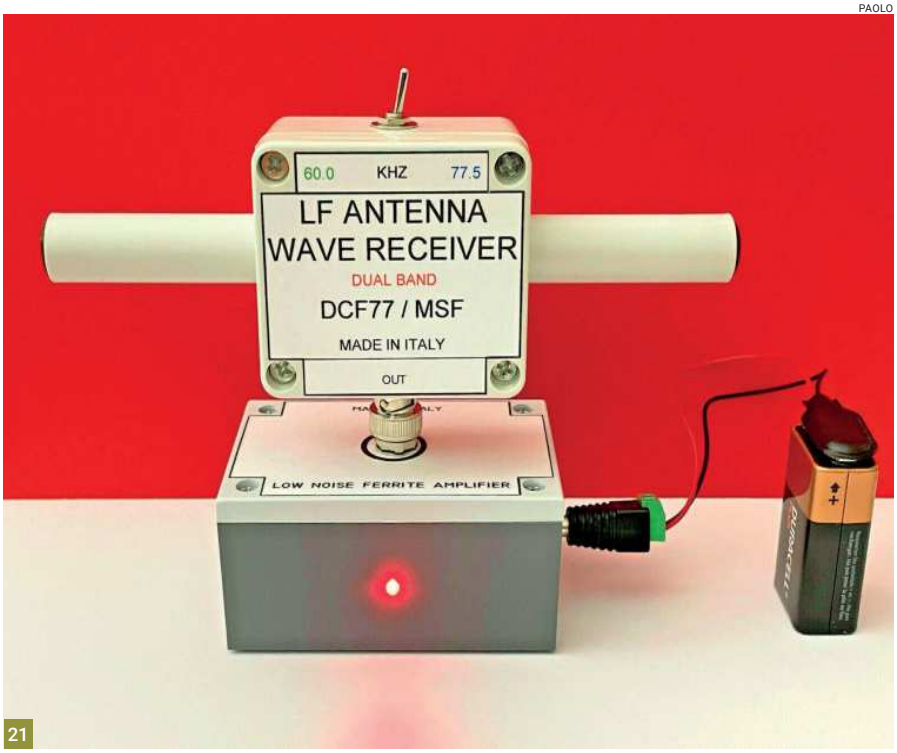
It is here where the radio meets deep-time, deep-thinking, philosophy and art.

Longplayer is a 1000-year-long (!) musical composition. It started playing at midnight on the 31st of December 1999. It will continue to play, *without repetition*, until the last moment of 2999, at which point it will conclude its cycle and begin again. Devised and composed by Jem Finer, it was originally produced as an *Artangel* commission and is now in the care of the *Longplayer Trust*.

BONITO

20

PAOLO



21

MEINBERG

22

BRETT OLIVER

23

Without going into too much detail, it works by harnessing an algorithm to six pieces of music. These are played in parallel, and simultaneously, at all times, on 234 Tibetan singing bowls. The algorithm chooses and combines these sections in such a well-timed way that *no combination is repeated* until exactly 1,000 years have passed.

Longplayer can be heard at several public listening posts around the world, at its flagship location at the Lighthouse in Trinity Buoy Wharf, London, and, of course, on an Internet-Radio (e.g. the *Roberts Stream 107*).

I think you will agree that its effect is nothing short of mesmerising.

https://longplayer.org
http://www.trinitybuoywharf.com
https://www.artangel.org.uk

A 'slice of eternity, so to speak, on our radio.

Long-Term Perspectives: The Clock of the Long Now

The philosophical concept of 'time' behind the *Longplayer* radio station is similar, in my view, to the *Clock of the Long Now*. You can see an early prototype of this mind-blowing device at the Science Museum in London, in its popular *Making the Modern World Gallery*.

The project is described as a monumental-scale, multi-millennial, all-mechanical clock. It is certainly an icon of some long-term thinking, which is needed more than ever in our troubled times.

I believe that this beautiful mechanism, is currently still being built into a mountain in Texas and that it is capable of telling the time accurately for 10,000 years.

That'll do.

The *Long Now Foundation* is responsible for its upkeep.

https://tinyurl.com/2p8wdwv5
http://longnow.org/clock

Conclusion – and a Jaw-Dropping Time Machine

I hope that my little excursion into 'radio and time', this month and last, has sharpened your appetite and that you may try and learn more about the fascinating subjects of metrology, radio, time beacons, and VLF and HF propagation.

Last but certainly not least, take a look at Fig. 23: If you ever thought that receiving these stations was dull or boring – just build yourself an *Arduino DCF77 Analyzer Mark II* from the website of Brett Oliver.

An astonishing device, as I am sure you will agree; I wish I had one in my shack.

Technology meets art in time!

https://tinyurl.com/3pxbcya3

Radio News

HUNDREDS OF JOBS TO GO AS BBC ANNOUNCES WORLD SERVICE CUTBACKS: The BBC has announced deep cuts to its World Service output that will result in the loss of hundreds of jobs, saying it has been forced to act by the government's ongoing licence fee freeze. In a move that could weaken the UK's soft power around the world, the corporation will stop producing radio output in 10 languages, including Chinese, Hindi, and Arabic. BBC Persian will end its audio broadcasts aimed at Iran, with the announcement coming at a time when widespread protests are taking place in the country. There will also be a change in focus of the World Service's English-language radio output, with more time dedicated to live news and sports programming at the expense of standalone programmes. About 382 jobs will be lost as a result of the proposals, which the BBC said were required to make £28.5m of annual savings. The broadcaster blamed years of below-inflation licence fee freezes imposed by the government, in addition to the rapidly increasing cost of producing programmes because of the state of the economy. Philippa Childs of the broadcasting union *Bectu* said she recognised the BBC needed to adapt to the digital era but that the government's licence fee freeze has *"potential ramifications for the BBC's reputation globally"*. The World Service was traditionally funded directly by the government and was seen as a soft power tool that provided British news and information to hundreds of millions of people around the globe. This money largely dried up as part of George Osborne's austerity measures in 2010, when the bill for World Service operations was loaded onto domestic licence fee payers. Since then the BBC has had to go 'cap-in-hand' to the government to seek extra funding to support specific WS projects, with ministers providing around £400m in additional cash since 2016. However, there are doubts about how long these deals will continue. Earlier this year the BBC had to ask ministers for an emergency £4m to keep its operations in Ukraine and Russia on air.
(SOURCE: The Guardian | SWLing Post)
https://tinyurl.com/2p975x5d

UKCRN COMMUNITY RADIO CONFERENCE 2022: The UK Community Radio Network has announced the return of its *National Connecting Communities Conference*. It'll take place on Saturday 19th November at *King's House Conference Centre* in Bedford, giving the chance for community radio managers, volunteers, and supporters to network, share ideas and inspire the future work of the 350+ stations on air across the United Kingdom. As it has in 2021, the event has partnered with the *Community Radio Awards* – which will take place on the same evening and at the same venue as the conference. Jointly, the Conference and Awards will be launching a bursary scheme to support individuals who otherwise might not be able to attend. The bursary tickets will include a free ticket to both events, and a contribution towards travel costs. UK Community Radio Network co-founder Nathan Spackman said, *"We were overwhelmed by the success of our first National Conference in 2021 in Coventry and the positive feedback from those who attended. We are delighted to be able to put this event together in partnership with the Community Radio Awards team and with the support of many industry businesses, be in a position to create a new bursary scheme to make sure everyone is given an equal opportunity to attend the event. This year's conference will focus on the future of our sector, with a range of speakers focusing on sustainable funding, advertising income, SSDAB and how community radio is becoming the pathway for developing the future of radio talent in the United Kingdom."* And *Community Radio Awards* Chair Martin Steers added, *"It's great to continue the partnership with the UK Community Radio Network, hosting the awards after a national conference means that it's a more worthwhile experience and more inclusive to more people who can make a day or weekend of the events"* Tickets and the bursary scheme will open in a few weeks, with those interested in finding out more or exhibiting at the event invited to use the contacts, below.
(SOURCES: UKCRN | RadioToday)
https://ukcommunity.radio
https://tinyurl.com/ycyhbeu7
www.ukcommunity.radio/conference
hello@ukcrn.radio

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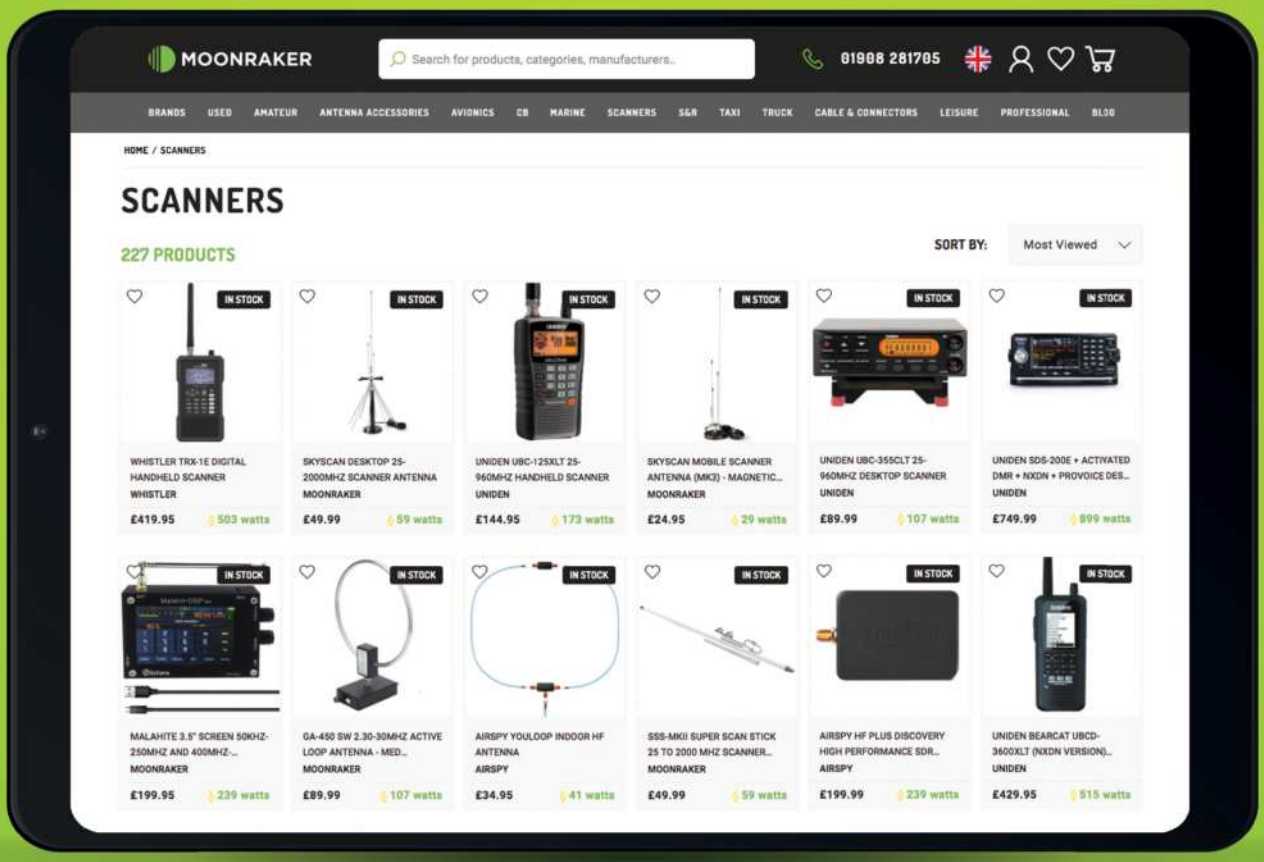

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SCAN TO SHOP

Radio News

SCALA RADIO CHRISTMAS LIVE TO INCLUDE MICHAEL BALL AND ALFIE BOE:
Hosted by Penny Smith, *Scala Radio Christmas Live* takes place at *The London Palladium* on 27 November. The show will include the best of the West End and classical favourites with Michael Ball and Alfie Boe (above) as part of the star-studded line-up. Also joining the show are Oscar-winning composer Anne Dudley, star of the stage and screen, Luke Evans and world-renowned classical chart-topping guitarist MILOŠ. As well as releasing the acclaimed piano album *Crossing the Bar* earlier this year, Anne Dudley is well-known for her film and TV scores from *The Full Monty* to *Poldark*. Luke Evans portrayed Gaston in Disney's live-action adaptation of *Beauty and the Beast* and released his debut album *At Last* to widespread acclaim in 2019. MILOŠ has led the classical guitar revival over the past decade, winning several awards including a Classical BRIT and playing sold-out tours from the UK to Japan. Speaking about joining the line-up, Michael Ball & Alfie Boe said: *"We were delighted to be asked to take part in Scala Radio's biggest ever live event and can't wait to take to The London Palladium stage for what is set to be a brilliant festive afternoon of live music. Now, where are our Christmas jumpers?!"*
More artists are to be announced in due course; tickets for the event are now on sale.
(SOURCE: Scala Radio | ontheradio)
https://tinyurl.com/ymv3a3at

THE EXODUS CONTINUES – JANE GARVEY AND FI GLOVER LEAVE THE BBC:
Broadcasters Jane Garvey and Fi Glover above) re joining *Times Radio* in an exclusive deal which includes a brand-new podcast.
The pair are two of Britain's most admired broadcasters and will present a new live daily afternoon show together on *Times Radio*. They have spent their careers at the BBC, and together have hosted the hit BBC podcast Fortunately since 2017, but this will be the first time they will broadcast a live news programme together.
Jane co-presented first *Breakfast* and then *Drive* on *BBC Radio 5 Live* and was the first voice when the station launched in 1994, before moving to BBC Radio 4's *Woman's Hour*.
Fi hosted *The Late-Night Programme* on *BBC Radio 5 Live* for three years before moving to Radio 4. The duo hit the top of the charts with their BBC podcast Fortunately, where they chat about life and talk to broadcasters and personalities.
It has had over 30 million downloads and was in the BBC's top three podcasts of 2021. The podcast is due to run until the end of the year.
Jane and Fi started on *Times Radio* on Monday the 10th of October, co-presenting a new live programme from 3-5 pm, Monday to Thursday. This will cover the day's news, as well as their reflections on the day […].
(SOURCE: Times Radio | ontheradio)
https://tinyurl.com/4xm28xup

Radio News

THE QUEEN ON THE RADIO : Radiocentre and *YouTube* are highlighting a short journey through Her Majesty The Queen's Broadcast History. An inspiring life, and a historic reign, as heard on the radio. Access is via this link:
https://tinyurl.com/ycx3wr7d

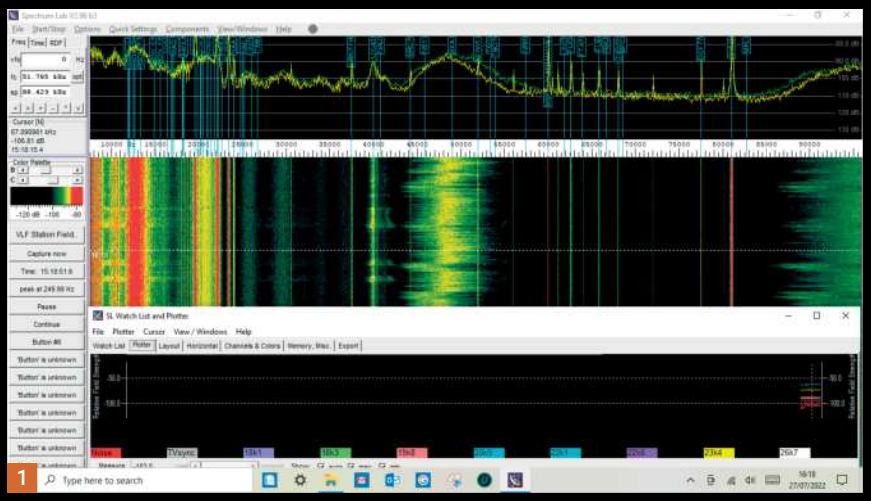
HAPPY RADIO EXPANDS ON MORE DIGITAL PLATFORMS IN THE NORTHWEST: Happy Radio UK (above) is expanding its DAB coverage across the North West by joining the multiplexes in West Cheshire, Chester, North Wales and on the Fylde Coast in Lancashire.
The station, home to Spence Macdonald and Steve Penk, has also joined *Freeview Play* in the region using the new *UK Radio Portal* service on channel 277. Darren Proctor, who set up Happy Radio with Festival Organiser Max Eden, said, *"In the six months since we've launched; the response to the station has just been incredible and proves that there has and always will be a want for local radio! We're excited to be welcoming the latest amazing new sponsors of our daytime line-up joining the Happy Radio Family and enabling us to further expand our coverage across the region,"* Co-Owner Max Eden added. Co-Owner Darren Proctor added: *"The response to what we are doing at Happy Radio is phenomenal and one of the most important things for us, is for everybody to be able to enjoy the radio station, that's why expanding our coverage was so important; particularly with having relationships with such well-known business brands across Manchester & Cheshire."*
(SOURCE: RadioToday | Freeview)
https://tinyurl.com/wc4rffzv

CHRISTMAS COMES EARLY AT GLOBAL AS HEART XMAS LAUNCHES NATIONALLY: As autumn begins Global has put Heart Xmas (above) on the national Sound Digital DAB radio platform. The station is playing Christmas music 24/7 across the UK three months ahead of Christmas Day. Already heard one morning: Mariah Carey's *'All I Want for Christmas Is You'*, Wham!'s *'Last Christmas'*, Chris Rea's *'Driving Home For Christmas'* and Band Aid's *'Do They Know It's Christmas?'* Andy Everett, Managing Editor of Heart said, *"This year we've decided to bring back our much-loved festive station, Heart Xmas, earlier than ever before. Every year, Heart listeners get in touch earlier and earlier to request their favourite festive tunes, so we wanted to get into the Christmas spirit here at Heart Xmas with three full months of non-stop festive feel-good!"*
Heart Xmas is broadcasting using DAB+ at 32 kb/s on SDL and has also been spotted on the Norfolk and Kent multiplexes.
(SOURCE: Global | RadioToday | radioworks | eRADIO with Broadcast Bionics)
https://tinyurl.com/2p8f6a9u
https://radioworks.co.uk

A NEW ADVOCATE FOR 'SLOW-CW': If you can't get enough of joining CW groups and operating with like-minded individuals, here's a new one that is offering contests, nets and other activities, especially for people who do not have their speed or their confidence yet.
It's a welcoming space called the Connecticut CW Club (CCC) and you don't even need to live in Connecticut (or even the US). Membership is also free. To kick things off, the club had its first CW contest on the 17th and 18th of September 2022.
(SOURCE: Colin Butler | RadioToday | CCC)
http://www.ctcw.club

PICTURES : GEORG WIESSALA

Georg Wiessala
wiessala@hotmail.com



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Solar Observations with the New UKRAA VLF Receiver

The editor tries out the latest version of the VLF receiver built by the UK Radio Astronomy Association (UKRAA) and goes in search of solar flares, by indirectly monitoring the German Navy Transmitter at Ramsloh on 23.4kHz.

Over the last few years this magazine, amongst others, published several articles on man-made radio signals (for example, transmissions to submarines and time signal stations, Fig. 1) and 'natural', atmospheric sounds (e.g. 'dawn chorus', 'tweeks', 'whistlers', sand so on). These are all receivable in the Very Low Frequency (VLF) band (3-30kHz).

These writings were complemented, for a time, by Tomas Hood's *RadioUser* popular column on radio wave propagation.

In addition to this, we introduced – either by itself or in the context of longer articles – the Very Low Frequency (VLF) and other equipment manufactured and distributed by the United Kingdom Radio Astronomy Association (UKRAA).

https://www.ukraa.com
https://tinyurl.com/2vyf8svj
https://tinyurl.com/yrhzdabn

Not too long ago (*RadioUser*, August 2022: 28-31) **Andrew Thomas**, a Trustee of UKRAA and long-term friend of *RadioUser*, explained to us how the radio hobby can be expanded – with the right kind of gear – to encompass the study of solar phenomena, meteor showers and *müon* particles.

Andrew had already introduced the compatible subject of hobby radio astronomy earlier (*RadioUser*, February 2021: 34-37), and I complemented this with a first look at the older version of the UKRAA VLF Aerial, ATU and Receiver, which I used for several features in previous issues.

Therefore, when Andrew contacted me again to let me know about a new, and improved, PCB for the UKRAA VLF Receiver, I jumped at the chance to write another review, since I still had the matching VLF Aerial and ATU in my possession from a number of previous experiments and articles.

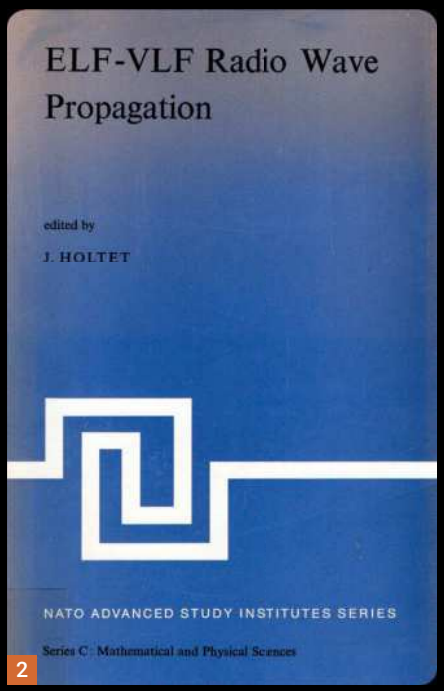
A Litmus Test: Solar Activity

In what follows, I am, once again, focussing on measuring the influence of solar emissions on the Ionosphere of the Earth, in the form of Sudden Ionospheric Disturbances (SID).

The current version of the UKRAA VLF board is still firmly calibrated to the German navy Transmitter in Ramsloh, on 23.4kHz. This is a stable signal across Europe and beyond, and a reliable indicator of the state of our Ionosphere.

Some of the world's time signals too are transmitted in the VLF and LF bands; therefore, a few words about propagation (Fig. 2): When selecting receivers and aerials for base-band (time) signals, remember that propagation is contingent on frequency, diurnal, seasonal, annual and solar patterns, transmitter power, and an aerial's efficiency, among other things. VLF *Groundwave* mostly travels close to the Earth, following its curvature.

Signals on 60, 77.5 or 100kHz, for example, can be slowed down by the ground's dielectric constant, reaching further over water (Friese, 2007: 11-13). *Groundwave* VLF predominates by day; after dark, LF signals travel by both Ground- and Skywave. *Skywave* VLF travels globally, through the Earth-Ionosphere Waveguide (80-800km). This 'sub-ionospheric propagation' undergoes refraction, reflection or attenuation;



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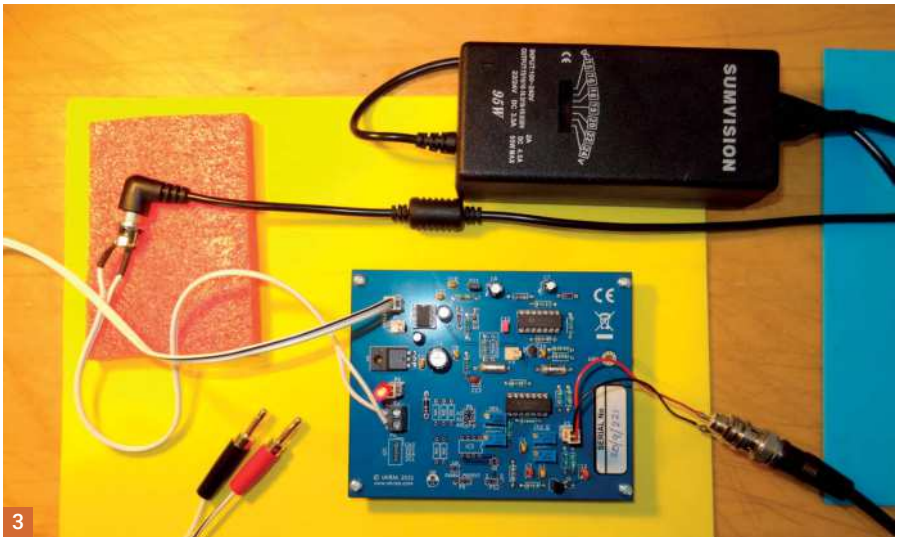
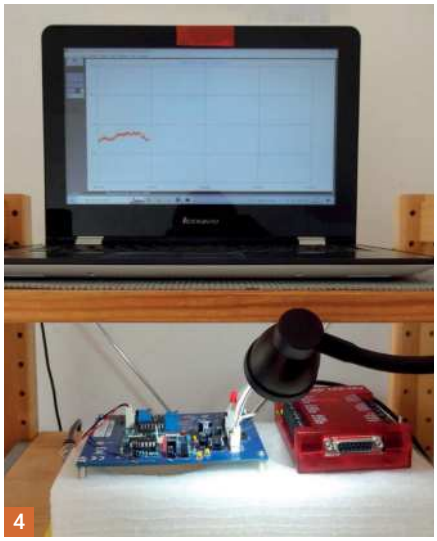




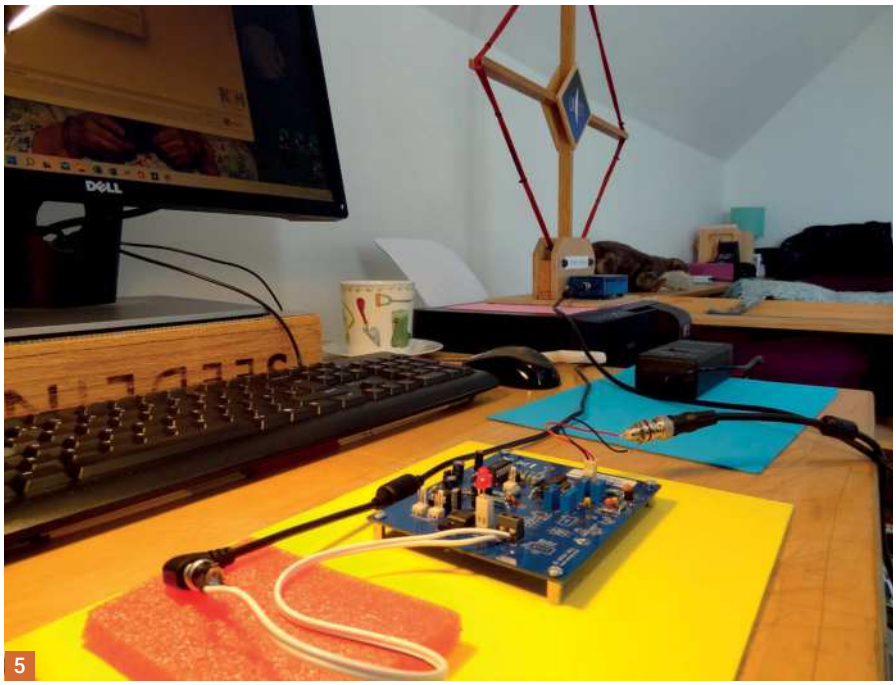


Fig. 1: Standard Frequency and Time Signals (SFTS) stations and other signals on VLF, made visible with *Spectrum Lab*. Fig. 2: An older but still widely read specialist resource on how signals in the Very Low Frequency (VLF) area travel, and how to calculate this. Fig. 3: The UKRAA VLF receiver board with a third-party 15V PSU and all connections. Fig. 4: Linking up with a laptop and *Radio Sky Pipe* software. Fig. 5: Connections to the UKRAA VLF aerial and ATU (background). Fig. 6: A plethora of signals to submarines (left) plus time signals on 60 and 77.5kHz (MSF and DCF77). Fig. 7: Mid-term virtual trace on *Radio Sky Pipe*.

inside, signals have typical skip distances of between 1,000 to 2,000km. When both kinds of waves arrive at the receiver simultaneously, this can cause (constructive and destructive) interference and fading, as happens in other frequency bands. And VLF signals – for instance, those containing time information – are of mainly a *vertical* polarisation. By contrast to short wave signals, VLF propagation can be *augmented* by enhanced atmospheric ionisation, during solar storms or in the case of meteor scatter. However, Solar Eclipses have been shown to have a dampening effect on signal levels.

https://tinyurl.com/2p8e275w

My Test Setup

I connected the PCB with the VLF receiver (Serial No. 20/09/221) to power (15V) and a suitable VLF aerial, and then, via the *LabJack U3-HV* Analogue-to-Digital Converter (ADC) to my laptop (Figs. 3 - 5). Fig. 5 shows the UKRAA VLF loop aerial in the background; this is for purposes of illustration only; it would not normally run this close to other equipment. The screenshot in Fig. 6 shows a split-screen display with (some) military VLF signals, mainly to the world's Navies, on the left and two SFTS stations in the right-hand side window.

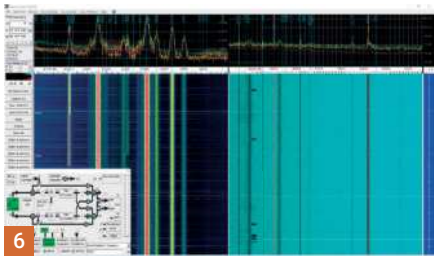
Lastly, Fig. 7 is a screen grab of the *Radio Sky Pipe* software suite running and monitoring the VLF signal over a longer period; this shows the change in the signal with the onset of darkness.

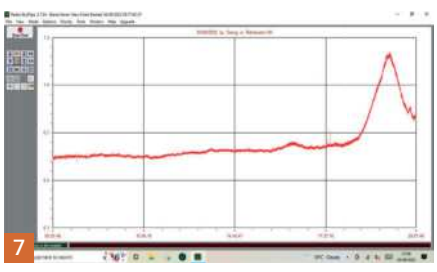
https://tinyurl.com/2p8pv7x5

In conclusion, I found the new version of the UKRAA VLF receiver to be working extremely well. It is a device that encourages some real citizen science and invites you to experiment in this fascinating frequency segment.

My warm thanks go to Andrew Thomas at UKRAA, for the very kind loan of the VLF receiver and accessories.

andrew.thomas@ukraa.com





Foghorns, Death-Jackets & Dark Vessels

Robert Connolly recalls some important forms of maritime signalling from former eras and contrasts this with news about the very latest in maritime radio, anti-piracy and geolocation technologies.

Robert Connolly
gi7ivx@btinternet.com

Since the introduction of MF/HF and VHF maritime radio, there have been considerable advances in the technology used for transmitters, antennas, and so on. Radar and AIS play an important role in collision avoidance and communications with other ships, particularly in low visibility conditions.

Before the introduction of marine radiotelegraphy (and later radiotelephony) communications with other ships, or shore stations, happened by using signal flags; in some cases, signal lamps, along with sound signals, were used. In poor visibility, ships would often have to anchor, to prevent a possible collision, especially outside busy ports. Even at anchor in such conditions, the ship would have to emit sound signals regularly to indicate its location to other vessels. While signal lamps and flags have fallen into disuse, many sound signals are still used today to indicate a ship's intentions to other vessels in the area.

Although the *Lathrop Ship Horn* was patented in 1836, it was not the first horn in use. Sound signals of various kinds, such

as bells and whistles, had been used for very many years previously; in fact, even Viking longships used a horn blown like a trumpet for communication between vessels. Sound signals were also used on certain navigation buoys for ships to establish the position of the buoy in poor visibility and communicate with lighthouses, as an aid to navigation during foggy conditions. When lighthouses were manned, the fog signal was operated by the lighthouse keepers, while, in later years, it became automatic.

Wave-Washed Beacons & Sounds

Our local lighthouse was a wave-washed building; when it was automated, a tower was constructed on the local shoreline that was also a popular caravan holiday park. The shoreline tower was probably about 15 feet high, with a horizontal tube coming out of the top of it and pointing towards the lighthouse. This emitted an invisible beam of light to the lighthouse. If it detected fog, when the beam was broken, it would activate the foghorn on the lighthouse.

Unfortunately, the horizontal tube at the top of this shore-based structure was wide enough to be blocked by a beach ball. Some younger people on holiday took great delight in managing to get a beach ball into this tube thereby activating the foghorn that would sound continuously for several days and nights before a maintenance team arrived to clear the obstruction. This tower was removed after about three years. A replacement fog detector system, which did not require any shore structures, was then put in place.

No Red Port Left

Meanwhile, in terms of ships' sound signals, one short blast indicates changing course to starboard. Two short blasts, changing course to port. If you are not sure about 'port' and 'starboard', the following is useful:

"There is No Red Port Left"

'Port is, of course, the *left* side of a ship, and its navigation light colour is *red*.

The *starboard* side navigation light is *green*.

In terms of signalling, three short blasts mean that the vessel is about to go astern. Five short horn blasts mean danger, or you do not understand the approaching boat's intentions, and they need to clarify. One prolonged blast indicates a warning and is used to indicate when you are leaving a dock or berth.

You will often hear cruise ships sounding this signal, just as they are about to leave their berths.

However, it can also be used as a warning when you are approaching an obstruction or a 'blind' turn. One prolonged blast, repeated every two minutes, is used when you are in a power-driven vessel with limited visibility. If you were travelling through the fog, you would do this. One prolonged blast plus two short blasts repeated every two minutes indicates you are in a sailing vessel in limited visibility. Two prolonged blasts repeated every two minutes may be used when you are in a power-driven vessel that has stopped, i.e. you are not anchored but you are not making way.

Marine Collision Regulations

Rule No. 34 of the new *ColRegs* (*Collision Regulations*) describes the various manoeuvring and warning signals for vessels. One additional warning signal is covered in this rule. A vessel nearing a bend – or an area of a channel or fairway where other vessels may be obscured by an intervening obstruction – must sound one prolonged blast. Such signal shall be answered with a prolonged blast by any approaching vessel that may be within hearing around the bend or behind the intervening obstruction. A full version of the Collision Regulations may be downloaded from this URL:

www.collisionregs.com/MSN1781.pdf.

One final signal using the ship's horn is seven short blasts followed by one long blast. This is the signal you hope never to hear for real when you are on a ship. This indicates the ship is in distress and those on board should get their lifejackets and go immediately to their muster stations in preparation for abandoning the ship. Passenger ferries and cruise ships include this signal in their pre-departure safety briefing announcement.

'Death' Jackets?

Should a situation arise in which you have to put your lifejacket on, to abandon ship by jumping into the sea, it is important to cross your arms, and, with your hands, hold the edges of the lifejacket tightly at shoulder level before you jump off the ship. This is to prevent the lifejacket from riding up as you enter the water and possibly breaking your neck.

In the *Princess Victoria* ferry disaster of January 1953, when 133 people lost their lives after the ferry on passage from Stranraer, Scotland to Larne in Northern Ireland foundered in the North Channel, rescuers discovered that many of the deceased passengers did not drown but died of broken necks, due to lifejackets riding up when they entered the water.

A First-Time Rescue & an EPIRB

Some years ago, RAF and Royal Navy helicopters carried out rescue operations, on behalf of the UK coastguard, using RAF fixed-wing aircraft. These provide 'top-cover', when required, for those cases in which

rescue missions were required well out to sea. When the Coastguard obtained dedicated contracted rescue helicopters that provision was terminated.

As a case study, in mid-August 2022, HM Coastguard's *Joint Rescue Coordination Centre (JRCC)* received a distress alert from a transatlantic rowing vessel. The JRCC quickly established that the two crew members from the Faroe Islands had taken to a life raft after their rowing vessel had capsized and subsequently sunk. Merchant vessels in the area were contacted and asked to help. The closest merchant vessel was asked to alter course and proceed to the distress position where the Emergency Position Indicating Radio Beacon (EPIRB) had been activated.

Due to the distance offshore, an RAF *Poseidon P8* aircraft was tasked to the distress position. The aircraft supported the rescue efforts by providing an overview of the rescue and critical communications link from the scene back to the UK. The closest merchant vessel successfully recovered the two rowers who were in good health. It was the first time that the aircraft has been used for a search and rescue operation in the UK.

AIS and LRIT

Marine VHF Automatic identification system (AIS) and Long Range Identification & Tracking (LRIT) are used to track ships, not just for collision avoidance and similar tasks, but also for maritime security purposes.

One overriding reason behind the introduction of VHF AIS was the ability to track ships that had been hijacked in active piracy regions.

There were two schools of thought on this use. Some authorities felt it would be beneficial, but many ship captains felt that VHF AIS would actually encourage pirate attacks in these regions as the position, speed, course, size and vessel type would make it much easier for pirates to select and attack targets with much more ease. As a result, many ships switched off their VHF AIS while transiting active piracy areas, believing that being 'unseen' would add to their safety and vessel security.

However, it is not just ships in piracy-afflicted regions, which may switch their AIS off: Many authorities too relied on AIS to track the movements of vessels making it an invaluable tool for spotting suspicious activity. Some vessels are involved in illegal activity, smuggling of drugs, arms or people, illegal fishing, and so on.

These vessels sometimes turn off their AIS to be, as it were, in the dark.

They are then undetectable to both other vessels and the authorities, and they may carry out illegal activities and avoid detection. However, many authorities now use several ways to work around this problem, for example, satellite imaging to look for visual evidence of the target vessel. However, it appears that one other new method stands out: this is Radio Frequency Data Acquisition (RFSA), an application of military signals intelligence for use in the maritime world.

Radio Frequency (RF) Data Acquisition - and Spies

In this system, satellite receivers are used to monitor a wide swath of the RF spectrum for all kinds of radio emissions. The satellites can geo-locate the source of a radio frequency transmission from a ship, for example, its radio communications.

Those of you involved in professional or amateur radio will be aware that the RF signature fingerprint of every transmitter is unique, a feature that military signal intelligence established during the two World Wars and used to their advantage. For example, during World War Two (1939-1945), a spy captured with his suitcase spy transceiver may have faced a choice of either being turned to work for his captors or executed.

If that spy selected the latter option, his captors could, in theory, use his spy-set to transmit false information back to his handlers in his home country. Those handlers would recognise the 'fingerprint' of his radio set and believe this false information to be genuine. However, as the spy transceivers used were mainly CW transmitters another 'fingerprint' came into play – the hand that was operating the Morse key.

Assuming that every transmitter produced an absolute identical fingerprint, the operators of those CW transmitters would produce a slightly different fingerprint, no matter how well they were trained.

RF Fingerprints

Similarly, the 'RF fingerprint' of every vessel is unique. As a result, it is much harder to falsify or turn off, compared to an AIS transceiver. Consequently, it is just as visible to RF tracking satellites as it was before their AIS was turned off.

This works in all conditions, no matter the time of day or night, or the weather conditions. When combined with synthetic aperture radar or visual imaging for confirmation, it can be a useful tool for tracking those ships that do not want to be tracked.

Unseen Labs is one company developing and using this technology. It decided to look at the fishing fleet in the northern Arabian Sea, an area known for its often intense distant-water fishing activity. Out of all the vessels identified by RF tracking in the study area, 35 per cent had their AIS turned off. This means that relying on AIS analysis alone would leave out a third of the maritime domain picture. Groups of these 'dark' vessels were clustered in the Omani EEZ and the Indian EEZ, indicating some possible illegal fishing.

A few of the suspect ships were identifiable because they turned on their AIS during the monitoring period, handing the researchers their vessels' names and characteristics in the process. One of these suspect ships was a large Chinese distant-water fishing vessel, which turned off its AIS to transit quietly into the Indian EEZ. The vessel ran without AIS inside Indian waters for 42 hours, then exited the EEZ again and turned AIS back on. With this task completed; it met up with a reefer vessel - standard behaviour for a fishing vessel that wants to offload a good catch.

Military Geolocation Procedures

The U.S. Navy is also studying ways to use RF geolocation data to improve maritime domain awareness for a range of national security missions. This could include sanctions enforcement, transhipment monitoring, SAR, fisheries management, and border control, among other tasks. The DC start-up *Kleos Space* is another company developing this technology to evaluate RF data and its potential use.

For more information visit these URLs:
https://unseenlabs.space/technology
https://kleos.space

In the British Isles, many registered fishing vessels are equipped with AIS, and they are also required to be fitted with a satellite tracking system. Even if they switch off their AIS, the satellite tracking system will continue to show authorities their position at all times; this is then cross-referenced to areas where they are permitted to fish for various species. If they enter an area that they are not permitted to be fishing in, the authorities can quickly detect this and commence appropriate action.

Finally, this month's picture is something that we could dream of owning if we won the *Euromillions*: The editor's yacht (*Ahem* -Ed). But seriously, the 1998 59.4 metre superyacht *Shubra II* has a crew of 16, and it can also sleep 16 guests.

Until next time, *Fair Winds*.

Rallies & Events

All information published here reflects the situation up to and including 13th October 2022. Readers are advised to check with the organisers of any rally or event before setting out for a visit. The Radio Enthusiast website (below) has the latest updates, please check it regularly. To get your event on this list, e-mail full details as early as possible: **wiessala@hotmail.com**

14-16 October
JAMBOREE ON THE AIR / INTERNET (JOTA/ JOTI) 2022: Ready for an amazing digital and radio Jamboree? JOTA-JOTI 2022 promises to be the best one ever, with an improved digital & offline experience for participants around the world. With so many opportunities to learn, play and connect with others, the Scouts are here to help guide your experience in a new way […]
https://tinyurl.com/28kf4n6y
https://tinyurl.com/332cyyvj
https://tinyurl.com/tarw8hny

16 October
HORNSEA ARC RALLY: Driffield Show Ground, Driffield, East Yorkshire YO25 9DW.
www.hornseaarc.co.uk

22 October
BATC CONVENTION FOR AMATEUR TV (CAT 22) (PART 2 (ONLINE): Online talks about ATV-related topics from 10 am until 3 pm.
http://batc.org.uk/live
https://tinyurl.com/3hvkyanu

22 October
ESSEX CW BOOT CAMP/ CW CONVENTION: 3rd Witham Scout & Guide HQ Rear of Spring Lodge Community Centre Powers Hall End Witham Essex CM8 2HE.
Doors open at 08:30 for registration. Begin 09:00. Finish approx 16:30. Entry is £10, with free drinks; Pre-register with G0IBN as places are limited (CR | FP).
Tel: 0745 342 60 87
g0ibn1@yahoo.com

30 October
GALASHIELS RADIO RALLY : Volunteer Hall, St Johns Street, Galashiels, TD1 3JX. Open from 11 am. (BB | CR | TS)
http://galaradioclub.co.uk/?cat=7

30 October
HACK GREEN RADIO SURPLUS HANGAR SALE: Hack Green Secret Nuclear Bunker, Nantwich, Cheshire CW5 8AL. Sale of electronic equipment, amateur gear, components,

military radio items, and vehicle spares. The doors are open at 10 am.
Tel: 01270 623 353
www.hackgreen.co.uk
coldwar@hackgreen.co.uk

6 November
BUSHVALLEY ARC RALLY: Doors open at 11 am, and entry is £3 with a door prize ticket. There will be raffles, tea, coffee and refreshments. All proceeds go towards the *Northern Ireland Air Ambulance*; all donations are welcome.

6 November
HOLSWORTHY RADIO RALLY (HARC) : Holsworthy Leisure Centre, Well Park, Western Road, Holsworthy, Devon EX22 6DH. Traders from 8:00 am; doors open to the public at 10 am. (BB | CR | D | TS) Traders & General Enquiries, Contact the Secretary via email.
m0omc@m0omc.co.uk
https://tinyurl.com/yckypn5v

19 November
THE ROCHDALE & DISTRICT AMATEUR RADIO WINTER RALLY: The Rochdale & District Amateur Radio Winter Rally will take place in St Vincent de Paul's Hall, Norden, Rochdale, OL12 7QR. Doors will be open at 10 am with the entry fee still only £3 (CR | FP | TS).
rozallin@gmail.com
dave@cardens.me.uk
Tel: 01706 633 400
Mob: 0781 367 1296

19 November
WILTSHIRE WINTER INDOOR RADIO RALLY: Kington Langley Village Hall & Fields, Church Road, Chippenham, Wiltshire SN15 5NJ. Doors are open from 9 am to 1.30 pm. £2 entry for buyers (under 16s free). £10 per table for sellers (CR | D). To reserve tables contact Brian G6HUI via e-mail:
rally@chippenhamradio.club
Chairman@g3vre.org.uk
https://tinyurl.com/ykyhf7nc

20 November
CATS 43RD RADIO AND ELECTRONICS BAZAAR: Oasis Academy Coulsdon, Homefield Road, Coulsdon, Surrey CR5 1ES. Doors are open from 10 am to 1 pm.
Tel. 07729 866 600
bazaar@catsradio.org.uk

27 November
BISHOP AUCKLAND RAC RALLY: Spennymoor Leisure Centre, High St, Spennymoor DL16 6DB: Radio, old and new, computers & electronics. The rally takes place in a large ground-floor hall. Doors open at 10.30 am (10 am for disabled visitors). Admission is £2 - under 14s free of charge with an adult. (BB | CR | D | FP | TS).
Tel: 07710 023 916
g4ttf@yahoo.co.uk

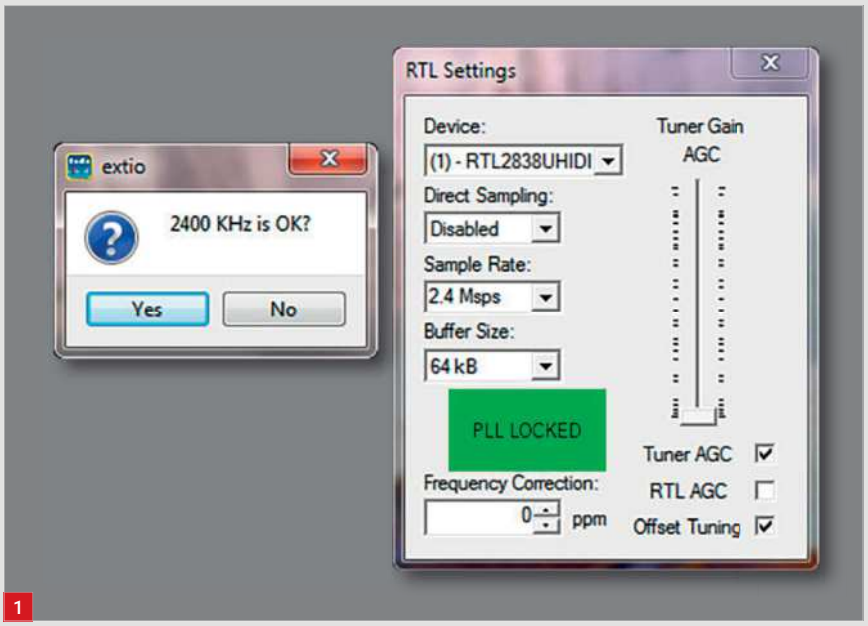
29 November
YEOVIL ARC RALLY: Davis Hall, Howell Hill, West Camel, Yeovil, Somerset BA22 7QX. Doors are open from 9.30 am to 1.00 pm. Admission is £3 (CR | FP | BB | RSGB | TS [20 tables of traders]).

WEB UPDATES
www.radioenthusiast.co.uk
https://rsgb.org/main/news/rallies
http://www.g4rga.org.uk/All.html
https://tinyurl.com/yr6j9rat
https://tinyurl.com/3ezb68d3
https://tinyurl.com/ytnnym3h
https://tinyurl.com/423udpmx

BA Buildathon **BB** Bring-and-Buy **CBS** Car Boot Sale **CR** Catering /Refreshments **D** Disabled visitors **FM** Flea Market **FP** Free Parking **LB** Licensed Bar **L** Lectures **MS** Meeting Spaces **RF** Raffle **RSGB** (RSGB) Book Stall **RU/PW** RadioUser/ PW in attendance **SIG** Special-Interest Groups **TI** Talk-In (Channel) **TS** Trade Stalls **Wi-Fi** (Free) Wi-Fi.

Follow us on Facebook @radioenthusiasts and Twitter @REnthusiasts

Kevin Ryan
kevin@radio-digital.co.uk



1

DAB Aerials and the Qt-DAB Decoder

Kevin Ryan reports on his current optimum DAB aerial setup and reviews the latest updates of the popular DAB decoding software suite Qt-DAB, including its new widgets, services and functionalities.

I completed the installation of two additional DAB aerials over the summer to add to my main eight-element Yagi, which points roughly east towards Crystal Palace and Croydon. Aerial number two points north, and number three points northeast.

All three aerials have amplifiers to offset their location in the loft. This lowers their signal-gathering capability.

In my study, each aerial is split into two outlets, allowing me to compare different receivers at the same time.

I now have reasonable coverage in most directions, using both the front and back lobes of each aerial. For example, the back lobe on the north-facing one pulls in the trial SSDAB (small-scale DAB) multiplex in Aldershot on 8A, which is a bonus. In addition to the Oxfordshire multiplex on 10B, I am hopeful of being able to receive the Oxford SSDAB multiplex scheduled to be on 8B.

Some DAB Software

I have recently evaluated a handful of DAB decoders for the PC. In my experience, the three top decoders (in no particular order) are *Qt-DAB, QIRX,* and *DAB Player*. I ruled out *DAB Player* because it does not have a driver or *.dll* file for the SDRPlay RSP1A. I then opted for *Qt-DAB*, mainly because it has been a while since I tried it out for an extended period. The nearest equivalent PC-based decoder to *Qt-DAB* is *QIRX* (*RadioUser*, July 2021: 44-47). *QIRX 3* is available for free use but Version 4 now needs a licence from the developer. The developer will provide a 15-day trial of Version 4; the full licence is a modest €20, payable by bank transfer.

SDR Devices

I have two SDRs connected to my PC. *Qt-DAB* seemed to detect the RTLSDR device (Fig. 1) because the control widget for the NooElectric unit popped up together with part of the *Qt-DAB* directory. The latter contained the *extio* drivers for the RTLSDR and LimeSDR DAB sticks. I used the RTLSDR device for a while but noted that BBC services had some 'bubbling' audio. I was not sure of the cause because all the other stations were fine. I overlooked that this directory also has an SDRPlay sub-directory with drivers for the RSP devices. After using the RTLSDR for a few days, I decided to switch over to the RSP1A. In my opinion, the RSP1A is superior to the RTL2832-based units, especially in terms of sensitivity. It is worth checking that the software is using the correct receiver. Choosing another *.dll* file just makes the device available. It still has to be configured as the 'working receiver'. I became used to restarting the *Qt-DAB* app to make sure that any new settings were used.

Review: New Qt-DAB Releases

I have used *Qt-DAB* for some time now and I have always been impressed by the stability of its DAB decoding. Other features, such as EPG and MOT (images) were included in the releases; however, I felt that they needed some more development to make them fully useful.

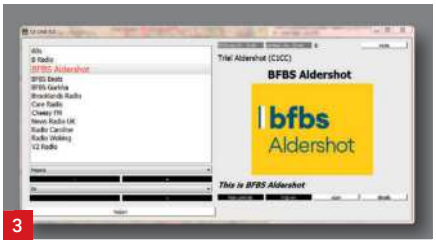
Qt-DAB only displays images contained within the main data payload (several SSDAB multiplexes include station logos) and not those sent in a separate stream (Heart London and Capital London use this method).

In late July and early August 2022, Jan van Katwijk of *Lazy Chair Computing* issued two new numbered releases. Updates and fixes are frequently added to *.exe* files available for download.

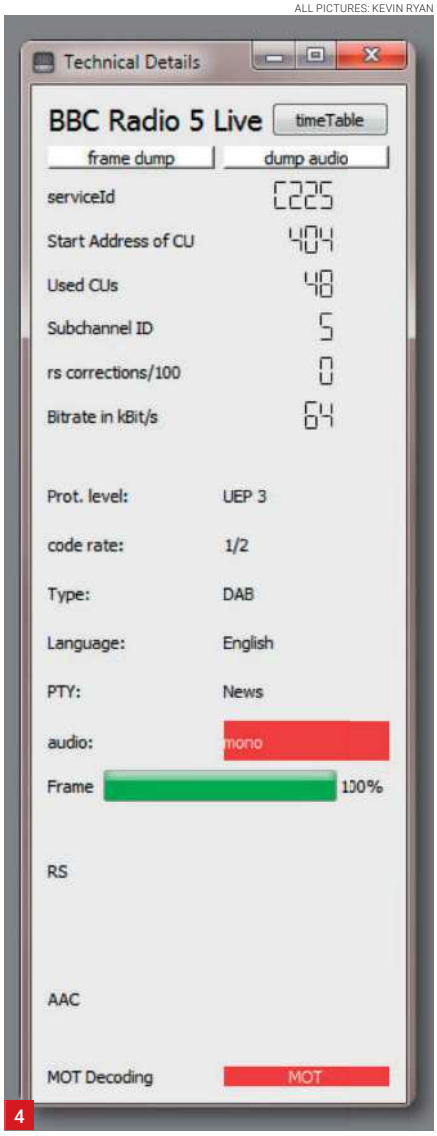
Version 4.4.2 is an incremental update in the chain of development with a branch named *Qt-DAB 5.0*. It offers a simplified Graphical User Interface (GUI) in which most controls are moved to a new configuration and control widget. In version 5.0, the software selects the last used device. If this cannot be found, it will launch a widget, through which a new device can be configured. The *Qt-DAB 5.0* software has a few new features and may very well become the primary route for new releases.

ALL PICTURES: KEVIN RYAN

2



3



4

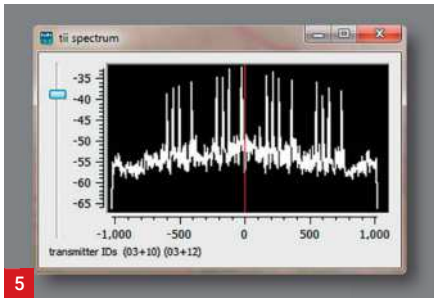


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Fig.1: If you have an RTLSDR device attached to a PC, *Qt-DAB* is likely to detect it and give you the option of using it. Drivers for other SDR devices are available in sub-directories. Fig. 2: The app displays a logo for 'BBC Radio Services'. The quality indicates they are probably meant to be displayed as thumbnails. Fig. 3: BFBS Aldershot SSDAB carries logos for several of its services. *Qt-DAB5* displays them in the *main* widget, rather than the *details* widget used by *Qt-DAB4*. Fig. 4: The *details* widget for *BBC Radio 5 Live* with the *timeTable* button for programme information for that day. Fig. 5: The old *TII detector* displays the characteristic four groups of transmitter information. The transmitter IDs are displayed as decimal information. Hannington (03+12) is correct, but 03+10 looks like a false positive. Fig. 6: *Qt-DAB5* adds all the detected transmitters to a map marked with different symbols. Unlike *QIRX*, it doesn't annotate the display with their names.

Qt-DAB in General Use

There are some visual differences between the two latest Qt-DAB releases. However, they do not alter what the software can do. Perhaps I am stating the obvious, but the software is an advanced program for decoding terrestrial DAB and DAB+ (T-DAB) transmissions. The program has a GUI and works on Windows, Linux and Raspberry devices. Pre-compiled versions can be found in the *releases* section of the *repository* for *Qt-DAB*. The Windows and Linux versions are implemented via a straightforward download. However, a bit of computing knowledge is needed to create an executable for Raspberry devices. The manual contains several pages given over to the building of an executable from scratch for various devices:

https://tinyurl.com/4s735rar

Installation and Main Widget

Installation is straightforward with only a few steps. The app will automatically launch if you ticked that option in the installation dialogue. Whichever device you choose to use, a small screen, asking you to accept a particular sample rate, will be hidden behind the control widget for the SDR. There are 'yes' and 'no' options but only 'yes' works. A few seconds later, the main widget appears on the screen.

The main widget in *Qt-DAB 4.4.2* is split into three sections: The left-hand side is for controlling the DAB channels, setting presets, and selecting the service you want to listen to. The top right-hand section displays basic information on the tuned service, including the service name, dynamic label text, a calculation of SNR, and the tuned frequency; and the bottom right-hand side lists the available widgets – more on that later.

The screen has several other pieces of information – all are explained in the detailed manual.

In *Qt-DAB 5.0*, the main widget is simplified and just keeps the essential controls to scan for, and select, radio services. Presets can still be set, and there is a new button labelled '*history*' listing services detected since the last time the list was cleared. The GUI is a little annoying, in that it spends ages adjusting its window to accommodate images, and this process partially covers the services list.

I was tuned to the BBC World Service on Channel 12B, and (eventually) the widget displayed a rotating set of logos, which were probably meant as thumbnails (Fig. 2). They may be part of the work going on in the team that delivers the new dashboards for the internet-connected cars of the future. On other BBC services on the local multiplexes, the default *Qt-DAB* logo is displayed. The logos from the Aldershot multiplex on 8A (Fig. 3) appeared on the *main* widget and not in the *details* one, as happens when you are using *Qt-DAB 4.4.2*.

What is more, *Qt-DAB 5.0* is a little less stable than version 4, especially if you make 'random' changes in the configuration widget – as I did when evaluating the software.

Tuning and Configuration

Qt-DAB is great for listening to a DAB service on a computer. Out of the box, the software has no station information. I opted to work through the DAB channels that I know put some signal into this area. If you do not want to 'increment' through all the available channels using the next and previous buttons, then the scan widget is available.

However, before launching any of the widgets, I recommend checking out your configuration. The manual is generally helpful in giving you an understanding of what the options do. Depending on which version you decide to use, some settings control the scan. There are options for a one-off complete scan of the DAB band, a stop-as-soon-as-a-channel-is-reached scan or a

continuous bandscan. The latter might be useful during a propagation lift.

Two other buttons influence the scan: The *skipList* button opens a CSV list of the DAB channels with a default of '+' (which *includes* it in the scan). By double-clicking the cell, this can be changed to a '–' (*excluding* it from the scan). *Qt-DAB* has to be restarted to pick up this file, otherwise, it will continue scanning from 5A to 13F in the same session.

Scan and Schedule Widgets

The *scan* widget starts by asking if you want to save the scan – and, if so, where. I found that creating a new folder to save the scans caused a blip in the software but the folder got created. The scans are stored as *.csv* files and are easily viewed. However, I haven't found where this scan information is used, and it may be just for reference.

The *list* button (V4) displays stations in random order – not by multiplex or alphabetically. I think that the list is my history of tuning in a multiplex – the newest one first. Version 5 renames this button as '*history*'.

This widget works well, performing actions set in the schedule. Starting the widget opens a list of services that includes *nothing, exit, audiodump, framedump, dlText, FICdump,* and a list of stations from the tuned multiplex, plus any presets. All the timers are shown in another window, not the one you set up the individual entries. I am not sure where the various dump files are stored but I couldn't find them on the PC.

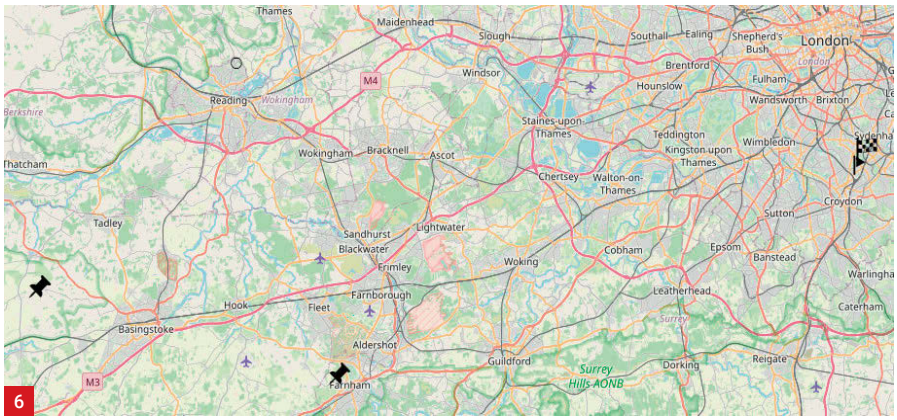
The '*exit*' command, naturally, shuts down the application.

The Detail Widget

The *Detail* widget provides a large amount of technical information on the currently tuned service. Here you can save the audio content into a *.wav* file or dump the PCM output as an *.aac* file. The button changes to '*Recording*' for the PCM dump and '*Writing*' for the audio dump. Clicking the buttons again will stop the action.

Other information displayed includes the number of Capacity Units (CU) used (there are 768 available), the encoding and the bit rate and other low-level information on how well the AAC+ frames are being received and decoded. In Version 4, this widget displays logos or images found in the DAB frames.

The manual shows that any alternative frequencies will be displayed but nothing showed up while tuned into BBC domestic services that I know carried this information in the past. Tuning in to Radio 5 Live made a '*timeTable*' button appear (Fig. 4). This launched a basic schedule, roughly with the same level of detail as the *Radio Times* does for the whole day.



6

All the BBC stations, except for BBC Radio 4, have their own EPG information. The EPG indicator on the configuration widget is yellow showing a message that the MOT is partially implemented. The logos might also be contained in the *BBC Guide* data service. The Berkshire and North Hampshire multiplex has a data service called *Station Logos*, but *Qt-DAB* did not appear to make use of it on this occasion.

The SNR Widget

Qt-DAB continually *measures* the signal too. According to the manual, the value displayed is *"the difference in dB between the overall signal amplitude and the signal amplitude in the NULL period"*.

To be honest I am not sure if this is saying that the SNR shown is the best guess.

However, the NULL period is an important part of the synchronizing process in decoding DAB radio. A DAB system sends data in three big blocks: *Synchronization Block, Fast Information Channel (FIC)* and *Main Service Channel (MSC)*. In terms of transmission time, this is the NULL period during which special symbols (a carrier with data encoded using phases and amplitudes) provide timing and channel-delay information.

This is followed by multiplex and station information in the FIC, and by audio and images on the MSC.

Correlation Widget and Transmitter Identification (TII)

National DAB networks and many local multiplexes use more than one transmitter to cover a country. Typically, any receiver will receive signals from more than one transmitter. Correlation, a mathematical process, helps identify the dominant transmitter.

Each DAB transmitter has a unique four-digit code to identify it. The new SSDAB multiplexes will also have codes, as indicated by the most recent issue of the DAB parameters from Ofcom, which includes TII codes for the two Salisbury SS transmitters. The code is sent in every other NULL period.

Qt-DAB has two TII decoders. I have found the old decoder (Fig. 5) to be more reliable with fewer false positives. To use the new detector, tick the box in the configuration widget.

The detection of a transmitter ID code seems to depend on the SNR, and a good audio signal is no guarantee of getting the transmitter ID. The converse is also true: I picked up the Surrey/North Sussex multiplex on 10C; the audio was ropey but I *Qt-DAB* identified the transmitter as Hungry Hill, 30km away.

Qt-DAB plots the transmitters on a map that is launched using the '*http*' button (Fig. 6).

However, this mapping process is a little variable and may not happen even if the TII widget shows that a code has been extracted. *Qt-DAB* displays the code in decimal format, whereas Ofcom and *Wohnort* use the hexadecimal code. I have come to rely on the Ofcom list for accuracy.

Furthermore, unticking the box in the configuration widget that restricts the transmitter display to the current channel, means that a map of the nearest transmitters can be built up during a listening session.

https://tinyurl.com/ym3sw989

Other Widgets

The *Content* widget opens a *.csv* file showing the services in the currently tuned multiplex. The *Spectrum* widget displays the spectrum of the tuned DAB channel. The *Coordinates* widget is where you input the latitude and longitude of your location. The software remembers your location, even though it opens with blank input boxes every time you use it.

Radio News

A LOOK INSIDE CBC/RADIO-CANADA'S NEW BROADCAST CENTER: The new *Maison de Radio Canada* in Montréal is the headquarters for the French-language network of Canada's national public broadcaster, CBC/Radio-Canada (right). It houses production facilities for the public broadcaster's television, radio and digital content. CBC/Radio-Canada offers diverse content in English, French and eight Indigenous languages; it also delivers content in Spanish, Arabic, Chinese, Punjabi and Tagalog through Radio Canada International (RCI). *"CBC/Radio-Canada's previous building, built in the 1970s, no longer met our needs as a 21st-century public broadcaster,"* said Supervising Audio Engineer François Goupil; *"Neither the workspaces nor the production infrastructure [were] fit for our current workflow. Moving to a brand-new facility right across the street, the new Maison de Radio-Canada, gave us the chance to fully embrace the AoIP world. We had the chance to start from a clean slate."* Building construction began in 2017 and the first radio studios were delivered in August 2020. The radio studios are now fully operational. Colleagues on the TV side subsequently moved production from the old building to the new one, starting with CBC/Radio-Canada's French-language all-news network, ICI RDI. For radio alone, the facility has 13 new radio studios, 15 audio booths, new master control, and all of the supporting facilities, using SMPTE 2110-30 audio networking […].
(SOURCES: RADIOWORLD *SmartBrief*, September 2022 | RADIOWORLD e-Book: *Spectacular Radio Stations* | RCI)
https://tinyurl.com/2p8vzckt
https://tinyurl.com/ystjeybh

UK RADIO PORTAL AIMS TO OFFER AN EASY ROUTE TO JOIN FREEVIEW PLAY: A new service is launching offering radio stations the opportunity to join the Freeview Play platform without signing up for their own channel. UK Radio Portal will be an interactive service on channel 277 providing a selection of radio stations to choose from. The company will take internet audio streams and add them to their list of stations available on the channel for a monthly cost. Stations will then be displayed along with their logo in their chosen region(s). UK Radio Portal launched on September 21st and will take on any station regardless of an Ofcom licence but must follow the *Ofcom Broadcasting Code*.
(SOURCE: RadioToday | UK Radio Portal
roy.martin@radiotoday.co.uk
admin@radiotoday.co.uk)
https://tinyurl.com/3uk8xrdv
www.ukrp.tv

JAZZ FM

1

Eat, Cruise and be Scary

Chrissy Brand looks at how a French restaurant turned to radio to stay alive, finds cruises with radio and musical themes, and she selects some suitably scary programmes for Halloween.

Chrissy Brand
chrissyLB@hotmail.co.uk

Radio can be harnessed to deliver vital messages and information, as well as entertainment. In a world dominated by the establishment media, the internet has enabled many lesser-heard voices to try and express and disseminate alternative views. As well as the major global issues of our day, such as climate change, the cost of living and inequalities, smaller, often community-focused campaigns can also be raised to an elevated prominence, which they were not afforded in the pre-internet world.

Vive Radio Bistrot!

A case in point came to my attention in the late summer, thanks to a friend who lives in rural France: Eleanor Pletts, an illustrator and designer, in Prémery, in central France, alerted me to Radio Bistrot. Eric Boubin runs a popular bistro in the village, and stood in the 2020 mayoral elections, gaining 19.5% of the vote, which is impressive for a newcomer.

This shook up the two main groups who had passed control back and forth over successive elections. In the summer, the *Maire* (mayor) allowed preparations for a big weekend festival centred around the bistro to be completed, only to send in an official immediate shut-down because of some 'security hazards': The fire extinguisher wasn't positioned at 1.20m, but 30cm higher, and the exits, which have been perfectly fine for decades, are no longer sufficient in case of fire.

However, as a former member of the fire service, Eric argued that he knew what he was doing.

What was to be done? Eric decided to garner wider support through an online petition and an internet radio station that he has streamed through his Facebook account since Covid-19 first struck. Eleanor told me how *Radio Bistrot* (Fig. 2) started at, *"the beginning of the first lockdown as a way of continuing the social aspect of the Bistro itself even whilst closed, and also to relay important local information, as a place where people could ask for help if needed (we had 'missions' such as an elderly person's fridge packed up and a replacement was found and delivered the next day for free, similar for a washing machine for a single mum, that sort of thing). Eric started cooking meals to deliver, using produce donated by the Bistro's 'family and friends,' as we call ourselves." Radio Bistrot* is usually streamed live on Friday evenings from 1800 UTC through Eric's Facebook page and attracts audiences of a thousand or more listeners, in neighbouring Belgium as well as France. A link to a show in August is given here, you may need to follow or track down Eric on Facebook to hear more.

https://tinyurl.com/y97ss5ss

Eleanor explained the programme content to me, *"Eric the Bistrotier (and 'social warrior') entertains and informs for an hour or so, or however long he feels like talking for: with local news and opinion, which changes from the very single track version of events coming from our Mairie, games and jokes of varying cleanliness and enthusiastic participation from the commenters online, special guests and more."*

"It was a great highlight of the week during lockdowns and a lifeline for people

Fig. 1: A cruise along the Mississippi River with *Jazz FM* in February. Fig. 2: Eric Boubin feeds mouths and minds at *Radio Bistrot* in France. Fig. 3: Quality radio emanating from *KTOO* in Juneau, Alaska. Fig. 4: A podcast to scare or surprise you - all year round. Fig. 5: KAB Radio, a fictional station in the movie *The Fog*.

RADIO BISTROT

2

who needed a helping hand or just to join in with a bit of social life. Now it is carrying the Bistro family on through the coming weeks and months until a new home is found and the doors can open once more."

Eric is continuing with *Radio Bistro* and has found new premises for the actual bistro in another village. A weekend of historical re-enactment in September took place, at a USA World War II camp with jeeps and GIs, through a local enthusiasts' club. Eleanor concluded: "*Eric is all about inclusion, to sum him up he's a pied piper, he is a total humanist that just wants things to be better for everyone, and I can't argue with that."*

Alors, Vive Radio Bistrot!

If you are looking to hear some more conventional music radio for restaurants, then at least one website offers just that, with several streams on offer. One is called *Restaurant Mix*, with one reviewer lauding the, *"upbeat and catchy songs to fill the void between customers."* Other options are entitled *Pepperoni, Cheese* (curated by Pizza Studio Canada), *Great Terrace Vibe*, *Hadaba Rouge Music*, and *Easy Dining Italian Mix*.

https://tinyurl.com/3jwz9z3j

Radio Cruisin'

In the past decade, cruises have become more innovative and versatile in what they offer in the entertainment stakes. Themed cruises with a radio connection have caught on in the Western world. One of the leaders is called *Cruise to the Edge,* which is comprised of prog rock and metal musicians aboard a cruise ship. The title is a pun on the seminal 1970s *Close to the Edge* album by *Yes*. It has seen rock radio favourites such as Adrian Belew, Marillion, Gong, Riverside, and The Flower Kings perform nightly on cruises from Orlando in Florida to the Bahamas.

https://cruisetotheedge.com

Other music cruises include *Shiprocked*, which travels from Texas to Mexico, and *Voragas*, which is a metal and rock-themed cruise from Miami to Belize. Thankfully, many genres are represented in this niche world of cruises, radio and music. The *Outlaw Country Cruise* includes country acts like Lucinda Williams, Emmylou Harris and Steve Earle and The Dukes. *Keeping the Blues Alive* and *Jamrock Reggae* are others, and there are several types of blues and jazz music covered in cruises. Mostly these all start in ports in the USA.

There are a couple that I am tempted by: *Groove Cruise Orlando* departed from Port Canaveral, Florida, and headed to Haiti. It was aimed at electronic dance music fans, and onboard musicians included Gorgon City and Markus Schulz. My other cruise of choice takes place in February 2023. It is advertised by UK national station, Jazz FM (Fig. 1), *"As you make your way down the Mississippi River … Jazz FM's very own Deb Grant will also be onboard, broadcasting her show from the boat and providing a fantastic DJ set."* However, cruises are not cheap. The Jazz FM jaunt costs £3,500 for eleven nights and that does not include your travel costs to and from the starting point of Memphis, Tennessee.

https://tinyurl.com/3nnt9j3v

You may be too late for 2022 but next year's *Literature Festival at Sea* runs in November 2023. It is sponsored by *The Sunday Times* and the Cheltenham Literature Festival and unites authors, poets, broadcasters and historians. Prices start from £999, and the ship goes from Southampton to New York City.

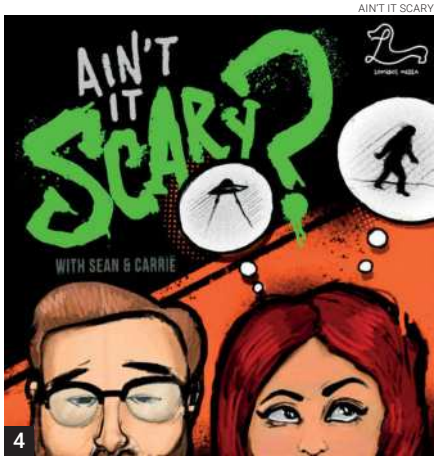
The *Henley Literary Festival* runs a cruise on the Danube with controversial radio 4 broadcaster Jenni Murray, but also the much-loved Louis de Bernières (*Captain Corelli's Mandolin*) and Ruth Jones (*Gavin and Stacey*). If you prefer to stay at home or to do further research before you commit to such extravagances, there are podcasts and programmes to give you information.

NPR station KTOO (Fig. 3) in Juneau, Alaska, produced a podcast series called *Cruise Town*: "*Cruise ship passengers to Juneau, Alaska, outnumber local residents 35 to 1. Cruise Town is a podcast from KTOO News. It's about how Juneau became a Cruise Town, what it's like to live in a Cruise Town and what the city's future holds, in the light of the industry's explosive growth."*

KTOO

3

AIN'T IT SCARY



4

https://tinyurl.com/2hhepnpn
www.ktoo.org

Other podcasts include *Essential Cruise Tips*. UK-based Gary Bembridge with advice about all forms of cruising and ports. From Florida, Doug Parker gives news, ship reviews, money-saving tips and interviews with industry insiders and everyday cruisers. In 2012 he broadcast an

Date	Time (UTC)	Station	Programme	Podcast	URL/ Stream/ Frequency
Daily	24/7	CKWX City News 1130, Vancouver	News, science, book reviews	https://tinyurl.com/4by59r8m	1130 kHz, online https://tinyurl.com/yde8u9b3
Daily	24/7	Radio Tonga	News, music, culture, in vernacular	NA	1017 kHz, online https://tinyurl.com/35wvxmtn
Weekdays	1600 to 1800	KQED, Northern California	Forum with Mina Kim and Alex Madrigal	www.kqed.org/forum	Fm locally and online www.kqed.org
Monday	1000 to 1200	Melodic Distraction	Mornings with Chantelle Lunt	https://tinyurl.com/4vchrkw3	Online only at www.melodicdistraction.com
Monday	2100 to 2200	BBC Mersey	Orient Express, a Chinese community programme in English	BBC Sounds	FM, DAB, Freeview, online https://tinyurl.com/yck3hmyh
Thursday	1800 to 1900	Radio Citta Aperta	Thursday the New Friday, a sound journey in search of beauty and emotion, with Sanja Babic	www.radiocittaperta.it/podcast	FM in Italy, online https://tinyurl.com/yw2jczr3
Thursday	1932 to 2000	BBC World Service	Science in Action	BBC Sounds	DAB, short wave, online, https://tinyurl.com/99f4paxp
Friday	2105 to 2200	Deutschlandfunk	On Stage, live concerts	https://tinyurl.com/ynndb9xy	FM locally www.deutschlandfunk.de
Saturday & Sunday	0000 to 0215 pm local US time	WSM and others	Grand Ole Opry	https://tinyurl.com/3j3xtx8b	FM locally, Sirius XM, online https://tinyurl.com/yc7ktjep
Sunday	1200 to 1400	Jack FM Oxfordshire	Dom Joly's Sunday Session	www.jackfm.co.uk/how-to-listen	FM, DAB, smart speaker, app

Table 1. Chrissy's Definitely Scary and Informative Autumnal Listening Recommendations.

episode from the *MS Zuiderdam* on a cruise on the Panama Canal.

https://cruisetips.libsyn.com
https://cruiseradio.net/podcasts
https://tinyurl.com/ZuidPanama

When Covid-19 hit in 2020, Brent Kuttschreuter launched a station aboard the Holland America Line's ship, *MS Zuiderdam*. *Zuiderdam Radio* became a community station broadcasting via the ship's PA system for two hours a day. Programmes consisted of music, interviews, weather, news, comedy and a fashion segment.

https://tinyurl.com/bde8j2rz

Elsewhere, the former NPR radio show *A Prairie Home Companion* ran regular cruises and recorded shows onboard for a later transmission throughout this century.

www.prairiehome.org/shows/57153.html

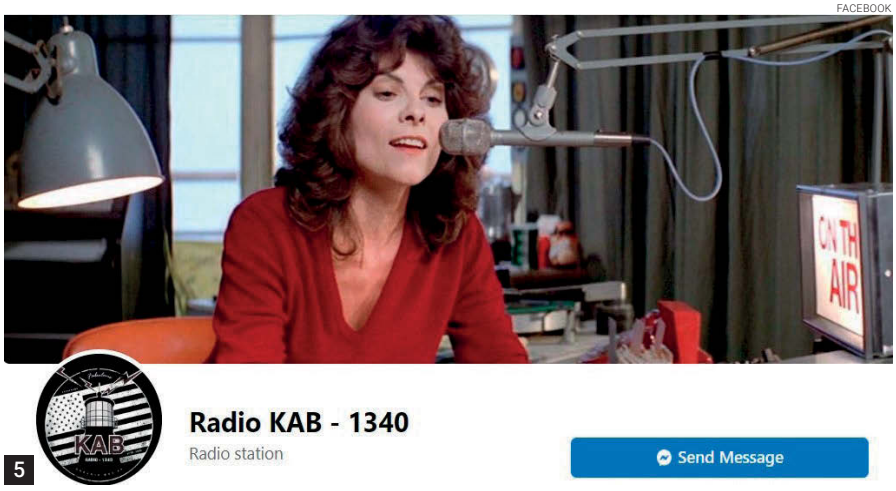
I wonder whether other cruise ships have their own onboard radio station: if not, they probably should. Broadcaster, Simon Brotherton, and travel industry writer, Emma Smith, made the case for this, some eight years ago: "*We could access the station through our cruise ship's interactive TV or portable device and in public areas; it could be broadcast through the PA system. After all, you'll often hear your cruise ship captain wishing you good morning and telling you a little about the sea's conditions and of course, your cruise director is often on-hand to remind you of events. Cruise ship radio I think, though, would create a real sense of community. Come on, if we can have hospital radio, surely we can have cruise ship radio?*"

https://tinyurl.com/4kr5uyr7

Heard at Halloween

It is that time of year when radio stations and podcasters turn to history and horror stories to mark Halloween, as well as

FACEBOOK



5

the *Day of the Dead*. For a podcast about true crime, the paranormal, weird history, and a miscellany of horror, you could do worse than listen to *Ain't it Scary*. Sean and Carrie have produced over one hundred episodes of this show and it is always an engrossing affair.

www.aintitscary.com

In the Republic of Ireland, the online station Halloween FM runs programmes from 0700 to 0100 UTC. Listen, if you dare, to programmes such as *Drive From Hell*, *Nightmare Nights*, and *The Bloody Breakfast*.

https://halloweenfm.com

Back in 2015, in an episode of the *History Today* podcast, Amy Fuller discussed the myths surrounding Mexico's *Day of the Dead*; and in 2018, Ben of the *Travel Man* podcast gave his own take on the tradition.

www.historytoday.com/podcast-day-dead
https://tinyurl.com/mw29f5yu

Australian station Radio Clandestino had a *Day of the Dead Fiesta* programme in 2020 and 2021. It looked at the origins of the tradition, played Mexican and Latin American music and advertised an annual festival for the event in Canberra.

https://tinyurl.com/ClandestinoDayOfDead
https://tinyurl.com/2p944zk3

If you are looking for a good horror film, then how about John Carpenter's *The Fog*? There is a 1980 and a 2005 version. I watched the original on the Legend channel (Freeview 041) in September. Jazz DJ Stevie Wayne has a central role in the plot, working at KAB, a radio station based in a lighthouse in Antonio Bay; she was played by Adrienne Barbeau in the 1980 version of the film and by Selma Blair in the 2005 remake. You can find an interesting remix of the 1980s film soundtrack on *Mixcloud*. There is also a link to *YouTube*, where other versions of the film soundtrack can be heard. There is a small FB group for fans of KAB radio (Fig. 5).

The *Legend* channel launched at the end of June on *Freeview* and is available on other platforms too. It broadcasts suspense, action and science fiction films plus TV series such as *The Prisoner*.

https://tinyurl.com/u98uv7z7
https://tinyurl.com/25t9j52h
www.legend-tv.co.uk

Chrissy Brand
chrissyLB@hotmail.co.uk

MAHDI CHAGHARI ON *UNSPLASH*

1

Opening Minds Through Music

Chrissy Brand dives into the deep ocean of World Music, offering some definitions, a carefully curated selection of podcasts, and a veritable plethora of diverse programmes to listen to, learn from and enjoy.

The English-language term *World Music* is understood by most of the western world as encompassing styles of music from non-Western countries. A recent *Wikipedia* article succinctly summarises this as *"including quasi-traditional, intercultural, and traditional music that does not follow North American or British pop and folk traditions."* The inception of this gathering together of a huge range of genres and styles, instruments and sounds, under one (somewhat generic) banner of *World Music* has been credited to ethnomusicologist Robert E. Brown. He used it in the early 1960s at Wesleyan University in Connecticut, where he developed undergraduate and doctoral programmes in the discipline. To enhance the learning process, Brown invited more than a dozen visiting performers from Africa and Asia and began a world music concert series.

The 1980s saw a growth in World Music's popularity in the UK, through events such as the *WOMAD Festival* (World of Music and Dance). This past summer, *WOMAD* celebrated its 40th anniversary, being held in person in Wiltshire once again, after a two-year absence due to Covid-19.

The 2022 event saw one of its co-founders, Peter Gabriel, appear on stage with headline act Angelique Kidjo. Other musicians at the festival included Fatoumata Diawara, Lianne La Havas, Kae Tempest, Kanda Bongo Man, Gilberto Gil, and Les Amazones d'Afrique.

Radio WOMAD also took to the airwaves on 87.7MHz, with an Ofcom Restricted Services Licence (RSL). Interviews and music can be heard on the *Radio WOMAD Mixcloud* channel (Fig. 2).
https://tinyurl.com/mtfa6yb3

The Roles of Radio

Radio stations around the world have, of course, been playing, and promoting, music of all kinds for decades, usually concentrating on their domestic artists. This, in turn, has led to raising awareness of different musical styles in other countries. Radio has had a role to play in the evolution and popularisation of a wealth of music. A quick *"A to Z"* of nations can, partially, tell that tale:

Afghanistan's popular music is based on singing. According to the *Rough Guide to World Music, Volume* 2, it was created in the 1950s in Kabul radio studios when the country began broadcasting. Following the model of Indian and European broadcasters, a radio orchestra was formed. Afghan folk instruments were included, such as the *dutar* and *tanbur*, along with rural-style instruments including the *soma* and *doghol*.

At that time, Radio Afghanistan was fundamental in bringing the country together through music, as well as being a force for some much wider social change.

As in most countries, in Zambia, radio also had a key role. The *Rough Guide to World Music, Volume 1*, explains how, in the 1960s, the Zambian Broadcasting Service

produced pioneering work in recording ceremonial, festival and work songs across southern central Africa. The *Lusaka Radio Band* was the country's first indigenous musical group, later renamed the *Big Gold Six Band*, promoting Zambian music. Congolese rumba was another musical genre that was popular on Zambian radio.

Today, a wide range of hip-hop, R&B, reggae and ragga can be heard when you dip into that country's radio scene. Take a trip online with the *Radio Garden* app, to discover it for yourself. By the way, second-hand copies of *The Rough Guide to World Music* are available in print but also online at the *Songlines* website.

https://tinyurl.com/yc5jmvnu

How To Tune In

Anyone who has listened to Short or Medium wave has heard and, hopefully, enjoyed, music of many genres from all over the world (Fig. 1). Hindustani classical music, for example, was a staple on All India Radio, which now needs to be heard online. However, a quick perusal of the log sections in the monthly BDXC publication, *Communication*, amply illustrates a feast of musical delights to be heard on your radio, from around the world.

A vast choice of fascinating musical genres can be heard on even a basic radio:

Tune to Radio Algeria International on 531kHz or Jil FM on 549kHz to get a taste of various Algerian music. On the Tropical bands, flute music and Quechua songs from Bolivian religious station Radio Mosoj Chaski can be heard on 3310kHz. There is Andean music from Radio Tarma in Peru on 4775kHz, plus Korean folk and K-Pop on KBS World using 3955kHz (as well as a good choice of streaming from the station's website). Some of the many styles of Brazilian music are there for you when you tune into Radio Clube do Para in Belem on 4885kHz and Radio Brasil Central on 4985kHz.

These are just a few of many. Many of you will be aware that veteran DXer Alan Roe regularly updates his *Music Programmes on Short Wave* guide at the *BDXC* and *Radio Enthusiast* websites, offering many further examples of what is to be heard.

https://tinyurl.com/uuxvxcmp
www.bdxc.org.uk
www.mosojchaski.org/en
https://radioalgerie.dz/rai/en
http://www.radiotarma.com
www.bdxc.org.uk/music.pdf

Simply listening to one radio station's musical output cannot give a representative sample of all that the particular region, country or culture has to offer musically. It merely gives a glimpse of a tip of an iceberg.

To achieve a well-rounded view and a better understanding, it is best to read up on different styles of music and to invest, in vinyl, CD or in digital format. Perhaps, the first steps before any purchase are to watch *YouTube* or other channels to discover the music of different cultures and to get an idea of what appeals best to you. This cannot fail to broaden your musical horizons and lead to an enriched experience.

WOMAD FACEBOOK

2

Fig. 1: Music is a global language in itself and can lift the spirit. Fig. 2: *Radio WOMAD* operates on a Restricted Service Licence (RSL) during this popular annual festival. Fig. 3: A QSL from *Radio Carpathia*, which has been broadcasting eastern European music since the summer.
Fig. 4: World Music Radio (WMR) has been showcasing global sounds since 1967.

World Music Programmes

Many radio programmes and stations are dedicated to covering world music per se, playing a miscellany of styles, whilst others concentrate on a particular region. A newcomer to the airwaves this past summer, commencing in July, was *Radio Carpathia*. It features a monthly programme of music from Eastern European countries such as Romania, Bulgaria, Moldova, Ukraine, Hungary, Slovakia, and Serbia. Radio Carpathia programmes are live-streamed every Friday at 1900 UTC on their website, and each programme is uploaded to *Mixcloud* at the end of the month. The station also broadcast on Short Wave via Channel 292 and issues e-QSL cards for correct reception reports (Fig. 3). Check the websites for the latest updates.

Radiocarpathia.caster.fm
www.mixcloud.com/RadioCarpathia

Moreover, *World Music Radio* (Fig. 4) in Denmark has, for many years, been showcasing an eclectic range of music. WMR began in 1967 in the Netherlands. Today, you can probably find it best on 5930 and 25600kHz and online, with a mix of music focusing on tropical world music.

https://wmr.dk

Tiger Beats Elephant Grooves - Subcontinental Sounds with Pradip Sarkar is a programme on PBS FM in Melbourne, Australia. It delivers a fusion of musical genres, based on Indian sub-continent roots, *"These musical cultures have incorporated sonic elements and aesthetics of global popular music and given rise to South Asian hybrids of Hip Hop, pop, rock, and electronic dance music, often categorised as 'independent' or 'regional' music. Such styles include the increasingly popular genre of South Asian Hip Hop [and] the techno-folk styles of various proletariat-music [genres]."*

www.pbsfm.org.au/program/tigerbeats

Radio Clandestino in Canberra is another Australian station to check out, in particular, their *Hand Picked Global Beats* programme. It has, to quote, *"From the latest contemporary urban sounds to folkloric, traditional and hybrid sounds, Radio Clandestino brings you a unique playlist from a diverse range of countries and cultures; your aural ticket to unknown musical landscapes and horizons, best listened to while dancing or with headphones."* An online back-catalogue of almost 70 episodes will take you on a journey encompassing Peruvian chicha, Middle Eastern dub, Angolan funk, Uruguayan candombe, Cuban jazz, and many stops in between.

https://tinyurl.com/24zyzfee

CHRISSY BRAND

3

WORLD MUSIC RADIO (WMR)

4

Closer to home, the Manchester community station *Northern Quarter Radio* airs many excellent programmes. A favourite of mine is called *Out of Europe*. Its strapline of "*Eurostar for the Ears, a Musical Mystery Tour*" is an enticing hook. Programmes are sometimes uploaded to the station's *Mixcloud* channel. At the time of writing, the most recent was from June. Musicians featured included Nicola Conte, Sunaga T Experience, Sotos, Abel, Jobclub Music Workshop, and Joff Winks Band. These gave examples of the breadth of genres to be heard in France, Italy, Holland, Germany, the Republic of Ireland, Norway and England.

https://tinyurl.com/mvh6rx7r
https://tinyurl.com/ycktkvcy

Perhaps the *Radio Garden* app is the most fun way to zap around the globe and discover new music.

However, I am often disappointed by the number of stations that play mainstream pop and R&B mainly from the UK and USA. You have to be patient to unearth stations with a more exciting musical menu!

The Pioneers

Taking this planet full of music and introducing it to new audiences, especially those in the western world, took a big step forward in 1975. Dan Stoprer founded a Latin American craft shop in New York City, called *Putamayo*. Over a decade later, hearing Afro Beat from a band called *Kotoja*, in San Francisco inspired him and Michael Kraus to start the *Putumayo World Music* record label: "Putumayo *has been considered a pioneer in developing the non-traditional market of gift, health food, children's and other speciality stores as outlets for music. The company's commitment to helping communities in the countries where the music originates led to the label contributing more than half a million dollars to non-profit organizations around the world. In 2021,* Putumayo *was awarded the* Elaine Weissman Lifetime Achievement Award *by* Folk Alliance International."

Today, *The Putumayo World Music Hour* (PWMH) is an, "*internationally syndicated radio show that takes listeners on a weekly journey through the music of many different cultures. PWMH episodes include a blend of music from well-known artists and exceptional, underexposed international artists."* It is hosted by Rosalie Howarth and Dan Storper. Stations airing this US-based programme are mostly to be found across the USA. However, it is also broadcast and streamed in Canada (e.g. CHMA and CFBX), Malta (Campus FM in Valletta) and on several stations in New Zealand, Spain, Saudi Arabia, Turkey, The Philippines, and other countries.

www.putumayo.com/radioshow
https://tinyurl.com/4ejjz4m4

Other radio shows and podcasts that specialise in world music include *Music Planet* on BBC Radio 3 and DJ Edu's *Destination Africa* on BBC Radio 1Xtra. The *Songlines Podcast* and *The World Music Foundation Podcast* also go behind the music to bring you information about artists and cultures. The latter organisation's mission is to, "*open minds through Music. We believe, and research shows, [which] experiences the music of other cultures [and] increases tolerance and cultural empathy in people; everything we do is based on effecting this social change. Racism continues to be one of the world's greatest problems, and Music is a proven armament in this fight.*"

Beyond the western world, there are countless stations and programmes to hear. You could do worse than start with Radio Optimum, where you will hear Sega music, *"the blues of the Indian Ocean"*, from the islands of Réunion and Mauritius. Amongst many other good music programmes I enjoy, are those heard on Radio Coco in Cuba and Radio Dakar Musique in Senegal.

www.bbc.co.uk/programmes/b09ymx3v
www.bbc.co.uk/programmes/b007215q
https://tinyurl.com/2p9hfx4m
http://radiooptimumfm.e-monsite.com
https://tinyurl.com/348jrdky

A Harmonious Conclusion

Better access to radio stations across the globe offers an array of amazing musical instruments, contrasting sounds and beats and a never-ending range of genres. There are hundreds to uncover: *Soca, sega, merengue, lovers rock, gamelan, Ethio-jazz, Qawwali* and *Mande* are just a handful.

The styles of music come from different roots and cultures. They include music as protest songs, as ballads and tales of life, of heritage or spiritual connections; or as dance or entertainment, as inducing inner peace or outer revolt, and often music from the poorest in society. All genres are equally valid.

To many, world music means vernacular or local musicians composing and playing what they know and love. It is only when catapulted onto a global stage through festivals, record labels, music streaming, radio stations and programmes, that the 'World' label is applied. Although I use the term 'World Music', like many, I remain uncomfortable with it. After all, it is a somewhat crass label for those in the western world.

We probably need a better term, but it is too late for that now. It may be clumsy but does at least make a statement that this is music with vernacular and traditional roots. If that is what was required for the western world and media to open its eyes, ears and hearts to rhythms, instruments and time signatures that are different from the traditional forms of western classical and pop music, then I can live with that.

David Smith
dj.daviator@btinternet.com

ALL PHOTOGRAPHS: DAVID SMITH

Noteworthy Flight Tracking Records

David Smith discusses the wider popularity of flight tracking apps, especially Flightradar24. He also reports on aircraft diversions, RAF ATC in eastern England, airspace management, and RAF Woodvale.

On an average day, more than 200,000 flights take off and land across the world. That includes commercial, cargo and charter aircraft, which account for about half of the total, as well as business jets, private aircraft, helicopters, air ambulances, government and military aircraft, drones, hot air balloons, and gliders. The numerous flight-tracking websites provide users with a real-time snapshot of almost everything airborne, except for certain military flights operating with transponder and ADS-B deliberately switched off.

Flight following has now reached far beyond aviation enthusiasts.

In September 2022, the final flight of HM Queen Elizabeth II (ZZ177) became the most-tracked flight in history, according to the BBC News website (14th September 2022).

https://tinyurl.com/2s4y9tat

Before that, *Flightradar24* reported that, when a US Air Force Boeing C-40 carrying House Speaker Nancy Pelosi landed in Taipei, Taiwan on 3rd August 2022, over 700,000 people witnessed the event as it happened, using *Flightradar24*. It was part of a tour of Asia, aimed at reassuring the UK's allies in the region.

Departing from Kuala Lumpur in Malaysia, the C-40 took a circuitous route to avoid the Chinese military; this added hours to the flight time. Its ultimate destination was a mystery and, as a result, it was the most tracked flight of all time on *Flightradar24*, with 2.92 million people following at least a portion of the seven-hour journey.

And before Pelosi's flight, the record for the most tracked flight on *Flightradar24* belonged to Russian opposition leader Alexei Navalny's return trip to Russia, where he was due to be imprisoned. The January 2021 flight was tracked by 550,000 people, beating an earlier record set in April 2020, when almost 200,000 users watched a Boeing 777 draw the crescent and star symbols of the Turkish national flag in the skies above Ankara, to celebrate the 100th Anniversary of the sovereignty of Turkey (now: '*Türkiye*').

Diversion Requests and Fuel Mayday

Airports across the whole of the United Kingdom are predominantly independently owned, meaning each has its own rules for considering, accepting, or declining diversion requests. However, in an emergency, any aircraft will be accepted at any airport without argument. Crews and operators making requests for a diversion aerodrome with ATC on an operational frequency will experience a time delay in receiving a response.

Any diversion request is passed by telephone to the selected airfield. This process takes time and will result in a delay of approximately 5-10 minutes, sometimes more. The airfield's response then needs to be passed by ATC to the crew via the operational frequency. This will increase the overall decision response time to any diversion request. In the UK, it is common for airports to decline a diversion request. Airport Ops will consider parking stand availability, ground handling capability, established relationships with the airline, as well as their overall capacity at the point when a diversion request is made.

It is important to note that a diversion request *is at an airfield's discretion*. Therefore, it might be declined. Crews considering a diversion airfield should identify and request one for which their Company has pre-arranged, or agreed on, handling, together with facilities to accommodate their aircraft type. It is suggested that crews have several diversion airfield options in the scope of their planning, to cover any possibility that their initial or preferred request is declined.

Note that any flight declaring a higher priority, such as a *'Pan'* or *'Mayday'*, will automatically be accepted at any airport without challenge. *'Fuel Pan'* phraseology is not recognised when protecting Final Reserve Fuel. Crews should expect ATC to seek clarity following a *'Fuel Pan'* declaration. This will be done by ATC requesting confirmation of *'Minimum Fuel'* or a *'Fuel Mayday'*.

A *'Minimum Fuel'* call will not award a flight an increase in priority and will only result in ATC confirming any arrival delay for the destination aerodrome. Following consecutive diversion requests being declined, crews should consider an escalation of flight priority to ensure they

can land safely at a suitable aerodrome whilst protecting Final Reserve Fuel. If the anticipated delay is unacceptable, pilots should declare a fuel emergency, using the phrase *'Mayday-Mayday-Mayday Fuel'*.

New Eastern England Hub for RAF ATC

Created in October 2014, the Thales-NATS joint venture AQUILA was selected by the Ministry of Defence (MOD) to transform military Air Traffic Management (ATM) in the UK and overseas in the form of *Project Marshall*. This is a large and wide-ranging project for the provision of ATM to military and civil aircraft operating in and out of government aerodromes in the UK and overseas.

It seeks to ensure a safe, efficient and sustainable ATM service for the UK Armed Forces, modernising ATM at over 100 MOD locations, including more than 60 airfields and ranges. The contract is worth an estimated £1.5bn throughout its 22-year life span.

The latest step in the programme has resulted in the approach controllers at RAF Waddington moving to a new hub at RAF Coningsby. The MOD says that it is the first of a series of transitions that will involve approach radar controllers from multiple airfields moving to a centralised Terminal Air Traffic Control Centre. The Coningsby hub consists of new primary and secondary radar surveillance systems and new communication equipment.

The Future of Airspace Management

Area controllers manage geographically-defined airspace sectors, having undergone sector-specific training to achieve validation. A NATS team is working on a project to make area controllers more flexible in their ability to move to other sectors. Instead of learning all the information specific to a particular sector, controllers would have more tools to provide the information they need to manage their airspace type in any given geographical area. These new tools, in conjunction with standardised procedures and improved airspace design, would mean they could hold validations on more sectors than they can today. They could qualify by sector type, allowing them to operate in any airspace classified as a particular type, regardless of its geographic location.

Simulator exercises and a carefully monitored live trial at the Swanwick Area Control Centre have proved that the concept is viable. Planners have identified what operational and technical changes may be required for controllers to adapt to a new way of handling traffic, and further work on this project continues.

Military ATC Profiles No 16: Woodvale

ICAO Code: EGOW

Frequencies	(MHz)
Woodvale Information	280.650, 121.000
Woodvale Tower	233.675, 119.750
Woodvale Radio	121.000
Navaids	UDF/VDF 282.575 121.000
Runways	03 (1648 x 45m)
	21 (1648 x 45m)
	08 (1060 x 45m)
	26 (1060 x 45m)

NOTES (A-Z)

Flight Procedures
Flypasts by jet aircraft flown West to East, 500ft above ground level. Avoid built-up areas north and south of the aerodrome. Light aircraft operate outside aerodrome hours on Woodvale frequency 121.000 announcing intentions and making standard R/T calls. The Aerodrome and ATC status is available from Warton Approach on 129.530, Blackpool Approach on 119.950 and Liverpool Approach on 119.850. No 10 Air Experience Flight cadet flying usually from Sat to Wed. Times may vary during summer.

Helicopter Landing Area
Jetloop Link (Eastern taxiway to the threshold of Runway 21).

Aerodrome Traffic Zone
Circle 2nm radius surface up to 2,000ft above aerodrome level.

Noise Abatement Procedures
Non specified.

Operational Hours
0900-1745 Mon - Fri, or Sunset +30 mins, whichever is earlier.

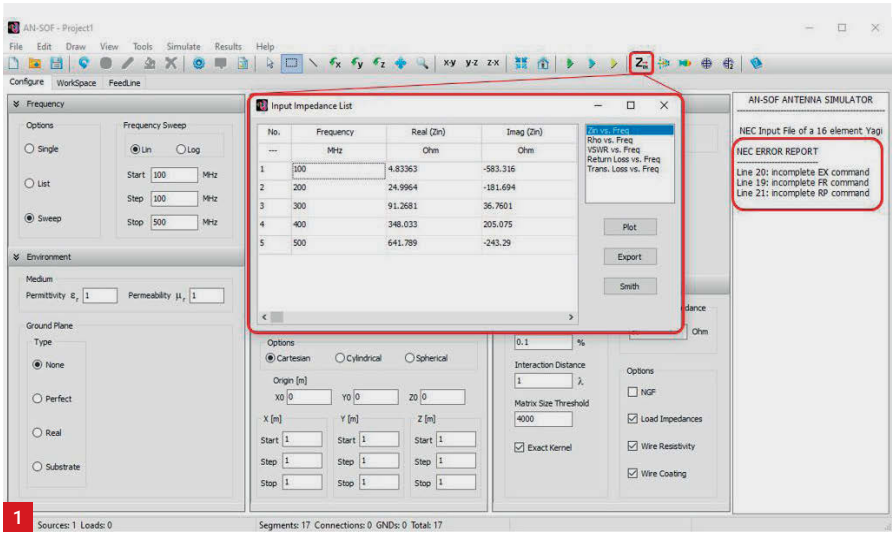
Use of Runways
Runway 03/21 is the preferential runway and in zero wind conditions, Runway 21 is to be used. Circuit direction: Runways 21 and 26 Right Hand. Runways 03 and 08 Left Hand. Circuit height - Piston: 800ft above ground level. Jet: 1000ft AGL. Tutor aircraft fly non-standard circuits on Runway 03/21.

Warnings
Instrument Approach Procedures for this aerodrome are established outside controlled airspace. Full obstacle clearance criteria not met on approach to all runways. Runway 03/21 braking action reduced when wet. Caution: Considerable risk of bird strike. Limited bird scaring facilities. Caution: Deer activity on airfield.

This month's aircraft pictures show an *Airbus A340* of the German Air Force (*Luftwaffe*) and a *C-130 Hercules* of the Royal Bahrani Air Force, both seen at Fairford in 2022.

Keith Rawlings
Keith.g4miu@gmail.com

ALL PICTURES: KEITH RAWLINGS G4MIU, EXCEPT FIG. 1: GOLDEN ENGINEERING; FIG. 5: RSGB HANDBOOK.5TH ED.



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AN-SOF Updates, Skeleton Slots, and Loss on Verticals

Keith Rawlings reviews some new compatibility features in the AN-SOF V7.50 aerial modelling software suite and looks at Skeleton Slots, before progressing his series on some key characteristics of vertical aerials.

As the AN-SOF antenna simulator does not use NEC coding, some improvements have now been made to afford more compatibility to those users who also use the NEC format.

For example, the RP (Radiation Pattern), LD (Impedance Loading), GM (Coordinate Transformation), GS (Scale Structure Dimensions), GH (Wire Helix), GA (Wire Arc), and EX5 (bi-cone source model) commands can now be imported into AN-SOF. Another change is that the 'Notes' panel in the configuration section will now display an error report if there are problems detected when importing these NEC files.

The line number(s) that need to be corrected and a brief description of the problem are also displayed.

This is very useful because some commands must be imported with their complete NEC description.

Moreover, a 'Zin' button has been added to the toolbar for convenience; it offers quick access to the table of input impedances and a *VSWR-versus-frequency* option (Fig. 1).

In the September issue (*RadioUser*, September 2022: 50-52), I stated that the free version of AN-SOF could run 100 segments. However, this was incorrect. The free version actually runs 50 segments.

New Model Army

More generally, the AN-SOF team have been busy producing new models for use in the simulator. Of late, there have been models for a 5-element array of square loops for 145MHz, a 17m spider Beam, and a Moxon-Yagi dual-band satellite array. Furthermore, a multi-band J-Pole file has recently been released. This simulates coverage of 5 bands from a single pole; there is also an interesting model for an HF 'Skeleton Slot' available for download. This intrigued me, as I had never considered this design on HF.

With regards to the Skeleton Slot, and to quote AN-SOF, *"The Skeleton Slot can be considered as an array of two tightly coupled loops. The image (Fig. 2) shows the top and bottom loops and (Figs. 3 and 4) the bi-directional pattern that is obtained. Both loops are linked to share a single feed point. This antenna is often said to be broadband, but only the radiation pattern does not change substantially with frequency. It can operate in the 14 to 28MHz bands with the appropriate impedance matching, but it will only be self-resonant when the perimeter of each loop is around one wavelength. In this example, each loop is 3 m x 4.5 m, and the resonant frequency is 19.8 MHz"*.

The Skeleton Slot Design

The Skeleton Slot was originally created by H G Booker in 1941 during World War II (1939-1945). However, as this design was then classified it was not reported. Consequently, it seems that it was registered for a patent in England in 1949 by J F Ramsay. It appears that it did not come to the general attention of amateurs until Sykes G2HCG completed an article on it in the then *RSGB Bulletin*.

That design was for use on the VHF frequency of 144MHz.

A disadvantage of the Yagi (/Uda) aerial type is that, when the element lengths and spacing are altered, the feed-point impedance will also vary. Therefore, when developing a design experimentally, changing these factors requires that the matching of the driven element be re-adjusted after each change, by either moving the reflector or altering whatever matching device was being used.

By using the Skeleton Slot for the driven element, G2HCG found that a Yagi was less susceptible to changes in the dimensions of the 'parasitic' elements, therefore, making experimentation easier.

G2HCG patented his 'square-shaped' design in 1956.

Today, we can simulate these adjustments using programs, such as *AN-SOF, EZNEC, MMANA-GAL* and many others, thereby minimising the need to keep mechanically adjusting a design to achieve the best results.

The Skeleton Slot can also be used to 'stack' two Yagi arrays while only using the one Driven Element (as shown in Fig. 5). VK5ATL has the construction details of this concept at this URL:
https://tinyurl.com/3ravsh8f

As he rightly points out, this type of de-

sign was in common use in the UK as a TV aerial after the Second World War and was used by companies such as *J-Beam*.

Readers may be aware of the basic slot aerial, which usually consists of a metal surface with one or more slots cut out; these are often used for VHF and above. The skeleton slot is different to this and appears to work based on reducing the surrounding metal of a conventional slot to just thin wires.

The *AN-SOF* model is interesting as it is an HF design over the range of 19-21.1MHz, with overall dimensions of some 9m high and 3m wide. If this was a conventional slot made from a solid material, it would be very cumbersome indeed.

Running the model in free space reveals that, while the SWR/Return Loss bandwidth is quite narrow, the polar plot stays broadly the same, from 19-21MHz, being bi-directional broadside onto the array.

Opening up the frequency sweep from 10-30MHz and running the model with the base 3m above real ground, demonstrates that the polar plot still remains broadside to the element but the effect of the earth raises the elevation angle. At 10MHz, maximum radiation is at approximately 30° (Fig. 3).

This decreases to 15° at 30MHz (Fig. 4). I find that this design is an interesting concept that, with suitable matching arrangements, should work over a broad frequency range.

I can only go by the results of the model; I have never built or used one of these on HF. But I will echo Tony Golden of *AN-SOF* in asking for anyone to build and test such a design for HF.

More on Verticals.

In my previous treatment of vertical aerials (*RadioUser*, October 2022: 50-52), I mentioned that, particularly on HF, it is important to have an efficient ground system, especially with the most basic of verticals, the λ/4 monopole, where the ground has to act as the second half of the dipole element.

The formula for calculating the length of a plain λ/2 dipole in feet is 468/f. So, for example, the nominal length of a λ/2 dipole for the 20 m (14MHz) amateur band would be 33.428 feet. As a λ/4 monopole will be half the length of a dipole, it will not be surprising to find that the formula is also 'half', that is 234/f.

Therefore, a vertical monopole for 14MHz would be some 16.714 feet high.

However, it is not just the length that halves; the feed point impedance does so as well, and it will be in the region of 35Ω. In practice the feed point impedance may vary; usually, it will be close enough to 50Ω to use a 50Ω coaxial cable. As the monopole has a ground, either artificial or real, it is an unbalanced device and can be easily fed directly with a coaxial cable.

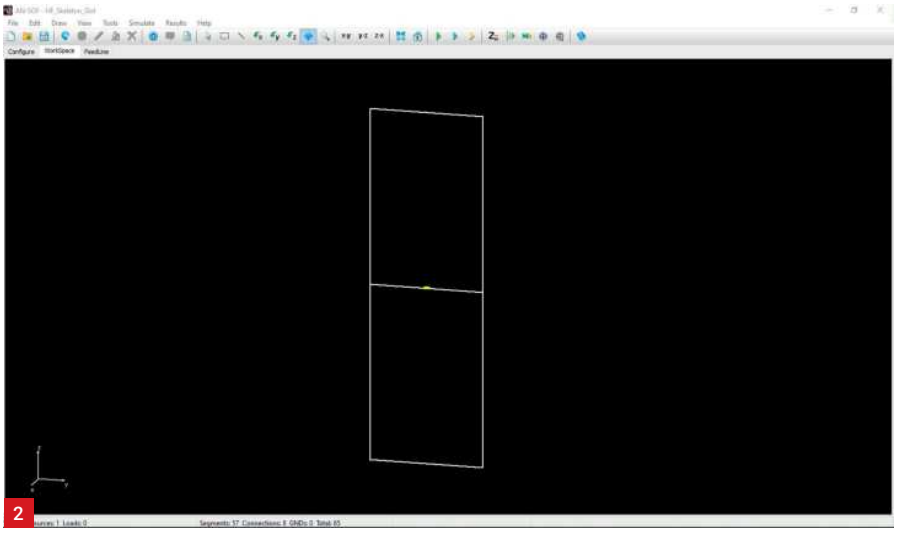


Fig. 1: The latest AN-SOF Update. Fig. 2: An AN-SOF CAD Drawing of the HF Skeleton Slot. Fig. 3: An AN-SOF Skeleton Slot 3D radiation pattern at 10.1MHz. Fig. 4: An AN-SOF Skeleton Slot 3D radiation pattern at 29.9MHz. Fig. 5: A 6-over-6 Skeleton Slot Yagi Aerial. Fig. 6: A 1090MHz ADSB λ/4 Ground Plane, using a brazing rod and an old BNC socket.

Short Distances, and Long

Like a dipole, the current is maximum at the feed point so the greatest level of radiation is at this lower point of the vertical. Radiation will be vertically polarised in an omnidirectional pattern, and most of its radiation will be at low angles. This makes it a good choice for long-distance work.

It will also be useful for working ground wave over short distances.

When used for long-distance working, the signal will refract in the ionosphere, with the result that the polarisation may no longer be vertical.

As discussed last month, there are various ways to form the 'second half' of the dipole:

A radial system or earth mat can be buried, or laid on the ground, with the radiating element mounted vertically above this; alternatively, the vertical and its radials may be elevated well above ground level, offering the benefit of some height advantage. I found my diamond CP6 worked well when elevated.

Radiation- and Loss Resistance

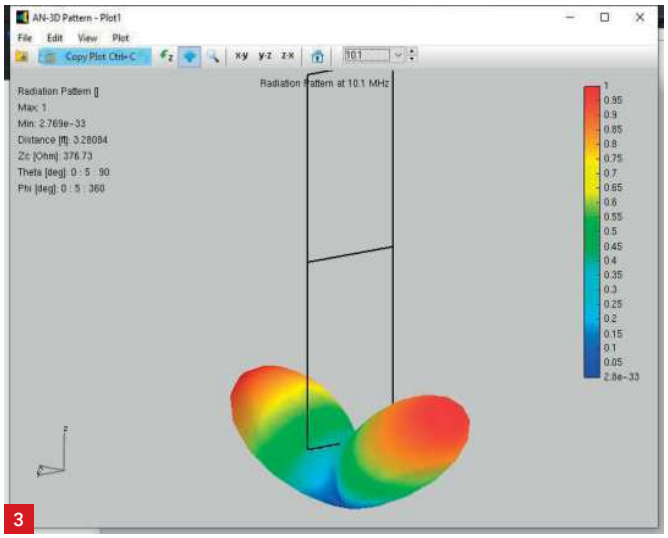
Coming back to my comments last month about how important it is to have an efficient ground system; it is worth looking a little more at why this is so: With a ground-mounted vertical, the ground forms the RF 'return' path for the other half of the dipole; consequently, the resistivity of the ground will play a very important role, especially if these return currents travel through 'lossy' ground. So, except for verticals using elevated radials (unless there is capacitive coupling if raised radials are close to the ground), the return current will flow through the ground, and these currents will suffer from what are called 'I2R Losses'.

Two important factors in this context, are radiation resistance and loss resistance: All aerials exhibit radiation resistance, which can be seen as an index of the amount of applied power that is usefully radiated, rather than simply lost; it has heat in the earth or conductors and ideally needs to be kept as high as possible to achieve maximum efficiency.

Radiation resistance is largely determined by the physical length of the aerial, nearby objects and their placement near the earth. The shorter the element length, the lower radiation resistance will be, but it can be improved by end-loading of a short vertical or by the addition of capacity hats and such like.

Loss Resistance may be encountered in things like conductors, loading coils traps, and so on.

Objects in the Near Field of the aerial, out to several wavelengths away, may add to these losses, especially with ground-mounted verticals. This will include houses, greenhouses, sheds, and any large physical nearby objects. However, ground losses in



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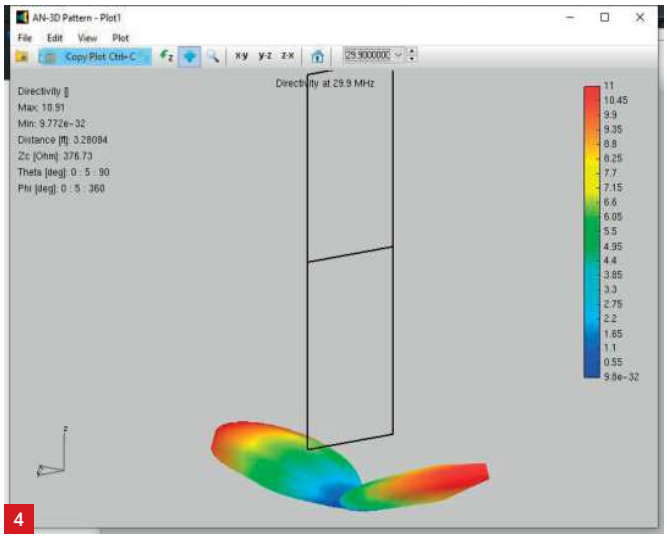

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the near field are usually the biggest factor. Unfortunately, one thing we probably can't do anything about here is the conductivity of the Earth below the aerial. This will be best by the sea and poorer in desert areas. What we can do to improve efficiency though is provide a ground radial system, as already described (see above).

Therefore, we need to achieve a high radiation resistance and as low a loss resistance as we can. Efficiency can be calculated with this formula:

Efficiency % = Radiation Resistance/ (Radiation Resistance + Loss Resistance) x 100.

As an example, if we take a ground loss figure for a λ/4 vertical with 4 λ/4 radials over an average ground as 30Ω (ignoring any other system losses), the radiation resistance will be around 35Ω.

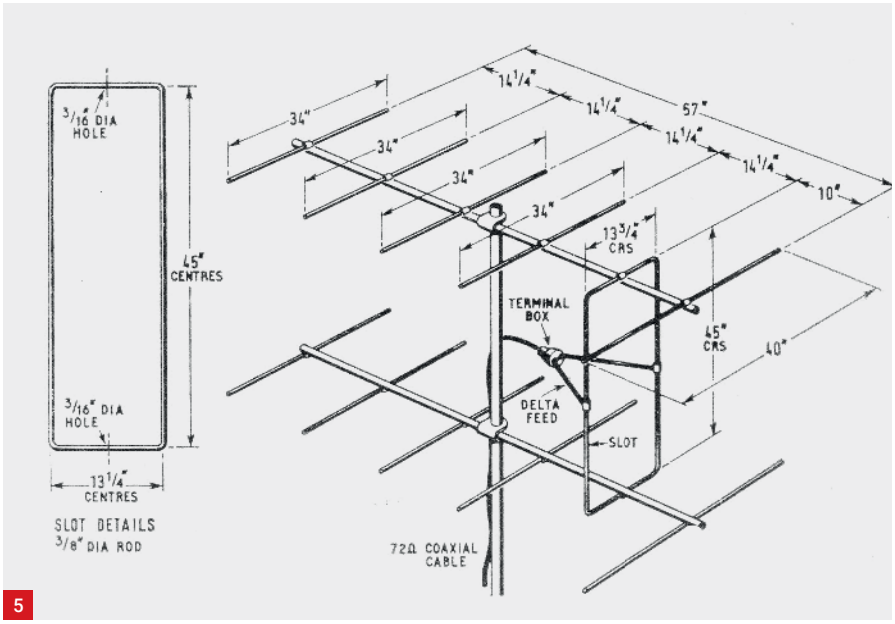
So if we take 35 / (35 + 30) x 100 = 52.8%.

Consequently, for a 100W input to the aerial, only 52.8W will be radiated – a loss of some 3dB, or nearly half the power. Clearly, if radiation resistance falls, or loss resistance increases, the efficiency will suffer.

However, listeners will be pleased to learn that, while these losses affect both transmit and receive, they are more predominant when transmitting.

We should also consider very short non-resonant whips as often found in HF mobile installations. Here the situation is much worse, with physical lengths being shorter; as such, radiation resistance can be very low.

Previously I mentioned that the feed point impedance of a λ/4 vertical will be in the region of 35Ω. With a ground radial array on an HF system, there is probably not much we can do about this figure. However, it is a different matter when we come to VHF/UHF, where dimensions are much smaller: By simply angling down the radials to 45°, we can bring the feed point impedance up to 50Ω. In Fig. 6, you can see a λ/4 ground plane, which I think many with a Mode-S receiver may have felt compelled to build to improve on the cheap magnetic mount whip supplied with some ADSB receivers. Note the ground plane bent down to 45°.



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References

- Sykes SWM article (SWM, 1955): **https://tinyurl.com/4s4fd2b6**
- Ramsay's Patent: **https://tinyurl.com/24j98fc7**
- G3VCG HF Skeleton Slot: **https://tinyurl.com/yaypmm93**


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ALL PICTURES: THE KEITH HAMER+GARRY SMITH BBC COLLECTION

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BBC 100 Years: 2020-2022

This month, **Keith Hamer and Garry Smith** present their penultimate exploration of the BBC's 100 years, as they continue rummaging through their archives.

In terms of synthetic voices & Artificial Intelligence (AI), several important engineering projects were launched by the BBC in **2020**. *BBC Together* was an experimental prototype to help people watch and listen to BBC programmes together, even when they were physically apart.

The BBC's *Natural History Unit* produced episodes of the popular programme, *Autumnwatch*, using their AI (Artificial Intelligence) system to identify different creatures captured by multiple cameras. This saved hours of production time. Plus, the BBC's *Sustainable Engineering Team* released the results of research work, which showed the actual energy used to deliver and view television and radio programmes.

A technical specification was published by the BBC for their system known as *Dynamic Adaptive Streaming over IP Multicast*. This enabled the distribution of 'live' television over the Internet.

Finally, an online study was conducted called *Synthetic Voice and Personality*. This tested a selection of bespoke synthetic voices with British regional accents on a wide public audience. Using this system, it could be possible to understand what many present-day radio and television announcers are actually saying!

BBC Programmes Disappear In Flames!

On Tuesday, August 10th, **2021**, a devastating blaze at the 1,032ft-tall mast on Bilsdale West Moor disrupted Freeview, DAB and FM radio signals across North Yorkshire, Teesside and parts of County Durham for more than a million people (Fig. 1). The transmitter was operated by *Arqiva*. Witnesses reported seeing a huge black cloud of smoke coming from the buildings directly at the base of the mast. Despite the loss of transmissions from the mast, BBC television programmes remained available on the *iPlayer* system and radio stations could still be listened to on *BBC Sounds*. The cause of the fire is still unknown, although there is speculation that faulty equipment was to blame.

BBC Statue Vandalised & Wind Of Change

The carved statue of *Prospero & Ariel,* located above the main original entrance to Broadcasting House in London, was vandalised on January 12th, **2022**. A man with a hammer used a ladder to climb up to the 10ft high sculpture by Eric Gill. The work of art was installed in 1923.

The government announced on January 17th that the BBC colour licence fee would be frozen at £159 for the next two years. When the *Royal Charter* expires in 2027, a new method of funding is due to be introduced, with the possible ending of the licence fee, which has been in existence since November 1st, 1922.

BBC-3 resumed broadcasting terrestrially on February 1st. The channel was originally available terrestrially but then changed (some say 'demoted') to become an online service only, due to poor viewing figures.

After almost 100 years of the BBC's remarkable broadcasting achievements, the Director-General (Tim Davie) announced on May 26th, 2022, that there would be a severe reduction in services due to cost-cutting plans. *BBC-4* will be taken off terrestrial platforms (such as Freeview and Freesat) and become an online service only. The children's channel, *CBBC*, will also only be available online resulting in the two channels being available solely on the BBC iPlayer. Meanwhile, *Radio 4 Extra* will move to the *BBC Sounds* application, rather than via their traditional broadcast outlets.

The two existing BBC News channels (for 'UK' and 'World' audiences) will be merged into one.

Changes were also announced that will impact some BBC Regional television news programmes. Sadly, the broadcasting of separate programmes for Radio 4 Long Wave will also end.

Between June 2nd and 5th, the BBC was the 'Official Broadcaster' for the Queen's Platinum Jubilee. This meant that none of the special events during the 4-day celebrations to honour the Queen's 70 years on the Throne could be covered by any other UK broadcaster, apart from short news items.

The *BBC News HD* channel stopped broadcasting via the *Freeview* platform on June 29th. This was in preparation for the final closure of the COM 7 multiplex on June 30th for the expansion of the 5G mobile network;

Fig. 1: The devastating blaze at the *Bilsdale West Moor* transmitter on August 10th, 2021. Fig. 2: The *BBC Tuning Signal*, denoting that programmes were to be broadcast using the '*Baird System*'. Fig. 3: A typical Baird 'Televisor' receiver. Fig. 4: J.L. Baird demonstrating his 'Mechanical Colour Television System'. Fig. 5: Baird's 30-line Carousel Scanner was loaded with an assortment of caption-cards. Fig. 6: The first televised play, *The Man With A Flower In His Mouth* by Pirandello on July 14th, 1930. Fig. 7: The original Control Room in *Broadcasting House* for Baird's experimental 30-line television service.

and, on June 29th, the BBC News studio set was completely revamped, including weather forecast presentations. The new set initially gave the somewhat weird impression that everything was on a slope, including the on-screen graphics.

The BBC Centenary: A Conclusion

This special series began in the January 2022 issue of *RadioUser* with our stated quest to cover at least one engineering or programme-production event for *every* year of the BBC's Centenary, beginning right back in 1922. We hope that you will agree that we have achieved our very ambitious target!

We have thoroughly enjoyed the opportunity to rummage through our private BBC archives, which originally began whilst writing a school project back in 1963.

We would like to thank Editor, Georg, for giving us a free hand as to the eclectic content of our monthly articles. Which other technical magazine would have a regular column covering topics ranging from *Dynamic Adaptive Streaming Over IP Multicast*, to *Bill And Ben, The Flower Pot Men* (not forgetting, of course, *Little Weed*), and the *Ultra High-Definition Hybrid Log-Gamma (HLG) High Dynamic Range (HDR)* broadcast format, to *Mr. Pastry*?

Baird's German Experiments

Moving back now to the early television pioneers, in November 1929, John Logie Baird and Bernard Natan established France's first television company, *Télévision Baird-Natan*. The German Post Office gave Baird the facilities to develop an experimental television service based on his mechanical system, which was the only one that existed at the time. Sound and vision were initially sent alternately and only began to be transmitted simultaneously in 1930.

In 1932, Baird proudly described his experiments in Germany. He said: *"In Germany, Fernseh A.G., a combination of the Baird Company, the Zeiss Ikon Optical Company, the Bosch Magneto Company, and the Loewe Radio Company, which was formed in 1929 to develop our system of television, has supplied a transmitter to the German Post Office which is very similar to that used by the BBC, and television in Germany is developing along parallel lines to developments in this country and we work in the closest collaboration.*

"A similar state of affairs exists in France, where Télévision Baird-Nathan is using the wireless station PTT on the outskirts of Paris for the experimental broadcast of television, and we are now constructing a transmitter for them. In the United States of America, extensive work is being done with television by the members of the huge combine known as the Radio Trust; and, in addition, numerous broadcasting stations are sending out television transmissions similar to those in Europe.

"The Baird Company of England has an affiliated Company in America, and last year, WMCA, one of the large broadcasting organisations of New York, arranged to take up the British system for broadcasting television, in preference to any American system offered [to] *them. An agreement was fixed with them, but the British Company was refused permission to broadcast in America by the Federal Radio Commission, because - to quote one of the leading technical journals:*

'Although the application was made in the name of WMCA, an American Company, the proposed station would be operated jointly with Baird Television Corporation, Ltd., a British concern. According to the commission, the granting of a licence would, in effect, give undue authority to the British Company in violation of the section of the Radio Law prohibiting alien ownership or directorates of Companies holding wavelength privileges in the United States. It might be advantageous to our 'Buy British' policy if this country were to adopt a similar attitude towards American-controlled concerns.'"

The Image Dissector Tube

Unfortunately for Baird, his mechanical system was rapidly becoming obsolete as electronic systems were being developed, chiefly by Marconi-EMI in the UK and RCA in America. Although he had invested in the mechanical system to achieve early results, Baird had also been exploring electronic prototypes from an early stage. By 1935, Baird invented an electro-mechanical television scanning system with a resolution of 240 lines.

Unfortunately for him, Marconi-EMI (under Isaac Shoenberg) had access to patents developed by Vladimir Zworykin and RCA and

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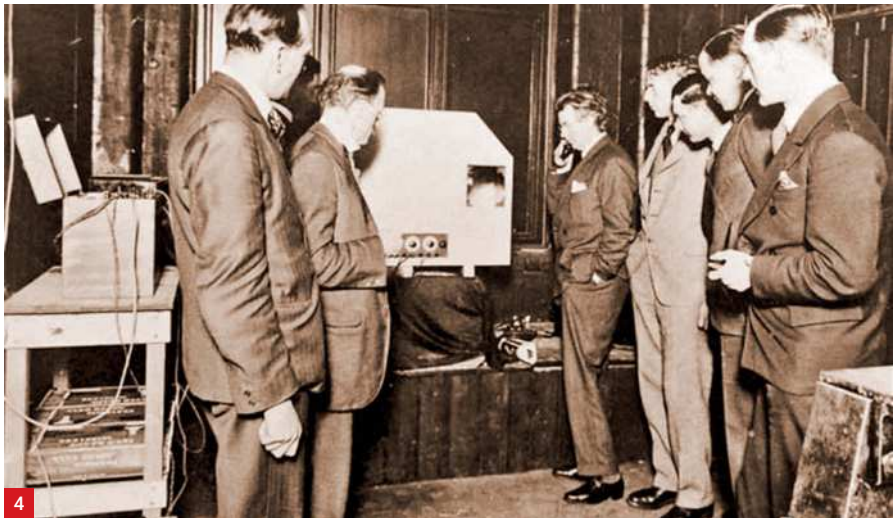
had perfected an all-electronic system with a resolution of 405 lines. Meanwhile, Baird's company had a patent-sharing agreement with Philo T. Farnsworth's electronic *Image Dissector* tube. Unfortunately, the Image Dissector tube was found to be lacking in light sensitivity, requiring excessive levels of illumination. Baird used the Farnsworth tubes instead to scan *ciné film* - in which capacity they proved serviceable, though prone to drop-outs and other problems.

Farnsworth himself came to London to Baird's Crystal Palace laboratories in 1936 but was unable to fully solve the problem. The fire that burned Crystal Palace to the ground later that year further hampered the Baird company's ability to compete.

Both systems were broadcast on an alternating basis and fully evaluated by the BBC (Fig. 2). In February 1937, it was officially announced by the government that Baird's system would be discontinued. The final Baird 240-line transmission was radiated by the BBC from Alexandra Palace on January 30th, 1937.

BBC Co-operates With Baird

During his short, but invention-packed lifetime, Baird took out no less than 178 patents. Due to his many successful inventions and demonstrations, he raised enough money from investors to hire a staff of engineers and moved to a much larger facility at Long Acre in London. It was at this point that he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successfully negotiated an agreement with a completely unenthusiastic BBC to allow his company to transmit regular broadcasts, albeit very late at night and using a less than ideal bandwidth.

To gain an agreement in the first place was an uphill struggle because the BBC's formidable Director-General, John Reith, openly stated that television was, *"a waste of time and would provide only a limited experimental service"*. However, with government support, Baird's company obtained a licence for regular broadcasts. His company began the sale of receivers, known as *televisors*, which sold for £18 (Fig. 3). The receivers were delivered either ready-assembled or in a less-expensive kit form for intrepid do-it-yourself electronics enthusiasts.

During this period, Baird demonstrated his low-definition *Noctovision* night-vision system, daylight television, stereoscopic television, phonovision (the recording of sound and vision on a gramophone disc), and large-screen television. He also demonstrated his mechanical colour television system (Fig.4).

The First Televised Play

On September 30th, 1929, the BBC transmitted their first experimental television broadcast using the Baird 30-line system. Baird's 30-line caption carousel scanner is shown in Fig. 5. There were some notable firsts during this period of experimental transmissions including a performance of Pirandello's play, *The Man With A Flower In His Mouth* on July 14th, 1930 (Fig. 6). This was the first play to be performed on television and the broadcast was mainly due to the united efforts of Sydney A. Moseley, Val Gielgud, and Lance Sieveking.

There was also the first O.B. (Outside Broadcast) – *The Derby* was televised 'live' in June 1931. Eventually, the BBC began to take television seriously and introduced a regular television service from *Studio BB*.

[This format of the studio's designation is deliberate and found in the original – Ed.):

Studio BB

This studio was located in the basement of Broadcasting House at 16, Portland Place in London. The original Control Room is shown in Fig. 7. Some time ago, a plaque was installed to mark the historic site of this studio, but it is uncertain whether this has survived the move to the adjoining huge extension.

The original Broadcasting House was officially opened on May 2nd, 1932. From 1933, Baird and the Baird Company were producing and broadcasting television programmes independently to the BBC, from Baird's studios and transmitter at the Crystal Palace in south London. He demonstrated a Theatre Television System with a screen of 2ft by 5ft (61 by 152cm) in 1930, at the London Coliseum, and also in Berlin, Paris, and Stockholm.

By 1939, he had improved his theatre projection system to televise a boxing match on a screen 15ft. (4.6m.) by 12ft. (3.7m.). And in November 1931, while in New York demonstrating his latest invention, Baird married Margaret Cecilia, a concert pianist, and daughter of Henry Albu, a South African diamond merchant. They had one son, Malcolm, and one daughter, Diana.

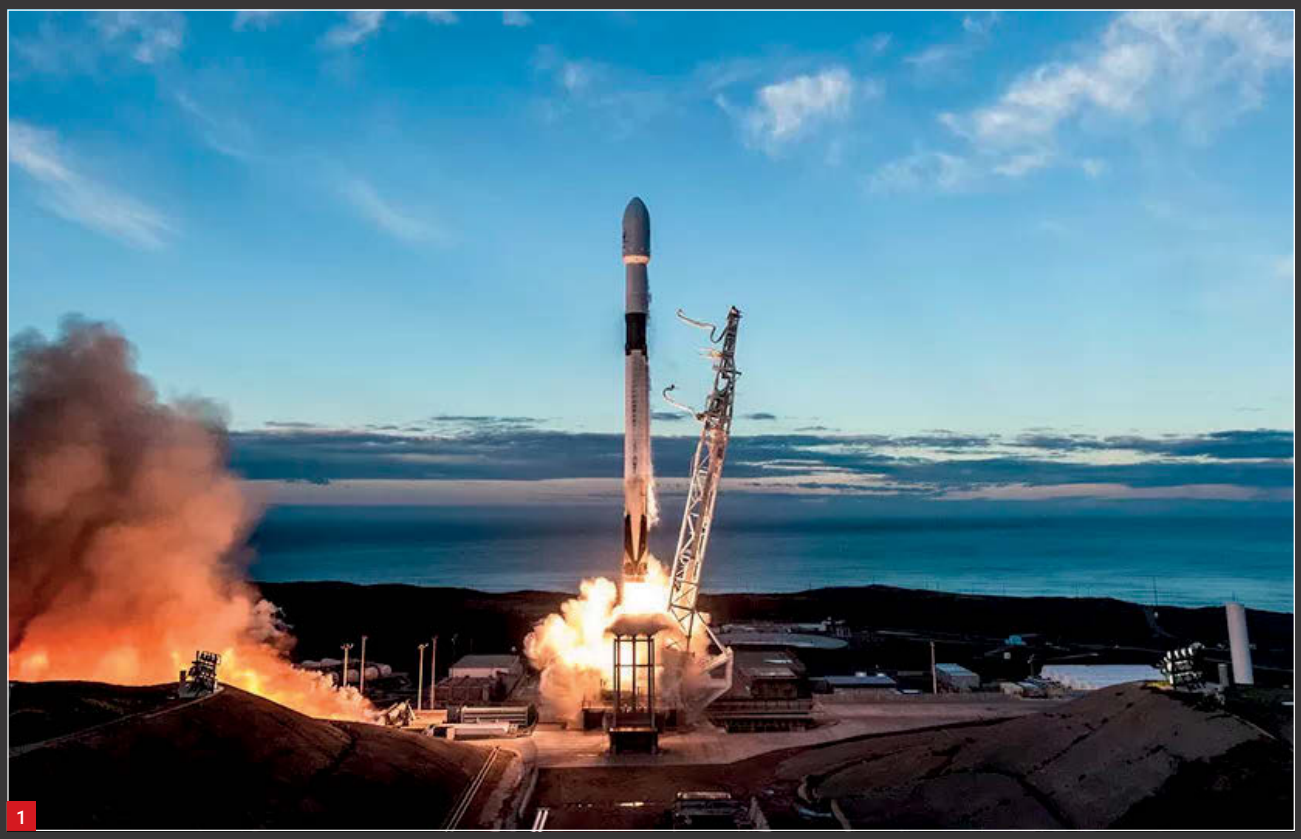
BBC: Regular Transmissions

In 1932, the BBC stated: *"Since 1926, the BBC has taken all practicable steps to make use of modern developments in television, and after a long period of entirely experimental transmissions, a series of television transmissions on the Baird system has been instituted from the new headquarters at Broadcasting House. This may be described as one step beyond the purely experimental stage. At the same time, every opportunity of improving technique is being taken.*

Future progress must depend on this. A development, which will, no doubt, in years to come, be regarded as a milestone in British broadcasting, was the BBC's decision to co-operate directly with the Baird Television Company in experimental transmissions of television. As a result, the necessary apparatus was installed in a studio in Broadcasting House, operated by BBC engineers, and from 22 August 1932, transmitted four times a week a programme prepared by the BBC. The BBC will shortly be radiating regular transmissions of television.

The televisor has been installed by the Baird Company in one of the studios at Broadcasting House and is being operated by BBC Engineers. The programmes are also produced by the BBC."

SPACE-X



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Space Communications and the iPhone 14

Tim Kirby
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In his final Signals from Space column for RadioUser, **Tim Kirby** looks at the new iPhone 14, and the Iridium network. He casts a glance back over his time writing this column and finds something to look forward to.

In a launch event in early September, Apple shared their plans for the new *iPhone 14* (Fig. 2) range. But why am I mentioning this in a column about space communication? Well, for the first time on a 'normal' or 'consumer' mobile phone, there will be an element of satellite communication included.

The *iPhone 14* range is not enabled for satellite communication for all calls, it will only use satellites in a very small number of situations. You will, at least, initially, have to be in North America and outside of the range of cellular networks and Wi-Fi. As some observers have noted, even in remote places, cellular coverage is fairly widespread, so you will have to be well out of the way. If you try to place an emergency call (USA: 911) and there are no cellular networks available, you will be offered the facility to place an emergency call via satellite, using text messages (Fig. 3).

Presumably, eventually, the emergency system will be rolled out to other geographical areas, although it is already known that it will not cover the Far East.

There will be some initial questions; what is the nature of the emergency (vehicle issue, sickness or injury, crime, persons lost or trapped, and fire), is anyone injured (yes or no) and what best describes the emergency (stranded, trapped, lost or other) and some other data such as your medical ID, your latitude/longitude, the phone number of the originating device, how much battery power you have left on your phone, all packaged up as data and sent via satellite to dispatchers.

Networks and Questions

As yet, it is not yet known which satellite network Apple is using to send the messages, although the speculation that I have seen suggests it will be the *Iridium* network. The *iPhone* will then work out when the next satellite will be passing your location and instruct you to point the phone in a particular direction, which

will allow your message to be passed to the emergency services.

You may be asked further questions by the dispatchers which will also be sent (and answered) by text messages. In ideal conditions, a message can be sent in around 15 seconds, however, if you are under foliage or there is something in the way between you and the satellite, then your phone may have to retry sending the message to the satellite several times, so it could take longer. And (fairly obviously) the system will not work if you are underground; you will need a clear view of the sky.

Apple plan for the *iPhone 14* to be available in September 2022, but the emergency satellite calling feature will be dependent on an operating system (iOS) update for the phone, which is not expected to be released until October or November 2022. Intriguingly, Apple does not have any plans to charge for this functionality for two years. What will happen after that has not yet been announced. It may depend, perhaps, on how much use is made of the facility.

It will be fascinating to see satellite communications being incorporated into mobile phones intended for use by the general public, whereas previously, phones using satellite communication were specialised pieces of equipment to be used by people travelling to very remote places.

The Iridium Network

Earlier in this piece, I mentioned *Iridium*, which has become very well known in the satellite communication (and astronomical) worlds. The *Iridium* satellite network is run by *Iridium Communications*, based in Virginia, USA. They operate a constellation of 66 active satellites, capable of providing worldwide voice and data communications from hand-held satellite phones and other transceiver units. The satellites use a near-polar orbit and are capable of communicating with other satellites in the constellation using inter-satellite links.

The *Iridium* service was launched in 1998, with a call between the then US Vice President Al Gore and Gilbert Grosvenor, the great-grandson of Alexander Graham Bell and chairman of the *National Geographic Society*. Motorola provided the technology for the system and major financial backing. The company was named *Iridium* because the element Iridium has an atomic number of 77, and 77 was the number of satellites initially planned to be in the company's constellation.

The company had a shaky start though, filing for bankruptcy in the US in August 1999. Various problems had dogged the start of operations. For example, handsets could not operate as they had been advertised until all the satellites in the constellation had been launched, which of course, involved a huge up-front cost for the company. The cost of service had deterred potential users, as well as the cost and size of the phones, which were expensive and bulky compared to terrestrial mobile phones.

A New Launch

In August 2000, Motorola essentially called time on the company, announcing that the *Iridium* satellites would have to be de-orbited, although they remained in orbit and stayed operational. In December 2000, the US Government stepped in to save the company, an action which is estimated to have wiped out around $4 million in debt. The *Iridium* service was restarted in 2001 by *Iridium Satellite LLC*, owned by a group of private investors.

The original constellation of satellites was replaced by launching 75 new satellites into space in a project known as *Iridium Next*. As well as having new satellites, ground-based infrastructure was updated and improved. As part of the project, *Iridium* signed a deal with *SpaceX* to use the *Falcon 9* rocket to launch all the new satellites (Fig. 1). It was a deal worth $492M. In 2017, ten years after the project was first announced, the first of eight *Iridium Next* launches took place, with another 65 launches over the next two years completely replacing the original constellation.

Worldwide Coverage

The *Iridium Next* network covers the entire planet, including poles, oceans and intercontinental airways. 66 satellites are used with the remaining nine acting as active backups. There are another six satellites on the ground available as spares if required. The satellites are in six polar orbital planes at a height of around 780km. They can communicate with neighbouring satellites using the Ka-band (26.5 – 40GHz) thus avoiding the latency introduced by the traffic having to go down to a ground station and then back up to space.

The *Iridium* system is used by aircraft in flight using the *Future Air Navigation System (FANS)*. This employs the satellite network to carry messages between aircraft and air traffic controllers. FANS is generally used in areas not served by *Inmarsat* coverage, especially polar regions, either above or below 70 degrees latitude.

The *Iridium* network is also used to carry

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traffic in the Global Maritime Distress and Safety System (GMDSS), a certification which was issued in January 2020, ending *Inmarsat's* monopoly in the network.

Services and Hardware

Iridium offers some satellite handsets (Fig. 4), including some hardware which is only available to customers from the US Government. It is also possible to get a Wi-Fi hotspot, known as the *Iridium Go!*, which gains its internet access through the *Iridium* network. Other manufacturers such as Garmin, offer units with global coverage using the *Iridium* network.

These units can send and receive text messages to any mobile phone, or e-mail address allowing location sharing, navigation and communication options for the emergency services. Originally, paging services were provided and remain available, although *Iridium*-based pagers have not been in production for many years.

In Maritime Use

I was further interested to learn that some data logging applications, such as ocean-based buoys use the *Iridium* network to transmit data back to land. *Iridium*-enabled buoys are used in the Tsunami warning system, enabling forecasters to determine the sea state, hundreds or even thousands of miles, offshore.

Units such as these use 'short burst data' messages to send data into their system at specified intervals or can also download a complete dump of data when the remote system's storage becomes full.

The *Iridium OpenPort System* provides satellite voice and data for maritime vessels and is used on vessels like Merchant Navy

Fig. 1: The launch of the final *Iridium Next* satellite. Fig. 2: The new Apple *iPhone 14* range; the first consumer phone to have emergency satellite communications built in.
Fig. 3: Instigating an Emergency SOS using satellite communications on an *iPhone 14*.
Fig. 4: An *Iridium 9555* satellite phone.

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3

ships, Government and Navy vessels, fishing fleets and yachts. The data rate of the system is only 2.2 to 3.8kbit/s which means that some substantial compression is required for voice calls. Latency can also be an issue depending on the path taken through the satellite constellation and any re-transmissions which may be necessary.

The *Iridium Certus* system is a global satellite broadband system capable of 704Kbps anywhere in the world.

It's safe to see the *Iridium* system as a reliable means of providing voice and data services anywhere on the globe, but it is not quick. I know various amateur radio expeditions have used *Iridium* services to upload news and data about the contacts that they have made from remote parts of the world. This has been a costly – and comparatively slow – exercise.

Iridium Flares

Earlier on, I mentioned that *Iridium* was well known in the astronomy community too. The first generation of satellites had three highly polished antennas 120 degrees apart. In certain circumstances, one of these antennas would reflect sunlight directly down at the surface of the Earth, creating a quickly moving illuminated spot on the ground of around 10km in diameter. To someone on the ground, this looked like a bright flash or flare in the sky.

However, since all the first generation of *Iridium* satellites have now been de-orbited, *Iridium* flares are a thing of the past. However, satellite flares can still be seen from satellites such as *MetOp-B* and *MetOp-C*, *COSMO-SkyMed, Terrasar X* and *Tandem X*, as well as, of course, the International Space Station (ISS).

I hope you have found this quick look at satellite phone technology of interest. It is a fascinating field and one which I am sure will develop further in the future.

A Fond Farewell!

Unfortunately, this is the last *Signals from Space* column to appear in *RadioUser* magazine. Over the last few years, we have covered a variety of radio and space-related topics, including natural phenomena such as the radio storms from Jupiter, and meteor scatter. Plus, I have looked at satellite communication, both from amateur radio and commercial standpoints, reporting on direct broadcasting satellite systems such as WorldSpace and Sirius XM.

I hope that I have provided you with enough information on how to hear signals from both amateur radio satellites and the International Space Station. If you have not tried this yet, do give it a go; it is fascinating.

I also mentioned some of the iconic ground stations used for space communications, such as the Arecibo Observatory in Puerto Rico, Jodrell Bank in Cheshire, and Goonhilly Earth Station in Cornwall, including a look at how those sites started, and how they are used now.

I also recalled the story of the first satellite, *Sputnik* and how the signals were received around the world, and I introduced some of the people behind the project.

Perhaps one of my favourite columns, being of the 'Apollo Generation', was looking at the story of the US radio enthusiasts who tracked the *Apollo* spacecraft and monitored communications from the Moon.

Looking to the future, with the *Artemis* missions planned to take a crew to the Moon and back, there should be plenty of opportunity for radio enthusiasts to experiment with receiving signals from spacecraft in the Moon's orbit as well as on the surface of the Moon itself. This should be fascinating and I am looking forward to seeing what is possible. In this context, it is good to see people already starting on projects to enable them to look at signals from the forthcoming *Artemis* missions.

I have enjoyed writing these columns and have learned a great deal in the process; I would very much like to thank you for your kind support and interest. See you over at *Practical Wireless*!

IRIDIUM COMMUNICATIONS

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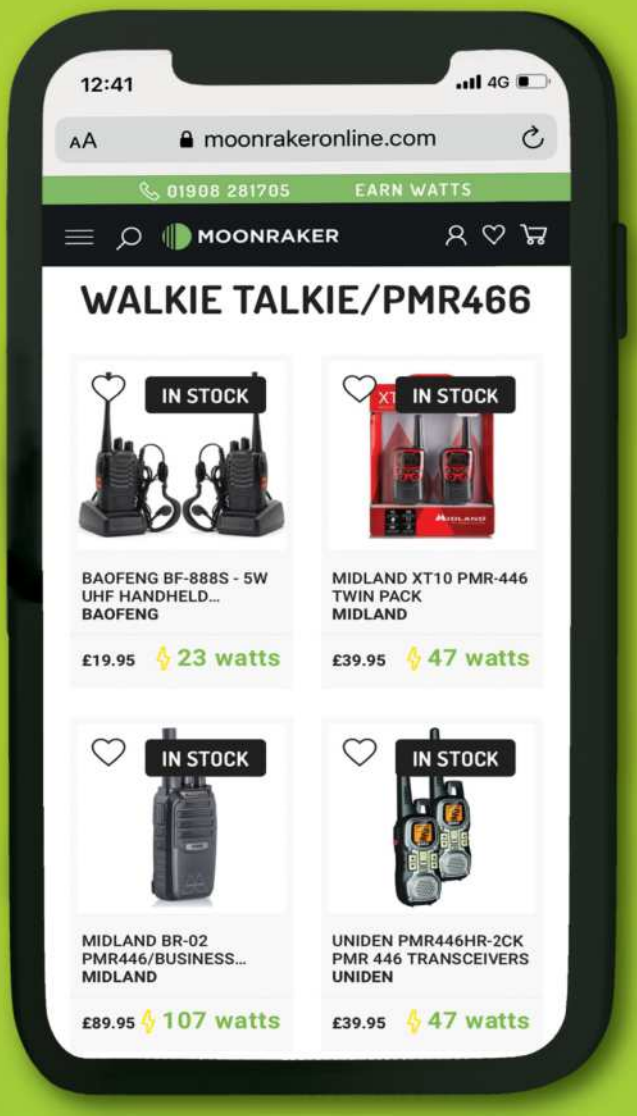

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1

A Wireless Amateur Tried By Court-Martial

Tony Smith travels back to the time of the First World War (1914-1918) looking at the restrictions then imposed on radio amateurs – and the consequences of contravening them.

Before the 'Great War' of 1914-1918, wireless amateurs, within restrictions imposed by the *Wireless Telegraphy Act 1904*, constructed their own spark transmitters, crystal receivers and aerials. Very few commercial sets were available and only for prices beyond the means of many (Fig. 1).

Therefore, from the beginning, some companies spotted the potential of the market for wireless products, especially components for home construction, and advertised them in early wireless magazines.

However, at the outbreak of war, all such advertising (e.g. Fig. 2) stopped.

Moreover, the supply of wireless parts for experimenters ceased and overnight, amateur wireless experimentation was banned.

The DORA Legislation

A few days after Britain declared war on Germany, in August 1914, the *Defence of the Realm (Consolidation) Act (DORA)* came into force. Among other things, the Act was intended to control communications and to subject civilians to the rule of military courts. Later amendments introduced further wide-ranging restrictions, including press censorship and the widening of police powers.

Shortly after the Act became law, the Post Office sent a telegram to many experimental wireless licence holders, reading: *"In accordance with your Wireless Licence, PMG (Postmaster-General) requires you to remove at once your aerial wires and dismantle your apparatus. One of his officers will shortly call upon you."*

At that point, amateur wireless experimentation in the country became illegal, and anyone ignoring the new regulations did so at their peril (Fig. 3).

Severe Sentences

Part of the Act read: *"... Any person who knows that some other person is acting in contravention of any provision of these regulations must inform the competent naval or military authority of the fact.*

"As to the trial and punishment of offences, it is provided that any person alleged to be guilty of an offence may be tried either by a court martial or before a Court of Summary Jurisdiction, and if tried by court-martial the sentence may be of penal servitude for life or any shorter period."

A Temptation to Ignore the Law

In Britain at the time, there were more than 2,000 experimental transmitting licensees, some 400 experimental receiving licensees, and many more applicants awaiting approval, all mainly using homemade equipment and aerials. The drawing in Fig. 4 shows a typical aerial in use at the time.

It is believed that only those licensed to transmit with power above 50W may have received the PMG's telegram. Those who did not receive it were notified of the new regulations by announcements in the press or publicly posted notices. To underline the point that wireless experimentation was now *illegal*, *Wireless World*, which normally invited its readers to send in questions on technical and general problems, announced that owing to the *Defence of the Realm Act*, it was *"totally unable to answer any questions on the construction of apparatus during the present emergency."* However, it was not long before the police and the military authorities began to receive reports from the public of *"suspicious spying activity"*, as required by DORA.

Caught in the Act

Some enthusiasts may have been tempted to ignore the new law, not take sufficient notice of it, or may even have been

Fig. 1: A commercially made receiver from 1913.
Fig. 2: Advertising of wireless products and components for home construction ceased, and all wireless-related items held by experimenters were to be taken into Post Office custody.
Fig. 3: *Defence of the Realm Act* 1914. This *Royal Proclamation* imposed extensive restrictions on many activities and banned experimental wireless telegraphy.
Fig. 4: Typical amateur experimental flat top T-aerial. All aerials were illegal under DORA.
Fig. 5: Reginald Cole lost his job for contravening the regulations and spent a period in custody awaiting trial. He was lucky not to have been given a prison sentence.

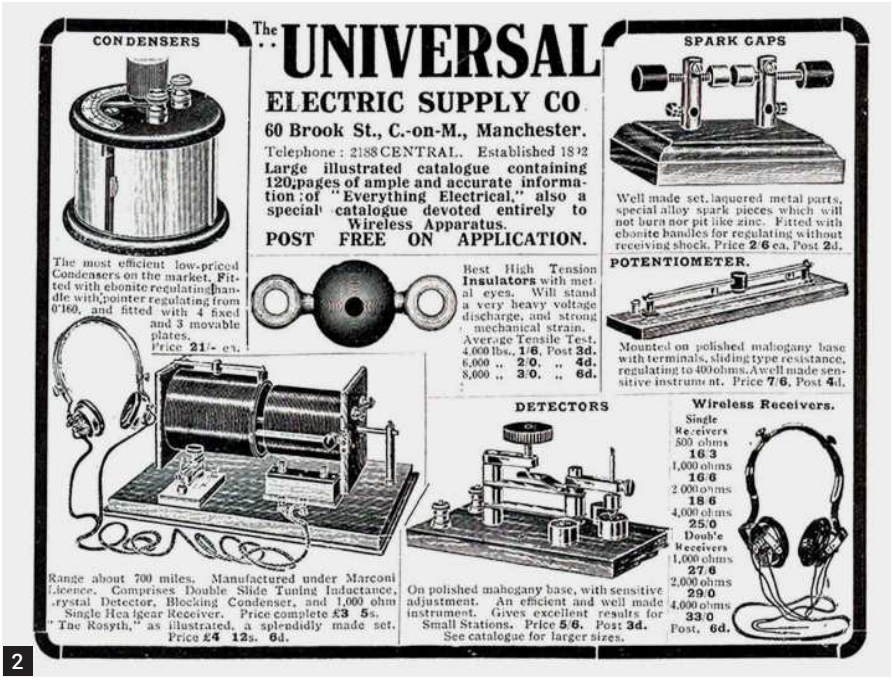
unaware of its severity, as in the following example reported in *Wireless World (WW)*, in January 1915: "*A Court Martial was held at Hull on December 6th, 1914, when Archibald George Cocks, resident in Filey, was charged with having wireless apparatus in his possession without permission*."

Mr J.B. Tucker, Honorary Secretary of the *Birmingham Wireless Association*, rallied to the defence of Mr Cocks. He attended the court martial and reported the outcome in a letter to the magazine. According to Mr Tucker, the President of the court martial stated at the outset that no charge of communication or attempted communication with the enemy was being made. Mr Cock's character was not doubted, and no evidence as to the same need be brought to the court. Nor would any importance be attached to the Morse code charts, etc, found on his premises.

A GPO witness read a letter to the Court from the Postmaster-General stating that as the accused was a British subject, he had no desire to press the case. This witness also stated that the portable wireless set in question was only capable when connected with the necessary aerial and, in its present condition, of transmitting for one mile.

The aerial and station, in general, had been dismantled by GPO officers at an earlier date when all amateur wireless stations were similarly treated. The station, therefore, was reasonably incapable of being worked, and Mr Cocks had only committed a small technical offence.

In these circumstances, it might have been expected that the case would be dismissed. However, despite all the evidence given in his favour, it was ruled that Mr Cocks had nevertheless committed an offence under the new law, and was sentenced to six months imprisonment, remitted by four months as he had already been seven weeks in custody, leaving two months to be served.



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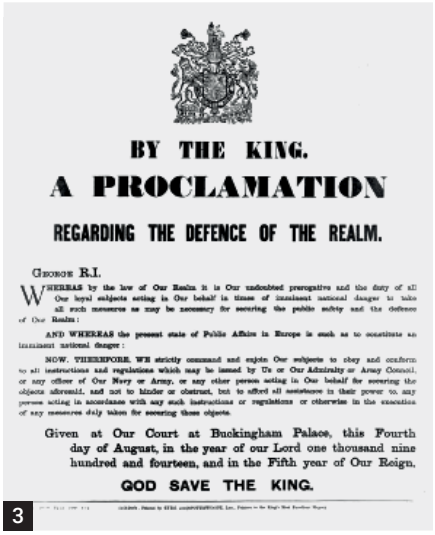
A Danger to Others

Mr Tucker concluded: "*Could anything be more unjust for a small technical offence? … The position is full of danger for every amateur throughout the country. I could give several instances where the Post Office authorities have, with their own knowledge, left such things as detectors, and variable condensers - in fact, enough apparatus to make up several portable sets. The Postmaster-General's letter was totally ignored, and unless something definite can be done about this matter… surely by now most amateurs in this country ought to be in prison.*"

Taken to the Highest Level

He subsequently brought the matter to the notice of Mr. A. A. Campbell-Swinton, President of the *British Association Radio-Telegraphic Investigation Committee*. Mr Campbell-Swinton, who was also President of the *Wireless Society of London* (the forerunner of the RSGB), referred it to Mr H.J. Tennant, the Under-Secretary of State for War who, on the same day ordered Mr Cocks' release.

Mr Cocks later wrote to WW: "*I hope it will serve as a warning to other experimenters to have every particle of their apparatus removed, sealed, or obtain a permit to keep component parts on their premises. Part of the apparatus mentioned in my case was simply a buzzer set with which my wife and I had been keeping up our Morse practice. I tremble to think what would happen to any unfortunate amateur who was found*


BY THE KING.
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GEORGE R.I.
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Given at Our Court at Buckingham Palace, this Fourth day of August, in the year of our Lord one thousand nine hundred and fourteen, and in the Fifth year of Our Reign.
GOD SAVE THE KING.
3

by certain Territorial officers to have in his possession a practice set as described in the November issue of WW."

(The set referred to by Mr Cocks was a wired two-way buzzer set for Morse practice between two adjoining rooms. In light of his own experience, this seems fair comment).

All Equipment Seized

Six months after the events described, the PMG lessened the possibility of further prosecutions by announcing that: "*in order to simplify the control of wireless apparatus and to avoid the necessity of visits of inspection to private premises, all wireless apparatus (whether licensed or not) which is not required for public purposes shall be removed into Post Office*

custody for the period of the War, under the authority contained in the Defence of the Realm Regulations."

Other Cases

By 1917, many experimenters had either volunteered or had been conscripted for service in the armed forces. Wireless telegraphy prosecutions under DORA had practically ceased to exist, but not entirely.

In May that year, Reginald George Harrison Cole, an electrical apprentice employed in Portsmouth Dockyard, was charged with being in possession of a wireless telegraphic apparatus without the permission of the Postmaster-General.

Evidence was given by a detective who, no doubt acting on information received, had visited the premises and discovered that Cole had a 15-foot clothes pole with three fine wires attached *"similar to those used as aerials in wireless telegraphy."* In his bedroom, he had a table on which there was a *"machine attached to aerials, and in working order."* Cole claimed that he could only receive messages and not transmit them. He was remanded for further inquiry and later committed for trial.

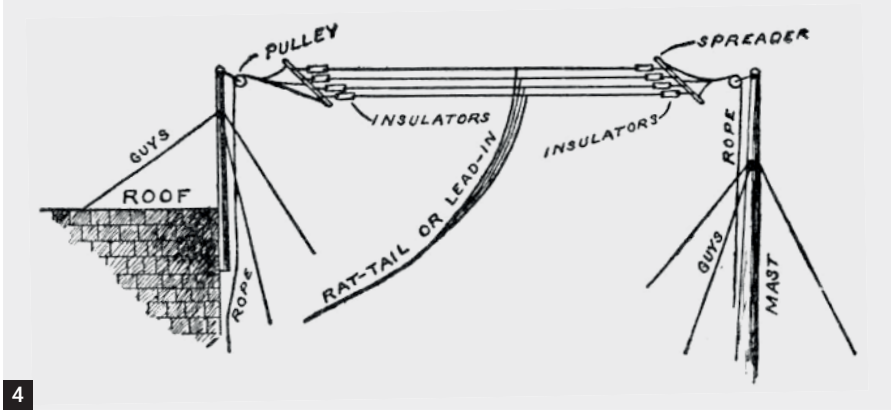
A Guilty Plea

He was tried at Hants Assizes at Winchester. He pleaded guilty to the charges of acting contrary to the *Defence of the Realm Regulations*. As reported in the *Hampshire Telegraph* of 22nd June 1917 (Fig. 5),

Prosecuting Counsel stated that there was no suggestion that the offence was committed with any idea of assisting the enemy.

The apparatus at the accused's home had been tested by a Naval Officer who reported that it could receive messages up to a distance of about 400 miles, but there was no indication of arrangements having been made to transmit. Cole admitted that he had received coded messages on his apparatus but said that he could not understand the code. Prosecuting counsel pointed out that Cole was employed in the dockyard, and ought to have known the regulations.

Although the case had no element of gravity, in the sense that Cole was not doing this for improper purposes, it certainly was a matter of public mischief and could not be lightly looked upon. Defence counsel said that Cole was 20 years of age and a most studious and industrious person of the highest character, who was enormously interested in his duties and scientific



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work. He pleaded that there had been no concealment.

The defendant had already had a very serious fright as, in the first instance, the magistrates had refused bail and he had spent 10 days in prison. He was now quite conscious of what he had done, and the Judge was asked to take as lenient a view as possible.

A Foolish Thing to Do

Cole remained in custody for sentencing on the following Monday. In summary, the Judge said that there could be no doubt that he had broken the regulations which stated that no one without the permission of the Postmaster-General should have in his possession or under his control any apparatus for sending or receiving messages by wireless telegraphy, or any apparatus intended to be used as a component part of such apparatus.

On the other hand, he concluded, this had not been done with any illegal intention, nor was it done in such a way that Cole could have used the messages he had received, because he did not know the code. What he had done was harmless except in the matter of example to others. It was a foolish thing to do, and it had been necessary to make an example of him so that others might not do the same thing.

It was very likely that he would not be taken back into his previous employment. He had learned a lesson and he, the Judge, would not make it worse. Cole had been in custody since Friday, and he would now be discharged in his own recognisance of £5 to come up for judgement if called upon.

The End of DORA

After the war, in November 1919, the Post Office announced that a new *Wireless Telegraphy Bill* was to be introduced into Parliament. Transmitting licences would be reissued but there would be


"WIRELESS" INSTALLATION.

Charge Against Portsmouth Draughtsman.

At the Hants Assizes at Winchester on
5

no easing up of the previous restrictions dating back to the *Wireless Telegraphy Act 1904*. Conditions would remain in respect of British nationality, the secrecy of correspondence and approval by the PMG of the installation.

The Post Office began issuing the new licences in 1920, permitting the use of a power not exceeding 10W on a wavelength of 180 metres (1665 kc/s), with transmission limited to two hours a day to work with three specified stations.

The *Defence of the Realm Act* remained in force until 1921 but no longer controlled and banned wireless telegraphy as it had during the war. It had been a frightening experience for those who contravened the regulations and found themselves facing the possibility of draconian sentences.

There were still risks for anyone disregarding the new post-war regulations, but fortunately, the penalties no longer included the possibility of long-term imprisonment!

Further information

Details of other cases tried under the *Defence of the Realm Act* in WW1 can be found in a video presentation *Hams in Court* by Lewis, M3HHY, at **https://tinyurl.com/2wy2bpkz**

More information about the later gradual relaxation of legally enforced restrictions, and the subsequent development of amateur wireless telegraphy, can be found in the author's articles "How to become a Wireless Amateur, 1904 style" in *Practical Wireless*, August 2019, and "The Experimental Receiving Licence 1904" in *RadioUser*, November 2019.

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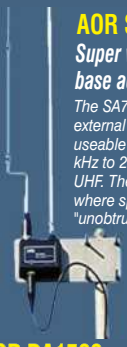

The SA7000 is an ultra-wide range external receiving aerial with a useable frequency coverage of 30 kHz to 2 GHz - short wave / VHF / UHF. The aerial is designed for areas where space is a problem or when an "unobtrusive" installation is essential.

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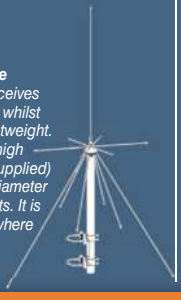

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The Blitz

IN COLOUR

THE BOMBING BLITZ 80 YEARS COMMEMORATIVE ISSUE

The story of Nazi Germany's failed bid to bomb Britain into submission during WWII

The Blitz IN COLOUR

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Welcome

The Blitz is an event in British military history which will forever remain embedded in the collective national consciousness. And, however doubtful the value or relevance of such a term might be in the 21st Century, the expression 'Blitz Spirit' has endured across the 80 years since the Blitz to suggest a spirit of resilience in the face of hardship and adversity. However inappropriate its application might have been to any event suffered nationally across subsequent decades, the fact that the expression is very much part of the English lexicon - and something which is universally understood – speaks volumes as to the impact that the events of the Blitz had upon the British psyche.

With the word's origins attached to the German word 'Blitzkrieg' (meaning Lightning War), the single term Blitz has evolved to be understood as the bombing of British cities by the Luftwaffe. Primarily, of course, the Blitz is associated with the German air assault on London between September 1940 and May 1941. However, it is important to recognise that the Blitz involved the majority of British cities: including Glasgow, Belfast, Southampton, Bristol, Coventry and Birmingham. That list, though, is not in any way exhaustive. It is also the case that a huge number of other towns and villages came in for attention by the Luftwaffe across almost the entire duration of the war, and not just the period of the September 1940 to May 1941 Blitz. Additionally, the nation was also attacked from the air and from the sea during the First World War, too.

In this publication, then, we have looked at the whole range and scope of attacks against the entirety of the British Isles (including the First World War) which largely targeted the civilian population and industrial or non-military objectives. During the Second World War, this also includes the devastating Tip and Run attacks against largely coastal towns as well as the fearsome V1 Flying Bomb and V2 rocket attacks.

Throughout the Second World War alone, a total of 60,595 civilians were killed as the result of air attacks. Putting this figure into perspective against Britain's total number of military fatalities during the war (376,239) it represents around 16% of that total.

While the very largest percentage of those civilian casualties were suffered in the big towns or cities, it is hard to find a single rural community across mainland Britain which did not suffer a fatality or casualty. Thus, the Blitz on Britain affected almost every single community. And the whole nation was on the front line. Or potentially so.

In this publication to mark the 80th anniversary of the main part of the Blitz, we have looked at a wide range of related topics, examined how Britain was defended, how it was attacked and how the civilian population withstood an extraordinary assault.

In compiling this record of the varied attacks on Britain, we have examined that period through a range of colour images, including photographs that have been colourised specifically for this publication.

We hope that you enjoy this unique look at one of the most dramatic periods in Britain's recent history.

This publication is dedicated to the memory of the 60,595 innocent civilian lives so cruelly taken during the nation's dreadful ordeal under fire.

Andy Saunders
Editor, The Blitz in Colour

The Blitz IN COLOUR

INSIDE THIS COMMEMORATIVE PUBLICATION

CONTRIBUTORS

Richard J Molloy

The colourisation artist for this project was Richard J Molloy who specialises in the digital colourisation of historic images. His particular interest is with military subjects and he is a regular art contributor to Iron Cross magazine, also by Warners Group Publications Plc.

Using research based on known colours, and sometimes using period colour charts, Richard constructs accurate representations of period images. His evaluation of those images often requires forensic research to properly represent the image being coloured.

This piece of work on the Blitz on Britain is Richard's second such project for Warners Group Publications Plc, his first being Battle of Britain in Colour published in 2020.

Samples of Richard J Molloy's work may be viewed by searching:- @colourbyRJM

Andy Godfrey

The aircraft colour profile artwork for this publication was by Andy Godfrey of the Teasel Studio.

Andy specialises in bespoke profile artworks for publication and commission.

Working from his studio near Hastings, East Sussex, his work draws on an extensive reference collection, gathered over five decades, a deep fascination with aircraft and specialist knowledge of colours and markings.

For enquiries:- teaselstudio@yahoo.co.uk

Acknowledgements

The editor wishes to thank Ian Castle, Austin J Ruddy and Steve Hunnisett for their individual and valuable contributions to this publication.

Cover Story Focke-Wulf 190 fighter-bombers streak away from Eastbourne on 4 June 1943 after one of the devastating tip-and-run attacks endured by the town. **Artwork by Piotr Forkasiewicz**

‘No Longer an Island’

At the dawn of the 20th century, Britons slept soundly in their beds, safe in the knowledge that the Royal Navy protected the coastline from enemy aggression. However, advances in aeronautics soon exposed the country to assault from the air.

In July 1900, a retired German Army officer, Count Ferdinand von Zeppelin, launched his first eponymous airship using lighter-than-air gas, hydrogen, to lift its great bulk into the sky. Over the next years, von Zeppelin continued to experiment and by 1910 Zeppelins were operating regular flights over Germany. It was a fact not underestimated by the German military.

Six years later, aeroplane development had progressed slowly in comparison to airships, and when an aviation pioneer claimed a prize for being the first to complete a flight of over 100 metres in 1906 there was little reaction. However, a newspaper baron, Lord Northcliffe, recognised its stark significance, remarking:

‘England is no longer an island.’

Despite this early warning, Britain had little in the way of air defence when the country declared war on Germany in August 1914.

HATRED FOR GERMANY

At that time, the Army and Royal Navy each had an air arm, the Royal Flying Corps (RFC) and the Royal Naval Air Service (RNAS). When the RFC accompanied the British Expeditionary Force to the battlefields of Europe, the RNAS accepted responsibility – temporarily – to defend Britain against aerial attack. Other than a diverse collection of 50 seaplanes and landplanes, there were just a handful of efficient anti-aircraft guns defending military installations. London only received its first guns – three ineffective one pounders – four days after the declaration of war.

There had never been a sustained aerial bombing campaign before and nobody could be sure what impact bombs falling amongst the civilian population would have on morale. In Germany, as early as August 1914, Paul Behncke, Deputy Chief of the Naval Staff, expressed his belief that attacks on London were likely:

‘...to cause panic in the population which may possibly render it doubtful that the war can be continued.’

Later, in October 1914, he warmed to his subject:

‘We dare not leave untried any means of forcing England to her knees, and successful air attacks on London, considering the well-known nervousness of the public, will be a valuable measure.’

Facing Page Ground personnel load 50kg bombs onto a Gotha G V, preparatory to an air raid against Britain.
Above Bomb damage in Great Yarmouth during the first Zeppelin raid on Britain. The bomb that wrecked this house in St. Peter's Plain also claimed the lives of the first two people in Britain killed by a bomb dropped from the air: Samuel Smith (aged 53) and Martha Taylor (72).

He was wrong. When bombs did start to fall across Britain there was no crumbling of morale but instead a hatred for Germany as its bombs killed innocent civilians as they lay asleep in their beds. And anger, too, that the British military appeared, initially at least, to have no effective means to oppose the raids.

AWE AND WONDER

The first significant raid took place in January 1915, when two Zeppelins bombed Great Yarmouth, King's Lynn and a number of Norfolk villages, claiming the lives of four and injuring 16 others. Something that seemed impossible just a few years earlier had become reality. And when those first bombs exploded, they opened-up a whole new theatre of war: The Home Front.

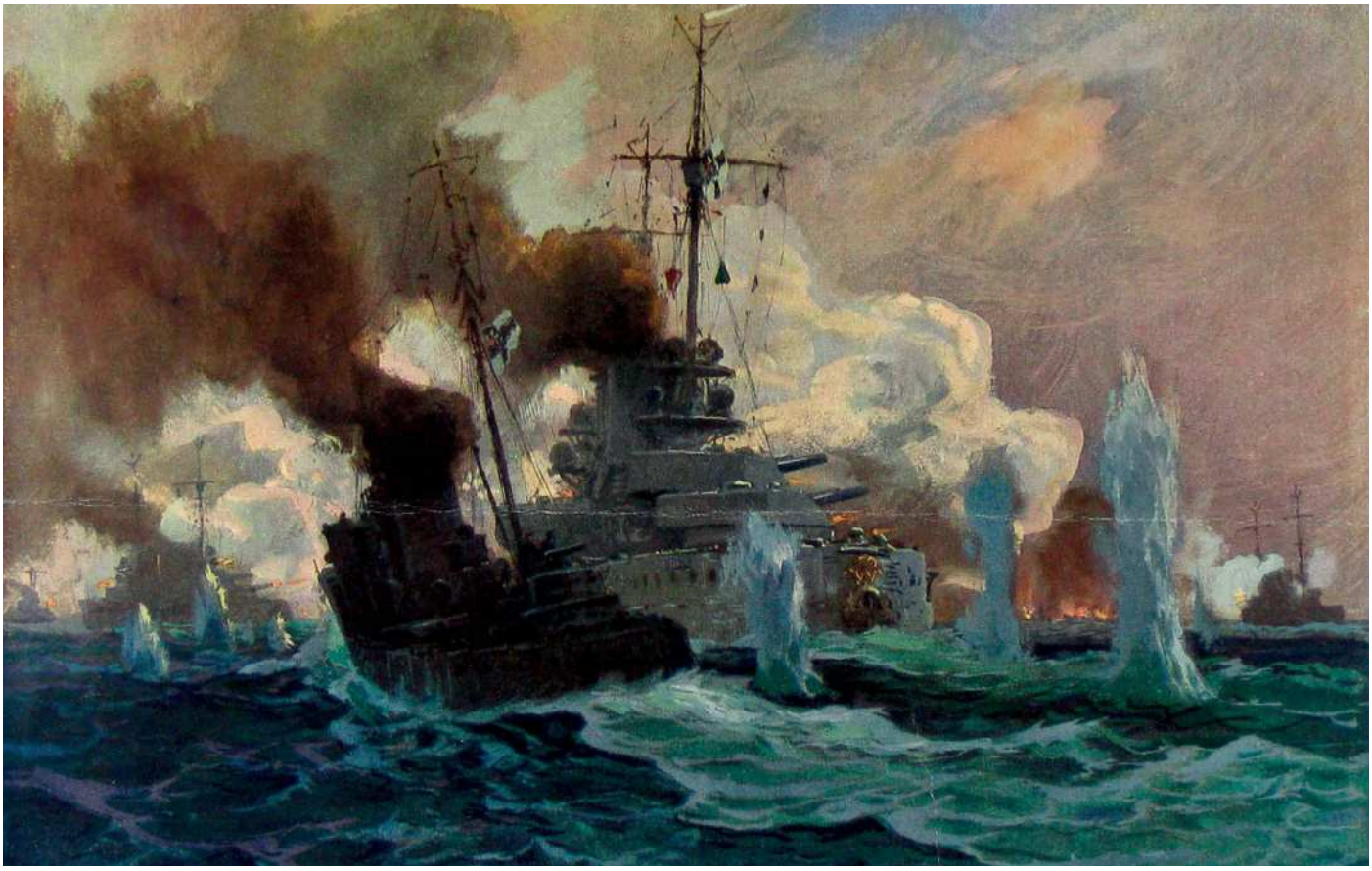
The experiences of those on the ground living through the raids varied enormously. Many people in Britain had not even seen an aeroplane before the war, and so when one of these huge airships passed over the blacked-out towns, cities and villages, illuminated by searchlights while moving serenely

on, they aroused widespread awe and wonder. Others, meanwhile, were simply – and understandably - terrified.

Air raid warnings were left to the discretion of local authorities and where such arrangements existed, they took the form of hooters or whistles sounded at factories or by the raising and lowering of gas pressure, which changed the brightness of lights in homes and workplaces. In London, though, there was no air raid warning system. Although debated, the government concluded

Top For residents of Britain dur… World War, the Zeppelin wa… awe, wonder and fear.
Above Left In 1915 … attacking Britain … their own way … developed … swung …
Ab…

READ THE FULL FEATURE HERE



Beachfront Broadside

German raids against Britain usually involved air attacks, but during the First World War the German Navy also shelled several British towns from the sea.

Although geographically the closest town to Germany, the residents of Lowestoft were not particularly concerned that war would come to them in any real way when it broke out in August 1914. However, on the night of 15/16 April 1915 that complacency was dispelled when the town was raided by a Zeppelin. Terrifying though it was, the attack resulted in relatively little damage although it was a portent of things to come. War would arrive in Lowestoft with a vengeance just over a year later.

Plans to bombard towns on the east coast at daybreak on 25 April 1916, from the cruisers and destroyers of a battlecruiser squadron, along with Zeppelin raids the night before, were intended to entice the Royal Navy to battle. If successful, the High Seas Fleet might destroy significant elements of the British Fleet, reducing or eliminating the Royal Navy's numerical superiority. In addition, it was timed to coincide with an expected Easter Rebellion by Irish Nationalists.

As targets, Lowestoft and Great Yarmouth were selected because the former was a minelaying and minesweeping base, while Great Yarmouth housed submarines disrupting German movements. The destruction of harbours and military establishments there would assist the war effort - even if it failed to bait the British.

In a well thought out plan, with eight Zeppelins dropping bombs and providing reconnaissance, the ships could assist if an airship was lost over water. Two U-boats were also sent ahead to Lowestoft, while others laid mines against vessels despatched south to engage the German force.

'BOMBS UNLAWFULLY DROPPED'

At noon on the 24th, operations began with the intention of putting the bombardment group off Lowestoft and Yarmouth by daybreak to bombard them for 30 minutes. But, at 16:00, disaster struck as the battlecruiser *Seydlitz*, in the vanguard of the force, hit a mine and was forced to turn back with a 50 ft gash in her hull.

The British, aware that the German ships had sailed, received information at 20:15 they were heading for Yarmouth and at 15:50 the fleet was put on two-hours-notice, finally ordered south from Scapa Flow at 19:05. Around midnight, the Harwich squadron of three light cruisers and 18 destroyers was ordered north.

Meanwhile, the airships had dropped their bombs while reporting visibility over land as poor, the winds unfavourable and the towns better defended than thought. However, whilst causing widespread terror, the bombs only resulted in one death: 79-year-old Fanny Gaze at Hall Farm, Horning, with the coroner later recording:

Facing Page A German painting by the artist Professor Hans Bohrdt of the bombardment of Lowestoft on 25 April 1916.
Right This imposing house on the Esplanade was cut in two by one of the German naval shells.
Below Left A series of commemorative postcards were produced to mark the bombardment of Lowestoft, this card showing damage at Cleveland Road.
Below Right Bombardment of another of Britain's coastal towns had taken place in Scarborough on 16 December 1915, the devastating assault being used as a tool to encourage enlistment.

'Heart failure from shock endured by the terrifying effect of explosions produced by bombs unlawfully dropped from a Zeppelin aircraft.'

Finally, at 03:50, one of the German ships sighted British ships to the WSW which turned south, attempting to draw the Germans away from Lowestoft. Instead, the four battlecruisers opened fire on the town at 04:10, the terrifying bombardment lasting for ten minutes before the ships moved their attention to Yarmouth. Here, fog made targeting difficult and only a few shells were fired before reports arrived that a British force had engaged the remainder of the German ships, the battlecruisers then breaking off to join them. Yarmouth had had a lucky escape.

Unable to draw the Germans away, the Royal Navy turned towards the Lowestoft attackers, engaging the light cruisers and escorts but broke-off when outgunned by the battlecruisers which had caused severe damage to the cruiser HMS *Conquest* and destroyer HMS *Laertes* and slightly damaged a light cruiser. The Germans then ceased fire, turned NW and hoped in vain that the British cruisers would follow.

During the bombardment, the German light cruiser *Frankfurt* sank one patrol steamer, while the leader of a torpedo-boat flotilla sank another, the crews being rescued and taken POW. However, while battle at sea continued, havoc had been wreaked ashore in Lowestoft.

DEATH, DESTRUCTION & FAILURE

Fortunately, casualties were remarkably light amidst large-scale destruction and only three civilians lost their lives, despite the intensity of the attack: siblings Herbert and Annie Davey and eight-month-old Robert Mumford were killed while Robert's mother, along with Herbert and Annie's parents and their

two other children, were injured when a shell collapsed the upper floor of their home at 20 Sandringham Road. In addition, there was one service death: Petty Officer William Hollis being killed at North End House, the RN Anti-Aircraft HQ on Yarmouth Road.

Light though casualties were, damage was estimated at the then considerable sum of £25,000. Captain Jasper Mayne, East Suffolk's Chief Constable, reported:

'Damage as follows:- Convalescent Home and Porter's Lodge considerably; Headquarters RNAAS wrecked and gutted by fire; Swimming baths, London Road South, extensively; Claremont Pier land end extensively; South Pier, Naval Base, damaged; 40 dwelling houses extensively; 200 dwelling houses slightly; the telephone wires and tramway wires with part of London Road South near Swimming Bath were demolished, four shells exploded in the enclosure round the wireless station at North Lowestoft...shells were 11-inch and generally made cavities of about 10ft diameter x 3ft deep.'

The destruction would likely have been worse had the battlecruisers carried high explosive shells rather than armour piercing ones. In many cases, these merely created large holes and left unexploded ordnance lying in the streets.

For the Germans, the operation was a dismal failure, sinking only two patrol craft and a submarine by U-boat and damaging one cruiser and a destroyer. Meanwhile, the U-boats found no targets with one sunk and another captured after running-aground at Harwich. The Germans also took serious damage to a battlecruiser, only inflicted light damage to naval establishments at Yarmouth and Lowestoft and failed to take advantage of superior numbers to engage the British.

British casualties were 21 servicemen killed at sea and four persons killed and 19 wounded in Lowestoft. While the raid angered the British, the bombardment of towns and the killing of civilians cost the Germans dearly in world opinion. ■

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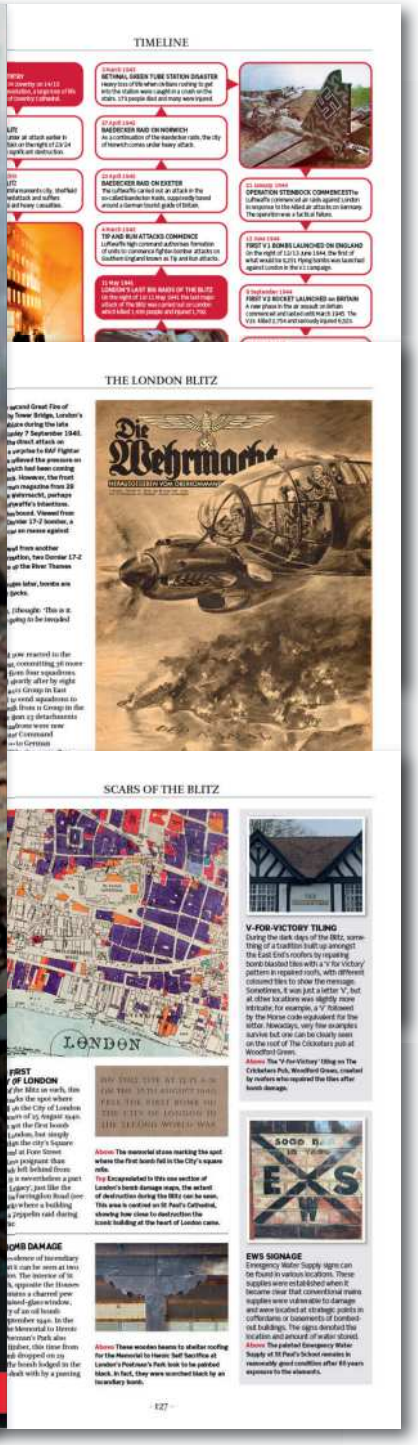

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